The Guinness Global Energy Report

Developments and trends for investors in the global energy sector

This is a marketing communication. Please refer to the prospectus and KIID for the Fund before making any final investment decisions. Past performance does not predict future returns.

February 2022

Guinness Global Energy Fund

The Guinness Global Energy Fund invests in listed equities of companies engaged in the exploration, production and distribution of oil, gas and other energy sources. We believe that over the next twenty years the combined effects of population growth, developing world industrialisation and diminishing fossil fuel supplies will force energy prices higher and generate growing profits for energy companies. The Fund is actively managed and uses the MSCI World Energy Index as a comparator benchmark only.

The Fund is run by co-managers Will Riley, Jonathan Waghorn and Tim Guinness, supported by Jamie Melrose (analyst). The investment philosophy, methodology and style which characterise the Guinness approach have been applied to the management of energy equity portfolios since 1998.

Risk

The Guinness Global Energy Fund is an equity fund. Investors should be willing and able to assume the risks of equity investing. The value of an investment and the income from it can fall as well as rise as a result of market and currency movement, and you may not get back the amount originally invested. The Fund invests only in companies involved in the energy sector; it is therefore susceptible to the performance of that one sector, and can be volatile. Details on the risk factors are included in the Fund's documentation, available on our website.

◀ Lower risk		Risk & reward				Higher risk ▶
1	2	3	4	5	6	**7**
Typically lower rewards				Typically lower rewards		

The risk and reward indicator shows where the fund ranks in terms of its potential risk and return. The fund is ranked as higher risk as its price has shown high fluctuations historically. This is based on how investments have performed in the past and you should note that the fund may perform differently in the future and its rank may change. Historic data may not be a reliable indicator for the future.

HIGHLIGHTS FOR JANUARY

OIL

WTI/Brent up on tighter oil market

Brent and WTI oil prices were both up sharply in January, as stronger demand combined with a limited supply increase from OPEC to create tight market conditions. The impact of Omicron on global oil demand has been modest (c.-0.5m b/day), more than offset by gas-to-oil switching as consumers seek relief from very high European and Asian gas prices. OPEC+ agreed at the start of February to continue with their plan of monthly 0.4m b/day increases, though there is increasing scepticism over the group's ability to fulfil these targets.

NATURAL GAS

US price up, European and Asian gas prices remain high

The European gas price (using UK NBP) averaged $24/mcf in January, Asia (Japan LNG) averaged $27/mcf, whilst the US spot price (Henry Hub) averaged $4.2/mcf. Extraordinarily high prices are persisting internationally, with a shortage of Russian exports to Europe now at the heart of the issue. US LNG exports are working at full capacity, with little scope in the short-term to increase.

EQUITIES

Energy outperforms the broad market in January

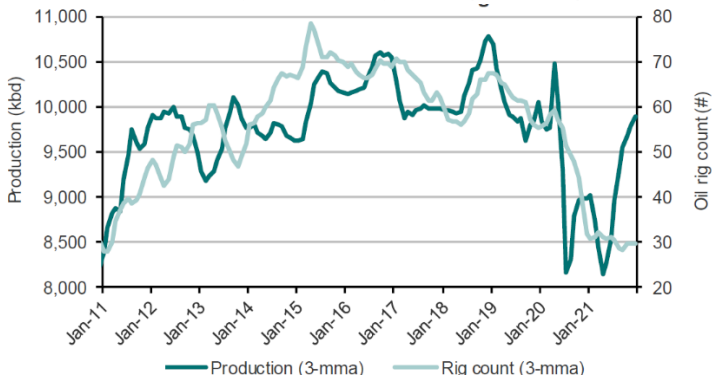
The MSCI World Energy Index (net return) rose by 15.5% in January, outperforming the MSCI World Index (net return) which fell by 5.3% over the month (all in US dollar terms).

CHART OF THE MONTH

Saudi drilling rig count at depressed level

Whilst there has been a significant recovery in the oil price over the last twelve months, the number of rigs drilling for oil & gas in Saudi Arabia remains depressed. In the 2016-19 period, OPEC's active rig count varied averaged around 65 rigs, but dropped by the end of 2020 to around 30 rigs, with little recovery since. This could indicate vulnerability in Saudi's production capacity if the kingdom needs to ramp production quickly amid continued oil demand rebound or supply disruptions.

OPEC oil & gas drilling rig count (2015-2021)

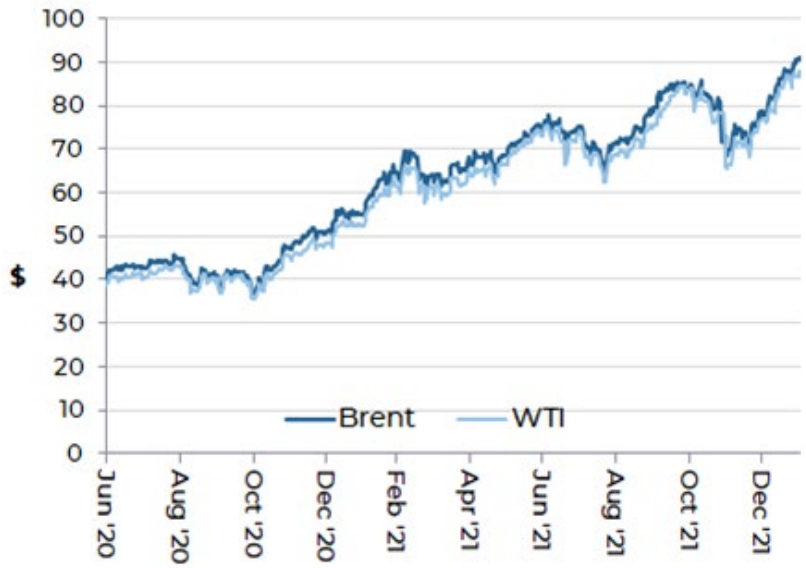


Contents

1. JANUARY IN REVIEW

i) Oil market

Oil price (WTI and Brent $/barrel): June 2020 to December 2021



Source: Bloomberg LP

The West Texas Intermediate (WTI) oil price started January at $77.0/bl and moved steadily higher over the month to close at $88.2/bl. WTI averaged $68/bl in 2021, having averaged $40/bl in 2020 and $58/bl in 2019.

Brent oil traded in a similar shape, opening at $77.5/bl and closing the month at $91.0/bl. Brent averaged $70/bl in 2021, having averaged $42/bl in 2020 and $64/bl in 2019. The gap between the WTI and Brent benchmark oil prices widened over the month, ending January at just under $3/bl. The Brent-WTI spread averaged $2.4/bl in 2021.

Factors which strengthened WTI and Brent oil prices in January:

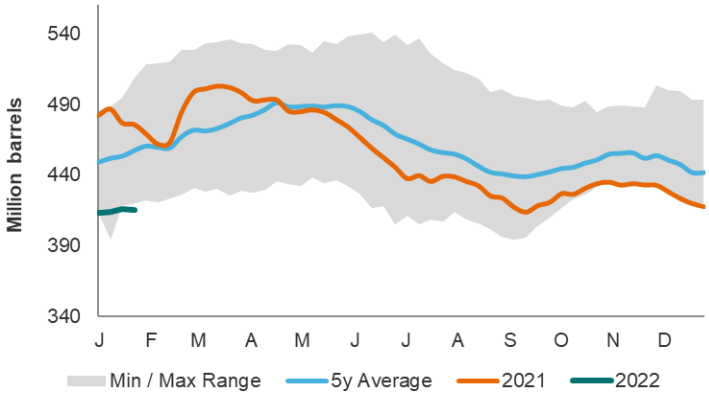
- **Current oil demand stronger than expected**

With oil markets continuing to tighten more than expected, it is likely that global oil demand is running higher than IEA forecasts. Indeed, in their latest report, the IEA raised their forecast for 2022 demand to 99.7m b/day, up by 0.2m b/day versus their previous estimate. Barring a significant COVID setback, we think it likely that demand in 2022 exceeds the IEA's forecast.

- **Low oil inventories**

US oil inventories fell in January to their lowest level for over five years, an indication of the ongoing tightness of the market:

US crude inventories



Source: DNB

- **Muted OPEC production rise in January**

According to latest Bloomberg estimates, OPEC production increased by just 0.05m b/day in January, with production issues in Libya holding the group back. OPEC countries included in the OPEC+ cut agreement increased production by 0.16m b/day in January, but still well short of the 0.26m b/day production quota increase (i.e. OPEC's share of the 0.4m b/day OPEC+ monthly increase). As a result, OPEC have fallen further behind quotas, with the group currently producing around 1m b/day less than planned. The shortfall highlights the issue within OPEC of dwindling spare capacity, particularly amongst African members (e.g. Algeria; Nigeria; Angola), who are suffering the effects of several years of underinvestment.

Factors which weakened WTI and Brent oil prices in January:

- **Growth in US shale oil production**

Latest data from the EIA for oil production indicates that US onshore production rose by 0.13m b/day in November, bringing the year-on-year increase to 0.54m b/day. There was reasonably strong production from the Permian and the Bakken. We are currently estimating 2022 onshore oil production to rise by around 0.75m b/day, with the outcome dependent on capital disciplined producers remain in the face of higher prices.

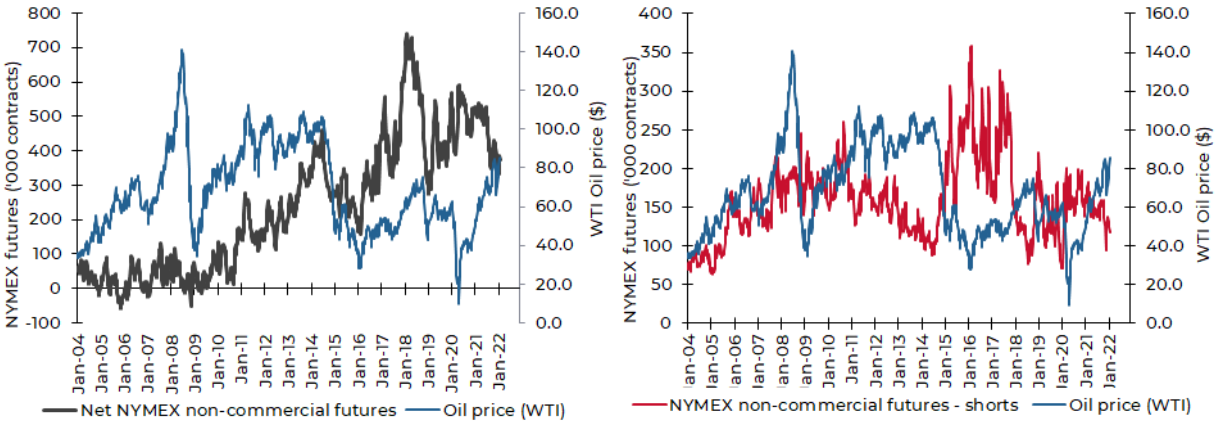
- **Possible advances in Iran talks**

In late January, Russia suggested Iran and world powers might reach a nuclear agreement by end of February. The pact would probably include the lifting of oil sanctions on Iran and be put into effect by April, according to a Russian spokesman. Iran said that it would consider direct talks with the US in nuclear negotiations, a signal that world powers might be closer to a deal. If a deal is struck, we expect Iran to increase its oil supply by around 1m b/day, and for other members of OPEC to accommodate this.

Speculative and investment flows

The New York Mercantile Exchange (NYMEX) net non-commercial crude oil futures open position was 373,000 contracts long at the end of January versus 338,000 contracts long at the end of December. 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 119,000 contracts at the end of January versus 132,000 at the end of the previous month.

NYMEX Non-commercial net and short futures contracts: WTI January 2004 – January 2022

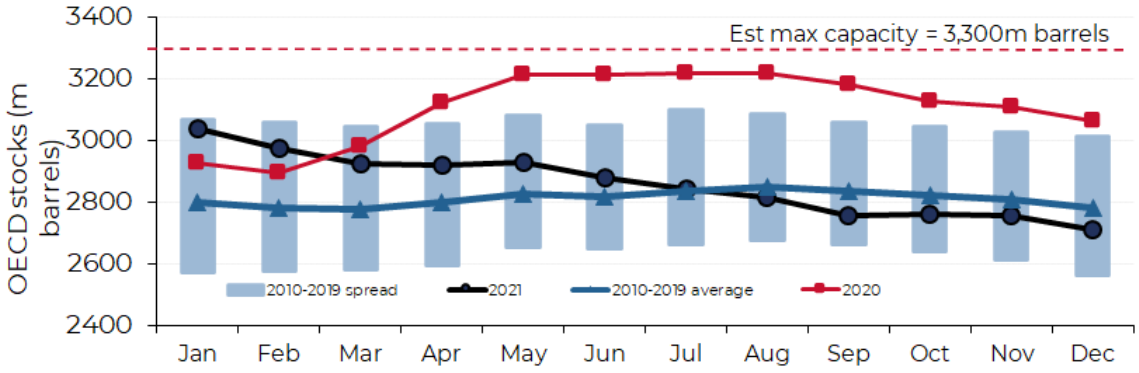


Source: Bloomberg LP/NYMEX/ICE (2021)

OECD stocks

OECD total product and crude inventories at the end of December (latest data point) were estimated by the IEA to be 2,711m barrels, down by 45m barrels versus the level reported for November. This compares to a 10-year average draw for December of 27m barrels, implying that the OECD market was undersupplied. The significant oversupply situation in 2020 pushed OECD inventory levels close to maximum capacity in August 2020 (c3.3bn barrels), with persistent tightening thereafter taking inventories below normal levels.

OECD total product and crude inventories, monthly, 2004 to 2021



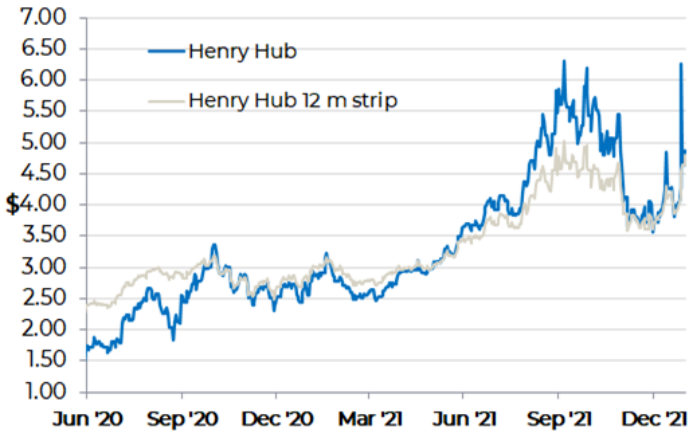
Source: IEA Oil Market Reports (Jan 2022 and older)

ii) Natural gas market

The US natural gas price (Henry Hub front month) opened January at $3.73/mcf (1,000 cubic feet), and trended higher over the month, spiking briefly to $6.27 on January 27, before closing at $4.87/mcf. The spot gas price averaged $3.70/mcf in 2021, having averaged $2.13/mcf in 2020 and $2.53/mcf in 2019.

The 12-month gas strip price (a simple average of settlement prices for the next 12 months' futures prices) also rose over the month, opening at $3.73/mcf and closing at $4.81/mcf. The strip price averaged $3.52 in 202, having averaged $2.54 in 2020 and $2.60 in 2019.

Henry Hub gas spot price and 12m strip ($/Mcf): May 2020 to Nov 2021



Source: Bloomberg LP

Factors which strengthened the US gas price in January included:

- **Lower than normal international gas inventories and stronger international demand**

High gas demand and low inventories in Europe and Asia held international gas prices at around $25/mcf during the month. This in turn is maximising demand for exports of LNG from the US. In addition, exports of US natural gas to Mexico are strong. US natural gas inventories sit below the 10-year average.

- **Market undersupplied (ex-weather effects)**

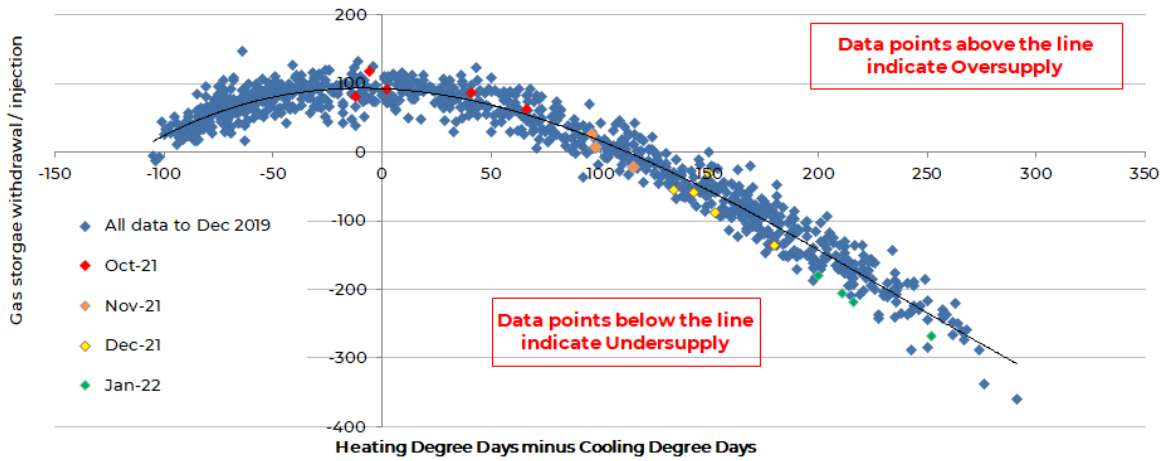
Withdrawals into US natural gas inventories during January were higher than expected for the time of year. Adjusting for the impact of weather, the draws implied that the US gas market was, on average, around 1 Bcf/day undersupplied.

Factors which strengthened the US gas price in January included:

- **US onshore supply up**

The latest US natural gas production data published by the EIA (for November) indicates that onshore supply of gas had risen since the start of 2021 by 6.0 Bcf/day, to 105.9 Bcf/day. Despite the increase in supply, it has been more than outweighed by the rise in demand, coming from improving economic activity, warm summer (2021) weather and rising LNG exports.

Weather adjusted US natural gas inventory injections and withdrawals

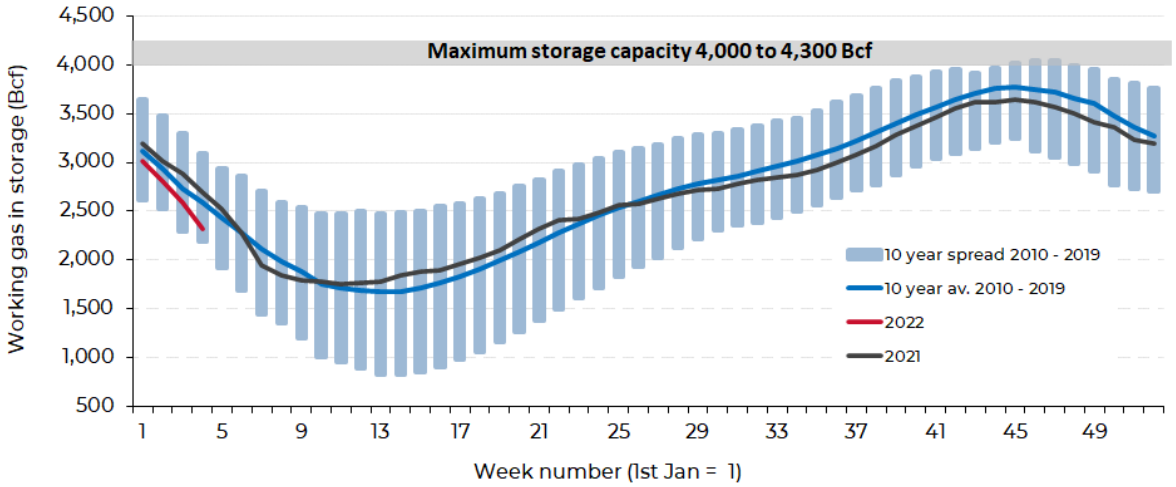


Source: Bloomberg LP; Guinness Global Investors

Natural gas inventories

Swings in the balance for US natural gas should, in theory, show up in movements in gas storage data. Natural gas inventories at the end of January were reported by the EIA to be 2.3 Tcf. Current gas in storage is around 0.3 Tcf below the 10-year average.

Deviation from 10yr gas storage norm



Source: Bloomberg; EIA (December 2021)

2. MANAGER'S COMMENTS

At the start of January we published an outlook piece for the year ahead. Following a strong start for the sector in 2022, we take the opportunity to provide updated comment on a number of the points made, in light of recent developments:

- **The path for oil demand will vary region by region**, as developed markets plus China continue their strong vaccination roll out, whilst other emerging countries remain more exposed to COVID. Overall, the IEA forecast demand in 2022 of 99.5m b/day, up by 3.3m b/day versus 2021. This would put global oil demand on par with its previous peak in 2019, and on course to reach a new high in 2023. The IEA's forecasts imply that oil demand in the OECD region will still, on average, be around 3% lower in 2022 than in 2019. By contrast, demand in the non-OECD region in 2022 is expected to be around 3% ahead of 2019.

With oil markets continuing to tighten more than expected, it is likely that global oil demand is running higher than IEA forecasts. Indeed, in their latest report, the IEA raised their forecast for 2022 demand to 99.7m b/day, up by 0.2m b/day versus their previous estimate.

So far, we have seen only a modest hit to demand from Omicron (around -0.5m b/day), more than offset by growth in gas-to-oil switching (estimated at 0.5m-1m b/day) as the market scrambles for substitutes to avoid high European and Asian gas prices.

Road mobility has almost fully recovered in Europe and the US, and it improved sharply in Asia towards the end of 2021. The major laggard for demand has been the aviation sector, and we expect a further recovery in this segment of 1-1.5m b/day over the rest of the year.

Barring a significant COVID setback, we think it likely that demand in 2022 exceeds the IEA's forecast.

- **OPEC+ will maintain high compliance with quotas**, remaining alert to any demand or supply issues that might require deviation from the 0.4m b/day monthly increases in production currently planned until September. Iran remains the wildcard, with a possible 1m b/day supply increase if negotiations with the US conclude successfully. If this occurs, OPEC+ will take it in its stride. We believe the oil price desired by OPEC is at around $65-70/bl, though they will welcome a higher outcome if it does not destabilise the global economy.

According to latest Bloomberg estimates, OPEC production increased by just 0.05m b/day in January, with production issues in Libya holding the group back. OPEC countries included in the OPEC+ cut agreement increased production by 0.16m b/day in January, but still well short of the 0.26m b/day production quota increase (i.e. OPEC's share of the 0.4m b/day OPEC+ monthly increase). As a result, OPEC have fallen further behind quotas, with the group currently producing around 1m b/day less than planned. The shortfall highlights the issue within OPEC of dwindling spare capacity, particularly amongst African members (e.g. Algeria; Nigeria; Angola), who are suffering the effects of several years of underinvestment.

At the latest OPEC+ meeting, hosted on February 2nd, there was quick agreement to ratify the next monthly production increase of 0.4m b/day, consistent with stated OPEC+ output strategy.

As the IEA predicted last month, "By the second half of the year, effective spare capacity (excluding Iranian crude shut in by sanctions) could shrink from around 5 m b/day currently to below 3m b/day – most of it held by Saudi Arabia and the United Arab Emirates". Spare capacity of less than 3m b/day would be low versus history, giving little buffer against rising demand or future supply shocks.

In late January, Russia suggested Iran and world powers might reach a nuclear agreement by end of February. The pact would probably include the lifting of oil sanctions on Iran and be put into effect by April, according to a Russian spokesman. Iran said that it would consider direct talks with the US in nuclear negotiations, a signal that world powers might be closer to a deal. If a deal is struck, we expect Iran to increase its oil supply by around 1m b/day, and for other members of OPEC to accommodate this.

- We expect **moderate growth from US shale production**, with average production rising 0.75m b/day versus 2021. Non-OPEC (ex US shale) will take its share of the OPEC+ quota increases, but beyond that, there will be no major roll-out of large new projects, the cycle having peaked in 2020.

Latest data from the EIA for oil production indicates that US onshore production rose by 0.13m b/day in November, bringing the year-on-year increase to 0.54m b/day. There was reasonably strong production increases from the Permian and the Bakken.

Shale producer messaging has so far been mixed, with major producers Chevron and Hess providing production guidance for 2022 below market expectations, whilst Exxon's guidance looks higher. We also note Conocophillips' comment that production may surprise to the upside (they see 0.9m b/day growth). Noting that there will be some fraying at the edges, overall we expect capital discipline to be maintained this year among US onshore producers, with a continued emphasis on dividends, buybacks and debt paydowns.

- **For natural gas, relief from very high prices should be forthcoming**. Additional supply will come from Russia and Norway; China is increasing its coal supply, and with normalised weather, hydro and wind generation will pick up again. Prices should settle back around $10/mcf, well down on current levels, but a significant step up on 2019/20.

European and Asian natural gas prices averaged around $25/mcf in January. Continuation of the Russia/Ukraine crisis has seen Russian exports of gas into Europe remain at low levels. Russia normally accounts for around 35% of the European market, reduced currently to around 20%.

Thanks to warmer weather, European gas inventories recovered slightly at the start of January, but still sit around 16% below the five-year average. Gazprom controlled gas inventories in Europe remain at their low of around 2BCM (versus 2020 average of over 10BCM).

European gas storage – deviation to 5-year average (%)

Source: DNB

There has been talk around the US raising its LNG exports to Europe, as an offset. However, the US LNG system is already working at full capacity (c.11 Bcf/day in a world market of around 400 Bcf/day), and therefore any diversion of cargoes to Europe will only create a tighter balance elsewhere in the world.

- **Despite the 2021 rally, energy equity valuations remain subdued.** The MSCI World Energy Index now trades on a price to book ratio of 1.6x, versus the S&P500 at 4.9x. The relative P/B of energy vs the S&P500 remains close to a 55-year low. Oil and gas companies are demonstrating a meaningful shift towards capital discipline, manifested in lower levels of reinvestment, lower levels of debt and a return of free cash to shareholders. Assuming a $65/bl Brent oil price, we forecast a free cashflow yield for our portfolio in 2022 of around 9%. Energy equities offer attractive upside if our oil price, profitability and free cashflow scenarios play out. We believe energy equities currently discount an oil price of around $55/bl. Adopting $65/bl Brent as a long-term oil price (consistent with the bottom end of OPEC's desired range), we see 30-40% upside across the energy complex.

The energy sector (MSCI World Energy Index) was up by 15.5% in January, outperforming the MSCI World and S&P500 which were down by 5.3% and 5.2%. Outperformance over the month leaves the energy sector on a price to book ratio of 1.8x, versus the S&P500 at 4.6x. Initial fourth quarter earnings results are reinforcing the concept that free cashflow remains a priority for oil & gas companies, supporting strong cashflow yields.

3. PERFORMANCE Guinness Global Energy Fund

Past performance is not a guide to future returns

The main index of oil and gas equities, the MSCI World Energy Index (net return), rose by 15.5% in January, while the MSCI World Index (net return) fell by 5.3% in USD.

Within the Fund, January's strongest performers included Exxon, Schlumberger, EOG Resources, Conocophillips and Canadian Natural Resources while the weakest performers included Gazprom, Equinor, OMV, Enbridge and ENI.

Performance (in USD) as at 31.12.2021

Past performance should not be taken as an indicator of future performance. The value of this investment and any income arising from it can fall as well as rise as a result of market and currency fluctuations as well as other factors. You may lose money in this investment.

Cumulative % returns	1 year	3 years	5 years	From Launch (31/03/08)
Guinness Global Energy Fund (Class Y, 0.99% OCF)	44.4%	3.5%	-18.0%	-30.1%
MSCI World Energy NR Index	40.1%	7.0%	-5.5%	-6.6%
MSCI World Small Cap Energy Index	56.8%	6.5%	-35.6%	-57.0%
50/50 Mix of MSCI World Energy and MSCI World Small Cap Index	48.5%	6.8%	-20.6%	-31.8%

Calendar year % returns	2021	2020	2019	2018	2017	2016	2015
Guinness Global Energy Fund (Class Y, 0.99% OCF)	44.4%	-34.7%	9.8%	-19.7%	-1.3%	27.9%	-27.6%
MSCI World Energy NR Index	40.1%	-31.5%	11.4%	-15.8%	5.0%	26.6%	-22.8%
MSCI World Small Cap Energy Index	56.8%	-30.5%	-2.3%	-31.3%	-12.0%	37.0%	-37.3%
50/50 Mix of MSCI World Energy and MSCI World Small Cap Index	48.5%	-31.0%	4.6%	-23.6%	-3.5%	31.8%	-30.1%

	2014	2013	2012	2011	2010	2009	2008*
Guinness Global Energy Fund (Class Y, 0.99% OCF)	-19.1%	24.4%	3.0%	-13.7%	15.3%	61.8%	-44.8%
MSCI World Energy NR Index	-11.6%	18.1%	1.9%	0.2%	11.9%	26.2%	-32.8%
MSCI World Small Cap Energy Index	-33.1%	16.4%	1.4%	-9.2%	34.8%	77.5%	-54.7%
50/50 Mix of MSCI World Energy and MSCI World Small Cap Index	-22.3%	17.3%	1.6%	-4.5%	23.3%	51.9%	-43.8%

Source: FE fundinfo, Guinness Global Investors and Bloomberg, bid to bid, gross income reinvested, in US dollars

Calculation by Guinness Global Investors, *Simulated past performance prior to 31.3.08, launch date of Guinness Global Energy Fund. The Guinness Global Energy investment team has been running global energy funds in accordance with the same methodology continuously since November 1998. These returns are calculated using a composite of the Investec GSF Global Energy Fund class A to 29.2.08 (managed by the Guinness team until this date); the Guinness Atkinson Global Energy Fund (sister US mutual fund) from 1.3.08 to 31.3.08 (launch date of this Fund), the Guinness Global Energy Fund class A (1.49% OCF) from launch to 02.09.08, and class Y (0.99% OCF) thereafter. Returns for share classes with a different OCF will vary accordingly.

Investors should note that fees and expenses are charged to the capital of the Fund. This reduces the return on your investment by an amount equivalent to the Ongoing Charges Figure (OCF). Performance returns do not reflect any initial charge; any such charge will also reduce the return.

TB Guinness Global Energy Fund

UK investors should be aware that the Guinness Global Energy Fund is now available as a UK domiciled fund denominated in GBP. The TB Guinness Global Energy Fund is available from 0.95% OCF. The historical performance of this fund will differ from the Guinness Global Energy Fund as the TB Guinness Global Energy fund has only been recently brought into line with the Guinness Global Energy Fund. The documentation needed to make an investment, including the Prospectus, the Key Investor Information Document (KIID) and the Application Form, is available from the website wwww.guinnessgi.com Please contact info@guinnessgi.com or +44 (0) 20 7222 5703 for more details.

Returns stated above are in US dollars; returns in other currencies may be higher or lower as a result of currency fluctuations. Investors may be subject to tax on distributions.

The Fund's Prospectus gives a full explanation of the characteristics of the Fund and is available at www.guinnessgi.com.

4. PORTFOLIO Guinness Global Energy Fund

Buys/Sells

There were no buys and sells during the month, but the portfolio was actively rebalanced.

Sector Breakdown

The following table shows the asset allocation of the Fund at **January 31 2022**.

Asset allocation as %NAV	Current	*Change*	Last year end	Previous year ends			
	Jan-22		Dec-21	Dec-20	Dec-19	Dec-18	Dec-17	Dec-16
Oil & Gas	**97.0%**	***0.1%***	**96.9%**	**94.8%**	**98.3%**	**96.7%**	**98.4%**	**96.7%**
Integrated	56.7%	*-0.9%*	57.7%	56.3%	51.1%	46.4%	42.9%	46.4%
Exploration & Productic	24.5%	*0.7%*	23.7%	22.2%	29.6%	35.8%	36.9%	35.8%
Drilling	0.0%	*0.0%*	0.0%	0.0%	0.1%	2.2%	1.9%	2.2%
Equipment & Services	4.5%	*0.5%*	4.0%	4.6%	9.6%	8.6%	9.5%	8.6%
Storage & Transportatic	4.2%	*-0.1%*	4.3%	4.4%	4.0%	0.0%	3.5%	0.0%
Refining & Marketing	7.1%	*0.0%*	7.2%	7.3%	3.8%	3.7%	3.7%	3.7%
Solar	0.7%	*-0.3%*	1.0%	1.8%	0.7%	0.9%	1.4%	0.9%
Coal & Consumable Fue	0.0%	*0.0%*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Construction & Enginee	0.0%	*0.0%*	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	2.3%	*0.1%*	2.1%	3.3%	1.1%	2.4%	0.2%	2.4%

Source: Guinness Global Investors. Basis: Global Industry Classification Standard (GICS)

The Fund at end of January 2022 was on a price to earnings ratio (P/E) for 2021/2022 of 10.7x/8.6x versus the MSCI World Index at 21.4x/18.5x as set out in the following table:

As at 31 January 2022	P/E		
	2020	2021	2022E
Guinness Global Energy Fund	70.2x	10.7x	8.6x
MSCI World Index	37.4x	21.4x	18.5x
Fund Premium/(Discount)	*88%*	*-50%*	*-54%*

Source: Bloomberg; Guinness Global Investors

Portfolio holdings

Our integrated and similar stock exposure (c.57%) is comprised of a mix of mid cap, mid/large cap and large cap stocks. Our five large caps are Chevron, BP, ExxonMobil, Royal Dutch Shell and Total. Mid/large and mid-caps are ENI, Equinor, GALP, Repsol and OMV. At January 31 2021 the median P/E ratio of this group was 9.7x 2021 earnings. We also have two Canadian integrated holdings, Suncor and Imperial Oil. Both companies have significant exposure to oil sands in addition to downstream assets.

Our exploration and production holdings (c.25%) give us exposure most directly to rising oil and natural gas prices. We include in this category non-integrated oil sands companies, as this is the GICS approach. The stock here with oil sands exposure is Canadian Natural Resources. The pure E&P stocks have a bias towards the US (EOG, Pioneer and Devon), with one other name (ConocoPhillips) having a mix of US and international production. One of the key metrics behind a number of the E&P stocks held is low enterprise value / proven reserves.

We have exposure to five (pure) emerging market stocks in the main portfolio, though one is a half-position, and in total represent 13% of the portfolio. Two are classified as integrateds (Gazprom and PetroChina), one as refining (Sinopec) and two as E&P companies (CNOOC and Pharos Energy). Gazprom is the Russian national oil and gas company which produces approximately a quarter of the European Union gas imports and trades on 3.1x 2022 earnings. PetroChina is one of the world's largest integrated oil and gas companies and has significant growth potential and, alongside CNOOC, enjoys advantages as a Chinese national champion.

The portfolio contains one midstream holding, Enbridge, North America's largest pipeline company. With the growth of hydrocarbon demand expected in the US and Canada over the next five years, we believe Enbridge is well placed to execute its pipeline expansion plans.

We have modest exposure to oil service stocks, which comprise around 4% of the portfolio. The stocks we own are mainly diversified internationally (Helix and Schlumberger).

Our independent refining exposure is currently in the US in Valero, the largest of the US refiners. Valero has a reasonably large presence on the US Gulf Coast and is benefitting from a recovery in refining margins.

Portfolio at December 31 2021 (for compliance reasons disclosed one month in arrears)

Guinness Global Energy Fund (31 December 2021)			P/E			EV/EBITDA		
Stock	**ISIN**	**% of NAV**	**2020**	**2021E**	**2022E**	**2020**	**2021E**	**2022E**
Integrated Oil & Gas								
Exxon Mobil Corp	US30231G1022	4.7%	n/a	12.1x	10.4x	15.8x	5.9x	5.4x
Chevron Corp	US1667641005	4.7%	n/a	13.9x	12.2x	14.6x	6.0x	5.5x
Royal Dutch Shell PLC	GB00B03MLX29	4.5%	35.1x	9.0x	6.4x	6.8x	4.2x	3.6x
Total SA	FR0000120271	4.6%	35.2x	8.0x	7.4x	9.0x	4.4x	4.0x
BP PLC	GB0007980591	4.4%	n/a	7.4x	6.4x	10.7x	4.0x	3.6x
Equinor ASA	NO0010096985	4.0%	48.0x	9.4x	9.4x	5.2x	2.3x	2.4x
ENI SpA	IT0003132476	4.1%	n/a	10.4x	8.4x	5.9x	3.6x	3.2x
Repsol SA	ES0173516115	3.7%	46.7x	7.0x	6.1x	5.8x	3.7x	3.4x
Galp Energia SGPS SA	PTGAL0AM0009	2.9%	n/a	15.1x	10.8x	5.8x	4.3x	3.8x
OMV AG	AT0000743059	3.8%	22.4x	6.2x	6.2x	7.8x	3.9x	3.9x
		41.4%						
Integrated / Oil & Gas E&P - Canada								
Suncor Energy Inc	CA8672241079	4.4%	n/a	11.5x	7.5x	13.2x	4.8x	4.1x
Canadian Natural Resources Ltd	CA1363851017	4.0%	n/a	9.1x	8.7x	13.5x	5.1x	4.6x
Imperial Oil Ltd	CA4530384086	4.6%	n/a	11.6x	8.6x	36.6x	6.1x	5.2x
		12.9%						
Integrated Oil & Gas - Emerging market								
PetroChina Co Ltd	CNE1000003W8	3.5%	27.8x	5.6x	6.1x	4.6x	3.4x	3.1x
Gazprom PJSC	US3682872078	3.8%	214.9x	3.3x	3.2x	8.7x	3.2x	2.8x
		7.4%						
Oil & Gas E&P								
ConocoPhillips	US20825C1045	4.0%	n/a	12.3x	9.2x	20.1x	5.4x	4.5x
EOG Resources Inc	US26875P1012	4.2%	81.0x	10.3x	9.0x	10.9x	4.9x	4.4x
Pioneer Natural Resources Co	US7237871071	4.2%	116.4x	13.4x	9.1x	21.0x	6.9x	4.9x
Devon Energy Corp	US25179M1036	4.3%	n/a	13.0x	8.2x	21.7x	6.1x	4.6x
		16.7%						
International E&Ps								
CNOOC Ltd	HK0883013259	1.5%	12.1x	4.1x	3.8x	3.1x	1.8x	1.6x
Pharos Energy PLC	GB00B572ZV91	0.2%	n/a	n/a	9.5x	2.5x	2.3x	1.4x
		1.7%						
Midstream								
Enbridge Inc	CA29250N1050	4.3%	20.2x	17.7x	16.0x	13.6x	13.1x	11.9x
		4.3%						
Equipment & Services								
Schlumberger Ltd	AN8068571086	3.5%	46.6x	23.7x	15.9x	12.8x	11.0x	9.0x
Helix Energy Solutions Group Inc	US42330P1075	0.5%	n/a	n/a	n/a	3.6x	5.4x	6.1x
		4.0%						
Oil & Gas Refining & Marketing								
China Petroleum & Chemical Corp	CNE1000002Q2	3.1%	10.3x	4.7x	5.2x	5.5x	3.6x	3.6x
Valero Energy Corp	US91913Y1001	4.1%	n/a	51.2x	12.4x	41.3x	10.4x	6.3x
		7.2%						
Research Portfolio								
Deltic Energy PLC	GB00B6SYKF01	0.3%	n/a	n/a	n/a	n/a	n/a	n/a
EnQuest PLC	GB00B635TG28	0.4%	n/a	2.8x	1.3x	3.5x	2.3x	1.9x
JKX Oil & Gas PLC	GB0004697420	0.1%	n/a	n/a	n/a	n/a	n/a	n/a
Reabold Resources PLC	GB00B95L0551	0.1%	n/a	n/a	n/a	n/a	n/a	n/a
Sunpower Corp	US8676524064	0.9%	n/a	124.2x	47.2x	115.5x	40.4x	27.4x
Maxeon Solar Technologies Ltd	SGXZ25336314	0.1%	n/a	n/a	n/a	n/a	n/a	n/a
Diversified Energy Company	GB00BYX7JT74	0.5%	5.9x	6.1x	5.7x	7.3x	6.3x	4.5x
		2.3%						
Cash	Cash	**2.1%**						
Portfolio		**100.0%**	**62.0x**	**9.4x**	**7.9x**	**9.3x**	**4.7x**	**4.1x**

The Fund's portfolio may change significantly over a short period of time; no recommendation is made for the purchase or sale of any particular stock.

5. OUTLOOK

i) Oil market

The table below illustrates the difference between the growth in world oil demand and non-OPEC supply since 2015:

	2015	2016	2017	2018	2019	2020	2021	2022E
							IEA	*IEA*
World Demand	***95.3***	***96.4***	***98.2***	***98.8***	***99.5***	***90.9***	***96.4***	***99.7***
Non-OPEC supply (inc NGLs)	*60.3*	*59.8*	*60.8*	*63.5*	*65.6*	*63.0*	*63.7*	*66.5*
OPEC NGLs	*5.2*	*5.3*	*5.4*	*5.5*	*5.4*	*5.1*	*5.2*	*5.4*
Non-OPEC supply plus OPEC NGLs	**65.5**	**65.1**	**66.2**	**69.0**	**71.0**	**68.1**	**68.9**	**71.9**
Call on OPEC (crude oil)	**29.8**	**31.3**	**32.0**	**29.8**	**28.5**	**22.8**	**27.5**	**27.8**
Congo supply adjustment	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Gabon supply adjustment	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Eq Guinea supply adjustment	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Call on OPEC-10 (crude oil)	**29.2**	**30.7**	**31.4**	**29.2**	**27.9**	**22.2**	**26.9**	**27.2**

Source: Bloomberg; IEA; Guinness Global Investors

Global oil demand in 2019 was 13m b/day higher than the pre-financial crisis (2007) peak. This means the combined effect of the 2007/08 oil price spike and the 2008/09 recession was shrugged off remarkably quickly, thanks to growth in demand from emerging markets. The demand picture for 2020, down by nearly 9m b/day, was heavily clouded by the impact of the COVID-19 virus and efforts to mitigate its spread. The IEA's best estimate is that demand will recovered in 2021 by around 5.5m b/day, leaving overall consumption on a par with 2016 but still around 3.1m b/day below the 2019 peak.

OPEC

The last five years have proved a testing time for OPEC. They have tried to keep prices strong enough that OPEC economies are not running excessive deficits, whilst not pushing the price too high and over-stimulating non-OPEC supply.

The effect of $100+ bbl oil, enjoyed for most of the 2011-2014 period, emerged in 2014 in the form of an acceleration in US shale oil production and an acceleration in the number of large non-OPEC (ex US onshore) projects reaching production. OPEC met in late 2014 and responded to rising non-OPEC supply with a significant change in strategy to one that prioritised market share over price. Post the November 2014 meeting, OPEC not only maintained their quota but also raised production significantly, up over 18 months by 2.5m b/day. This contributed to an oversupplied market in 2015 and 2016.

In November 2016, faced with sharply lower oil prices, OPEC stepped back from their market share stance, announcing plans for the first production cut since 2008, opting for a new production limit of 32.5m b/day. The announcement represented a cut of 1.2m b/day. There was also an understanding that non-OPEC, including Russia, would cut production by 0.6m b/day, taking the total reduction to 1.8m b/day.

OPEC-10 oil production to 31 Jan 2022

('000 b/day	31-Dec-19	31-Dec-21	31-Jan-22	Current vs Dec 2019	Current vs last month
Saudi	9,730	10,030	**10,060**	330	30
Iran	2,080	2,510	**2,520**	440	10
Iraq	4,610	4,280	**4,310**	-300	30
UAE	3,040	2,890	**2,910**	-130	20
Kuwait	2,710	2,550	**2,580**	-130	30
Nigeria	1,820	1,420	**1,520**	-300	100
Venezuela	730	650	**670**	-60	20
Angola	1,390	1,150	**1,120**	-270	-30
Libya	1,110	1,060	**920**	-190	-140
Algeria	1,010	960	**970**	-40	10
OPEC-10	**28,230**	**27,500**	**27,580**	**-650**	**80**

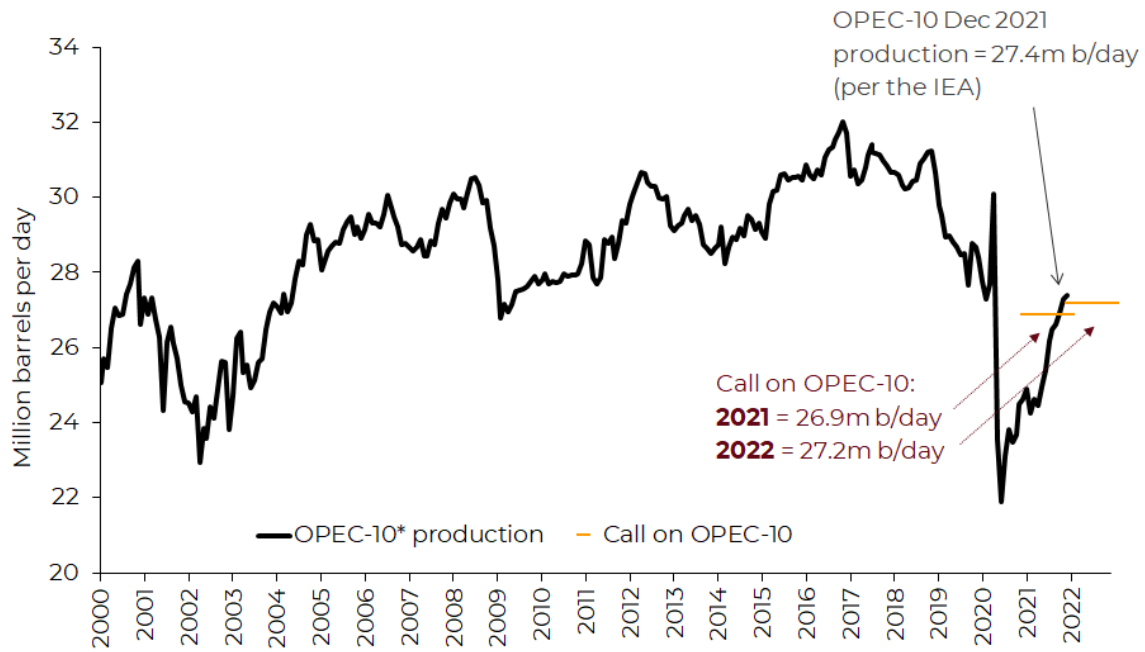
Source: Bloomberg; Guinness Global Investors

The 2017-19 period continued to see a volatile time for OPEC with further production cuts necessary to balance ongoing non-OPEC supply growth.

The challenge for OPEC then ballooned in 2020 with the onset of COVID around the world. Initially, OPEC and their non-OPEC partners failed to reach agreement around their response to demand from the spread of the virus, precipitating a fall-out between participants and a short-lived price war. In light of extreme oil market oversupply, OPEC and non-OPEC partners reconvened in April 2020 and confirmed a deal to cut their production by 9.7m b/day, relative to their 'baseline' production level of October 2018.

In July 2021, the OPEC+ group agreed to taper their quota cuts at 0.4m b/day until September 2022, whilst still meeting monthly to ratify each production increase in light of the prevailing conditions. The agreement gives us confidence that OPEC is looking to do 'what it takes' to keep the market in balance, despite extreme challenges in the shorter term.

OPEC-10 apparent production vs call on OPEC 2000 – 2021



Source: IEA Oil Market Report (Dec 2021 and prior); Guinness estimates

OPEC's actions in recent years have generally demonstrated a commitment to delivering a reasonable oil price to satisfy their own economies but also to incentivise investment in long term projects. Saudi's actions at the head of OPEC have been designed to achieve an oil price that to some extent closes their fiscal deficit (c.$70/bl is needed to close the gap fully), whilst not spiking the oil price too high and over-stimulating non-OPEC supply.

In the shorter term, the COVID-19 crisis has created particularly challenging conditions. Longer term, however, we believe that Saudi seek a 'good' oil price, well in excess of current levels to balance their fiscal needs, but they realise that patience is required to achieve that goal.

Overall, we reiterate two important criteria for Saudi:

1. Saudi is interested in the average price of oil that they get; they have a longer investment horizon than most other market participants

2. Saudi wants to maintain a balance between global oil supply and demand to maintain a price that is acceptable to both producers and consumers

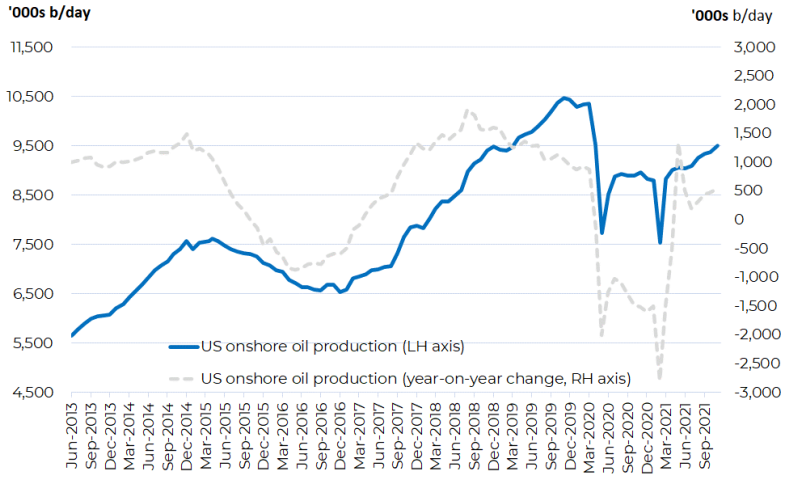
Nothing in the market in recent years has changed our view that OPEC can put a floor under the price – as they did in 2018, 2016, 2008, 2006, 2001 and 1998. Saudi's desire for a $60 oil price floor is not dimmed.

Supply looking forward

The non-OPEC world has, since the 2008 financial crisis, grown its production more meaningfully than in the seven years before 2008. The growth was 0.9% p.a. from 2001-2008, increasing to 1.8% p.a. from 2008-2019.

Growth in the non-OPEC region since the start of the last decade has been dominated by the development of shale oil and oil sands in North America (up around 7m b/day between since 2010), implying that the rest of non-OPEC region has barely grown over this period, despite the sustained high oil price until mid-2014.

US onshore oil production



Source: EIA; Guinness Global Investors

The growth in US shale oil production, in particular from the Permian basin, raises the question of how much more there is to come and at what price. Our assessment is that US shale oil is a capital intensive source of oil but one where some growth is viable, on average, at around $50 oil prices. In particular, there appears to be ample inventory in the Permian basin to allow growth well into the 2020s. The rate of development is heavily dependent on the cashflow available to producing companies, which tends to be recycled immediately into new wells, and the underlying cost of services to drill and fracture the wells. During 2019 and 2020, we started to see increased pressure on US E&P companies to improve their capital discipline and to cut their reinvestment rates, and this is evidenced by higher costs of capital being charged to the US E&P companies.

The collapse in oil prices at the start of 2020 to a level well below $50/bl changed the landscape, with US E&P companies significantly reducing capital spending as they attempt to live within their cashflows. Despite a stronger oil price since then, the overall reduction in activity caused average US shale supply to decline in 2021.

Non-OPEC supply growth outside the US has been sustained in recent years, despite lower oil prices, since projects that were sanctioned before 2014 (when oil was $100/bl+) have continued to come onstream. However, the slowdown in investment post 2014 creates the likelihood that non-OPEC (ex-US) production will struggle to grow into the start of the 2020s. On a ten-year view, it is interesting to note that non-OPEC (ex-US) has essentially been flat (excluding the fall in early 2020 as a result of voluntary curtailments amid the COVID-19 demand shock), as new investment has simply offset the decline profiles of existing production.

Looking longer term, other opportunities to exploit unconventional oil likely exist internationally using techniques established in the US, notably in Argentina (Vaca Muerta), Russia (Bazhenov), China (Tarim and Sichuan) and Australia (Cooper). However, the US is far better understood geologically; the infrastructure in the US is already in place; service capacity in the US is high; and the interests of the landowner are aligned in the US with the E&P company. In most of the rest of the world, the reverse of each of these points is true, and as a result we see international shale as only being viable at high oil prices.

Demand looking forward

The IEA estimate that 2022 oil demand will rise by around 3.3m b/day to 99.7m b/day, back just above the 2019 pre-COVID peak. The spread of the COVID virus globally caused major restrictions to the movement of people, which has now largely reversed.

After a sharp demand recovery in 2021 and 2022, we then expect the world to settle back into oil demand growth of plus or minus 1m b/day, led by increased use in Asia. Historically, China has been the most important component of this growth and continues to be a major component, although signs are emerging that India will also grow rapidly.

In the US, the sharp fall in gasoline prices since 2014 has stimulated a reversal in improving fuel efficiency, as drivers switch back to purchasing larger vehicles, and a rise in total vehicle miles travelled. Total vehicle miles travelled had stalled between 2007 and 2014, after two decades of growth, and are now growing again (ex COVID effects) at a rate of around 1% per year.

The trajectory of global oil demand over the next few years will be a function of global GDP, pace of the 'consumerisation' of developing economies, the development of alternative fuels and price. At a $50/bl oil price, the world oil bill as a percentage of GDP is around 2.0% and this will still be a stimulant of further demand growth. If oil prices persist in a higher range (say around $75/bbl, representing 3%+ of GDP), we probably return to the pattern established over the past 5 years, with a flatter picture in the OECD more than offset by strong growth in the non-OECD area. Flatter OECD demand reflects improving oil efficiency over time, dampened by economic, population and vehicle growth. Within the non-OECD, population growth and rising oil use per capita will both play a significant part.

We keep a close eye on developments in the 'new energy' vehicle fleet (electric vehicles; hybrids etc), but see little that makes a significant dent on the consumption of gasoline and diesel in the next few years. Sales of electric vehicles (pure electric and plug-in hybrid electrics) globally were around 6.1m in 2021, up from 3.1m in 2020. We expect to see strong EV sales growth again in 2022, up to around 9m, or 10% of total global sales. Even applying an aggressive growth rate to EV sales, we see EVs comprising only around 2% of the global car fleet by the end of 2022. Looking further ahead, we expect the penetration of EVs to accelerate, causing global gasoline demand to peak at some point in the middle of the 2020s. However, owing to the weight of oil demand that comes from sources other than passenger vehicles (around 70%), which we expect to continue growing linked to GDP, we expect total oil demand not to peak until around 2030.

Conclusions about oil

The table below summarises our view by showing our oil price forecasts for WTI and Brent in 2022 versus recent history.

Average WTI & Brent yearly prices, and changes

Oil price (inflation adjusted)																*Est*
12 month MAV	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
WTI	82	104	68	84	99	94	98	93	49	45	51	65	57	40	68	72
Brent	82	103	67	84	115	112	108	99	52	45	54	72	60	42	70	75
Brent/WTI (12m MAV)	**82**	**104**	**68**	**84**	**107**	**103**	**103**	**96**	**51**	**45**	**53**	**68**	**59**	**41**	**69**	**74**
Brent/WTI y-on-y change	9%	26%	-35%	24%	27%	-4%	0%	-7%	-47%	-11%	17%	30%	-14%	-30%	68%	7%
Brent/WTI (5yr MAV)	61	75	79	82	89	93	93	99	92	80	69	63	55	53	58	62

Source: Guinness Global Investors, Bloomberg

We believe that Saudi's long-term objective remains to maintain a 'good' oil price, something north of $70/bl. The world oil bill at around $70/bl represents 2.8% of 2021 Global GDP, under the average of the 1970 – 2015 period (3.4%).

ii) Natural gas market

US gas demand

On the demand side for the US, industrial gas demand and power generation gas demand, each about 25-30% of total US gas demand, are key. Commercial and residential demand, which make up a further quarter, have been fairly constant on average over the last decade – although yearly fluctuations due to the coldness of winter weather can be marked.

US natural gas demand

Bcf/day	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022E
US natural gas demand:											
Residential/commercial	19.2	22.4	23.4	21.4	20.5	20.9	23.4	23.5	21.3	22.2	22.0
Power generation	24.9	22.3	22.3	26.5	27.3	25.3	29.0	30.9	31.7	30.3	31.2
Industrial	19.7	20.3	20.9	20.6	21.1	21.6	23.0	23.0	22.6	23.0	23.6
Pipeline exports (Mexico)	1.8	1.9	1.9	2.7	3.8	4.0	4.6	5.1	5.4	6.1	6.4
LNG exports	-	-	-	0.1	1.0	2.6	3.4	5.7	7.3	10.3	10.9
Pipeline/plant/other	6.1	6.7	6.3	6.5	6.4	6.5	7.1	7.6	7.7	7.8	8.0
Total demand	**71.7**	**73.6**	**74.8**	**77.8**	**80.1**	**80.9**	**90.5**	**95.8**	**96.0**	**99.7**	**102.1**
Demand growth	**3.1**	**1.9**	**1.2**	**3.0**	**2.3**	**0.8**	**9.6**	**5.3**	**0.2**	**3.7**	**2.4**

Source: Guinness estimates; GS (Nov 2021)

Industrial demand (of which around 35% comes from petrochemicals) tends to trend up and down depending on the strength of the economy and the differential between US and international gas prices. Electricity gas demand (i.e. power generation) is affected by weather, in particular warm summers which drive demand for air conditioning, but the underlying trend depends on GDP growth and the proportion of incremental new power generation each year that goes to natural gas versus the alternatives of coal, nuclear and renewables. Gas has been taking market share in this sector: in 2021, 33% of electricity generation was powered by gas, up from 22% in 2007. The big loser here is coal which has consistently given up market share.

Total gas demand in 2021 (including Mexican and LNG exports) was around 99.7 Bcf/day, up by 3.7 Bcf/day versus 2020 and 11 Bcf/day (12%) higher than the 5-year average. The biggest contributors to the growth in demand in 2020 were residential/commercial and LNG exports (opening of new export terminals). Power generation for gas was lower, however.

We expect US demand in 2022, assuming prices remain around $4/mcf, to be up by around 2 Bcf/day. Looking further ahead to 2025, we believe that gas will take a good share of incremental power generation growth in the US and continue to take market share from coal. Our working assumption is for gas fired power generation to grow 0.8-1.2 Bcf/day per year, although this will be affected by actual gas prices. Beyond the mid-2020s, we expect power generation from gas to face stronger competition from renewables.

US gas supply

Overall, whilst gas demand in the US has been strong over the past five years, it has been overshadowed by a rise in onshore supply, holding the gas price lower.

The supply side fundamentals for natural gas in the US are driven by three main moving parts: onshore and offshore domestic production, pipeline imports of gas from Canada and LNG imports. Of these, onshore supply is the biggest component, making up over 90% of total supply.

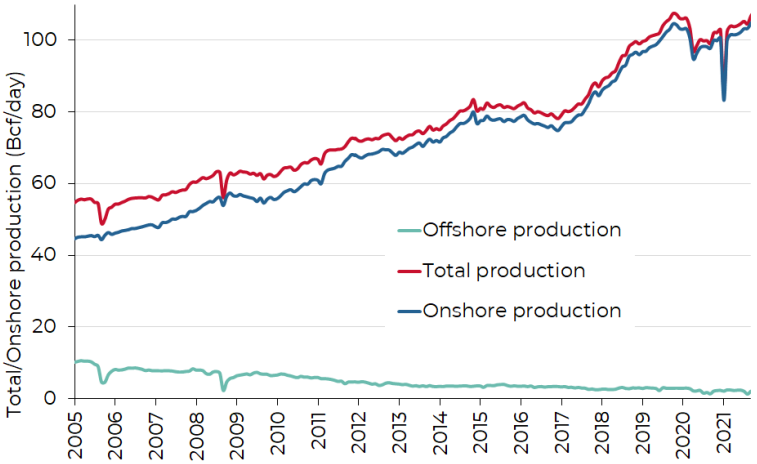
US natural gas supply

Bcf/day	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022E
US natural gas supply:											
US (onshore & offshore)	65.7	66.3	70.9	74.2	73.4	73.6	84.0	92.3	92.1	93.0	96.7
Net imports (Canada)	5.4	5.0	4.9	4.9	5.5	5.8	5.4	4.7	4.4	5.3	5.3
LNG imports & other	0.8	0.6	0.5	0.5	0.4	0.3	0.1	0.1	-	-	0.1
Total supply	**71.9**	**71.9**	**76.3**	**79.6**	**79.3**	**79.7**	**89.5**	**97.1**	**96.5**	**98.3**	**102.1**
Supply growth	**2.4**	**-**	**4.4**	**3.3**	**- 0.3**	**0.4**	**9.8**	**7.6**	**- 0.6**	**1.8**	**3.8**
(Supply)/demand balance	**- 0.2**	**1.7**	**- 1.5**	**- 1.8**	**0.8**	**1.2**	**1.0**	**- 1.3**	**- 0.5**	**1.4**	**-**

Source: EIA; Simmons; Guinness estimates

Over the last 10 years, the weaker gas price in the US reflects growing onshore US production driven by rising shale gas and associated gas production (a by-product of growing onshore US oil production). Interestingly, the overall rise in onshore production has come despite a collapse in the number of rigs drilling for gas, which has dropped from a 1,606 peak in September 2008 to 102 at the end of November 2021. However, offsetting the fall, the average productivity per rig has risen dramatically as producers focus their attention on the most prolific shale basins, whilst associated gas from oil production has grown handsomely.

US natural gross gas production 2005 – 2021 (Lower 48 States)



Source: EIA 914 data (Feb 2022 data)

The outlook for gas production in the US depends on three key factors: the rise of associated gas (gas produced from wells classified as oil wells); expansion of the newer shale basins, principally the Marcellus/Utica, and the decline profile of legacy gas fields.

Associated gas production declined in 2021 with the fall of shale oil production, but will rise again in 2022 as shale oil grows again. Generally, we expect to see rates of around 2-3 Bcf/day of associated gas per 1m b/day of oil production growth. The Marcellus/Utica region, which includes the largest producing gas field in the US and the surrounding region, reached production of around 32 Bcf/day in 2021. Moderate growth is likely in 2022.

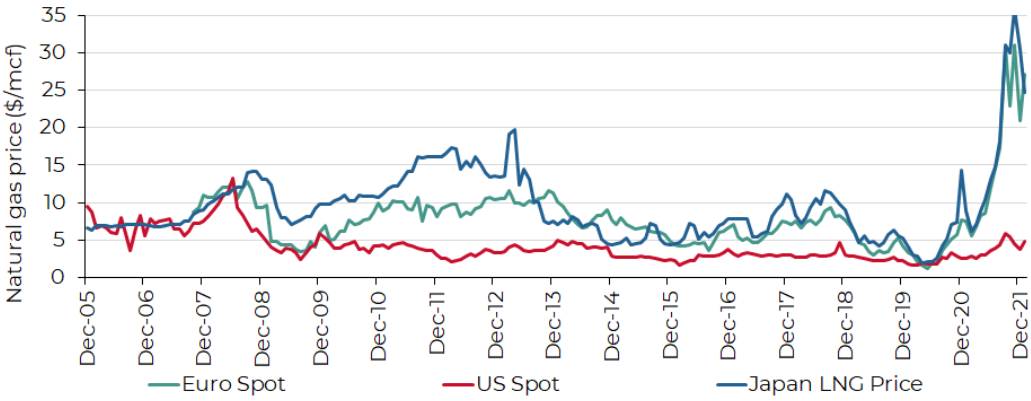
Overall, if the price averages in the $4-$5/mcf range, we expect a rise in average onshore gas supply in 2022, up by around 1-2 Bcf/day versus 2021.

Outlook for US LNG exports – global gas arbitrage

The prospects for US LNG exports depend on the differentials to European and Asian gas prices, and whether the economic incentive exists to carry out the trade. The UK national balancing point (NBP) gas price – which serves as a proxy to the European traded gas price – has moved to a significant premium to the US gas price (c.$25/mcf versus c.$4-5/mcf). Asian spot LNG prices have also been extraordinarily strong, averaging over $10/mcf in 2021 and also up over $25/mcf on a spot basis at the end of January. There have been many factors at play, in particular the strong economic recovery which is driving demand, and a shortage of coal supply in China which is causing China

to pull in additional LNG. The implied economics for US LNG exports into Europe and Asia are attractive assuming international prices are over $7/mcf.

International gas prices to Jan 2022

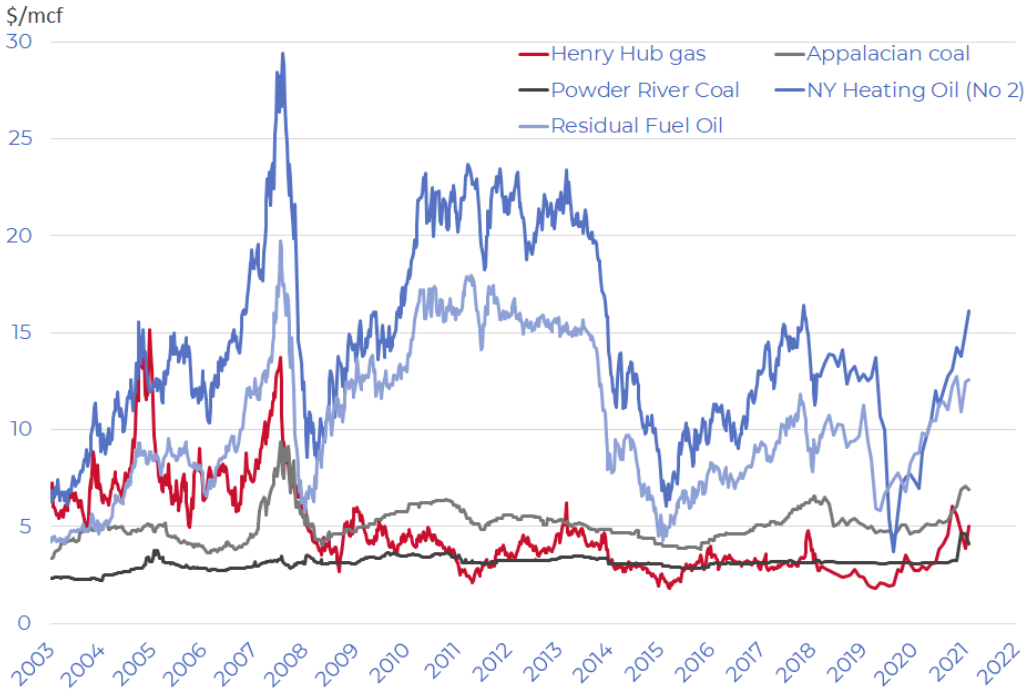


Source: Bloomberg; Guinness Global Investors (Feb 2022)

Relationship with oil and coal

The following chart of the front month US natural gas price against heating oil (No 2), residual fuel oil (No 6) and coal (Sandy Barge adjusted for transport and environmental costs) seeks to illustrate how coal and residual fuel oil switching provide a floor and heating oil a ceiling to the natural gas price. When the gas price has traded below the coal price support level (2012 and 2016), resulting coal to gas switching for power generation was significant.

Natural gas versus substitutes (fuel oil and coal) - Henry Hub vs residual fuel oil, heating oil, Sandy Barge (adjusted) and Powder River coal (adjusted)



Source: Bloomberg; Guinness Global Investors (Feb 2022)

Conclusions about US natural gas

The US natural gas price was held back in the 2010s by continued strength in gas supply, particularly from the Marcellus/Utica and from gas produced as a by-product of shale oil. Natural gas prices averaged $3.71/mcf in 2021, up from $2.13/mcf in 2020, and we suspect that the (full cycle) marginal cost of supply is now around $4/mcf. More

controlled growth in associated gas supply over the next couple of years should allow gas prices to stay closer to the full cycle cost level.

6. APPENDIX Oil and gas markets historical context

Oil price (WTI $) since 1989

Source: Bloomberg LP

For the oil market, the period since the Iraq Kuwait war (1990/91) can be divided into three distinct periods:

1) **1990-1998:** broadly characterized by decline. The oil price steadily weakened 1991 - 1993, rallied between 1994 –1996, and then sold off sharply, to test 20-year lows in late 1998. This latter decline was partly induced by a sharp contraction in demand growth from Asia, associated with the Asian crisis, partly by a rapid recovery in Iraq exports after the UN Oil for food deal, and partly by a perceived lack of discipline at OPEC in coping with these developments.

2) **1998-2014:** a much stronger price and upward trend. There was a very strong rally between 1999 and 2000 as OPEC implemented 4m b/day of production cuts. It was followed by a period of weakness caused by the rollback of these cuts, coinciding with the world economic slowdown, which reduced demand growth and a recovery in Russian exports from depressed levels in the mid 90's that increased supply. OPEC responded rapidly to this during 2001 and reintroduced production cuts that stabilized the market relatively quickly by the end of 2001.

Then, in late 2002 early 2003, war in Iraq and a general strike in Venezuela caused the price to spike upward. This was quickly followed by a sharp sell-off due to the swift capture of Iraq's Southern oil fields by Allied Forces and expectation that they would win easily. Then higher prices were generated when the anticipated recovery in Iraq production was slow to materialise. This was in mid to end 2003 followed by a much more normal phase with positive factors (China demand; Venezuelan production difficulties; strong world economy) balanced against negative ones (Iraq back to 2.5 m b/day; 2Q seasonal demand weakness) with stock levels and speculative activity needing to be monitored closely. OPEC's management skills appeared likely to be the critical determinant in this environment.

By mid-2004 the market had become unsettled by the deteriorating security situation in Iraq and Saudi Arabia and increasingly impressed by the regular upgrades in IEA forecasts of near record world oil demand growth in 2004 caused by a triple demand shock from strong demand simultaneously from China; the developed world (esp. USA) and Asia ex China. Higher production by OPEC has been one response and there was for a period some worry that this, if not curbed, together with demand and supply responses to higher prices, would cause an oil price sell off. Offsetting this has been an opposite worry that non-OPEC production could be within a decade of peaking; a growing view that OPEC would defend $50 oil vigorously; upwards pressure on inventory levels from a move from JIT (just in time) to JIC (just in case); and pressure on futures markets from commodity fund investors.

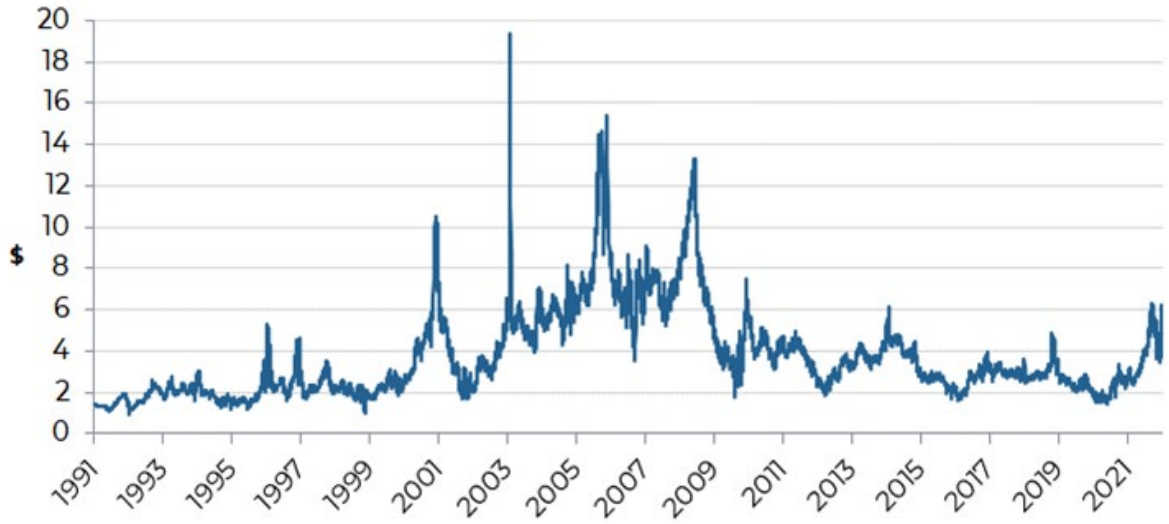
Continued expectations of a supply crunch by the end of the decade, coupled with increased speculative activity in oil markets, contributed to the oil price surging past $90 in the final months of 2007 and as high as $147 by the middle of 2008. This spike was brought to an abrupt end by the collapse of Lehman Brothers and the financial crisis and recession that followed, all of which contributed to the oil price falling back by early 2009 to just above $30. OPEC's responded decisively and reduced output, helping the price to recover in 2009 and stabilise in the $70-95 range where it remained for two years.

Prices during 2011-2014 moved higher, averaging around $100, though WTI generally traded lower than Brent oil benchmarks due to US domestic oversupply affecting WTI. During this period, US unconventional oil supply grew strongly, but was offset by the pressures of rising non-OECD demand and supply tensions in the Middle East/North Africa.

3) **2014-2021:** a further downcycle in oil. Ten years of high prices leading up to 2014 catalysed a wall of new non-OPEC supply, sufficient that OPEC saw no choice but to stop supporting price and re-set the investment cycle. Oil prices found a bottom in 2016 (as a result of OPEC and non-OPEC partners cutting production again), but its recovery was capped by the volume of new supply still coming into the market from projects sanctioned pre the 2014 price crash. Average prices were pinned 2017-19 in the $50-70/bl range, with prices at the top end of this rang stimulating oversupply from US shale.

The alliance between OPEC and non-OPEC partners fell apart briefly in March 2020 and, coupled with an unprecedented collapse in demand owing to the COVID-19 crisis, oil prices dropped back below $30/bl, before recovering to around $50/bl by the end of 2020 thanks to renewed OPEC+ action.

North American gas price since 1991 (Henry Hub $/Mcf)



Source: Bloomberg LP

With regard to the US natural gas market, the price traded between $1.50 and $3/Mcf for the period 1991 - 1999. The 2000s were a more volatile period for the gas price, with several spikes over $8/mcf, but each lasting less than 12 months. On each occasion, the price spike induced a spurt of drilling which brought the price back down. Excepting these spikes, from 2004 to 2008, the price generally traded in the $5-8 range. Since 2008, the price has averaged below $4 as progress achieved in 2007-8 in developing shale plays boosted supply while the 2008-09 recession cut demand. Demand has been recovering since 2009 but this has been outpaced by continued growth in onshore production, driven by the prolific Marcellus/Utica field and associated gas as a by-product of shale oil production.

North American gas prices are important to many E&P companies. In the short-term, they do not necessarily move in line with the oil price, as the gas market is essentially a local one. (In theory 6 Mcf of gas is equivalent to 1 barrel of oil so $60 per barrel equals $10/Mcf gas). It remains a regional market more than a global market, though the development of the LNG industry is creating a greater linkage.

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