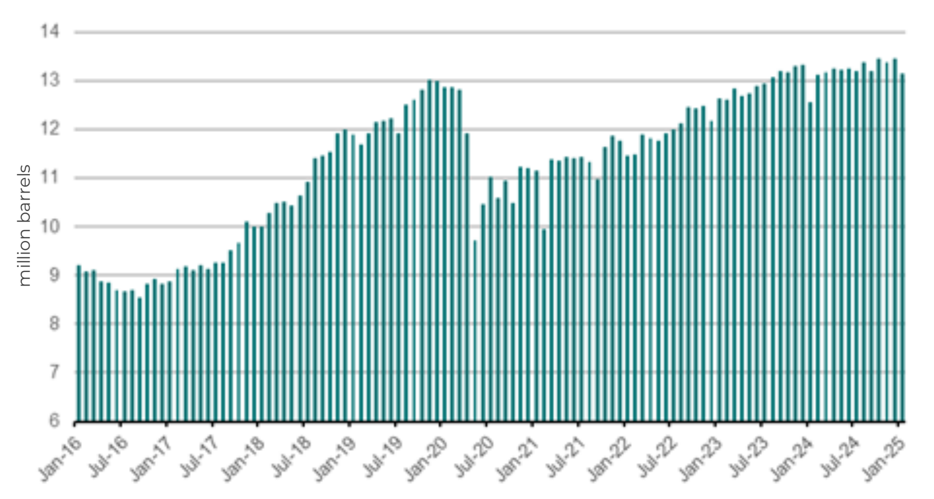
CHART OF THE MONTH
US oil production growth losing momentum

After many years of positive momentum, US oil production growth appears to be moderating. Production has been essentially flat over the last 12 months and growth expectations for 2025 and beyond remain muted.

US oil production (million barrels/day)



Source: DNB, April 2025

OIL
Spot prices moved higher in March

Brent and WTI spot oil prices rose during the month on lower supply expectations, amplified by heightened geopolitical tensions in the Middle East/Russia and moderated by the threat of geopolitically-related demand weakness. We also saw OPEC+ confirm plans to force countries that had overproduced to compensate with lower future production. Brent and WTI both rose, closing at $77/bl and $71.5/bl respectively.

NATURAL GAS
International gas prices moderate, US price up

International gas prices moderated in March, with the UK National Balancing Point price down by $0.7/mcf (thousand cubic feet) to $12.7/mcf and Japanese liquefied natural gas down $0.8/mcf to $13.1/mcf. A particularly cold snap in the United States has eased allowing inventories to rebuild despite record LNG export volumes in March.

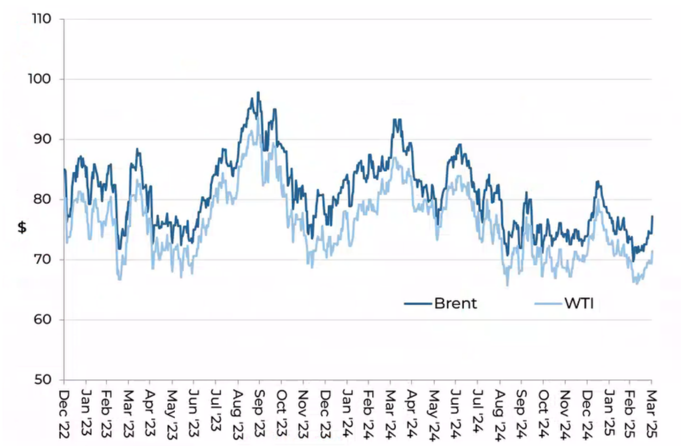
EQUITIES
Energy outperforms the broad market in March

The MSCI World Energy Index (net return) rose by 4.61% in March, outperforming the MSCI World Index (net return) which fell by -4.45%.

March in Review

OIL MARKET

Oil price (WTI and Brent $/barrel)
December 2022 to April 2025



Source: Bloomberg, Guinness Atkinson Funds. Data as of March 2025.

The West Texas Intermediate (WTI) oil price began March at $70/bl and, after dipping to a low of $66.3/bl on March 5th, rallied to close the month at $71.5/bl. WTI has averaged just over $71/bl so far this year, having averaged $76/bl in 2024 and $78/bl in 2023. Brent oil traded in a similar shape, opening at nearly $73/bl and moving higher, to close at $77.2/bl. Brent has averaged $75/bl so far in 2025, having averaged $80/bl in 2024 and $83/bl in 2023. The gap between the WTI and Brent benchmark oil prices widened over the month, ending March at $5.7/bl. The Brent-WTI spread averaged $5/bl in 2024 after averaging a similar amount in 2023.

Factors which strengthened WTI and Brent oil prices in March:

- **Venezuelan oil production growth under threat**
  Oil exports from Venezuela fell 11% in March versus February following US President Trump's announcement in February to cancel a "concession agreement" on Venezuela's energy sector that allowed Chevron to produce and export oil from the country. The concession had been put in place by President Biden in November 2022. The shutting down of Chevron's activities in particular threatens the supply of diluent, a substance produced by the company which is used to thin out Venezuela's heavy oil, allowing it to be transported. Without the diluent supply, heavy oil production in the country is likely to fall sharply from here. Venezuela is currently producing around 1m b/day but production was as a low as 0.3m b/day in late 2020.
- **Signs of tighter oil supply/demand balance in 2025**
  Over the first three months of 2025, we saw developing expectations of a tighter oil market for the rest of the year. The tighter oil balance has been driven by lower supply expectations, amplified by heightened geopolitical tensions in the Middle East and Russia and moderated by the threat of geopolitically-related demand weakness. Nonetheless, the oil market still looks to be in oversupply for 2025.

Factors which weakened WTI and Brent oil prices in March:

- **OPEC+ production increases**

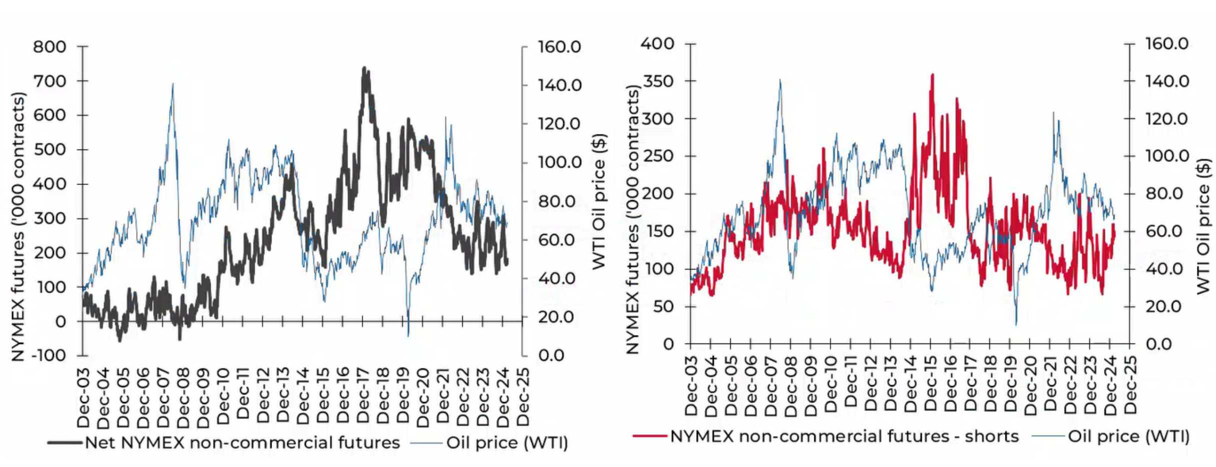
During March, OPEC-9 production increased to 26.9m b/day (from 26.4m b/day in February) with Iran, Iraq and Libya, Venezuela, UAE and Nigeria each adding nearly 0.1m b/day. From the start of April, a group of eight countries within OPEC+ (Saudi included), who have provided voluntary production cuts over the last two years, will start increasing production monthly (by 140,000 b/day). Very early in April, the group announced its intention (from May) to increase the rate at which it returns withheld oil to the market. The group has stressed that it could be reversed at any time, should market conditions become looser

- **US tariffs causing concerns for global economic growth**
  Since coming to power, President Trump has threatened and enacted a number of tariffs against various countries and industries. Early in April, he announced a further swathe of tariffs to come into immediate effect. These actions, part of a broader strategy to address trade imbalances and protect U.S. industries, remain fluid, but have brought into question whether world GDP will slow as a result. Correspondingly, oil demand growth may also be slower and the International Energy Agency (IEA) noted in its most recent Oil Market Report that "amid an unusually uncertain macroeconomic outlook, recent delivery data have been somewhat underwhelming".

Speculative and investment flows

The New York Mercantile Exchange (NYMEX) net non-commercial crude oil futures open position was 180,000 contracts long at the end of March versus 171,000 contracts long at the end of February. The net position peaked in February 2018 at 739,000 contracts long. Typically, there is a positive correlation between the movement in net position and movement in the oil price. The gross short position decreased to 143,000 contracts at the end of March versus 160,000 at the end of the previous month.

NYMEX Non-commercial net and short futures contracts:
WTI January 2004 – March 2025

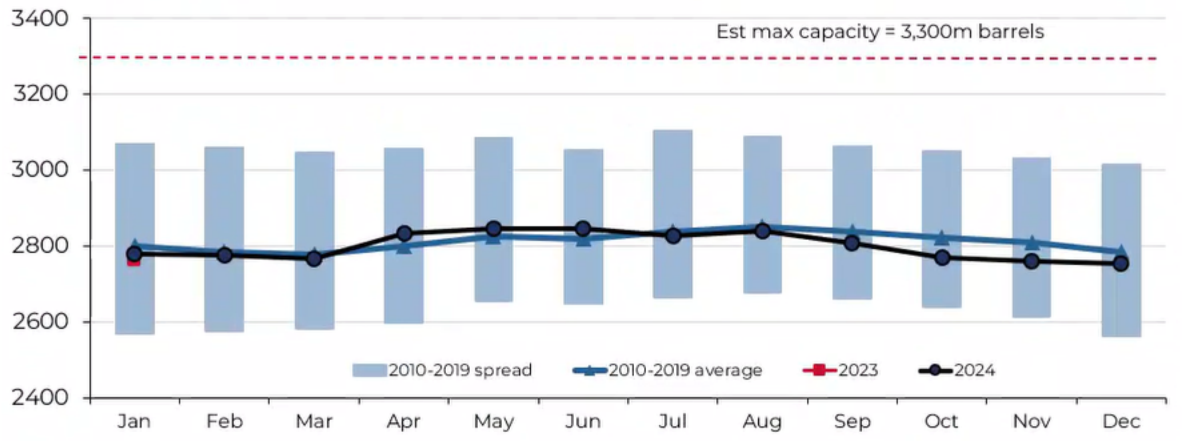


Source: Bloomberg LP/NYMEX/ICE (2025)

OECD Stocks

OECD total product and crude inventories at the end of January (latest data point) were estimated by the IEA to be 2,762m barrels, up 10m barrels versus the level reported for the previous month. Preliminary data for February implies another small increase. The rise in January compares to a 10-year average (pre COVID) rise of 32m barrels, implying that the OECD market was tighter than normal. The significant oversupply situation in 2020 pushed OECD inventory levels close to maximum capacity in August 2020 (c.3.3bn barrels), with subsequent tightening taking inventories below normal levels.

OECD Total Product & Crude Inventories
Monthly, 2010 to January 2025



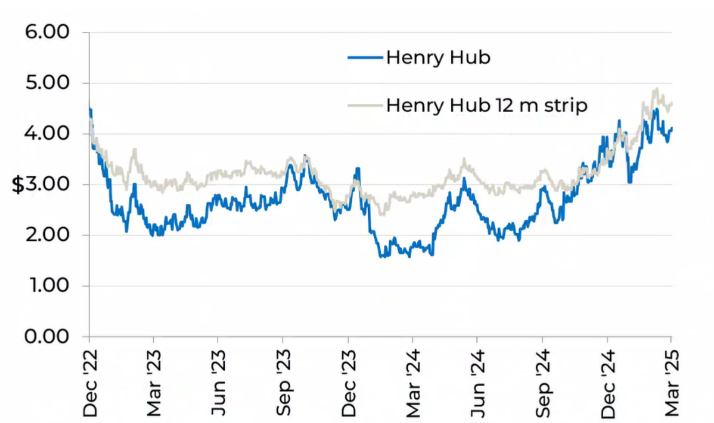
Source: IEA Oil Market Reports (March 2025 and older)

NATURAL GAS MARKET

The US natural gas price (Henry Hub front month) opened March at $3.83/Mcf (1,000 cubic feet) and traded in a reasonably tight range over the month, closing slightly higher at $4.12/Mcf. The spot gas price has averaged $3.87/Mcf so far in 2025, having averaged $2.41/Mcf in 2024 and $2.67/Mcf in 2023.

The 12-month gas strip price (a simple average of settlement prices for the next 12 months' futures prices) traded in a similar pattern, opening at $4.31/Mcf and closing stronger, at $4.61/Mcf. The strip price has averaged $4.20/Mcf so far in 2025, having averaged $2.98 in 2024 and $3.19 in 2023.

Henry Hub gas spot price and 12m strip ($/Mcf)
December 2022 to April 2025



Source: Bloomberg LP. Data as of March 2025.

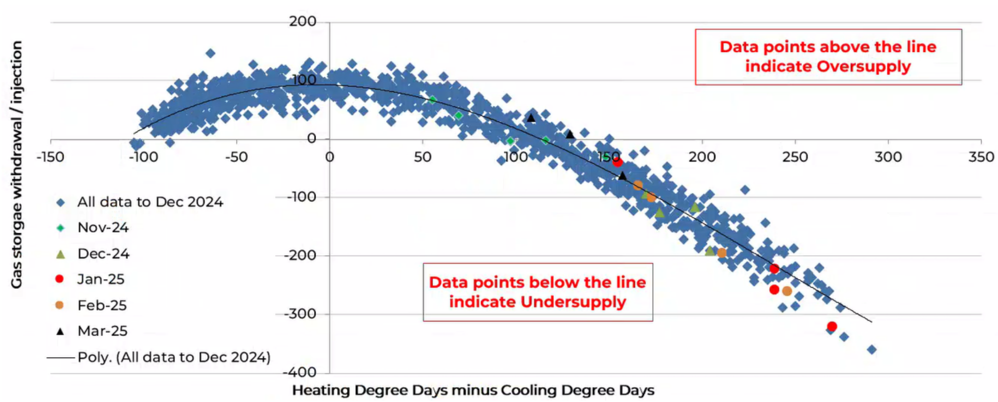
Factors which strengthened the US gas price in March included:

- **Falling rig count**
  The number of rigs drilling for natural gas in the US has fallen from 160 in the middle of 2022 to a low of 94 in mid-September 2024. It has since averaged around 100 rigs, although rise slightly to 103 rigs at the end of March 2025. Overall, the low number of gas rigs operating has slowed gas production growth, though "associated gas" production (a byproduct of shale oil) has continued to grow from the Permian basin.
- **Record LNG exports**
  The US exported a record amount of liquified natural gas in March as Phase 1 of the new 3.2 Bcf/day Plaquemines LNG export terminal on the US Gulf Coast commenced operation. According to LSEG, total US LNG exports were 9.3 million tonnes in the month, up from the December 2023 record of 8.6 million tonnes.

Factors which were neutral or negative for the US gas price in March included:

- **Market fairly supplied (ex-weather effects)**
  Adjusting for the impact of weather, the US gas market was, on average, in balanced supply during March. This is a change to the sharply undersupplied markets earlier in the year, as illustrated in the chart below.

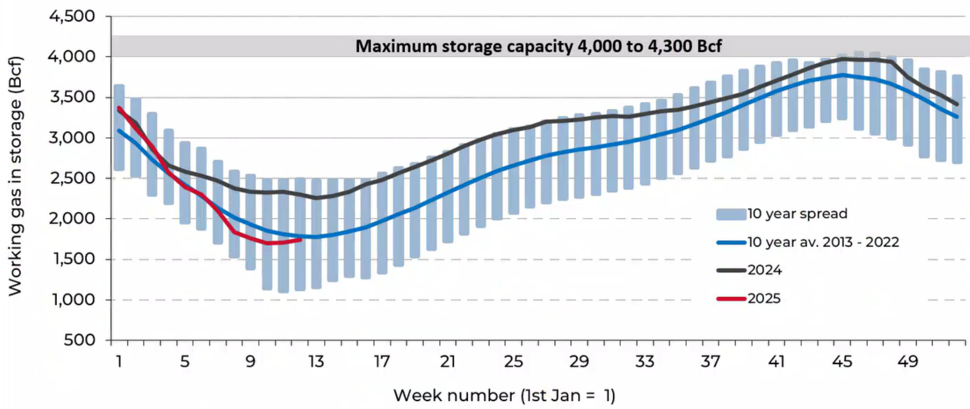
Weather-adjusted US natural gas inventory injections and withdrawals



Source: Bloomberg LP, Guinness Atkinson Funds. Data as of April 2025.

- **Natural gas in inventories falling back to the ten-year average**
  US natural gas inventories ran higher than seasonal norms throughout 2024, driven by a warmer-than-expected 2023/24 winter and early spring that brought lower-than-expected heating demand. Inventory levels moved to the top of the 10-year range but tightened in 4Q 2024 and further in 1Q 2025 as very cold weather arrived. At the end of March 2025, US natural gas inventories stood at 1.74 Tcf, recovering back to a little below the 10-year average.

Deviation from 10yr US gas storage norm



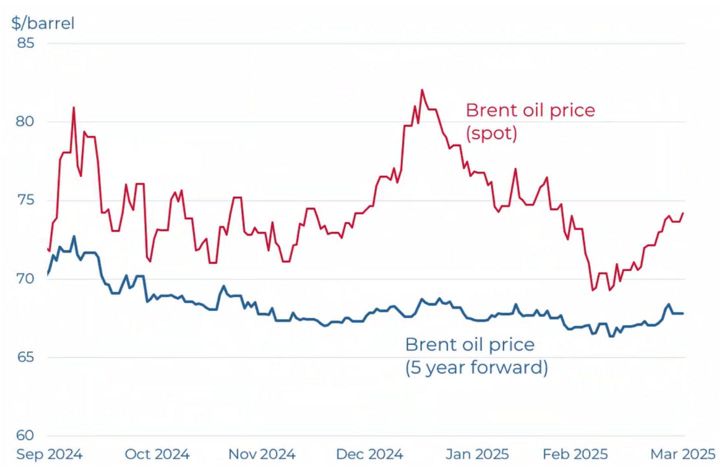
Source: Bloomberg, Energy Information Administration (EIA). Data as of March 2025.

Manager's Comments

Global energy equities outperformed the broader market over the first quarter of 2025, as oil prices remained robust and the companies delivered consistent messages around cost control and free cash generation with less focus on low carbon energy investments. Here, we explore the key developments in energy markets and the fund over the period, and consider the outlook.

Over the first three months of 2025, we saw developing expectations of a tighter oil market for the rest of the year. The tighter oil balance has been driven by lower supply expectations, amplified by heightened geopolitical tensions in the Middle East and Russia and moderated by the threat of geopolitically-related demand weakness. The Brent spot oil price has averaged $75/bl since the start of the year, whilst the five-year forward Brent oil price has averaged nearly $68/bl.

Brent spot price vs 5 year forward price ($/bl), 6mths to March 2025



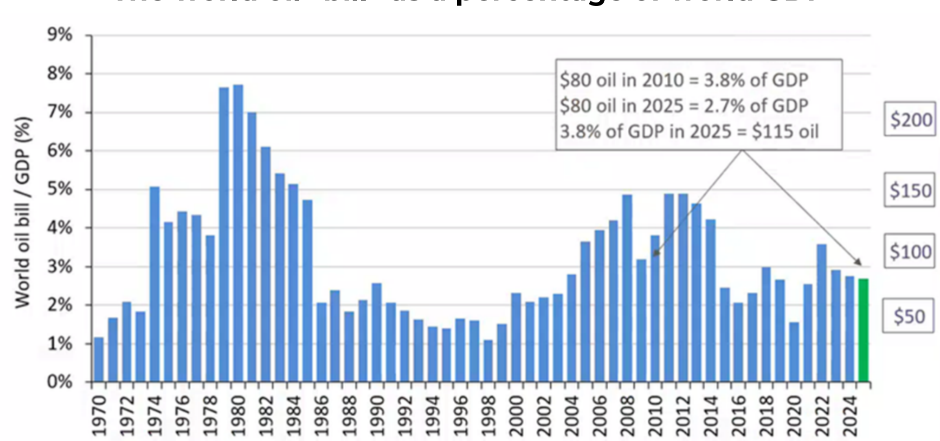
Source: Bloomberg, Guinness Atkinson Funds. Data as of March 2025.

Global oil demand growth for 2025 is estimated by the IEA to be 1.0m b/day (down slightly from the 1.1m b/day forecast at the start of the year but ahead of the 0.8m b/day growth seen in 2024) with the non-OECD up by 1.1m b/day and the OECD down by 0.1m b/day. The demand outlook has been impacted by geopolitical risks, especially the threat of tariffs from President Trump, leading the IEA to note in its most recent Oil Market Report that "amid an unusually uncertain macroeconomic outlook, recent delivery data have been somewhat underwhelming".

Oil demand in 2025 of 103.9m b/day (unchanged from expectations at the start of the year) will be around 3.3m b/day above its previous peak in 2019. Unlike previous years, China is not expected to be the key driver of demand growth and at only 0.2m b/day, China's demand growth is in line with that expected from India, Other Asia and the Middle East.

When writing at the start of the year about the prospects for oil demand, we placed strong emphasis on the current affordability of oil as a driver of demand upgrades. Globally, we believe that oil remains a "good value" commodity. Based on Brent oil price of around \$80/bl in 2025, we calculate that the world would spend around 2.7% of GDP on oil, below the 30-year average of around 3% and well below the 3.8% seen in 2010 when oil also averaged \$80/bl.

The world oil "bill" as a percentage of world GDP



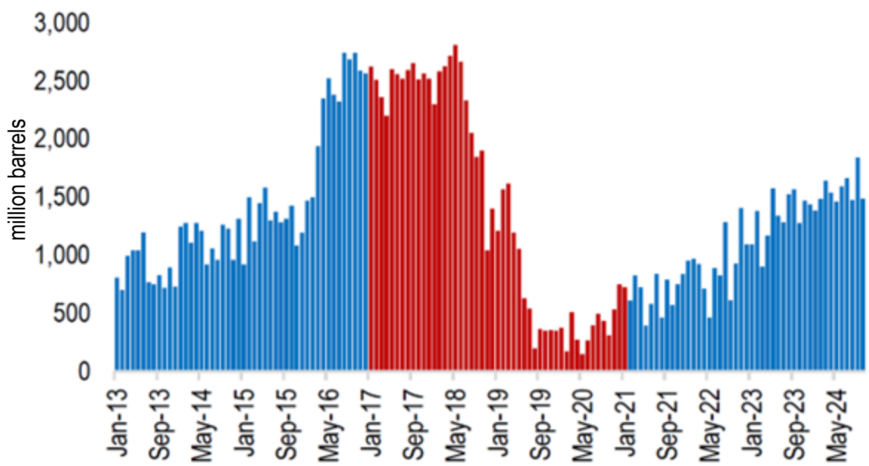
Source: Guinness Atkinson Funds, Bloomberg, March 2025.

On the **supply side**, forecasts for non-OPEC supply growth in 2025 have moderated by 0.2m b/day since the start of the year, although some of this reduction was related to very cold weather conditions affecting production in the United States. Nonetheless, the call on OPEC and OPEC+ production for the year has increased and, after a number of quarters of delays, OPEC+ confirmed plans in March to increase production monthly (by 140,000 b/day), starting in April. The oil to be added back into the market comes from a group of eight countries within OPEC+ (Saudi included), who have provided voluntary production cuts over the last two years, above formal quota adjustments.

Later in the month, the group announced stricter plans for its members to compensate for historic levels of overproduction (or non-compliance with quotas) with lower production in future months. The net effect of the two announcements is expected to be a small shorter term tightening of oil supply/demand as the compensation cuts are forecast to outweigh the return of withheld supply. OPEC+ continued to stress that its supply strategy could be amended at any time, should market conditions require it.

Geopolitical concerns persisted, dominated by the actions of the United States with respect to Russia, China, Iran and Venezuela. Early in February, incoming US President Donald Trump signed an executive order requiring the US Treasury Secretary to impose "*maximum economic pressure*" on **Iran**. The move is a return to the approach he took during his last presidency, which caused Iranian exports to fall by around 2m b/day. Later in the quarter, the US put sanctions on a Chinese refinery (that represented a large share of the 1.6m b/d of Iranian oil that China imported in 2024) and carried out air strikes against the Houthi rebels in Yemen.

Iranian Oil Exports



Source: Shell

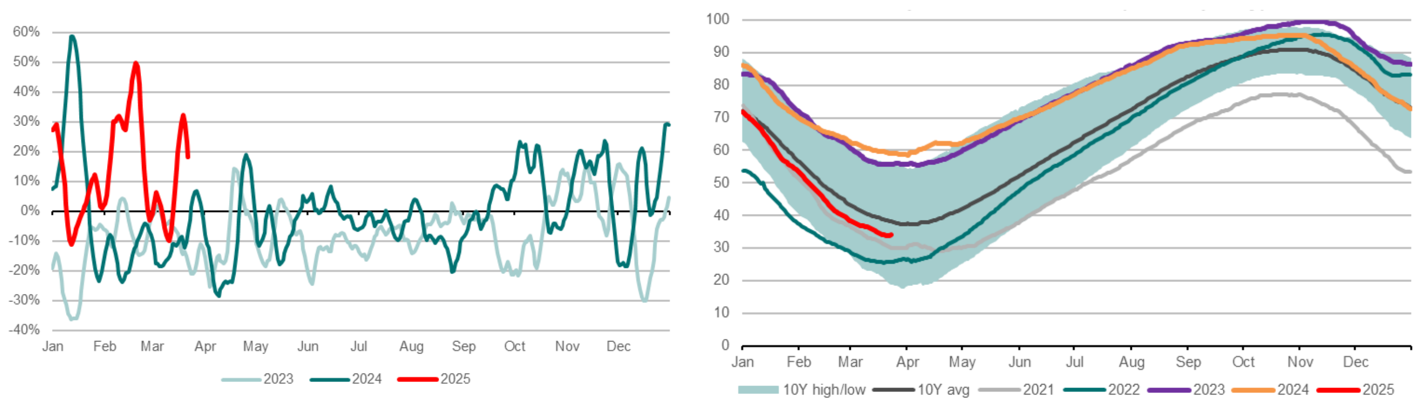
Earlier in the quarter, the US placed new sanctions on **Russian** oil producers Gazprom Neft and Surgutneftegas (representing 2m b/day of production and 1m b/day of exports) as well as a Chinese port operator and a large number of crude oil or oil product tankers that previously carried Russian and Iranian crude oil. The US also announced the cancellation of a “concession agreement” in **Venezuela** that allowed Chevron to produce export oil from the country. The concession had been put in place by President Biden in November 2022 and, since then, Venezuelan oil production has increased from 0.7m b/day to nearly 1.0m b/day. Seaborne crude oil exports are already starting to fall (-11.5% in March vs February) and we expect further declines in coming months.

As these actions have shown, we believe that Trump will have more of an impact on international oil markets in 2025 than he can have on his own domestic oil market. His actions in 2025 could negatively impact supply from Russia, Venezuela and Iran and create sufficient space for OPEC+ to return some of their withheld volumes back to the market, in line with its current strategy.

International and US natural gas markets remained tighter than expected in 2025, thanks largely to industrial, LNG and power demand for natural gas together with colder than normal conditions (the US suffered the coldest January in a decade). US natural gas inventories drew to 9% below 10-year average levels as the first phase of the Plaquemines LNG terminal commenced operation, consuming 2 Bcf/day of natural gas (nearly 2% of total US gas demand) and helping to lift the Henry Hub gas price to over $4/mcf at the end of March. Milder weather allowed inventories to rebuild in the second half of March.

Similar tightening occurred in Europe where a combination of reduced Russian gas imports, colder weather, lower wind power and increased competition from Asia for LNG brought the largest winter drawdown in gas inventories in four years (falling to 33% full, 10ppts below the 5-year average level). This was in sharp contrast to the prior 24-month period during which Europe had been successful in building a surplus of natural gas in storage (preparing itself for higher demand winter periods). Returning inventories to 90% by the end of the injection season (October) will require an estimated 250 extra LNG cargoes.

European gas demand (7 day moving average change yoy) and natural gas inventories (% of capacity)



Source: DNB

In terms of **company news** during the quarter, the BP strategy day highlighted a reset back towards growth in fossil fuels (at the expense of low carbon activities) while Shell showcased an attractive long-term outlook for LNG demand.

In the opening comments of his strategy day presentation, bp CEO Murray Auchincloss stated conviction that “energy demand is growing over the next decade and beyond” and that “the world is in an “energy addition” phase, consuming increasing amounts of both fossil fuels and low carbon energy”. Informing the decision to return to fossil fuel growth, bp believes that “oil and gas will be needed for decades to come” with oil and gas demand robust out to 2035, including strong growth in natural gas demand from emerging Asian economies (a point well covered in Shell’s LNG event). As such, BP acknowledged its push into renewables over the last five years had been “too far, too fast” and the company announced plans to cut low carbon capex by nearly 80%.

For companies operating in the key sectors held in our Global Energy Fund, the consistent themes being reported were operating cost control, free cash generation and capital expenditure restraint (with a bias away from low carbon activities). Within the fund over the quarter, strongest performers included:

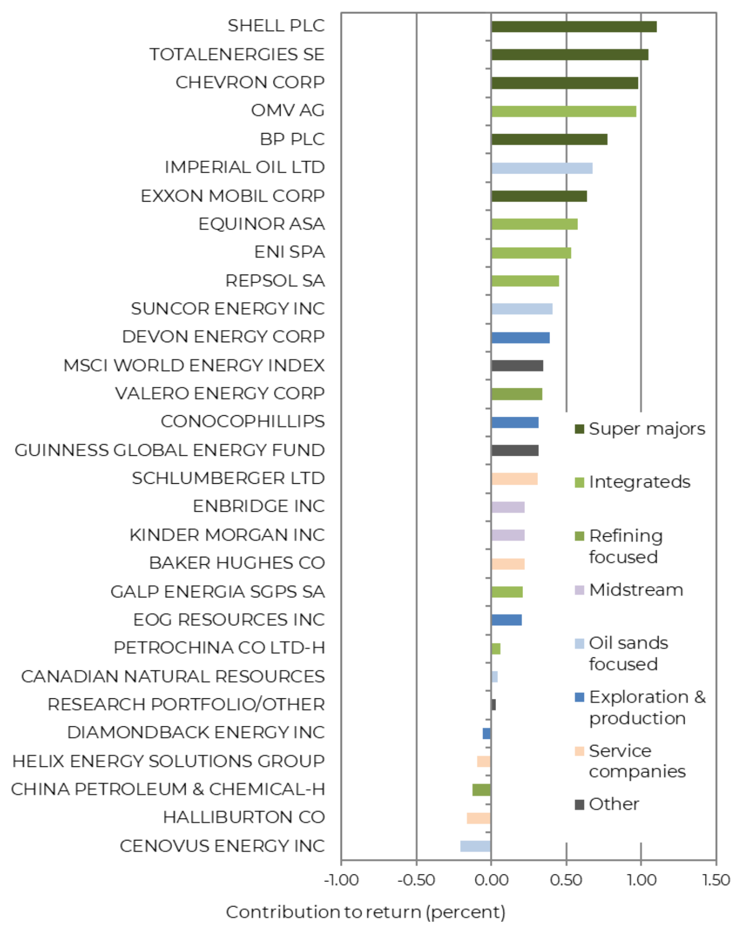
- **European Integrateds**: seven of the top ten contributors were European integrateds, reflecting strength in broader European stock markets and a tilting away from low carbon investments back towards growth from fossil fuels

- **US super majors**: Exxon and Chevron were top ten performers as they delivered strong results and free cash flow generation and, accordingly, provided a safe haven opportunity for investors in US markets
- **US refining**: tighter refining capacity kept refining margins higher. Particular beneficiaries included Valero Energy and US major, Exxon.

Sectors in the portfolio that were relatively weaker over the quarter included:

- **Canadian integrateds**: Despite Canadian oil benchmarks strengthening versus WTI, our Canadian integrateds were generally weaker as a result of tariff concerns
- **Services**: Large cap diversified service companies Halliburton and Baker Hughes underperformed, driven by a flat US oil/gas rig count and continued capital discipline from E&Ps and integrated oils

Guinness Atkinson Global Energy Fund Contribution Q1 2025



Source: Bloomberg, Guinness Atkinson estimates. Data as of March 31, 2025.

Moves in energy equities lifted the price-to-book (P/B) ratio for the energy sector at the end of March 2025 to around 1.8x, versus the S&P 500 trading at 4.8x. On a relative P/B basis versus the S&P500, therefore, the valuation of energy equities now sits at around 0.38x (down from 0.51x at the end of 2022), and still more than two standard deviations below the long-term relationship.

P/B of Energy Sector vs S&P 500

Source: Bernstein, Bloomberg, Guinness Atkinson Funds

We keep a close eye on the relationship between the P/B ratio for the energy sector and its return on capital employed (ROCE) which, although having had a high correlation historically, has diverged since 2021. The divergence has closed somewhat year to date and potentially reflects a shift in market sentiment towards energy security and energy pragmatism at the expense of decarbonization.

The bp and Shell events highlighted the attractive longer term demand outlook for oil and natural gas and they may help to support a re-rating of global energy equities as investors ascribe a more meaningful terminal value to oil and gas producers that provide growth within a disciplined cash flow framework.

With full year results now reflected, we see ROCE for the Guinness Atkinson Global Energy portfolio in 2024 (with Brent oil averaging $80/bl) at around 10.8%, in line with the mid-cycle ROCE which we peg at 10.9%. With the Brent oil price averaging around $80/bl in 2025, we see ROCE at around 11.0%, a level that we expect to be maintained in 2026 with Brent at the same level.

Current P/B valuation implies that the long-term ROCE of our companies should average only around 3%, significantly below the mid cycle or long-term average level of nearly 11%. If ROCE remains at our 2025 forecast level of nearly 12%, and the market were to pay for it as it has done on average over the last 20 years, it would imply an increase in the equity valuation of around 35%.

Performance

as of 3/31/2025	YTD	1 Year	3 Years	5 Years	10 Years
GAGEX	9.18%	-2.62%	6.71%	22.72%	1.83%
MSCI World Energy Index NR	10.08%	3.01%	9.01%	24.09%	4.99%
MSCI World Index NR	-1.79%	7.04%	7.57%	16.12%	9.49%

All returns after 1 year annualized.

Inception 06.30.2004 Expense ratio* 1.47% (net); 2.13% (gross)

Performance data quoted represents past performance; past performance does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Fund may be lower or higher than the performance quoted. Performance data current to the most recent month end may be obtained by visiting www.gafunds.com or calling 800-915-6566.

* The Advisor has contractually agreed to reduce its fees and/or pay Fund expenses (excluding Acquired Fund Fees and Expenses, interest, taxes, dividends on short positions and extraordinary expenses) in order to limit the Fund's Total Annual Operating Expenses to 1.45% through June 30, 2027. To the extent that the Advisor absorbs expenses to satisfy this cap, it may recoup a portion or all of such amounts absorbed at any time within three fiscal years after the fiscal year in which such amounts were waived or absorbed, subject to the expense cap in place at the time recoupment is sought, which cannot exceed the expense cap at the time of the waiver. The expense limitation agreement may be terminated by the Board of the Fund at any time without penalty upon 60 days' notice.

Top 10 Fund Holdings as of 3/31/2025:

1. Shell PLC 6.10%
2. Chevron Corp 6.02%
3. Exxon Mobil Corp 5.56%
4. TotalEnergies SE 5.39%
5. ConocoPhillips 4.50%
6. BP PLC 4.42%
7. Kinder Morgan Inc 4.16%
8. Suncor Energy Inc 4.13%
9. Valero Energy Corp 3.94%
10. Imperial Oil Ltd 3.87%

MSCI World Energy Index is designed to capture the large and mid cap segments across 23 Developed Markets countries. All securities in the index are classified in the Energy sector as per the Global Industry Classification Standard.

MSCI World Index captures large and mid cap representation across 23 Developed Markets countries. With 1,546 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

Brent Crude is the price benchmark used for the light oil market in Europe, Africa, and the Middle East, originating from oil fields in the North Sea between the Shetland Islands and Norway.

West Texas Intermediate (WTI) is the price benchmark for the US light oil market and is sourced from US oil fields.

Long futures position in oil is when a trader buys an oil futures contract in the belief that the price of oil will increase.

Short futures position in oil is when a trader sells an oils future contract in the belief that the price of oil will decrease before the contract expires.

Organization for Economic Cooperation and Development (OECD) is an intergovernmental organization with 38 member countries meant to stimulate economic progress and world trade.

OPEC+, or the Organization of the Petroleum Exporting Countries Plus, is a loosely affiliated entity consisting of 12 OPEC members and 10 of the world's major non-OPEC oil-exporting nations.

Permian Basin is a large oil and gas-producing area in the United States that spans parts of West Texas and southeastern New Mexico.

New York Mercantile Exchange (NYMEX) is the world's largest physical commodity futures exchange.

Henry Hub is a natural gas pipeline located in Erath, Louisiana, that serves as the official delivery location for futures contracts on the New York Mercantile Exchange (NYMEX).

Free cash flow represents the cash that a company generates after accounting for cash outflows to support its operations and maintain its capital assets.

Capital Expenditure (CapEx) are payments that are made for goods or services that are recorded or capitalized on a company's balance sheet rather than expensed on the income statement.

Return on Capital Employed (ROCE) is a financial ratio that measures a company's profitability in terms of all of its capital.

Net Debt/EBITDA is a debt ratio that shows how many years it would take for a company to pay back its debt if net debt and EBITDA are held constant.

Fund holdings and/or sector allocations are subject to change at any time and are not recommendations to buy or sell any security.

One cannot invest directly in an index. Dividends are not guaranteed and dividend payments, if any, may fluctuate.

Earnings Growth is not a measure of future performance. Dividends are not guaranteed and dividend payments, if any, may fluctuate.

Opinions expressed are subject to change, are not guaranteed and should not be considered investment advice.

The Guinness Atkinson Global Energy Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectuses contain this and other important information and can be obtained by calling 800- 915-6565 or visiting www.gafunds.com. Read and consider it carefully before investing.

The Fund invests in foreign securities which will involve greater volatility and political, economic and currency risks and difference in accounting methods. The risks are greater for investments in emerging markets. The Fund also invests in smaller and mid-cap companies, which will involve additional risks such as limited liquidity and greater volatility than larger companies. The Fund's focus on the energy sector to the exclusion of other sectors exposes the Fund to greater market risk and potential monetary losses than if the Fund's assets were diversified among various sectors.

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