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Oil's Future: Investment Trends, Demand Forecasts, and Navigating the Energy Transition



Energy Research Paper

The Al-Attiyah Foundation



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The oil industry is in an investment upcycle, even though the demand rebound after the COVID-19 pandemic has largely abated. Whilst the low-carbon energy system roll-out continues, oil will continue to meet global energy demand and define energy security for years to come. Delivering the necessary supply at a reasonable cost will underpin upstream capital expenditure and energy security, but the corresponding oil consumption will leave the world well short of the goal of the Paris Agreement to limit global warming to below 1.5°C.

What is the outlook for global oil demand? Where will investments in upstream oil production be directed in the coming years? What are the trends in upstream CAPEX and what is driving these changes? What are the risks and vulnerabilities related to upstream CAPEX?

ENERGY RESEARCH PAPER

This research paper is part of a 12-month series published by the Al-Attiyah Foundation every year. Each in-depth research paper focuses on a current energy topic that is of interest to the Foundation's members and partners. The 12 technical papers are distributed to members, partners, and universities, as well as made available on the Foundation's website.





Introduction

- Oil demand will continue to increase for several years, though growth will progressively slow after 2024, from the elevated rate in the previous three years of ~2.5 Mb / day, as the post-pandemic recovery has fadedⁱ. Demand is expected to peak at 108 Mb / day in the early 2030s before beginning its long-term decline^{ii iii}.
- In the medium-to-long term, upstream investments will primarily target advantaged resources, particularly those with the lowest production costs, fastest cycle time to production, lowest emissions, and least risk.

Upstream Capital Expenditures (CAPEX) Set to Surpass US\$ 600 Billion, Global Demand Requires US\$ 738 Billion

- In 2023, upstream Capital Expenditures (CAPEX) increased by US\$ 63 billion y-o-y^{iv}. This trend is expected to continue in 2024, with an additional increase of US\$ 26 billion anticipated, marking the first time in a decade that annual upstream investment will exceed US\$ 600 billion^v. North and Latin American international oil companies (IOCs) and some Latin American National Oil Companies (NOCs) are projected to contribute ~60% of the total increase in upstream CAPEX between now and 2030^{vi}. However, in order to meet future demand adequately, annual upstream investments must increase by US\$ 135 billion, to US\$ 738 billion by 2030^{vii}.

Upstream Investment Risks Decline Amid Price Hikes and Production Increases

- Over the past year, the risk of underinvestment in the upstream segment and potential supply shortages has lessened, primarily due to higher prices bolstering investments, relaxed capital constraints, increased non-quota OPEC production (including from sanctioned countries), and restored spare capacity. The slowing of demand growth in 2024 has also eased pressures, and it is expected to be similarly moderate in 2025. However, upstream CAPEX remains vulnerable to oil price fluctuations, geopolitical shifts, and, to a smaller extent, changes in monetary policies and ESG regulations.

National Oil Companies are Leading Upstream Investments, GCC Oil Spending Slows

- At the end of this year, NOCs are expected to account for ~40% of global upstream spending, up from < 25% in 2015, largely driven by investments from PetroChina in conventional resources and tight oil & gas basins, Saudi Aramco's efforts to meet its expanded gas production targets, the expansion of LNG output in Qatar, and new sour gas field developments in the United Arab Emirates^{viii ix x xi}. NOC investment has shifted more to gas to meet domestic needs, and some export projects, as significant spare capacity remains in the oil sector.

- GCC NOCs are projected to experience a slowdown in their overall CAPEX growth in the near-term, although it will still be relatively strong. This deceleration, along with Saudi Arabia's recent halt in capacity expansions, is expected to reduce drilling activities. This will likely lower rig demand, utilisation rates, average day rates, and profitability.

Future Oil Demand and Upstream CAPEX

- Energy security and energy transition policies will continue to shape future oil demand, but uncertainties remain. Global medium-to-long term demand forecasts continue to diverge significantly, posing a challenge for long-term upstream planning and CAPEX.





Global oil demand continues to increase steadily with developing and emerging markets becoming the main drivers of demand growth, contributing 53% of the 1 Mb / day average annual increase between 2013 – 2023^{xii}. Global consumption peaked at 101 Mb / day in Q3 2019 before the COVID-19 pandemic hit but has since rebounded strongly, currently averaging 102 Mb / day^{xiii xiv}.

Oil demand will continue to increase for several years, though growth will progressively slow down after 2024, from the elevated rate in the last three years of ~2.5 Mb / day, as the post-pandemic recovery has faded^{xv}. Demand is expected to peak at 108 Mb / day in the early 2030s before beginning its long-term decline^{xvi xvii}.

Fuel efficiency will improve steadily, encouraged by regulations related to the energy transition. Electric vehicles, fuel cell vehicles, oil-to-natural gas substitution, and synthetic fuels will gradually replace conventional fossil fuel technologies, mainly internal combustion engines in the road transport segment.

This shift will take time, such that, by the late 2020s, internal combustion engines will make up < 50% of new vehicle sales globally, and it will take another decade for them to fall below half of the total vehicle stock, which will be 50% larger than it is today^{xviii}.

Still, oil will remain a key fuel in the shipping and aviation industries, where fossil fuel-based technologies have long service lives. Petrochemical consumption will be a source of continuing consumption growth. Hence, oil demand is expected to stay > 90 Mb / day until 2050^{xix}.

In an accelerated energy transition scenario (i.e. < 1.5°C pathway), oil demand is projected to decline by ~10 Mb / day by the early 2030s^{xx}. Achieving such a significant reduction would require rapid and large-scale investments in energy demand electrification and low-carbon energy supply, which is currently unlikely.

Over the past decade, global oil supplies matched an increasing demand, despite

structurally lower prices compared to the early 2010s, with the industry tapping into new supply sources, particularly in the Middle East and the United States, which have replaced higher-cost supplies from Europe and Africa. Low-cost conventional, tight oil, and deepwater resources have outperformed more complex and higher-cost projects that were the focus of exploration and production investment in the early 2000s.

Moreover, the price shocks of 2015 – 2016 and 2020 – 2021 forced upstream producers to adopt a more disciplined capital management approach, with NOCs and IOCs refining their portfolios to ensure only high-grade projects move forward, ultimately forcing their upstream operations to be more efficient.

In the medium-to-long term, upstream investments will primarily target advantaged resources, particularly those with the lowest production costs, lowest emissions, and least risk.

After this decade, the growth potential of existing prime resources will be exhausted, with upstream producers increasingly relying on late-life reserves growth from legacy sources, lower-tier unconventional resources, higher-cost greenfield developments, and yet-to-be-discovered volumes^{xxi}. This will further expand OPEC's market share in the 2030s and beyond, supported by expansions in the GCC and Iraq, in addition to new volumes from Iran and Venezuela, if sanctions are eased.

With production from fields naturally declining overtime, continuous CAPEX will be essential in capturing demand and maintaining supply, which if halted could lead to an immediate drop in output, and cause supplies from existing assets to decline much faster than any realistic energy transition scenario.

ExxonMobil now estimates global decline rates in the absence of new investment at about 15% per year, much faster than the International Energy Agency's assumption of 8%, reflecting the rising share of unconventional resources^{xxii}.

Global upstream investments must increase to ~US\$ 738 billion / year in order to meet demand over the next decade, including a forecast peak oil demand of 108 Mb / day in the early 2030s and peak natural gas demand of 11 BCM / day in the late 2030s, assuming the industry maintains its capital efficiency^{xxiii xxiv}. However, in an accelerated energy transition scenario, approximately two-thirds of the current CAPEX deployment will be needed in the 2020s and one-third in the 2030s.



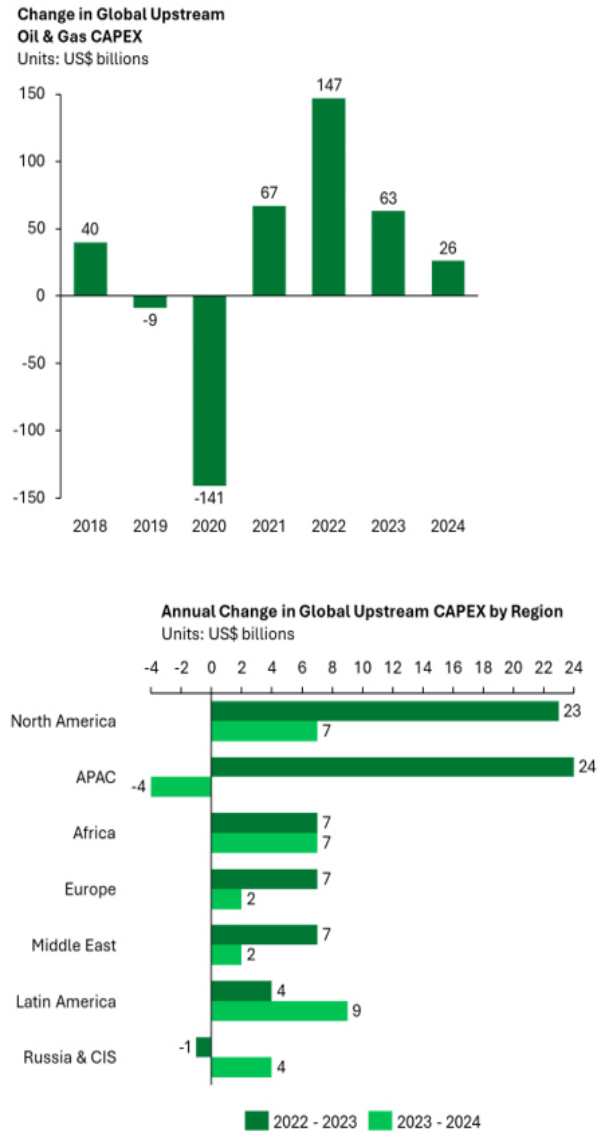
07 UPSTREAM CAPEX SET TO SURPASS US\$ 600 BILLION, GLOBAL DEMAND REQUIRES US\$ 738 BILLION

In 2023, upstream CAPEX increased by US\$ 63 billion y-o-y^{xxv}. This trend is expected to continue in 2024, with an additional increase of US\$ 26 billion anticipated, marking the first time in a decade that annual upstream investment will exceed US\$ 600 billion^{xxvi}. North and Latin American IOCs and some Latin American NOCs are projected to contribute ~60% of the total increase in upstream CAPEX between now and 2030^{xxvii}. However, in order to adequately meet future demand, annual upstream investments must increase by US\$ 135 billion, to US\$ 738 billion by 2030^{xxviii}.

Upstream CAPEX in North and Latin America is projected to increase by US\$ 43 billion between 2022 – 2024, accounting for ~50% of the global increase. Latin America is expected to be the largest driver of CAPEX growth in 2024, surpassing North America's y-o-y growth for the first time since 2004, mainly driven by deepwater / ultra-deepwater developments such as Yellowtail, Tilapia and Redtail in Guyana; and Buzios VIII, Buzios IX, Sepia and Atapu in Brazil^{xxix}. In contrast, CAPEX growth in the United States is estimated to slow this year due to consolidation in the upstream segment and a continued focus on shareholder returns.

In order to meet market demand, a total of US\$ 4.3 trillion must be invested in the upstream segment between 2025 – 2030, even as demand growth nears a plateau, and is feasible given the cash availability of upstream producers and a heightened focus on energy security by policymakers^{xxx}. Despite, the availability of free cash flow, higher prices will remain critical to base-level CAPEX, and a drop in commodity prices could require external funding to fill the gap.

Figure 1: Global Upstream Oil & Gas CAPEX

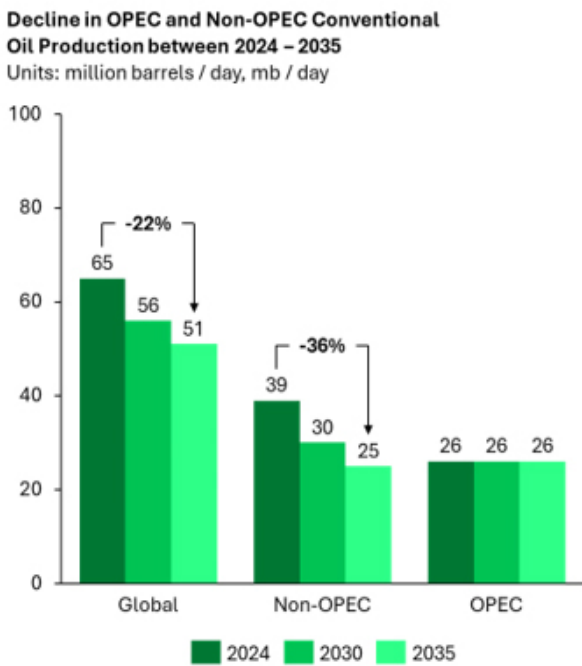


CAPEX this decade will impact production levels well into the next decade and beyond. Continued upstream investment will be necessary first to offset expected production declines and meet future demand growth.

North America's upstream CAPEX is projected to increase by US\$ 77 billion between 2024 – 2030, more than all other regions combined, primarily driven by shale production in the United States, particularly from the Permian Basin, with marginal contributions from the

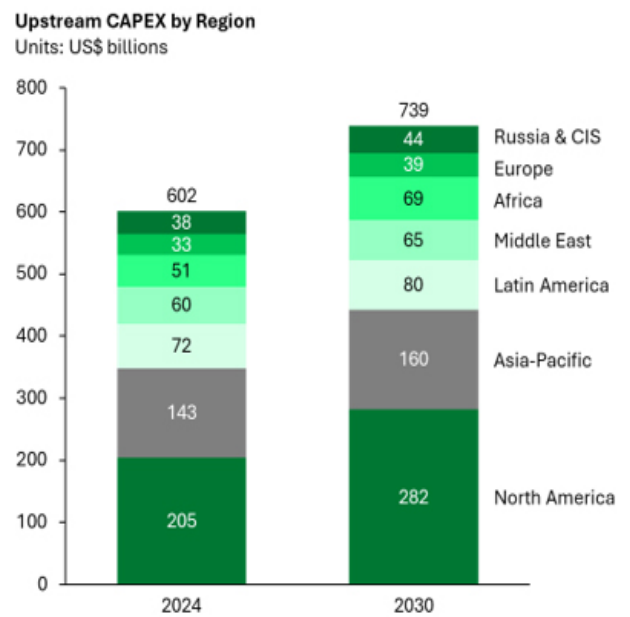
United States Gulf of Mexico and Canada, ultimately raising the region's share of global upstream CAPEX from 34% in 2024 to 38% in 2030^{xxxi}.

Figure 2: Decline in OPEC and Non-OPEC Conventional Oil Production between 2024 – 2035 (assuming no additional drilling, additional spare capacity comes online as planned)



its "Project Lightning" offshore electrification. An extension of electrification at the Troll gas field in Norway will cost \$0.95 billion. This increased focus on upstream decarbonisation has also contributed to the upwardly revised CAPEX forecast.

Figure 3: Change in Long-Term Upstream CAPEX by Region by 2030



Upstream producers are also allocating a higher portion of CAPEX towards decarbonising operations, mainly through investments in CCUS / CCS systems^{xxxii}. Currently, the global upstream segment accounts for ~60% of the oil & gas industry's direct (Scope 1 and Scope 2) greenhouse gas emissions. Companies are increasingly focusing on reducing their upstream emissions intensity to meet regulatory requirements and investor expectations, which often involve increased spending on methane abatement, flaring reduction, operational and energy efficiency, electrification, and CCUS / CCS. For example, Abu Dhabi National Oil Company quotes its decarbonisation budget as \$23 billion, of which \$3.8 billion is allocated for



09 UPSTREAM INVESTMENT RISKS DECLINE AMID PRICE HIKES AND PRODUCTION INCREASES



Over the past year, the risk of underinvestment in the upstream segment and potential supply shortages has lessened, primarily due to higher prices bolstering investments, relaxed capital constraints, increased non-OPEC quota production (including from sanctioned countries), and restored spare capacity. However, upstream CAPEX remains vulnerable to oil price fluctuations, geopolitical shifts, and, to a smaller extent, changes in monetary policies and ESG regulations.

Conventional oil currently accounts for ~85% of global production and typically requires longer lead times for first production, with investment decisions made years in advance, in contrast to unconventional oil (e.g. United States shale), which is more flexible and responsive to oil price signals, with CAPEX and drilling plans generally made a year in advance but adjustable within months^{xxxiii}.

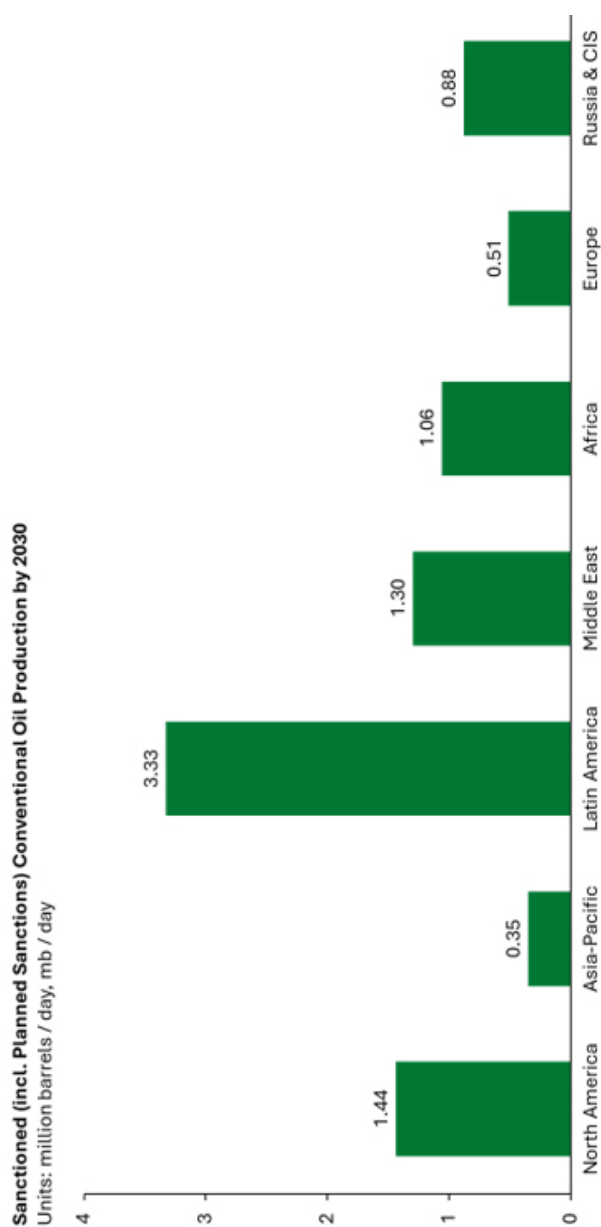
New projects and expansions already sanctioned will add > 6 Mb / day of conventional oil by 2030, with > 2.2 Mb / day coming from Latin America^{xxxiv}. In order to meet demand by 2030, an additional 2.8 Mb / day of conventional oil must be sanctioned in the next 2 – 3 years.

Robust upstream profitability in recent years have enabled producers to fund CAPEX directly from operating cash flow, reducing reliance on debt capital, which is a significant shift from the pre-pandemic years when weak cash flow and limited free cash flow availability constrained CAPEX.

Seven of the largest global IOCs reported ~US\$ 350 billion in cash flow from operations in 2022, ~US\$ 250 billion in 2023, and similar returns are expected in 2024^{xxxv}. Saudi Aramco, the largest NOC, reported free cashflow of \$148.5 billion in 2022 and \$101.2 billion in 2023^{xxxvi}.

The largest Latin American NOC, Petrobras of Brazil, had free cashflow of about \$31 billion in 2022 and \$40 billion in 2023, and the biggest Chinese NOC, PetroChina, \$21 billion and \$24 billion respectively^{xxxvii}. These ten companies alone could therefore finance more than half of the required global 2030 investment from cashflow alone at the 2023 level.

Figure 4: Sanctioned (incl. Planned Sanctions) Conventional Oil Production by 2030



Capital constraints are, however, possible in some cases where, because of domestic political choices or international sanctions, access to international capital is limited and existing debt load or government tax take is high. This applies, for example, to Mexico's Pemex, which had more than \$100 billion in debt in early 2024, to Venezuela's PdVSA, the main Russian NOCs, and National Iranian Oil Company.

These situations apart, the CAPEX challenge has shifted from prioritising limited capital in a low commodity price environment to allocating available capital in a higher price environment. This year, the largest IOCs are expected to allocate ~50% of their cash flow from operations to CAPEX, 27% to share buybacks, and 23% to cash dividends^{xxxviii xxxix}.

Low-carbon segments are also competing for CAPEX allocation. This year, the largest IOCs will spend 11% - 26% of their total CAPEX on low-carbon segments such as renewables, hydrogen, and CCUS^{xl xli}. And if cash flows decline due to lower prices or higher costs, IOCs will need to increase their reinvestment rate to maintain CAPEX and production levels whilst deliberating how to allocate CAPEX between upstream and other business segments.

Global geopolitical risk is currently at one of its highest levels; however, despite ongoing conflicts, the impact on physical oil supply has been rather minimal. Oil markets have demonstrated flexibility, with flows being rerouted despite sanctions and threats to key waterways.

Russia is increasing using its "dark fleet" of tankers that operate covertly to bypass sanctions.

Over the last three years, the global dark fleet has grown to 435 tankers^{xliii}. Russia is also participating in OPEC+ production cuts, with its output currently < 0.7 Mb / day below early-2022 levels^{xliii}.

Iran and Venezuela have also seen their combined production increase over the last 18 months, benefiting from the expanded dark fleet, increased Asian demand, and more lenient enforcement of sanctions. These flows are likely to continue at the current rate, unless there are policy changes, stricter sanctions enforcement, or disruptions.

However, non-OPEC production (excluding Russia), fell short of expectations for much of 2022 but improved by mid-2023. At the end of 2023, production had increased to 59.2 Mb / day, surpassing forecasts of 2.5 Mb / day^{xliiv xlv}.

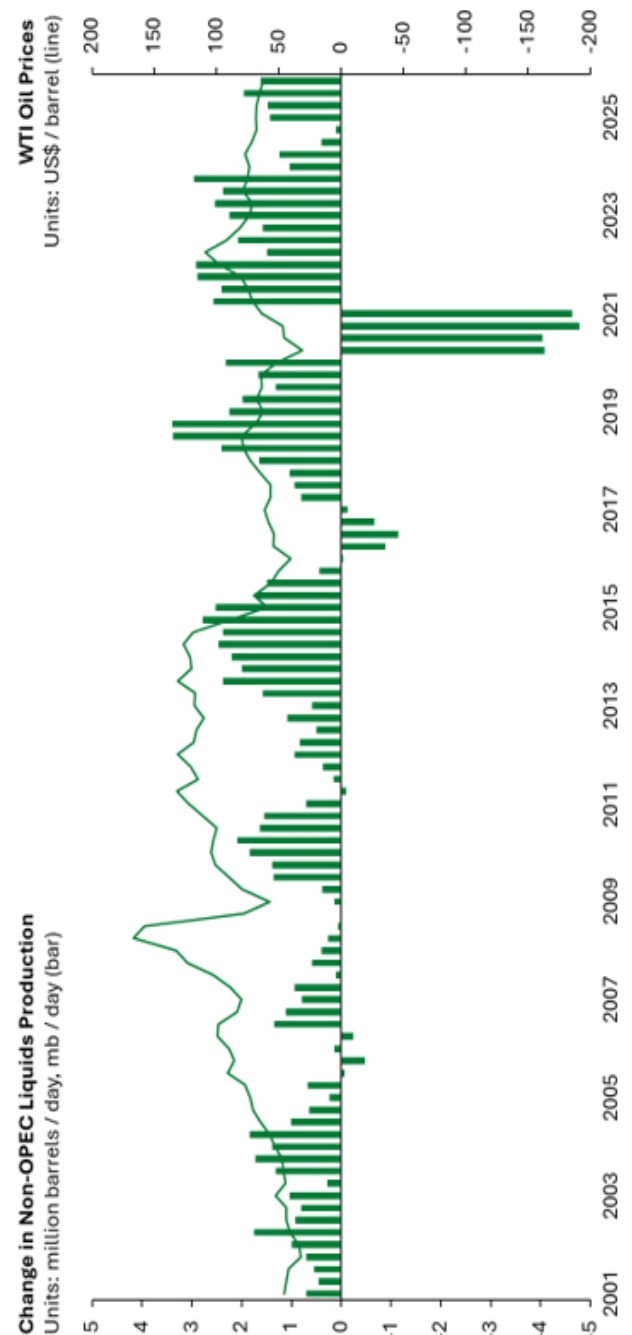
United States' production growth is projected to decelerate this year, and in the long-term, historical trends indicate that the risk for shale production tends to be on the upside, especially in a high-price environment. Oil prices remain a critical factor for sustained growth in shale production. Independent producers and major companies can still generate cash surpluses for their shareholders whilst drilling new wells to boost production at ~US\$ 80 / bbl (WTI price).

However, if prices were to drop significantly, shale growth could quickly halt due to the steep decline rates and the substantial CAPEX required to maintain production levels. Sustained WTI prices below US\$ 65 / bbl would likely lead to a reduction in shale output from the United States.

OPEC's spare production capacity currently stands at 4 Mb / day, enough to surpass the additional 2.8 Mb / day of conventional oil

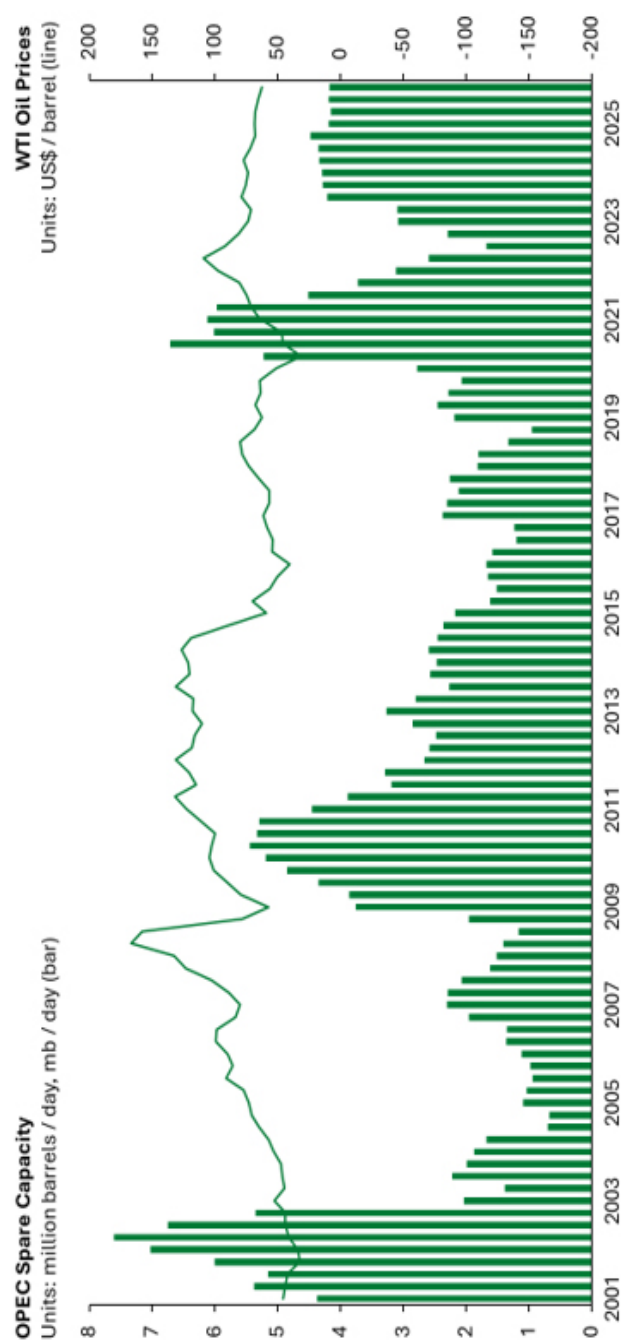
that needs to be sanctioned in the next few years to meet 2030 demand^{xlvi}. Oil markets generally prefer some level of spare capacity, as elevated excess capacity provides a buffer against potential disappointments or delays in conventional project approvals, prolonged supply outages, or accelerated base declines.

Figure 5: Change in non-OPEC Liquids Production and WTI Prices



In the past, when spare production capacity was limited, the risk of underinvestment was perceived as greater. Conventional oil supplies are typically inelastic to short-term price changes. However, ample spare capacity can serve as a buffer, along with inventories, to buy time until new supplies can come online.

Figure 6: OPEC Spare Capacity



Overall, the outlook for upstream CAPEX is relatively more positive than in previous years, upstream producers will continue stay adaptable to navigate potential challenges and adjust to evolving circumstances.



13 NATIONAL OIL COMPANIES ARE LEADING UPSTREAM INVESTMENTS, GCC OIL SPENDING SLOWS



Since 2015, there has been a significant shift in upstream investment, characterised by increased cost discipline by IOCs, greater geographic selectivity, and a new approach to CAPEX. Between 2017 – 2024, investment by NOCs in the Middle East and Asia-Pacific region increased by 50%, whereas investments by IOCs (across the regions) declined by 20%^{xlvii}.

At the end of this year, NOCs are expected to account for ~40% of global upstream spending, up from < 25% in 2015, largely driven by investments from PetroChina in conventional resources and tight oil & gas basins, Saudi Aramco's efforts to meet its expanded gas production targets, and new sour gas field developments in the United Arab Emirates^{xlviii xlix l li}.

Over the past decade, CAPEX in existing conventional oil & gas has made up ~40% of total upstream oil & gas investments, of which a third was allocated to new field development and exploration, with the remainder primarily directed towards tight oil and shale gas production in the United States^{lii}.

From 2021 – 2023, US\$ 130 billion was invested in conventional oil & gas exploration, of which nearly half was invested in China, North America, Norway, and Russia, with the largest discoveries in Guyana and Namibia^{liiii liv}. Exploration investment is projected to rise by an additional 15% y-o-y in 2024, mainly driven by increased activity in China and North America^{lv}.

Moreover, CAPEX in United States tight oil and shale gas reached its peak in 2018 – 2019, with an annual spending of US\$ 130 billion / year^{lvi}. Since then, investments have declined due to significant cost-cutting measures. In 2024, activity levels are expected to remain relatively stable, but investment is anticipated to decrease slightly due to ongoing cost reductions and mergers and acquisitions-related consolidation, which should enhance operational efficiency.

GCC NOCs are projected to experience a slowdown in their overall CAPEX growth in the near-term, although it will still be relatively strong.

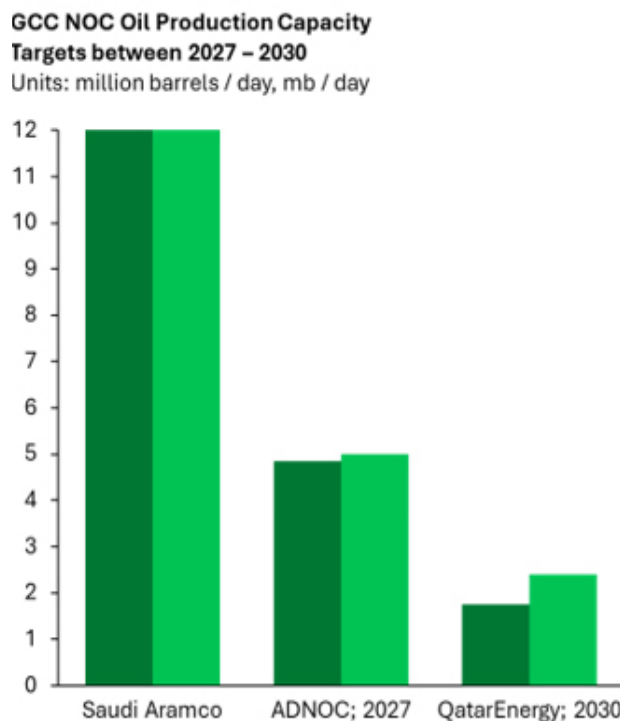
This deceleration, along with Saudi Arabia's recent halt in capacity expansions, is expected to reduce drilling activities, especially in Saudi Arabia. Consequently, this will likely lower rig demand, utilisation rates, average day rates, and profitability.

In the near-term, GCC NOCs are expected to adopt a cautious approach to spending, with aggregate CAPEX expected to increase modestly by 5% y-o-y this year compared to 2023 levels, mainly driven by production plans in Saudi Arabia, the United Arab Emirates, and Qatar. Over the next few years, GCC NOCs' CAPEX total ~US\$ 115 billion, which is relatively high compared to previous years, marking the beginning of a plateau after years of continuous CAPEX growth^{lvii}.

ADNOC aims to boost production capacity to 5 Mb / day by 2027, from 4 Mb / day in February 2024^{lviii}. Qatar plans to expand its LNG production capacity to 142 MT / year by 2030, from the current 77 MT / year, with expansions in the North Field East, South, and West projects^{lix}. Conversely, Saudi Aramco has paused its plans to increase capacity by an additional 1 Mb / day, maintaining its maximum sustainable capacity at 12 Mb / day^{lx}.

In January 2024, Saudi Aramco received a directive from the Ministry of Energy to maintain its maximum sustainable capacity, rather than moving towards the planned target of 13 Mb / day by 2027, leaving spare capacity unchanged at ~3 Mb / day^{lxi}. As a result, Saudi Aramco may defer certain projects, including the expansion of the Safaniya field, which is one of the world's largest offshore oil fields, ultimately curtailing CAPEX by US\$ 40 billion between 2024 – 2028, despite the company continuing to spend on other projects^{lxii}.

Figure 7: GCC NOCs' Planned Oil Capacity Targets



Saudi Aramco has also cancelled the bidding processes for multiple EPC contracts to expand the Safaniya field. Since the expansion project was only in the construction phase, with an expected start date in 2027, its demand for offshore rigs could start declining from 2026, assuming all other factors remain constant.

A slowdown in GCC NOCs' upstream investments is expected to reduce utilisation rates, average day rates, and profitability. Although drillers in the GCC have strong ties to NOCs in highly rated countries, they also tend to have significant concentration on a single NOC, making them vulnerable to cash flow volatility.

In recent years, domestic oilfield service players have benefited more from contract awards than their international peers in the region. In Saudi Arabia, domestic drillers held 67% of the offshore market as of the end of 2023, and roughly a 78% share including GCC-based players such as ADNOC Drilling^{lxiii}.



Energy security and energy transition policies will continue to shape future fossil fuel demand, but uncertainties remain. Global medium-to-long term demand forecast continue to diverge significantly, posing a challenge for long-term planning and investments.

Investment prospects and market fundamentals continue to improve post-pandemic, primarily due to supply-side factors. Non-OPEC and sanctioned OPEC+ members have surpassed production expectations, resulting in increased project approvals and investment levels, amidst the uncertainty about the pace of the global energy transition and its potential impact on energy demand^{lxiv}.

The Russian invasion of Ukraine has highlighted that the ongoing energy transition cannot come at the cost of energy security.

The challenge is not only to move away from carbon-intensive fuels but also to meet rising energy demand, especially in developing and emerging markets, where 80% of the global population lives and ~3 billion people experience energy poverty^{lxv}.

Simultaneously, increasing artificial intelligence use and data centre infrastructure development could increase the use of natural gas and other fossil fuels in the power sector, which is likely if low-carbon or renewable energy generation does not expand rapidly enough.

Average data centres typically require a power demand of 5 – 10 MW; however, large hyperscale data centres require > 100 MW, with annual electricity consumption equivalent to the demand of ~350,000 – 400,000 electric vehicles^{lxvi}.

Modelling oil demand accurately during typical periods is already challenging, but it becomes even more complex during times of significant market transformation.

Currently, there is a notable divergence in short-term oil demand forecasts. Despite similar economic outlooks, the IEA and OPEC's forecasts for 2025 differ by 2 Mb / day. Whilst this might seem minor in a market exceeding 100 Mb / day, the inelastic nature of oil supply means that even a small (i.e. 1% -2%) deviation in global oil supply-demand balance can lead to significant price volatility.

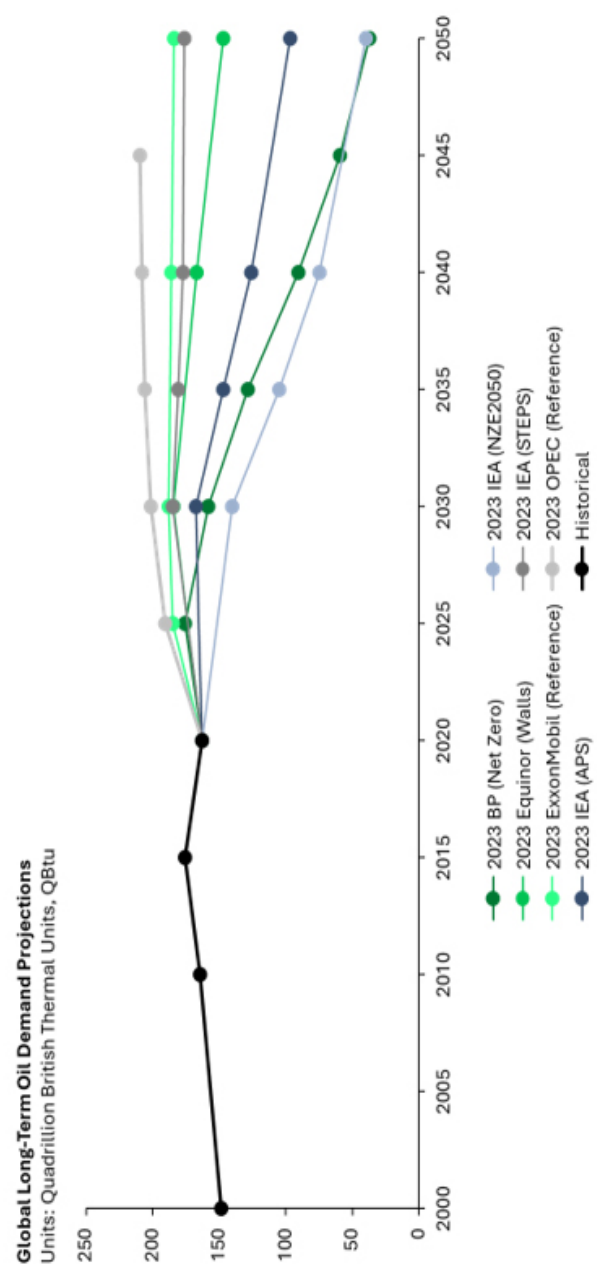
Looking further ahead to 2030, the IEA and OPEC's base case scenarios for oil demand differs by 7 Mb / day by 2030 and will widen to 27 Mb / day under the IEA's 2050 Net-Zero scenario^{lxvii lxviii}. By 2045, the divergence in base case scenarios expands to 13 Mb / day, and under more ambitious climate scenarios, the gap increases to 72 Mb / day^{lxix lxx}.

As short-term supply-side fundamentals stabilise, uncertainty in medium-term and long-term demand will pose a significant challenge for oil investments. Traditionally, investing in long-cycle upstream projects requires balancing economic factors like full-cycle breakeven prices and above-ground risks^{lxxi}. However, current market conditions, upstream producers must consider whether demand will persist over the project's lifespan and the potential impact of government policy changes.

Projects scheduled to come online in the short-term are expected to produce well into the 2030s and beyond (extending into the 2040s) and have factored a broad range of long-term price scenarios and increasing market uncertainties, with upstream

producers accelerating payback periods for new investments and raising return thresholds to account for additional uncertainties. Nonetheless, long-term demand uncertainty continues to be a significant constraint and a source of long-term investment risk in the upstream oil segment.

Figure 8: Global Long-Term Oil Demand Scenarios





The oil industry stands at a critical juncture, with future demand and investment patterns poised to shape the industry's trajectory. Oil demand is projected to continue increasing in the medium-to-long term, although the growth rate will decelerate after 2024 as the post-pandemic recovery wanes. Demand is expected to peak in the early 2030s before entering a long-term decline. In this context, upstream CAPEX will increasingly focus on advantaged resources, i.e. those with the lowest production costs, minimal emissions, and least risk.

Upstream CAPEX is expected to exceed US\$ 600 billion in 2024. North and Latin American IOCs are expected to contribute two-thirds of the total spending between now and 2030. However, to adequately meet long-term oil demand, upstream investments must increase by US\$ 135 billion / year, to US\$ 738 billion by 2030.

There has been a reduction in the risks of underinvestment and potential supply shortages

in the upstream segment; however upstream CAPEX remains susceptible to fluctuations in oil prices and geopolitical shifts.

Energy security and energy transition policies will continue to influence future oil demand, but significant uncertainties remain. The upstream segment must navigate these uncertainties with flexibility and adaptability to ensure a stable and secure energy future.

Whilst the outlook for upstream investment is more optimistic than in previous years, the market must remain agile to overcome potential hurdles and adapt to new realities. Substantial and sustained investments will be essential to ensure energy security and meet future demand. Clear policies and increased dialogue can help reduce uncertainty and risks in this complex market. As the industry moves forward, it must balance the need for immediate investment with the long-term goal of a stable and equitable energy transition.

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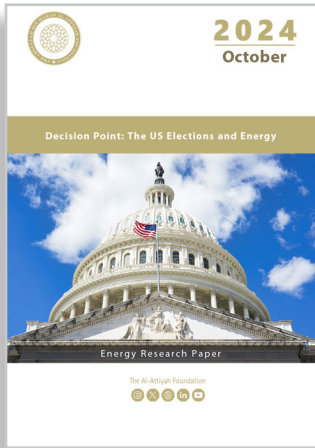
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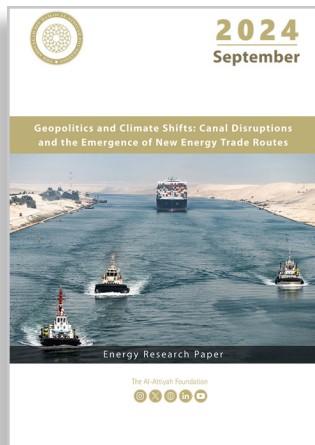
October – 2024

Decision Point: The US Elections and Energy

Almost half the world's population is expected to vote this year, marking an unprecedented turnout. Soon, it will be the United States' turn – on 5th November 2024, it will elect a new president and numerous legislators, including all 435 members of the House of Representatives and 34 of the 100 Senate seats, along with various state and local offices.



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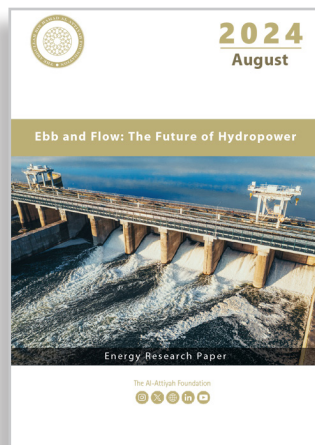
September – 2024

Geopolitics and Climate Shifts: Canal Disruptions and the Emergence of New Energy Trade Routes

Geopolitics and climate have emerged as the two wildcards impacting the world's busiest trade chokepoints, i.e. the Suez and Panama Canals. Daily shipments through the Suez Canal in the Red Sea have dropped by 50% since January 2024, while Panama Canal transit restrictions have led to a 32% decline since October 2023.



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August – 2024

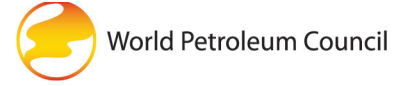
Ebb and Flow: The Future of Hydropower

For over a century, hydropower has driven global development by generating affordable and reliable electricity. It accounts for 14% of global power generation and is the largest contributor to renewable energy (in 2023, wind generated 7.8% of global electricity and solar 5.5%). Hydropower generation supports the integration of non-dispatchable renewables like solar and wind by offering balancing and flexibility services.





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The Al-Attiyah Foundation

 Tel: +(974) 4042 8000,
Fax: +(974) 4042 8099
 www.abhafoundation.org

 Barzan Tower, 4th Floor, West Bay.
 PO Box 1916 Doha, Qatar
 [Alattiyahfndn](https://www.instagram.com/Alattiyahfndn)

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