Guinness Atkinson
Energy Brief
April 2018

REPORT HIGHLIGHTS

OIL

Brent and WTI stronger as oil demand strengthens and OPEC holds its resolve

Oil prices, a key driver of the sector, rose over the quarter. The West Texas Intermediate (WTI) oil price started January at $60.4/bl and quickly strengthened to over $66/bl by the end of the month before retrenching sharply to nearly $59/bl in early February. WTI eventually closed the quarter at $64.9/bl and averaged just under $63/bl for the quarter. Global oil demand forecasts for 2018 were upgraded during the quarter while OPEC held its resolve (keeping the market undersupplied) thus causing inventories to continue to fall on a seasonally adjusted basis. Strong US onshore production growth brought some concerns of an over supplied market during the quarter.

NATURAL GAS

US gas price weakens despite cold weather as domestic production growth remains robust

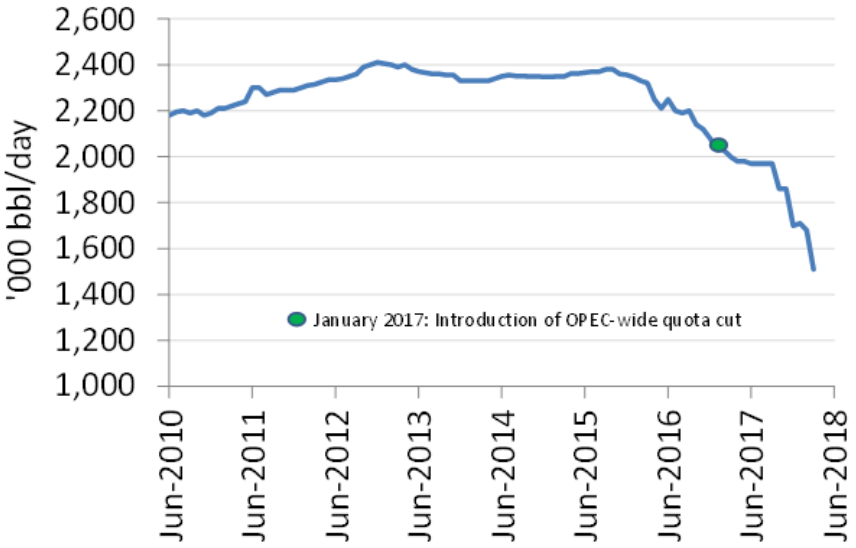
The US natural gas price traded down from $2.95/mcf to end the month at $2.73/mcf, after rallying to a peak of $3.60/mcf as a result of particularly cold weather. Inventories tightened as the market remained undersupplied but domestic production continues to grow rapidly.

CHART OF THE QUARTER

Venezuelan oil production nearly 0.5m b/day lower than quota

Bloomberg reported that Venezuelan oil production declined in March by 0.1m b/day, falling to an average of 1.5m b/day. This means that Venezuela is producing nearly 0.5m b/day less than their January 2017 quota of 1.97m b/day, providing a meaningful contribution to the tightening of oil markets globally. Infrastructure issues, weak reservoir management, poor quality control and poor relations with foreign service partners all contributing.

Venezuelan oil production (2010-2018)

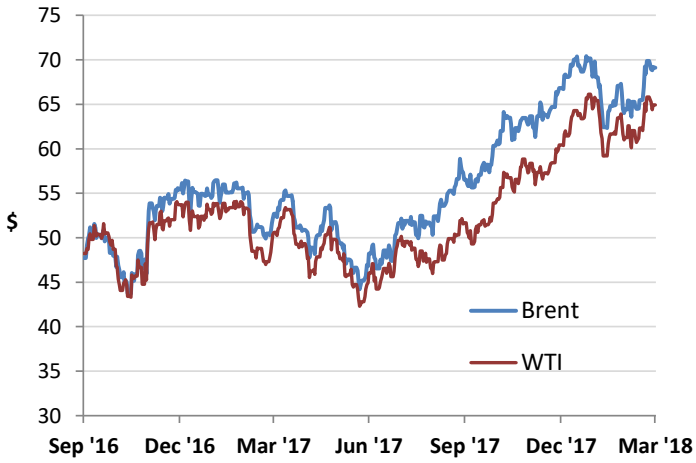


Source: Bloomberg; Guinness Atkinson Asset Management

First Quarter 2018 in Review

i) Oil market

Figure 1: Oil price (WTI and Brent $/barrel) 18 months September 30, 2016 to March 31, 2018



Source: Bloomberg LP

The West Texas Intermediate (WTI) oil price started January at $60.4/bl and quickly strengthened to over $66/bl by the end of the month before retrenching sharply to nearly $59/bl in early February. WTI eventually closed the quarter at $64.9/bl and averaged just under $63/bl for the quarter. WTI averaged $50.9/bl in 2017, having averaged $43.4 in 2016, $48.7 in 2015 and $93.1 in 2014. Brent oil traded very similarly, opening January at $66.9/bl and closing at $69.1/bl, achieving an average price of $67/bl over the quarter. Brent averaged $54.8/bl in 2017.

Factors which strengthened WTI and Brent oil prices in the quarter:

- **Upgrade for global oil demand forecasts in 2018.** At the end of January, the IMF raised their forecast for global GDP growth in 2018 to 3.9% and subsequently the IEA upgraded their global oil demand forecast for 2018 from 1.3m b/day to 1.5m b/day. The growth is mainly expected to come from emerging markets (+1.2m b/day), consistent with recent years. Despite the IEA's increase to their demand expectation, if the IMF's forecast for global GDP growth in 2018 of 3.9% is achieved, we would expect demand growth to be higher still, exceeding the IEA's current forecast.

- **Strong OPEC compliance to cuts.** OPEC's compliance to their quota cuts remains high with recent data indicating that OPEC (ex Libya/Nigeria) are currently cutting more than the 1.2m b/day promised by their current quotas. Part of the reason for the over-compliance rests with Venezuela, who have seen a sharp drop in production over the last few months as under-investment bites. Bloomberg reported that Venezuelan oil production declined in March by 0.1m b/day, falling to an average of 1.5m b/day. This means that Venezuela is producing nearly 0.5m b/day less than their January 2017 quota of 1.97m b/day, providing a meaningful contribution to the tightening of oil markets globally.

- **Sustained reduction in global and US oil and oil product inventories.** OECD total product and crude inventories at the end of February (the latest data point available) were estimated by the IEA to be 2,845m barrels, down by 25m barrels versus the level reported in January. This compares to a 10-year average draw for February of 24m barrels. Inventories have been tightening since the middle of 2017 and remain around 100m barrels above the 'normalized' (pre-2015) range. While total OECD inventories remain elevated, they are clearly declining as a result of OPEC's strong adherence to its current quotas. With global oil demand continuing to grow, the 'days of demand coverage' also continued to decline.

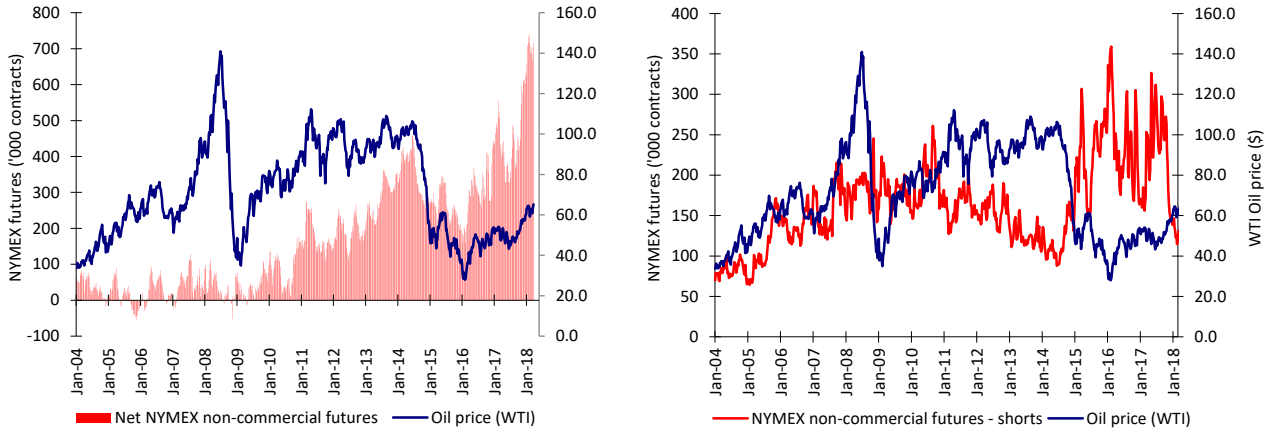
Factors which weakened WTI and Brent oil prices in the quarter:

- **Stronger than expected US onshore production growth and E&P production efficiencies.** Reliable US onshore crude production is typically reported with a two to three month delay. During the first quarter, the EIA reported a significant surge in production for September to November 2017, with onshore supply rising by around 0.8m b/day over those three months. With the surge of new production at the end of 2017, shale oil growth in 2017 (Q4 2017 versus Q4 2016) totalled around 1.2m b/day. At the start of April, the EIA reported that US onshore production declined by 69k b/day during January 2018. This brings year over year growth for the US onshore system to around 1.2m b/day. Using production guidance data provided by the larger shale producers for the rest of the year, we expect the US onshore oil system to grow in the region of 1.2m b/day. Whilst this level of growth would be significant, it does not represent much of a change versus expectations 6-9 months ago.

Speculative and investment flows

The New York Mercantile Exchange (NYMEX) net non-commercial crude oil futures open position (WTI) increased over the quarter, ending March at 716,000 contracts long versus 632,000 contracts long at the end of December. Typically there is a positive correlation between the movement in net position and movement in the oil price. The gross short position fell from 141,000 contracts to 138,000 contracts. This short position is now at relatively low level versus those seen in the last couple of years.

Figure 2: NYMEX Non-commercial net and short futures contracts: WTI January 2004 – March 2018

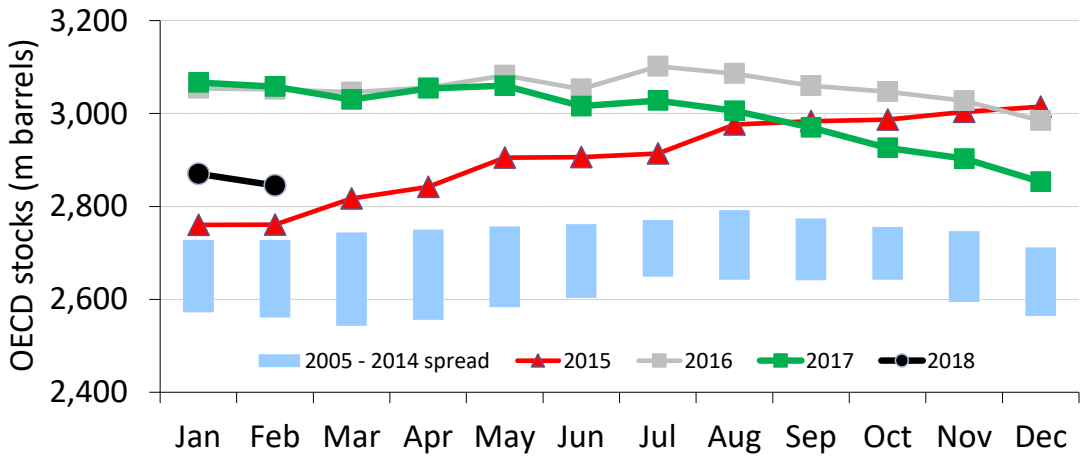


Source: Bloomberg LP/NYMEX/ICE (2018)

OECD stocks

OECD total product and crude inventories at the end of February (the latest data point available) were estimated by the IEA to be 2,845m barrels, down from 2,910m barrels at the end of November. This 65m bl reduction compares to a 10-year average draw for the period of 44m barrels. Inventories have been tightening since the middle of 2017, and remain around 100m barrels above the 'normalized' (pre-2015) range. We expect them to continue to tighten over 2018, predominantly as a result of OPEC's quota system..

Figure 3: OECD total product and crude inventories, monthly, 2004 to 2018



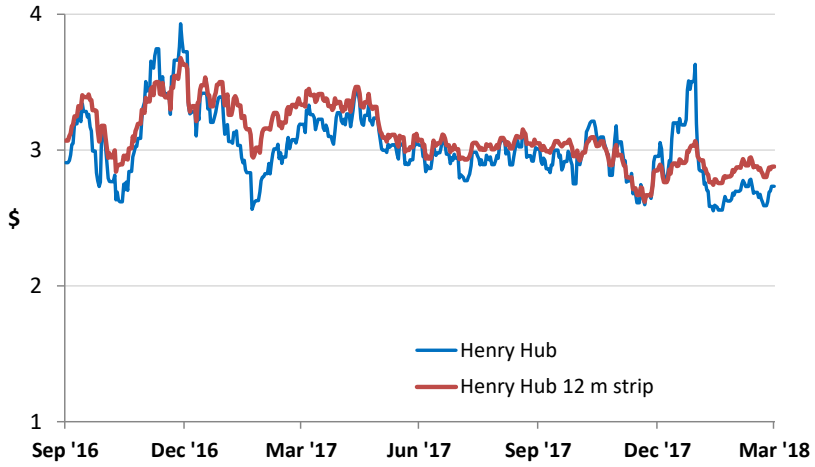
Source: IEA Oil Market Reports (March 2018 and older)

ii) Natural gas market

The US natural gas price (Henry Hub front month) opened the quarter at $2.95/mcf (1,000 cubic feet) before trading up to $3.60/mcf in late January and then subsiding back to close at $2.73/mcf, averaging $2.85/mcf over the quarter. The spot gas price averaged $3.00/mcf in 2017, which compares to an average gas price of $2.55/mcf in 2016, $2.61/mcf in 2015 and $4.26/mcf in 2014 (assisted by a very cold 2013/14 US winter). The price averaged $3.72/mcf over the preceding four years (2010-2013).

The 12-month gas strip price (a simple average of settlement prices for the next 12 months' futures prices) also remained broadly flat over the quarter, opening at $2.85/mcf and closing at $2.88/mcf. The strip price averaged $3.12 in 2017 having averaged $2.84 in 2016, $2.86 in 2015, $4.18 in 2014 and $3.92 in 2013.

Figure 4: Henry Hub gas spot price and 12m strip ($/Mcf) September 30, 2016 to March 31, 2018

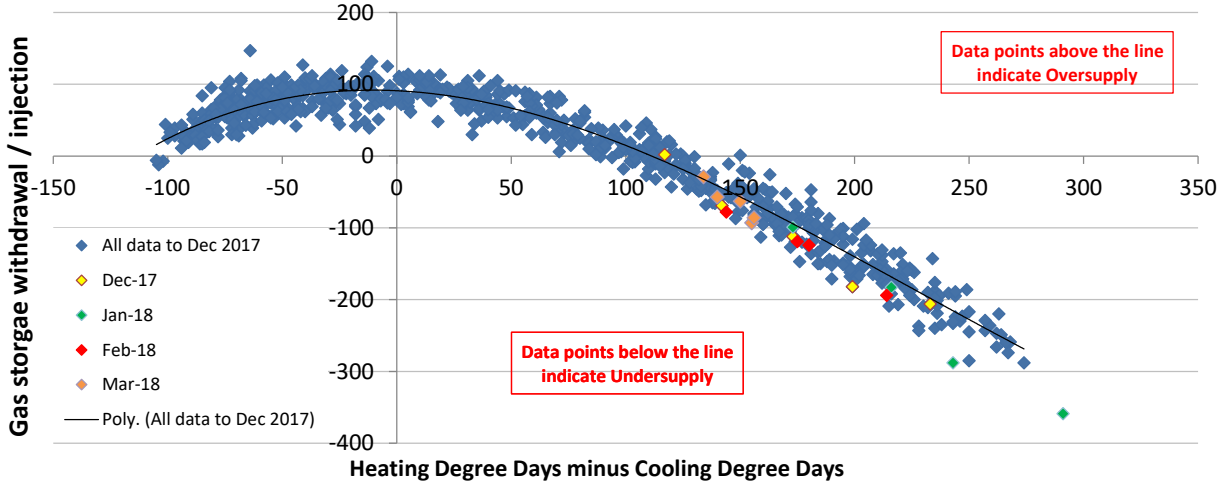


Source: Bloomberg LP

Factors which strengthened the US gas price in the quarter included:

- **Structurally undersupplied market.** Adjusting for the impact of weather in the quarter, the most recent injections of gas into storage suggest the market is, on average, around 3 bcf/day undersupplied (as indicated by the red, orange and yellow dots on the scatter graph). The gas market shifted into structural undersupply in late 2015, but that has been trumped over the last 18 months by two successive warm winters which have lowered demand.

Figure 5: Weather adjusted US natural gas inventory injections and withdrawals



Source: Bloomberg LP; Guinness Atkinson Asset Management

Factors which weakened the US gas price in the quarter included:

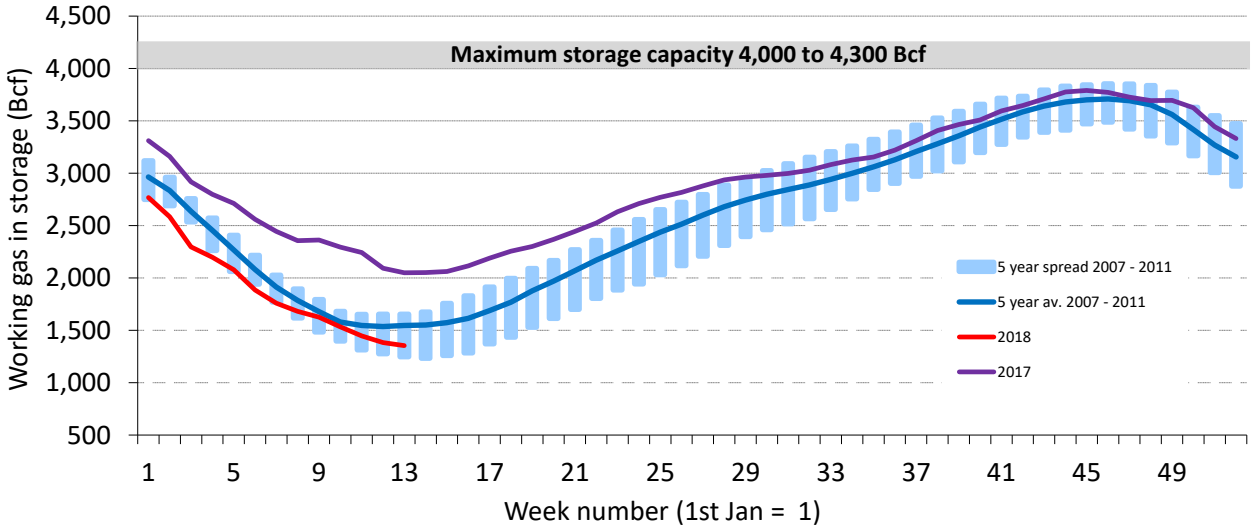
- **Strong US onshore natural gas production.** Onshore US natural gas production averaged 83.5 Bcf/day in January 2018 (the latest available data point), down by 1.2 Bcf/day on the level reported for December 2017. Nevertheless, onshore production is up by 8.5 Bcf/day versus the level reported twelve months before. Rising

associated gas supply from shale oil, and a pickup of activity in the Marcellus basin, are the key reasons for the rise in production: both look set to continue for the rest of 2018.

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 March were reported by the EIA to be 1.35tcf. The withdrawal season started with inventories peaking at 3.8tcf in mid-November, the lowest starting point of the winter season for US gas inventories since November 2014. Exceptionally cold weather and an undersupplied market has brought inventories back from being at the top of the ten year range (in November and December) to being below seasonal norms during March.

Figure 6: Deviation from 5yr gas storage norm vs gas price 12-month strip (H. Hub $/Mcf)



Source: Bloomberg; EIA (March 2018)

Manager's Comments

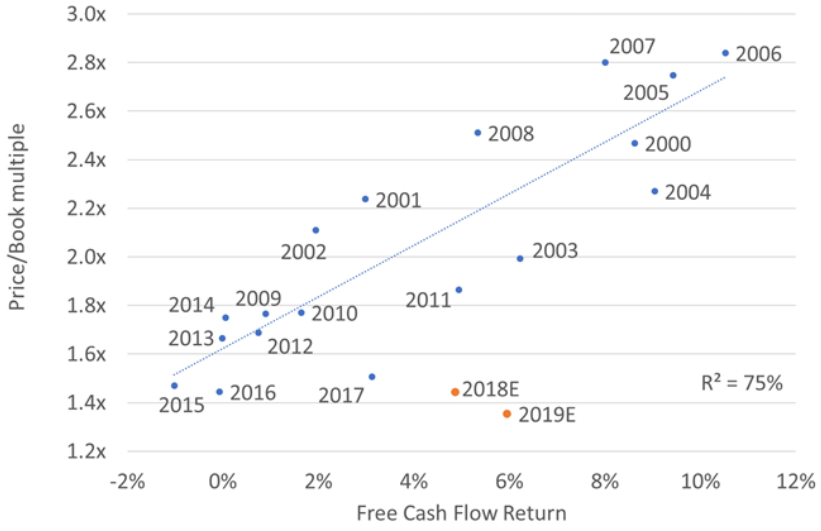
The energy equity sector started 2018 strongly, outperforming the broad market in January. February's energy equity sell-off was then particularly acute, as broad market equity declines were compounded in the oil sector by renewed concerns over accelerating US onshore oil supply, which dampened the long-dated end of the oil futures curve. Since the start of March, energy equities have recovered again, thanks to a combination of tightening fundamentals in the oil market, heightened political risk, and a rotation in equities from growth (tech) to value. Here, we provide some commentary on three key topics of interest that have impacted energy markets (physical and equity) so far this year:

1. **Improving large-cap cashflows (improving equity story)**
2. **US onshore oil production (rising supply)**
3. **Venezuelan oil production (falling supply)**

1. Improving large-cap cashflows

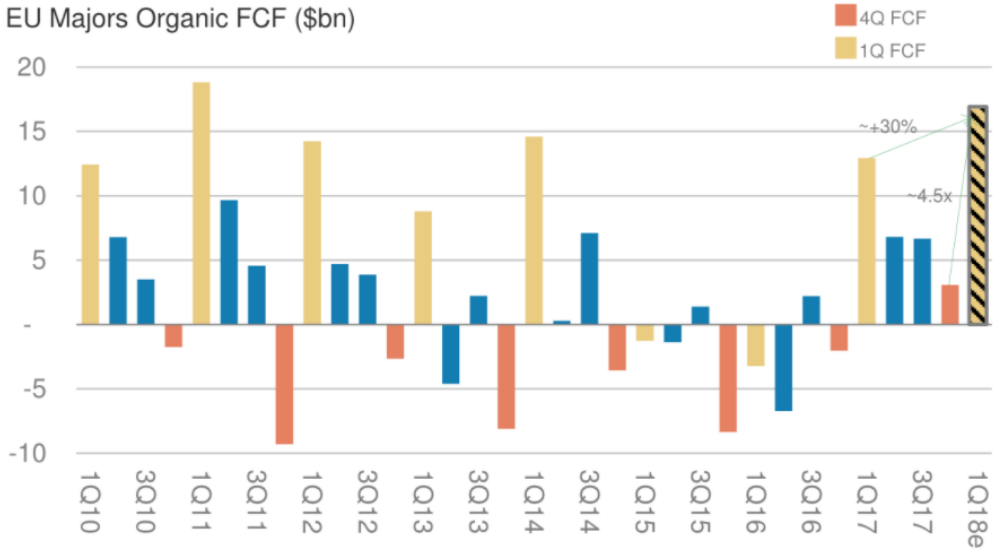
In our annual outlook for 2018, we pointed out that thanks to a modest improvement in the oil price in 2017, and better capital discipline from the companies, impressive free cash flow yields were already emerging in the energy sector. We see this as a leading indicator that returns on capital should also improve, both of which will catalyze an uplift in the price-to-book valuation that the sector currently trades on.

Guinness Atkinson Global Energy portfolio: FCF return vs P/B multiple (2000-2019)



Source: Guinness Atkinson Asset Management

So far this year, strength in spot oil prices, and continued capital spending restraint (particularly in Europe), should result in a material increase in free cashflows reported for Q1 2018, beyond what we forecasted in January. Considering the largest five European integrateds (Royal Dutch Shell, BP, Total, ENI and Statoil), for example, we expect to see aggregate free cashflow of around $17bn for Q1, which would be the highest quarterly free cash flow since the start of 2011, and better than any quarter between 2012 and 2014 when the oil price averaged over $100/bl.



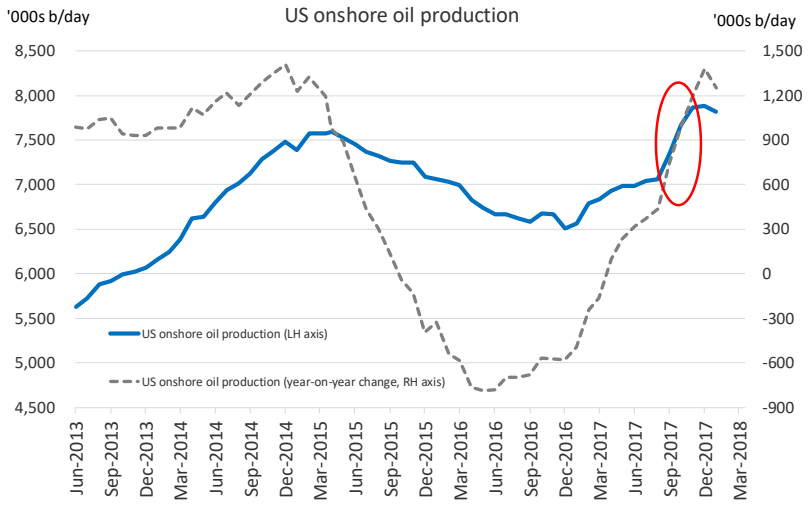
Source: Morgan Stanley

As the chart above shows, Q1 cashflows tend to be seasonally stronger (thanks to lower tax payments and a seasonal dip in capital spending), nevertheless we expect the strength of cashflows to be a positive surprise to the market.

Our current forecast for the Guinness Atkinson energy portfolio in 2018 is a FCF return (defined as cashflow from operations less CAPEX, over capital employed) of around 5%, which would be the highest since 2011. Note though that this is based on an average oil price of $55/bl. Applying the spot oil price for the remainder of 2018 would lift this FCF return to just over 7%, the highest level since 2007.

2. US onshore production

Reliable US onshore crude production is typically reported with a two to three month delay. During the first quarter, the EIA reported a significant surge in production for September to November 2017, with onshore supply rising by around 0.8m b/day over those three months. This information weighed on energy stocks in the first quarter of 2018, with questions arising over the rate of growth likely for the rest of this year and beyond.



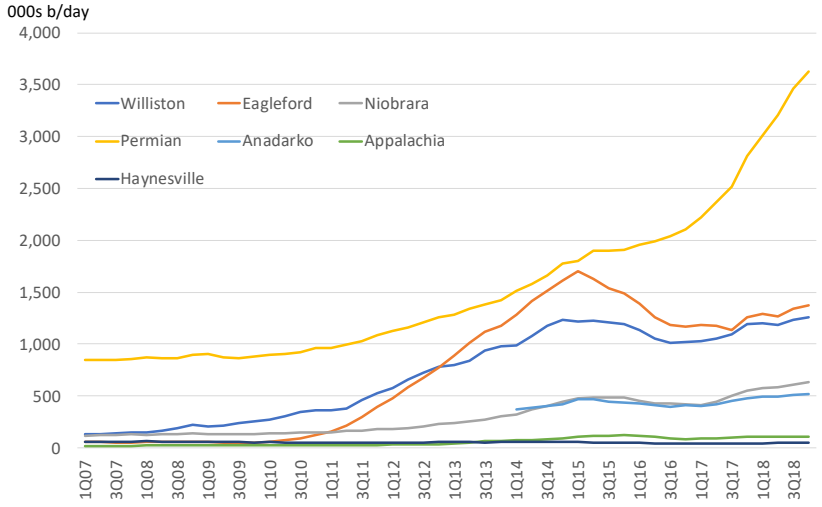
Source: EIA; Guinness Atkinson Asset Management

With the surge of new production at the end of 2017, shale oil growth in 2017 (Q4 2017 versus Q4 2016) totaled around 1.2m b/day.

Looking ahead, we observe that the improved cashflow discipline exhibited by the majors is now filtering down to the US E&P community. Historically, the E&P economic model was typically to reinvest over 100% of cashflows into capital spending. In the first quarter, E&Ps guided to a reinvestment ratio for 2018 of 92%. And importantly, a significant number of larger E&Ps either raised/initiated dividends, or expanded their share repurchase programs, suggesting that the reinvestment rate is likely to remain below 100%. We are also seeing signs of greater oilfield service inflation than was generally expected, now running in many cases at 10-15% per annum. Against this, the strength in spot oil prices so far this year leaves WTI averaging around $62/bl, versus $51/bl in 2017, which generates greater cashflow to reinvest. Pulling these factors together, and considering the guidance given by E&Ps during the first quarter, we expect to see US shale oil growth in 2018 (Q4 2018 vs Q4 2017) of around 1.1-1.2m b/day, so a similar growth rate to 2017. Importantly, despite the Q4 2017 surge in production, the forecast for 2018 production is no higher than that we assumed 9-12 months ago. We believe the US can grow well at $60/bl (>1m b/day), but effectively there has been no acceleration in recent months, only a lumpy well completions schedule.

As has been the case since 2014, the majority of growth this year will come from the Permian Basin:

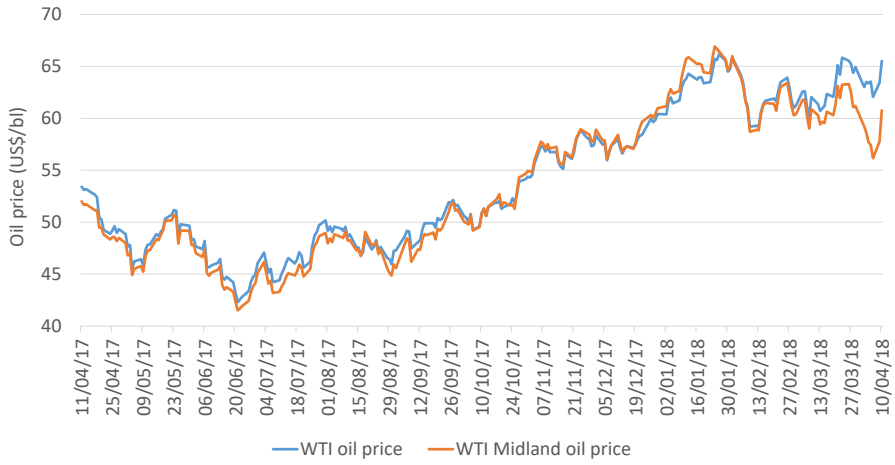
US shale oil production by basin (2007-2018e)



Source: Heikkinen Energy; Guinness Atkinson Asset Management
Forecasts are inherently limited and cannot be relied upon.

One question arising which may affect production forecasts is the takeaway capacity in the Permian. Logistical bottlenecks in the US shale oil system are nothing new: we saw major oil price dislocations in local markets in 2012-2014, for example. However, the concentration of growth in the Permian is now posing new infrastructure and refining challenges, and has, very recently, caused local (Midland) oil prices to fall up to $6/bl below the WTI spot price. In the short term, it appears that the price dislocation between the Permian and WTI has more to do with lower local refinery runs than a lack of pipelines to export the crude oil. However, it does appear that for a period later this year, stretching into the second half of 2019, Permian production will saturate the basin's pipeline takeaway capacity. This would likely result in some barrels being trucked to US refining centers, holding price differentials wider under the second half of 2019, when new oil pipes are scheduled to come online.

WTI spot oil price versus Midland (Permian) spot oil price (2017-2018)



Source: Bloomberg, Guinness Atkinson Asset Management
Forecasts are inherently limited and cannot be relied upon.

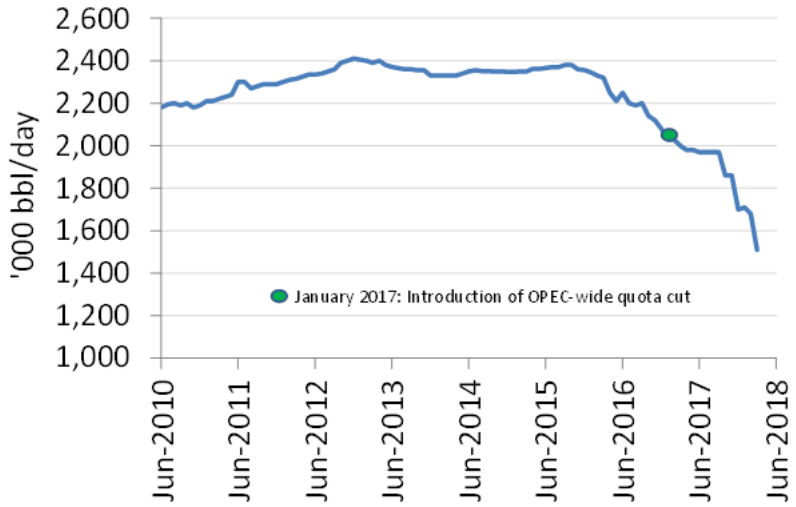
Our US shale oil production growth forecast for 2018 of 1.1-1.2m b/day does not assume any significant Permian disruption - we prefer to think conservatively and assume higher supply as a base case – but infrastructure constraints are likely to have an impact at the margin.

3. Venezuelan oil production

Since the sharp fall in the oil price in late 2014, there has been much focus on the resulting decline in upstream investment across the non-OPEC world. Within OPEC, Gulf states have been able to weather the storm successfully (at least from an upstream investment perspective, if not a fiscal one). However, it is clear that under investment is starting to have a more meaningful impact on 'tier 2' OPEC countries, none more so than Venezuela, where production has been under significant strain.

Venezuelan oil production declined in March by 0.1m b/day, falling to an average of 1.5m b/day. This means that Venezuela is producing nearly 0.5m b/day less than their January 2017 quota of 1.97m b/day, and nearly 0.9m b/day less that recent peak production in 2015.

Venezuelan oil production, 2010-2018



Source: Bloomberg; Guinness Atkinson Asset Management
Forecasts are inherently limited and cannot be relied upon.

Venezuela's national oil company, PdVSA, is struggling to pay back foreign joint venture partners, as oil revenues are increasingly diverted to support social spending programs. Deteriorating infrastructure, weak reservoir management and, according to the IEA, issues sourcing diluent to mix with domestic heavy crude oil production, have combined to lower production. These trends have been persisting for nearly a decade, but have accelerated since 2014. Towards the end of 2017, it was reported that US Gulf Coast refiner, Philips 66, had rejected over 4m barrels of Venezuelan crude due to quality issues, including a lack of basic treatments to remove water, salt, metals and other impurities. Similar issues have been reported from shipments made to China and India, resulting in large quality pricing discounts, lowering proceeds from production yet further.

Oil industry problems in the country have been compounded by a new round of sanctions imposed on the Venezuelan government by the US in 2017. The sanctions prevent US corporations from providing new debt or equity financings to the Venezuelan government or institutions under its control (i.e. including PdVSA). This has resulted in Venezuela being unable to issue new debt, and for the oil industry, has caused US-oriented institutions to back away from offering letters of credit to purchasers of PdVSA's oil.

Source: OPEC

Venezuela continues to rely on foreign oilfield services expertise, but service partners are acting increasingly cautiously due to sizeable receivables that are outstanding. According to CIBC, PdVSA had an estimated US$20bn of outstanding payables to contractors, with little prospect of a resolution.

All of these factors combine to create an exceedingly difficult outlook for Venezuelan oil production. It is thought that by the end of 2018, capacity may be down to 1.4m b/day, which would be Venezuela's lowest production level since the late 1940s. And whilst a continued steady deterioration seems most likely, a sharp drop in production thanks to a national strike, as the country experienced in 2002-03, also remains a possibility.

Venezuelan production at current levels tightens the oil market by around 0.5m b/day more than OPEC were planning, and is helping to accelerate the move to normalized oil inventories across the globe.

Conclusions

The factors discussed here – declining OPEC supply, as expected US supply growth – combined with strong global demand, have combined so far this year to continue to tighten the oil market. At the start of 2017, OECD oil inventories sat around 300m barrels (around 11%) higher than 'normal'. The inventory surplus has now been reduced to around 100m barrels, and we expect it to fall further over the rest of 2018.

Combined with capital constraint and lower operating costs, a tighter oil market is boosting profitability for energy producers, pulling free cashflow returns to their highest levels since the start of the decade. We see energy equities discounting an oil price in the mid $50s/bl, with good upside if equities were to discount $60/bl or higher in their valuations.

Performance: Guinness Atkinson Global Energy Fund (GAGEX)

The main index of oil and gas equities, the MSCI World Energy Index, was down by 5.23% in the first quarter of 2018. The S&P 500 Index was down by 0.76% over the same period. The Guinness Atkinson fund was down by 4.01% over this period (all in US dollar terms).

At the positive end of the portfolio, the stronger performing stocks tended to be the European Integrated Oils (especially Statoil, ENI and TOTAL that benefitted from improving free cash flow return profiles) plus the Emerging market producers (especially CNOOC, PetroChina and Gazprom that benefitted from the stronger demand and pricing environment). Weaker performers included Canadian large caps (including Imperial Oil, Canadian Natural Resources and Suncor that suffered from lower regional oil and product pricing during the quarter) and the gassier North American E&Ps (including Newfield Exploration and Devon Energy) which also suffered from lower product pricing.

Performance as of March 31, 2018 (inception date is June 30, 2004)

Inception Date 6/30/04	Full Year 2010	Full Year 2011	Full Year 2012	Full Year 2013	Full Year 2014	Full Year 2015	Full Year 2016	Full Year 2017
Global Energy Fund	16.63%	-13.16%	3.45%	24.58%	-19.62%	-26.99%	27.04%	-1.06%
MSCI World Energy Index	12.73%	0.71%	2.54%	18.98%	-10.93%	-22.02%	26.96%	5.93%
S&P 500 Index	15.06%	2.09%	15.99%	32.36%	13.66%	1.38%	11.76%	21.82%

Inception Date 6/30/04	YTD 2018	1 Year	5 Years	Since Inception
Global Energy Fund	-4.01%	2.84%	-3.46%	6.38%
MSCI World Energy Index	-5.21%	5.45%	0.04%	6.22%
S&P 500 Index	-0.76%	13.98%	13.28%	8.57%

Source: Bloomberg
Expense ratio: 1.53% (gross) 1.45% (net)
All returns over one year are annualized.

Performance data quoted represent past performance and 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. For most recent month-end and quarter-end performance, visit https://www.gafunds.com/our-funds/#fund_performance or call (800) 915-6566.

Portfolio: Guinness Atkinson Global Energy Fund (GAGEX)

The portfolio was actively rebalanced during the quarter but there were no stock switches

Sector Breakdown

The following table shows the asset allocation of the Fund at **March 31, 2018**.

(%)	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015	31 Dec 2016	31 Dec 2017	31 Mar 2018	*Change YTD*
Oil & Gas	**93.2**	**98.5**	**98.6**	**95.6**	**95.3**	**94.4**	**97.9**	**97.7**	**96.7**	***-0.2***
Integrated	41.2	39.6	39.1	39.6	37.5	40.5	45.8	41.8	43.4	*-4.0*
Exploration and production	36.9	41.5	41.6	36.8	38.1	37.0	37.3	38.0	36.9	*0.7*
Drilling	6.3	6.0	7.4	6.8	3.1	1.7	2.3	1.8	1.5	*-0.5*
Equipment and services	5.3	6.6	7.1	9.0	13.1	11.1	8.9	9.2	8.2	*0.3*
Storage & transportation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.1	*3.4*
Refining and marketing	3.5	4.8	3.4	3.4	3.5	4.1	3.6	3.5	3.6	*-0.1*
Coal and consumables	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solar	**3.2**	**1.2**	**1.2**	**2.8**	**3.5**	**4.9**	**1.0**	**2.1**	**2.2**	**1.1**
Construction and engineering	**0.4**	**0.4**	**0.6**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cash	**3.2**	**-0.1**	**-0.4**	**0.7**	**1.2**	**0.7**	**1.1**	**0.2**	**1.1**	**-0.9**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**0.0**

Source: Guinness Atkinson Asset Management
Basis: Global Industry Classification Standard (GICS)
Holdings are subject to change at any time

Guinness Atkinson Global Energy Fund Portfolio

Based on the information shown previously, the table below shows the fund valuation in terms of historical and forward (analyst consensus estimates from Bloomberg) price/earnings (P/E) ratios versus the S&P500 Index.

	2011	2012	2013	2014	2015	2016	2017	2018E
Fund P/E	7.5	7.8	8.4	9.2	20.9	37.0	22.7	15.6
S&P 500 P/E	27.4	27.3	24.6	22.8	26.3	24.9	21.3	16.9
Premium (+) / Discount (-)	-73%	-71%	-66%	-60%	-21%	49%	7%	-8%
Average oil price (WTI $)	$95/bbl	$94/bbl	$98/bbl	$93/bbl	$48/bbl	$43/bbl	$51/bbl	$55/bbl

Source: Standard and Poor's; Guinness Atkinson Asset Management Ltd

Forecasts are inherently limited and cannot be relied upon. Holdings are subject to change.

Portfolio Holdings

Our integrated and similar stock exposure (c.30%) is comprised of a mix of mid cap, mid/large cap and large cap stocks. Our four large caps are Chevron, BP, Royal Dutch Shell and Total. Mid/large and mid-caps are ENI, Statoil, Hess and OMV. On March 31, 2018 the median P/E ratios of this group were 17.5x/14.9x 2017/2018 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.29%) 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 (Newfield, Devon, Oasis and QEP Resources), with four other names (Apache, Occidental, ConocoPhillips, Noble) having a mix of US and international production and one (Tullow) which is African focused. One of the key metrics behind a number of the E&P stocks held is low enterprise value / proven reserves. Almost all of the US E&P stocks held also provide exposure to North American natural gas.

We have exposure to four (pure) emerging market stocks in the main portfolio, though one is a half-position, and in total represent 12% of the portfolio. Two are classified as integrateds (Gazprom and PetroChina) and two as E&P companies (CNOOC and SOCO International). Gazprom is the Russian national oil and gas company which produces approximately a quarter of the European Union gas demand and trades on 4.3x 2017 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. SOCO International is an E&P company with production in Vietnam.

The portfolio contains one midstream holding, Enbridge, North America's largest pipeline company. With the growth of onshore oil and gas production 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 useful exposure to oil service stocks, which comprise around 9.6% of the portfolio. The stocks we own are split between those which focus their activities in North America (land driller Unit Corp) and those which operate in the US and internationally (Helix, Halliburton 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 the rise in US exports of refined products seen in recent times.

Our alternative energy exposure is currently split between two companies: JA Solar and Sunpower. JA Solar is a Chinese solar cell and module manufacturer whilst Sunpower is a more diversified US solar developer. We see them as well placed to benefit from the expansion in the solar market we expect to continue for a number of years.

Portfolio as of March 31, 2018

Guinness Atkinson Global Energy Fund 30 March 2018					2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Stock	ID_ISIN	Curr.	Country	% of NAV	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER	B'berg mean PER
Integrated Oil & Gas														
Chevron	US1667641005	USD	US	3.61	12.2	8.5	9.3	10.3	11.9	31.3	82.2	27.5	18.4	18.1
Royal Dutch Shell PLC	GB00B03MLX29	EUR	NL	3.67	10.3	7.6	7.5	10.0	8.8	18.6	30.7	16.6	13.3	12.4
BP PLC	GB0007980591	GBP	GB	3.80	6.0	6.0	7.4	9.2	10.9	19.3	36.9	22.0	14.9	14.2
Total SA	FR0000120271	EUR	FR	3.91	10.1	9.0	8.6	9.6	9.8	12.5	14.8	13.8	11.9	11.6
ENI SpA	IT0003132476	EUR	IT	3.69	7.6	7.3	7.1	11.4	13.3	62.0	nm	25.0	15.8	15.4
Statoil ASA	NO0010096985	NOK	NO	3.65	10.2	8.9	7.9	9.7	13.6	33.0	167.4	17.5	15.7	15.0
Hess Corp	US42809H1077	USD	US	3.88	9.8	8.4	8.6	8.8	12.1	nm	nm	nm	nm	nm
OMV AG	AT0000743059	EUR	AT	3.56	11.9	14.9	10.4	12.8	15.7	14.1	14.4	9.7	9.8	10.2
				29.77										
Integrated Oil & Gas - Canada														
Suncor Energy Inc	CA8672241079	CAD	CA	3.63	28.1	12.5	13.8	13.9	13.9	39.5	nm	23.8	18.1	18.0
Canadian Natural Resources Ltd	CA1363851017	CAD	CA	3.45	16.7	17.5	25.5	18.0	11.8	291.4	nm	34.5	16.7	18.0
Imperial Oil	CA4530384086	CAD	CA	3.14	14.9	9.3	8.2	10.6	8.9	19.2	56.7	26.7	18.7	18.2
				10.23										
Integrated Oil & Gas - Emerging market														
PetroChina Co Ltd	CNE1000003W8	HKD	HK	3.45	5.9	5.8	6.7	7.4	7.4	22.8	89.3	34.7	14.4	12.9
Gazprom OAO	US3682872078	USD	RU	3.85	4.0	2.7	2.8	2.6	4.1	2.9	3.8	4.3	3.9	4.0
				7.31										
Oil & Gas E&P														
Apache Corp	US0374111054	USD	US	3.29	4.1	3.2	4.0	4.7	6.9	nm	nm	363.0	29.4	31.9
Occidental Petroleum Corp	US6745991058	USD	US	3.41	11.5	7.8	9.4	9.4	11.2	391.3	nm	72.3	23.7	23.2
ConocoPhillips	US20825C1045	USD	US	3.76	10.0	7.0	10.4	10.6	11.2	nm	nm	95.2	21.8	20.7
QEP Resources Inc	US74733V1008	USD	US	1.74	7.1	6.0	7.9	7.0	7.0	nm	nm	nm	nm	nm
Devon Energy Corp	US25179M1036	USD	US	2.94	5.4	5.3	9.8	7.5	6.2	12.9	nm	17.3	24.6	15.2
Noble Energy Inc	US6550441058	USD	US	3.97	14.6	11.5	13.2	9.8	13.0	531.6	nm	1,893.8	38.9	26.1
Newfield Exploration Co	US6512901082	USD	US	2.95	5.3	6.0	10.1	13.6	13.2	33.7	22.7	11.4	7.8	6.5
Oasis Petroleum Inc	US6742151086	USD	US	1.66	67.8	13.8	7.7	4.1	4.7	14.3	nm	nm	45.4	23.2
				23.73										
International E&P														
CNOOC Ltd	HK0883013259	HKD	HK	3.58	8.0	6.1	6.5	6.6	7.9	23.6	nm	13.7	9.3	9.1
Tullow Oil PLC	GB0001500809	GBP	GB	1.80	20.7	4.7	4.2	31.8	nm	nm	nm	14.4	13.3	13.8
Soco International PLC	GB00B572ZV91	GBP	GB	1.13	10.4	6.7	1.9	2.0	3.0	nm	nm	nm	27.5	25.8
				6.51										
Midstream														
Enbridge Inc	CA29250N1050	USD	CA	3.11	42.2	38.0	35.0	32.3	29.6	26.7	24.8	30.0	24.5	22.7
				3.11										
Drilling														
Unit Corp	US9092181091	USD	US	1.54	6.5	4.8	4.8	5.4	4.6	nm	nm	37.2	17.2	13.8
				1.54										
Equipment & Services														
Halliburton Co	US4062161017	USD	US	3.32	23.3	14.0	15.8	15.1	11.9	31.8	nm	40.4	18.8	13.6
Helix Energy Solutions Group Inc	US42330P1075	USD	US	1.50	11.0	3.9	3.1	5.4	3.0	34.3	nm	nm	46.3	21.9
Schlumberger	AN8068571086	USD	US	3.26	23.5	17.9	15.5	13.6	11.7	19.3	56.1	44.3	30.2	20.5
				8.09										
Solar														
JA Solar Holdings Co Ltd	US4660902069	USD	US	1.46	0.9	nm	nm	nm	7.1	3.6	8.3	11.1	12.4	10.3
SunPower Corp	US8676524064	USD	US	0.71	5.5	97.3	53.2	5.7	6.1	4.1	nm	nm	nm	49.3
				2.17										
Oil & Gas Refining & Marketing														
Valero Energy Corp	US91913Y1001	USD	US	3.65	58.5	23.3	19.0	22.6	15.2	10.6	25.2	19.0	13.0	11.4
				3.65										
Research portfolio														
Cluff Natural Resources PLC	GB00B6SYKF01	GBP	GB	0.40	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
EnQuest PLC	GB00B635TG28	GBP	GB	0.70	4.7	5.3	1.6	1.8	3.3	31.5	2.1	nm	5.9	3.4
JKX Oil & Gas PLC	GB0004697420	GBP	GB	0.63	0.7	0.9	1.2	2.3	6.3	nm	nm	nm	31.4	nm
Ophir Energy PLC	GB00B24CT194	GBP	GB	0.12	nm	nm	nm	nm	1.3	nm	nm	nm	nm	31.4
Reabold Resources PLC	GB00B95L0551	GBP	GB	0.32	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm
Shandong Molong Petroleum Machinery Co	CNE1000001N1	HKD	HK	0.10	2.2	3.1	nm	nm	nm	nm	nm	nm	nm	nm
Sino Gas & Energy Holdings Ltd	AU000000SEH2	AUD	AU	0.47	nm	nm	116.0	nm	116.0	nm	nm	nm	nm	16.6
				2.74										
			Cash	1.15										
			Total	100										
			PER		7.9	7.3	7.5	8.3	9.1	19.9	34.4	22.3	15.6	14.1
			Med. PER		10.1	7.5	8.4	9.6	9.8	23.2	25.2	24.4	17.2	15.4
			Ex-gas PER		8.3	7.8	7.7	8.7	9.5	19.1	31.5	21.6	15.1	14.0

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Holdings are subject to change.

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.

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The 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's holdings, industry sector weightings and geographic weightings may change at any time due to ongoing portfolio management. References to specific investments and weightings should not be construed as a recommendation by the Fund or Guinness Atkinson Asset Management, Inc. to buy or sell the securities. Current and future portfolio holdings are subject to risk.

Mutual fund investing involves risk and loss of principal is possible. The Fund invests in foreign securities which will involve greater volatility, political, economic and currency risks and differences in accounting methods. The Fund is non-diversified meaning it concentrates its assets in fewer individual holdings than a diversified fund. Therefore, the Fund is more exposed to individual stock volatility than a diversified fund. The Fund also invests in smaller companies, which involve additional risks such as limited liquidity and greater volatility. 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. The decline in the prices of energy (oil, gas, electricity) or alternative energy supplies would likely have a negative effect on the fund's holdings.

MSCI World Energy Index is the energy sector of the MSCI World Index (an unmanaged index composed of more than 1400 stocks listed in the US, Europe, Canada, Australia, New Zealand, and the Far East) and as such can be used as a broad measurement of the performance of energy stocks.

MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets.

The S&P 500 Index is a broad based unmanaged index of 500 stocks, which is widely recognized as representative of the equity market in general.

One cannot invest directly in an index.

The Henry Hub pipeline is the pricing point for natural gas futures on the New York Mercantile Exchange.

Price to earnings (P/E) ratio (PER) reflects the multiple of earnings at which a stock sells and is calculated by dividing current price of the stock by the company's trailing 12 months' earnings per share

The New York Mercantile Exchange is the world's largest physical commodity futures exchange.

Enterprise Value, or EV for short, is a measure of a company's total value, often used as a more comprehensive alternative to equity market capitalization

Standard Deviation (SD) is applied to the annual rate of return of an investment to measure the investment's volatility. Standard deviation is also known as historical volatility and is used by investors as a gauge for the amount of expected volatility.

Debt/EBITDA is a measure of a company's ability to pay off its incurred debt. This ratio gives the investor the approximate amount of time that would be needed to pay off all debt, ignoring the factors of interest, taxes, depreciation and amortization.

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

Top 10 Holdings as of 3/31/2018:

1.	Noble Energy Inc.	4.02%
2.	TOTAL SA	3.96%
3.	Hess Corp	3.93%
4.	Gazprom OAO – ADR	3.90%
5.	BP PLC	3.85%
6.	ConocoPhillips	3.81%
7.	Eni SpA	3.74%
8.	Royal Dutch Shell PLC – A Shares	3.72%
9.	Statoil ASA	3.70%
10.	Valero Energy Corp	3.70%

Fund Holdings are subject to change.

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