GUINNESS ATKINSON FUNDS

Energy Brief
October 2017

REPORT HIGHLIGHTS

FUND NEWS • Fund size $35.7 million as of September 30, 2017

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 at $46.0/bl, reached a high on September 25 of $52.2/bl and then retraced slightly to close September 30 at $51.7/bl. The Brent spot price behaved in a similar fashion, rising from $48.2/bl to $56.5/bl over the quarter. Global oil demand growth was revised higher (now 1.6mn b/d for 2017 and forecast to reach 100mn b/d in Q3 2018) while there were signs of lower US oil production growth potential (June and July US onshore production growth much lower than forecast) and there was increased confidence in OPEC's action, with exports falling and compliance looking robust.

NATURAL GAS

US gas price holds around $3 as the structurally undersupplied market starts to normalize

The US natural gas price traded in a tight range around $3/mcf as US onshore natural gas production grew, but the market remained around 2-3 Bcf/day undersupplied.

EQUITIES

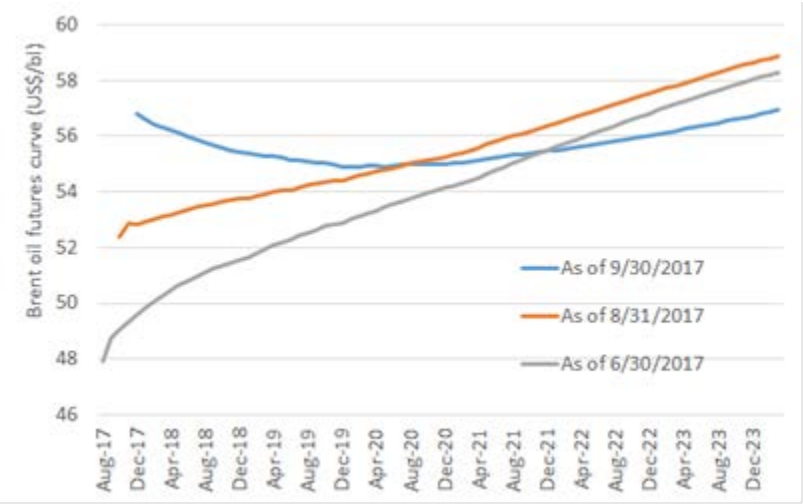
Energy outperforms the broad market

The main index of oil and gas equities, the MSCI World Energy Index, was up by 9.3% in the third quarter of 2017. The S&P 500 Index was up by 4.5% over the same period. The Guinness Atkinson fund was up by 10.2% over this period (all in US dollar terms).

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.

CHART OF THE QUARTER – Brent oil forward curve moves into backwardation

Brent crude oil prices were up 20.1% over the quarter but, more importantly, the Brent oil forward curve also moved from contango into backwardation late in the quarter. We view the structure of the forward curve as being just as important as the level of spot oil price and note that this is the first time since August 2014 that the Brent oil forward curve has been in backwardation. The backwardated curve (front month price being higher than 12 month forward price) indicates tight near term supply and demand fundamentals in the Brent oil market

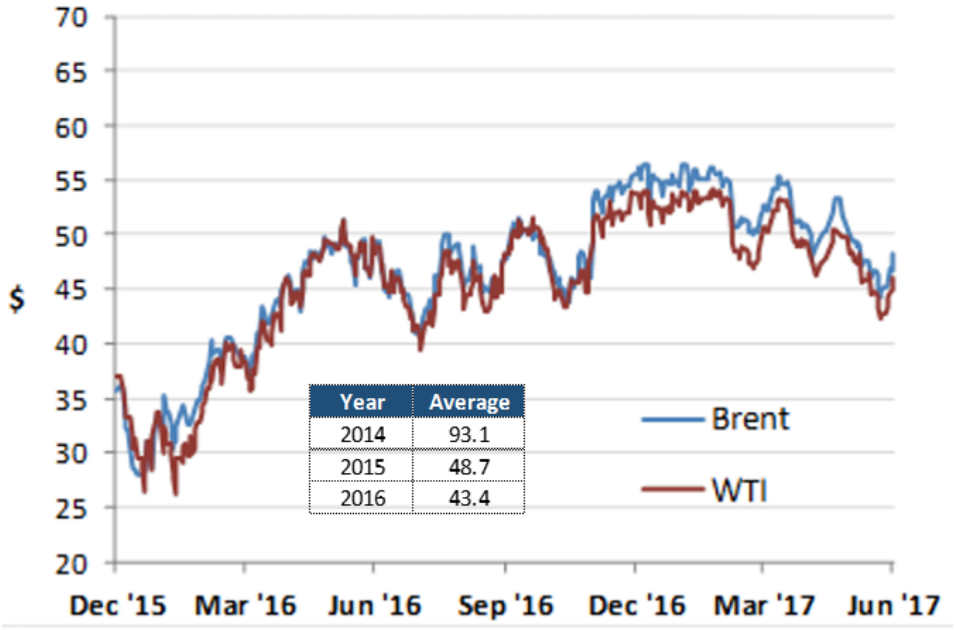


Source: Bloomberg

1. Third quarter 2017 in review

i) Oil market

Figure 1: Oil price (West Texas Intermediate (WTI) and Brent $/barrel) 18 months March 31 2016 to September 30 2017



Source: Bloomberg LP

The West Texas Intermediate (WTI) oil price started July at $46.0/bl and strengthened steadily over the quarter to close its highs at $51.7/bl. WTI has averaged $49.4/bl so far in 2017, having averaged $43.4 in 2016, $48.7 in 2015 and $93.1 in 2014.

Brent oil traded more strongly, opening July at $48.2/bl, trading higher all quarter until reaching just over $59/bl on 25th September and then closing the month slightly lower at $57.5/bl. Brent has averaged $52.6/bl so far in 2017. The gap between the WTI and Brent benchmark oil prices continued to remain wide during the month as a result of Tropical Harvey, ending September at just under $6/bl, compared to the pre-Harvey level of around $2/bl seen prior in the year.

Factors which Strengthened WTI oil prices in the quarter:

- **Continued strong oil demand growth in 2017 and robust expectations of further growth** IEA expectations of 2017 world oil demand have increased from 1.3mn b/d at the start of 2017 to 1.6mn b/d

in the most recent IEA Oil Monthly report. The increase in demand is split 0.4mn b/d from OECD countries and 1.2mn b/d for non-OECD countries, indicating continued strong demand trends for both regions.

- **Weaker than expected US onshore production growth and E&P production efficiencies** At the start of October, the EIA reported that US onshore oil production grew by 52k b/day during July 2017 having

  grown by only 5k b/day in June, bringing year over year growth for the US onshore system to 370k b/d. Both monthly data points have been lower than expectation. We expect the US onshore production in 2017 to average around 300,000-400,000 b/day higher than 2016.

- **Sustained high levels of OPEC compliance and hopes that current quotas could be extended** As of the end of August, we recorded compliance from OPEC (ex Libya and Nigeria) with its stated production quotas of around 85%. While production compliance has slipped somewhat in recent months, tanker tracking data indicated that exports from OPEC countries (and Saudi Arabia especially) continued to fall and indications are that Q4 export loadings will continue to remain suppressed.

- **Sustained reduction in global and US oil and oil product inventories** US oil and product inventories fell by 19.1m barrels over the four weeks reported in September, which compares to a 5-year average decline of 1.6m barrels. This implies that inventories tightened by around 0.6m b/day versus norms, a useful step towards normalizing inventories. OECD oil and product inventories for August (reported in September) were flat on the levels reported for both June and July versus typical seasonal builds of around 19mn and 15mn barrels in those months.

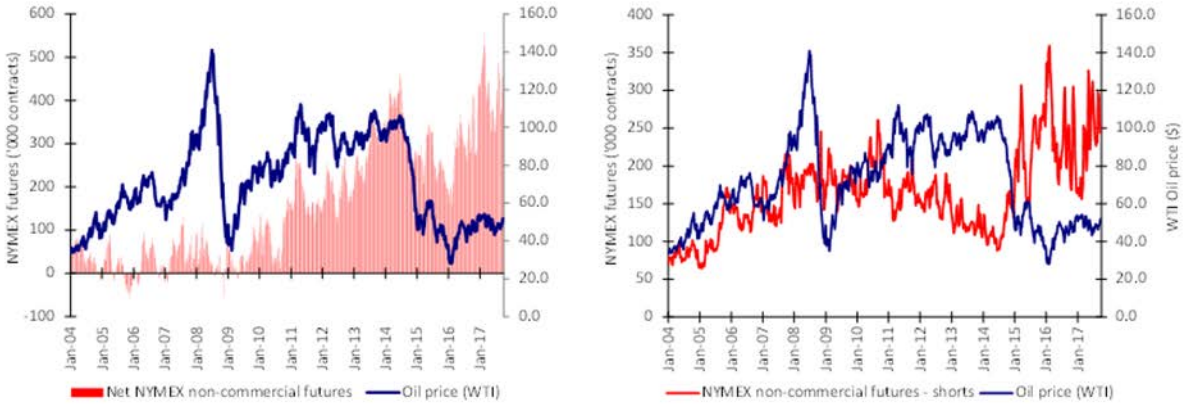
Factors which weakened WTI and Brent oil prices in the quarter:

- **Technical pull back at the end of September** On September 25th, a positive technical indicator occurred in the Brent crude oil markets. The 50 day moving average of Brent crude oil prices rose through the 200 day moving average of Brent crude oil prices, leading to technical buying and causing Brent oil to be up 12.7% on a month to date basis. This pricing reversed sharply at the end of the month.

Speculative and investment flows

The New York Mercantile Exchange (NYMEX) net non-commercial crude oil futures open position (WTI) shrunk in the quarter, ending September at 454,000 contracts long versus 327,000 contracts long at the end of June. Typically there is a positive correlation between the movement in net position and movement in the oil price. The gross short position shrunk from 312,000 contracts to 244,000 contracts.

Figure 2: NYMEX (New York Mercantile Exchange) Non-commercial net and short futures contracts: WTI January 2004 – September 2017



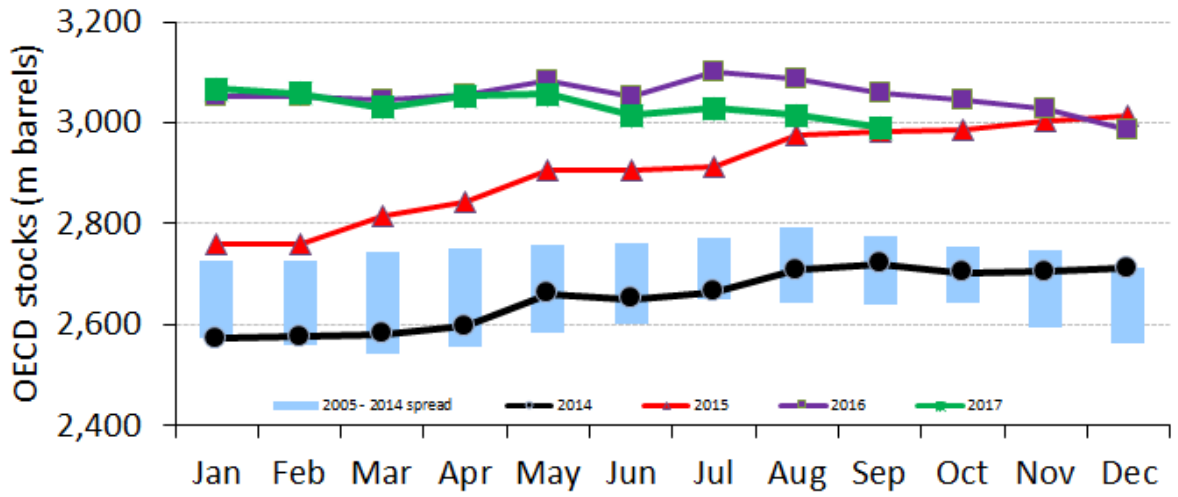
Source: Bloomberg LP/NYMEX/ICE (2017)

OECD (Organization for Economic Co-operation and Development) stocks

OECD total product and crude inventories at the end of August (the latest data point available) were estimated by the IEA to be 3,016m barrels, down by 42m barrels versus the end of May. Having been in decline over the second

half of 2016, inventories loosened at the start of 2017, as a flush of pre-OPEC cut production reached the market, but are now tightening again, albeit slowly. Inventories are still considerably above the top of the 10 year historic range, and we expect them to continue to tighten over the next few months.

Figure 3: OECD total product and crude inventories, monthly, 2004 to 2017



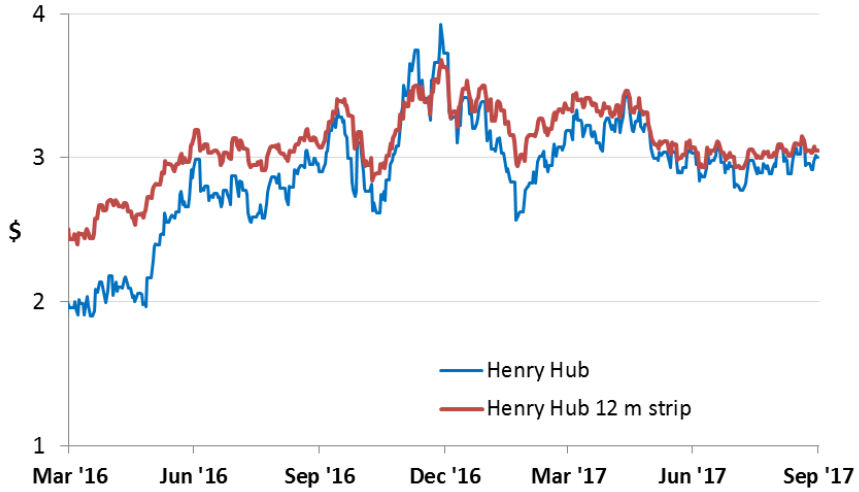
Source: IEA Oil Market Reports (September 2017 and older)

ii) Natural gas market

The US natural gas price (Henry Hub front month) opened the quarter at $3.04/mcf (1,000 cubic feet). The price stayed very much range bound during the month, closing at $3.01/mcf. The spot gas price has averaged $3.00/mcf so far 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 month, opening at $2.93/mcf and closing at $3.05/mcf. The strip price averaged $2.84 in 2016, having averaged $2.86 in 2015, $4.18 in 2014 and $3.92 in 2013.

Figure 4: Henry Hub Gas spot price and 12m strip ($/Mcf) March 31 2017 to September 30 2017

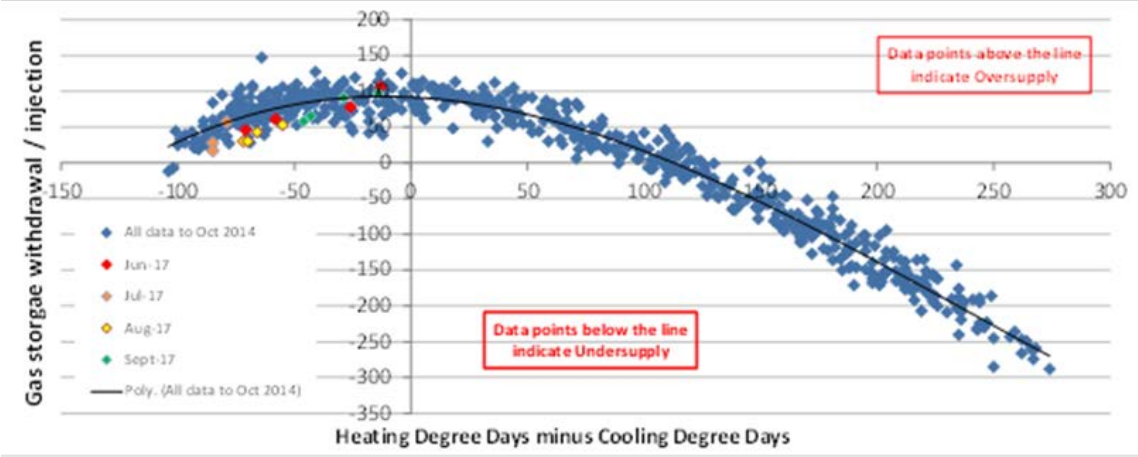


Source: Bloomberg LP

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

- **Impact of Tropical Storm Harvey** We believe Tropical Storm Harvey caused around 1.6 Bcf/day of natural gas production to be shut-in, representing about 2% of US gas supply. Around half of this was offshore Gulf of Mexico production (c.26% of GoM's 3.2 Bcf/day) and half onshore Eagleford production. The impact of Harvey on the US gas market has been far less than Hurricane Katrina caused in 2005. At that time, the Gulf of Mexico produced over 10 bcf/day of gas, versus 3 bcf/day (normally) at present.

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



Source: Bloomberg LP; Guinness Atkinson Asset Management

- **Structurally undersupplied market** Adjusting for the impact of weather in September, the most recent injections of gas into storage suggest the market is, on average, around 1 bcf/day undersupplied (as indicated by the green dots on the graph below). The average level of undersupply has been 2-3 bcf/day over the quarter

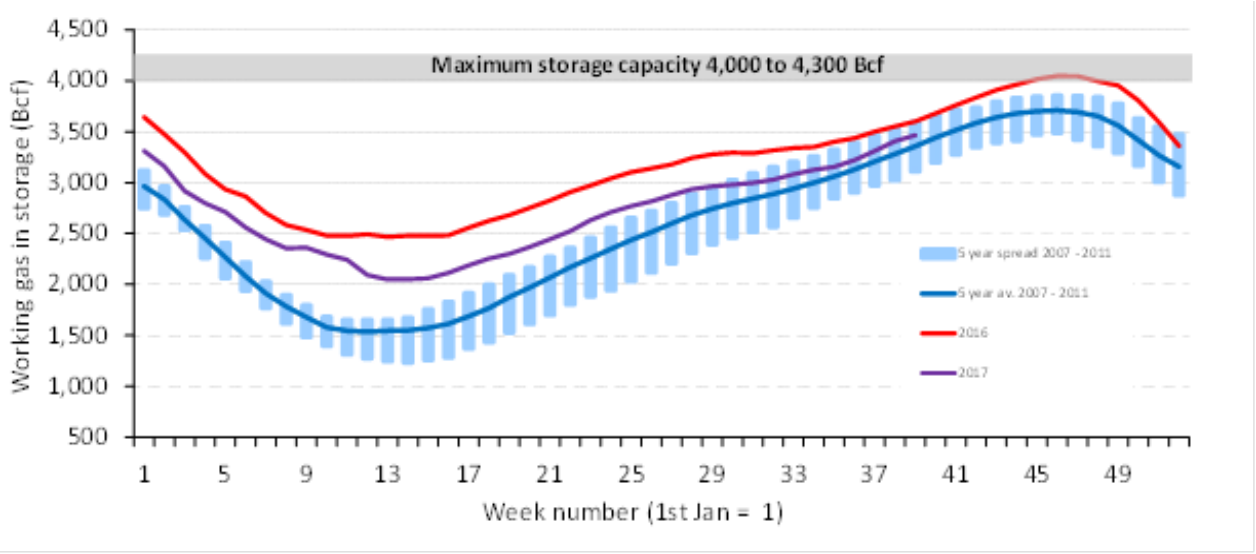
Factors which weakened the US gas price in the quarter included:

- **Stronger US onshore natural gas production** Onshore US natural gas production averaged 79.1 bcf/day in July 2017 (the latest available data point), up by 2.4 bcf/day on the level reported for April 2017. We expect US onshore natural gas production to continue to grow in the second half of 2017, supported by rising associated gas supply from shale oil, and the increase in the natural gas rig count seen over the last 12 months.

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 supply/demand the end of August were reported by the EIA to be 3,466 bcf. The 78 bcf average weekly injection in inventories during September was broadly in line with the ten-year average weekly rate of 74 bcf, meaning that inventories maintained their level relative to long run averages.

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



Source: Bloomberg; EIA (September 2017)

2. MANAGER'S COMMENTS

We are publishing two individual pieces within our Managers Comments this quarter. We include a long term outlook for the impact of Electric Vehicles on the energy sector and a general energy sector update and review of the third quarter.

The legacy of US Patent 132: how will electric vehicles impact future global oil demand?

On February 25th 1837, the US Patent Office issued Patent number 132. The patent application had been made by a Vermont blacksmith named Thomas Davenport, and was titled "Improvement in Propelling Machinery by Magnetism and Electro-Magnetism". Davenport hoped to see his invention power electric motor street cars. In reality, the batteries he built were large and unreliable, and Devonport died, bankrupt, in 1851. However, his legacy lives on to this day, with the brush-and-commutator design that Davenport invented still appearing in electric motors.

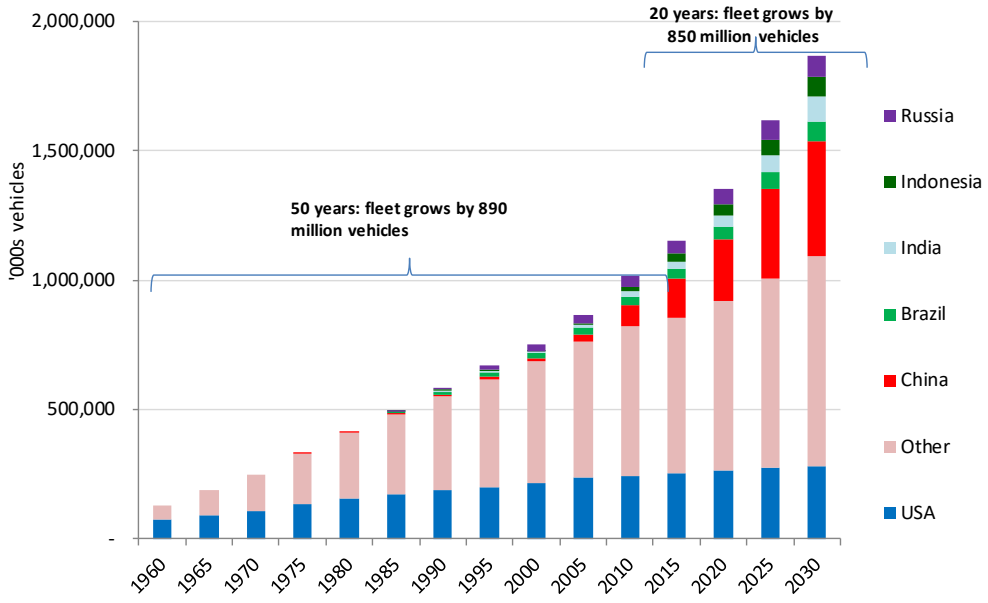
One hundred and eighty years on from the issuing of US Patent 132, and Davenport's dream is becoming a reality. Electric vehicles are moving into the mainstream, with Tesla recently delivering the keys to the first owner of the more 'affordable' Model 3; Volvo announcing a switch to manufacturing electric and electric hybrid vehicles only by 2019, and the UK and French governments recently announcing bans on the sales of pure combustion engine cars by 2040. Given, it looks likely that an increasing proportion of passenger vehicles will be fully or partly electric, these headlines raise questions around the future trajectory for oil demand growth. Here, we explore the impact of EVs on oil, considering the overall size of vehicle fleet, pace of adoption, and importance in the context of other sources of oil demand.

World vehicle fleet – rapid expansion over the next 20 years

The adoption of the motor car in developed markets took off in the 1960s, with passenger cars becoming affordable for the middle classes. Over the next fifty years, the world light vehicle fleet grew by 890m vehicles, to just over 1bn units in 2010.

We are now in an era where the absolute growth rate for light vehicles is expanding much more rapidly. Global car sales in 2016 grew by 5.6% to 76.7m units, almost 50% higher than the annual average sales rate in the 2000s (c.52m units), and nearly double the annual average sales rate of the 1990s (c.39m units). Unsurprisingly, the growth mainly comes from emerging markets. China is currently selling over 25m passenger vehicles each year, while India still only has around 30m cars, but is developing a sophisticated highway system, capable of supporting far more.

World vehicle population (1960-2030e)



Forecasts are inherently limited and cannot be relied upon

This sets up the likelihood the global vehicle fleet grows by as much over 20 years, from 2010 to 2030, as it did in the previous 50 years.

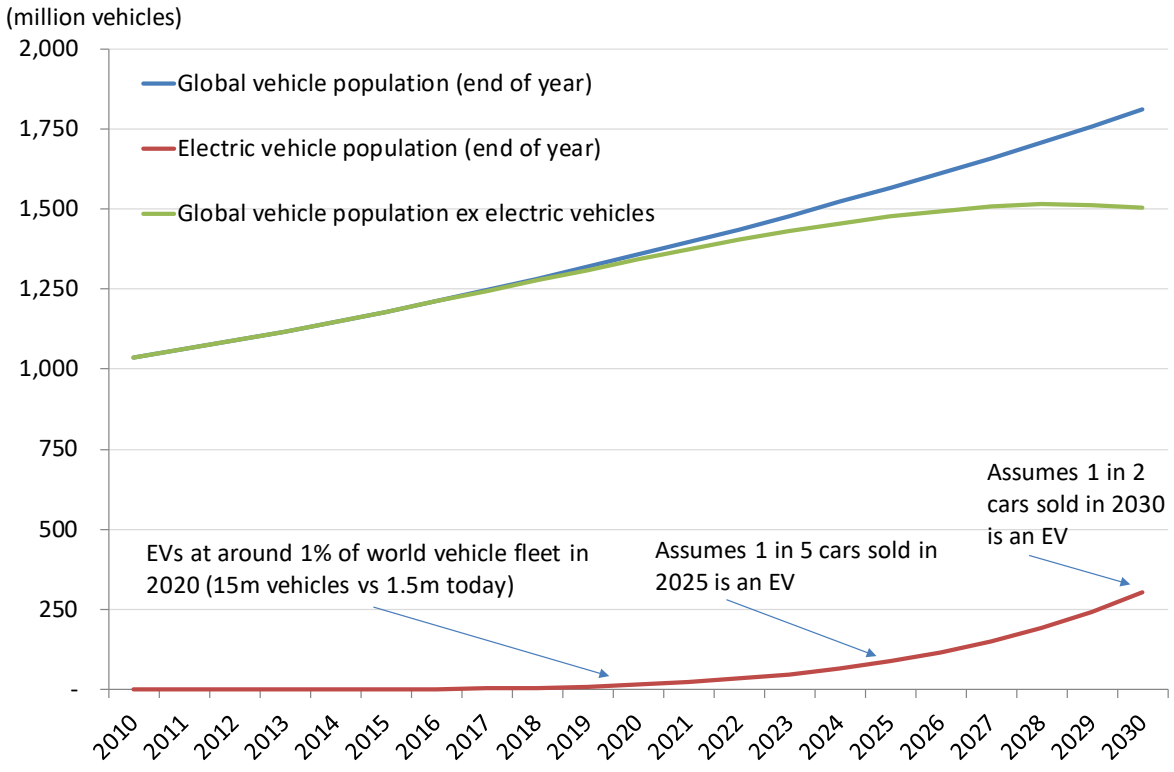
Electric vehicles – pace of adoption

The history of forecasting the penetration of new technologies is one strewn with bias and misjudgement. We are still at an early stage in terms of the path of EV sales and, acknowledging its limitations, we present a single scenario below which is towards the more aggressive end of current forecasts in the market.

The world vehicle population today is around 1.2bn units. As outlined above, we expect this to grow on average by 2.9% per year between now and 2030, just below the 3% growth rate recorded between 1990 and 2015.

We model that sales of EVs (the term 'EV' refers to pure battery EVs and plug-in hybrid EVs) grow from 0.8m units in 2016 (representing 0.9% of total vehicle sales) to 5.5m units in 2020 (5.3% of total vehicles sales). By 2025, we assume that 20% of total vehicles sales are EV, rising to 50% of sales in 2030. To put this scenario into context, Bloomberg New Energy Finance published a study earlier this month that includes an "aggressive" EV sales adoption scenario, with EV sales reaching 30% of sales by 2030, and our figure of 50% not until 2040.

World vehicle population: growth of EVs vs non-EVs (2010-2030e)



Source: IHS; Guinness Atkinson estimates

Forecasts are inherently limited and cannot be relied upon

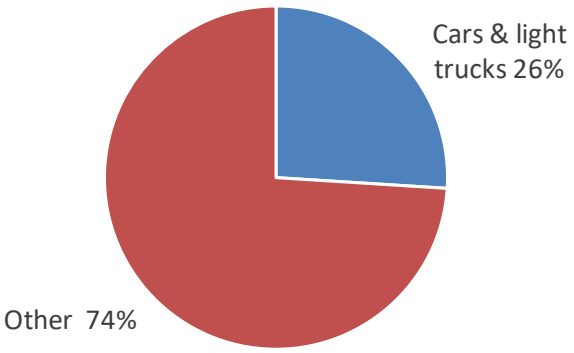
The results of this modeling are striking. Despite the rapid adoption of EVs that is assumed, the offsetting impact of global vehicle population growth might create the result that the global population of internal combustion engine (ICE) vehicles does not peak for another 10 years. After the peak of 1.5bn in 2028, the population of ICE vehicles could move into relatively shallow decline, returning to the number of ICE vehicles that we see in the world today (1.2bn) in around 2036.

As EV adoption progresses over the next 10 or 15 years, we believe that the fuel efficiency of the ICE portion of the market will improve, which will put further pressure on oil demand growth from the fleet. On the other hand, around 50% of EVs are being sold as hybrids (a figure that likely declines over time)(Source: Guinness Atkinson), which will still generate significant gasoline and diesel demand. Taken together, we believe a growing fleet, improving fuel efficiency and EV penetration points to oil demand from cars and light vehicles peaking in the mid to late 2020s.

How important is oil demand from light vehicles in the context of total oil demand?

Given how visible it is in everyday life, there is a danger of overemphasizing the importance of oil demand that is generated by passenger vehicle use versus other sources of demand. The reality is that cars and light trucks account for around 26% of global oil usage, with other sources of transportation (heavy vehicles, air, shipping and rail) accounting for around 31% of demand, and petrochemicals, other industry and power account making up most of the rest. Electrification of heavier road vehicles will come eventually, but is some way behind, mainly due to range issues.

Structure of global oil demand



Source of demand	%
Power	6%
Petrochemicals	13%
Other industry	11%
Cars & light trucks	26%
Heavy vehicles	18%
Air travel	6%
Shipping	6%
Rail	1%
Other	13%
Total	**100%**

Source: BP; Bernstein; Guinness Atkinson Funds

Therefore, assessing the direction of oil demand growth over the next decade or two also requires consideration of how other uses of oil are likely to evolve. Between 2015 and 2030, real GDP is expected to grow by 75% from $69trn to around $120trn (World Bank). Behind this, there will be a very significant increase in the number of trucks, air passenger miles, ethylene production and seaborne trade:

- **Global truck fleet** rising from 377m in 2015 to 600m in 2030
- **Air revenue passenger kms** rising from 9trn in 2015 to 15trn in 2030
- **Seaborne trade** rising from 54trn ton miles in 2015 to 90trn ton miles in 2030
- **Ethylene demand** rising from 141m tons to 235m tons in 2030

Source: IHS; IATA; IMF; Bernstein; Guinness Atkinson estimates
Forecasts are inherently limited and cannot be relied upon

In isolation, these impacts could put enormous upward pressure on oil demand, implying average growth of around 2m b/day each year between now and 2030. However, once we factor in improving efficiency of the light vehicle fleet, efficiencies for other types of vehicle and in other industries, plus the penetration of EVs, the net effect is persistent but slowing demand growth into 2030. And when will oil demand then peak? The most likely scenario would be sometime around the mid 2030s, reaching a peak of around 115m b/day about 15-20 years from now. This would imply average demand growth of 1m b/day between now and the peak: higher than that in the near years and tailing off in later years.

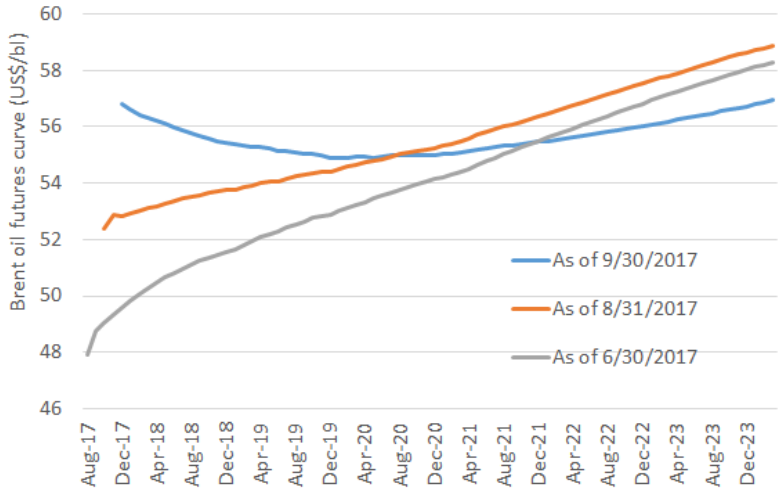
We expect to see positive headlines for electric vehicles continue to emerge and multiply. Falling battery prices are likely to bring price-competitive electric vehicles, particularly in the second half of the 2020s as EVs compete on an unsubsidized total cost of ownership basis across mass-market vehicle classes. This will bring challenges, in the form of raw material availability, charging infrastructure and battery quality. But even assuming the EV becomes a success, analysis of oil demand until the 2030s hinges more on trends in fuel efficiency, the size of the passenger vehicle fleet and the trajectory for global GDP growth. Today, the signs still appear to point to significant new oil resources being required to keep up with continuing demand growth.

Review of the third quarter

After a poor start to the year, the third quarter of 2017 delivered stronger energy commodity and energy equity performance. We have seen improved fundamentals and sentiment throughout the sector after a difficult first half of the year. Here, we cover a number of the fundamental reasons for the recovery in oil prices and energy equities over the quarter with a summary of what is currently 'priced into' energy equities.

Brent crude oil prices were up sharply over the quarter (a clear positive factor for energy sector sentiment) but, more importantly, the Brent oil forward curve moved from contango into backwardation late in the quarter. We view the structure of the forward curve as being just as important as the level of spot oil price and note that this is the first time since August 2014 that the Brent oil forward curve has been in backwardation. The backwardated curve (front month price being higher than 12 month forward price) indicates tight near term supply and demand fundamentals in the Brent oil market.

Brent oil forward curve has moved from contango into backwardation
Grey line = Brent futures curve as of end June 2017, Orange = end August 2017, Blue = end September 2017



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

We see a number of reasons for the recovery in front month oil prices and for the return of backwardation to the global crude oil markets:

- **Global oil demand growth being revised higher.** The International Energy Agency (IEA) has steadily increased its estimates for 2017 demand throughout the year. Demand in Q2 was particularly strong and expectations are that demand growth will continue to be robust for the remainder of 2017. IEA expectations for 2017 world oil demand have increased from 1.3m b/day at the start of 2017 to 1.6m b/day in the most recent IEA Oil Monthly report. 2017 demand growth is split 0.4m b/day from the OECD and 1.2m b/day for the non-OECD, indicating continued strong demand trends across both regions. The IEA expects these trends to continue. We noted with interest that it is now forecasting that world oil demand will exceed 100m b/day on average in Q3 2018, five years earlier than they were predicting only 18 months ago. Clearly, low oil prices have had a beneficial impact on world oil demand levels and we would expect weaker oil demand growth if oil prices start to rise. However, should oil stay at $50/bl until 2020, then the 'world oil bill' as a percentage of

world GDP would be only 2% (substantially lower than the 30 year average 'world oil bill' of 3%). Crude oil is currently a 'cheap' commodity for consumers, in our opinion, and we expect to see strong demand while prices and the economic burden of crude oil remain low.

- **Signs of lower US oil production growth potential**. A number of US E&Ps have indicated that either supply chain/logistics factors or subsurface issues (for example higher gas vs oil production ratios) have delayed their proposed ramp up of new oil supply and/or caused the E&Ps to suffer greater than expected cost inflation. These are the first signs of the US onshore system suffering inefficiencies in the upcycle and we sense that market expectations of US growth being in excess of 1m b/day per year have now been pared back somewhat. Monthly production data from the EIA reported US onshore production growth of only 5k b/day in June and 52k b/day in July versus prior indications (from the EIA's own weekly data and their Drilling Productivity Report) that growth would be more like 100k/day per month. We wait to see if this is a trend or a one-off 'wobble' but note that higher levels of activity and investment are very likely to cause sustained infrastructure and supply chain issues, although an active service industry will obviously endeavor to overcome these issues.

- **Increased confidence in OPEC's action.** Over the quarter, OPEC delivered sustained high levels of compliance on current production quotas and we saw evidence that OPEC oil exports are now falling as well. At the end of August 2017, OPEC production compliance appeared to be at around 85%. There have been continued ad-hoc OPEC meetings and announcements through the quarter, raising the likelihood that current quota cuts are extended beyond March 2018, when they are currently due to end. In informal comment, OPEC ministers have provided some confidence that the group will not immediately return their extra supply onto the market, which would risk near term oversupply and potentially weaker oil prices. We do not expect any firm commitments from OPEC until much nearer to March 2018 and note that OPEC countries still need higher oil prices to balance their government budgets. As an example, the foreign currency reserves of Saudi Arabia fell by a further $36bn in the first half of 2017 with Brent oil prices averaging $52/bl over the period.

In addition to improving supply and demand fundamentals for oil, we believe that underlying fundamentals are improving for the companies and there are signs of improving capital discipline and free cash generation. Here, we discuss some examples of this:

- **Capital discipline from the US E&P community**. Anadarko, a $25bn market cap international E&P, announced a $2.5bn share repurchase plan in late September, driving the stock up 8% on the day. Since then, Anadarko shares have risen by 11% while its nearest peers Apache, Devon Energy, Noble Energy and Hess Corporation are up by 4.3% and 5.7%. The positive share price reaction gives us hope that other US domiciled E&Ps will shift from growth to a better focus on capital discipline and profitability. This would also have positive implications for the macro oil supply picture, as greater capital discipline would cap the growth of US onshore oil production.

- **Free cash flow generation from Canadian large-caps**. The larger Canadian oil sands focused companies such as Suncor and Canadian Natural Resources has been working energetically to improve free cash flow at WTI $50/bbl. Suncor, for example, has achieved oil sands operating cost reductions of 19% so far in 2017 versus 2016. With a sharp drop off in oil sands growth projects coming into the end of the decade, there will be an increasingly loose service market, which will help to control capex costs and sustain the cash profitability of mature producing companies in this sector. This in turn means growing dividends and larger share buybacks.

- **Free cash flow generation from European integrateds**. According to Goldman Sachs, European oil companies delivered a higher level of free cash flow generation in 1H 2017 (based on a $52 Brent oil price) than they delivered in 1H 2014 (based on a $109/bl Brent oil price). The improved free cash generation comes as a result of both lower operating costs and lower capital expenditure and means that the same group of

companies should be able to cover their full dividend commitments and capex from their operating cash flow at around $50-55/bl oil. This is the first indication that scrip dividends could be removed and that the attractive dividend yields of the European oils would be sustained at current oil prices.

- **Bad news discounted in prices**. Expectations are low and we are tempted to believe that the energy sector could deliver ahead of expectations from here. For example, RD/Shell trades at a nearly 7% dividend yield yet its cash dividend now looks likely to be fully covered by cash generation from 2018 onwards and its Credit Default Swap (CDS) is now trading at about the same level as ExxonMobil. In 'normal' market conditions, we would have expected RD/Shell's dividend yield to be closer to 5% rather than the current 7%. We think it is fair to say that RD/Shell's equity, in common with a number of other oil majors, is priced for a weaker oil and gas environment than we have today.

The outcome of the recovery in energy equities is that, based on our valuation work, we see the implied oil prices in the fund's holdings as being around $53/bl currently. Put another way, if we put $53/bl into our company models for next year (2018) our model portfolio holdings would be trading at around 6.5x EV/EBITDA (a level we deem as reasonable given the profitability and growth prospects of the portfolio). To put this into context, the oil price implied in our holdings fell to a low of around $48/bl in early 2016 (when oil prices fell to $28/bl) and it got to highs of around $80/bl when oil prices were as high as $100/bl in the 2011-2014 timeframe. Should the implied oil price recover to $60/bl, then we would see around 30% upside in the equities and more like 70% upside if $70/bl is implied in the equities.

3. Performance – Guinness Atkinson Global Energy Fund

The main index of oil and gas equities, the MSCI World Energy Index, was up by 9.3% in the third quarter of 2017. The S&P 500 Index was up by 4.5% over the same period. The Guinness Atkinson fund was up by 10.2% over this period (all in US dollar terms).

At the positive end of the portfolio, stronger performance tended to come from integrated oil and gas stocks, who benefitted from higher oil prices and elevated refining margins thanks to Hurricane Harvey (Royal Dutch Shell +15.7%; Chevron +13.8%). Oil sands companies with integrated refining exposure also benefitted (Suncor +21.1%). Exploration and production stocks were mixed, with the rising oil price tending to help international producers (CNOOC +20.4%; Tullow +27.2%) more than US producers, many of whom were hindered by completion delays (QEP -15.1%; Apache -4.0%). US solar was also an underperformer (Sunpower -21.9%), as losses widened.

Performance as of September 30, 2017 (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	YTD 2017	1 year (annualized)	Last 5 years (annualized)	Last 10 years (annualized)	Since Inception (annualized)
Global Energy Fund	16.63%	-13.16%	3.45%	24.58%	-19.62%	-26.99%	27.04%	-6.53%	1.92%	-3.08%	-1.65%	6.50%
MSCI World Energy Index	12.73%	0.71%	2.54%	18.98%	-10.93%	-22.02%	26.96%	-0.87%	6.64%	0.43%	0.10%	6.36%
S&P 500 Index	15.06%	2.09%	15.99%	32.36%	13.66%	1.38%	11.76%	14.24%	18.60%	14.20%	7.43%	8.39%

Source: Bloomberg
Expense ratio: 1.53% (gross) 1.45% (net)

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.

4. Portfolio – Guinness Atkinson Global Energy Fund

In July, we exited our 'research' position in Westernzagros. The company, which explores and produces oil and gas in Kurdistan, was taken private by Crest Energy. The deal to take Westernzagros private was completed at a substantial premium to the undisturbed price, but overall the investment has been a disappointment, with the geological and political hurdles of operating in Kurdistan proving to be far harder to overcome than entrants anticipated.

In September we purchased a 'research' position in Reabold Resources. Reabold is a UK AIM-listed resources investment company which raised equity and announced new management in September, with the aim of investing in small E&P special situations in Europe. We are attracted to Reabold by the opportunities that the new management team are planning to exploit, at a time when valuations in pre-cashflow oil and gas assets remain close to cyclical lows.

Sector Breakdown

The following table shows the asset allocation of the Fund at September 30, 2017.

(%)	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	31 Dec 2015	31 Dec 2016	30 Sept 2017	*Change YTD*
Oil & Gas	**96.4**	**96.1**	**93.2**	**98.5**	**98.6**	**95.6**	**95.3**	**94.4**	**97.9**	**98.4**	***0.5***
Integrated	53.7	47.2	41.2	39.6	39.1	39.6	37.5	40.5	45.8	43.2	*-2.6*
Exploration and production	28.7	32.0	36.9	41.5	41.6	36.8	38.1	37.0	37.3	36.8	*-0.5*
Drilling	5.2	8.4	6.3	6.0	7.4	6.8	3.1	1.7	2.3	1.7	*-0.6*
Equipment and services	6.4	5.4	5.3	6.6	7.1	9.0	13.1	11.1	8.9	8.8	*-0.1*
Storage & transportation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	*3.6*
Refining and marketing	2.4	3.1	3.5	4.8	3.4	3.4	3.5	4.1	3.6	4.3	*0.7*
Coal and consumables	**2.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Solar	**0.0**	**0.0**	**3.2**	**1.2**	**1.2**	**2.8**	**3.5**	**4.9**	**1.0**	**1.9**	**0.9**
Construction and engineering	**0.4**	**0.4**	**0.4**	**0.4**	**0.6**	**0.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Cash	**0.9**	**3.5**	**3.2**	**-0.1**	**-0.4**	**0.7**	**1.2**	**0.7**	**1.1**	**-0.3**	**-1.4**
Total	**100.0**	**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.

	2009	2010	2011	2012	2013	2014	2015	2016	2017E
Fund P/E	14.1	9.3	7.2	7.4	8.2	9.0	20.1	33.1	25.5
S&P 500 P/E	41.6	28.2	26.1	26.0	23.5	21.7	25.1	23.8	19.8
Premium (+) / Discount (-)	-66%	-67%	-72%	-72%	-65%	-59%	-20%	39%	29%
Average oil price (WTI $)	$62/bbl	$80/bbl	$95/bbl	$94/bbl	$98/bbl	$93/bbl	$48/bbl	$43/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.29%) 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. At September 30, 2017 the median P/E ratios of this group were 17.3x/17.0x 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.30%) 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 4.4x 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 10.5% 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 across 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 at September 30, 2017

Guinness Atkinson Global Energy Fund 30 September 2017					2010	2011	2012	2013	2014	2015	2016	2017	2018
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
Integrated Oil & Gas													
Chevron	US1667641005	USD	US	3.52	12.6	8.7	9.5	10.6	12.2	32.3	84.7	29.1	24.3
Royal Dutch Shell PLC	GB00B03MLX29	EUR	NL	3.75	9.7	7.2	7.1	9.4	8.3	17.7	29.1	17.3	15.6
BP PLC	GB0007980591	GBP	GB	3.58	5.6	5.6	7.0	8.6	10.3	18.1	34.6	22.2	17.0
Total SA	FR0000120271	EUR	FR	3.51	9.9	8.8	8.4	9.5	9.6	12.3	14.5	13.4	12.6
ENI SpA	IT0003132476	EUR	IT	3.48	7.5	7.1	7.0	11.1	13.0	60.6	nm	24.0	19.9
Statoil ASA	NO0010096985	NOK	NO	3.58	8.6	7.5	6.7	8.2	11.5	27.9	141.3	16.9	18.2
Hess Corp	US42809H1077	USD	US	3.61	9.1	7.8	7.9	8.2	11.2	nm	nm	nm	nm
OMV AG	AT0000743059	EUR	AT	3.58	12.4	15.5	10.8	13.3	16.3	14.6	14.9	12.9	13.9
				28.60									
Integrated Oil & Gas - Canada													
Suncor Energy Inc	CA8672241079	CAD	CA	3.59	27.6	12.3	13.6	13.7	13.7	38.8	nm	33.6	36.7
Canadian Natural Resources Ltd	CA1363851017	CAD	CA	3.50	17.2	18.1	26.3	18.6	12.1	300.6	nm	42.6	27.6
Imperial Oil	CA4530384086	CAD	CA	4.01	17.4	10.8	9.6	12.4	10.5	22.4	66.2	35.2	28.0
				11.09									
Integrated Oil & Gas - Emerging market													
PetroChina Co Ltd	CNE1000003W8	HKD	HK	3.56	5.7	5.6	6.5	7.2	7.1	22.0	86.1	30.1	21.4
Gazprom OAO	US3682872078	USD	RU	3.21	3.4	2.3	2.4	2.3	3.5	2.5	3.3	4.4	3.9
				6.77									
Oil & Gas E&P													
Apache Corp	US0374111054	USD	US	3.58	4.9	3.9	4.8	5.6	8.2	nm	nm	nm	110.6
Occidental Petroleum Corp	US6745991058	USD	US	3.79	11.4	7.7	9.3	9.2	11.0	386.8	nm	93.1	48.5
ConocoPhillips	US20825C1045	USD	US	4.13	8.4	5.9	8.8	8.9	9.4	nm	nm	204.3	41.5
QEP Resources Inc	US74733V1008	USD	US	1.21	6.2	5.2	6.9	6.1	6.1	nm	nm	nm	nm
Devon Energy Corp	US25179M1036	USD	US	3.45	6.2	6.1	11.4	8.7	7.1	14.9	nm	21.3	17.8
Noble Energy Inc	US6550441058	USD	US	3.26	13.7	10.8	12.4	9.2	12.1	497.5	nm	nm	nm
Newfield Exploration Co	US6512901082	USD	US	3.10	6.4	7.3	12.2	16.5	16.1	40.9	27.6	15.8	13.8
Oasis Petroleum Inc	US6742151086	USD	US	1.79	72.0	14.7	8.2	4.4	4.9	15.2	nm	nm	nm
				24.31									
International E&P													
CNOOC Ltd	HK0883013259	HKD	HK	3.96	7.3	5.6	5.9	6.0	7.2	21.6	nm	13.4	11.8
Tullow Oil PLC	GB0001500809	GBP	GB	1.76	18.4	4.2	3.8	28.4	nm	nm	nm	nm	19.1
Soco International PLC	GB00B572ZV91	GBP	GB	1.08	12.4	8.0	2.2	2.4	3.6	nm	nm	nm	765.8
				6.80									
Midstream													
Enbridge Inc	CA29250N1050	USD	CA	3.58	51.3	46.3	42.6	39.3	36.0	32.6	30.1	33.4	26.8
				3.58									
Drilling													
Unit Corp	US9092181091	USD	US	1.74	6.8	5.0	5.0	5.6	4.8	nm	nm	39.1	16.0
				1.74									
Equipment & Services													
Halliburton Co	US4062161017	USD	US	3.43	22.9	13.8	15.5	14.8	11.7	31.1	nm	41.5	21.2
Helix Energy Solutions Group Inc	US42330P1075	USD	US	1.94	14.0	4.9	4.0	6.9	3.8	43.7	nm	nm	51.7
Schlumberger	AN8068571086	USD	US	3.34	25.3	19.3	16.7	14.7	12.6	20.8	60.4	46.5	30.4
				8.71									
Solar													
JA Solar Holdings Co Ltd	US4660902069	USD	US	1.35	1.1	nm	nm	nm	8.7	4.4	10.2	11.6	15.6
SunPower Corp	US8676524064	USD	US	0.52	5.1	88.9	48.6	5.2	5.5	3.7	nm	nm	102.7
				1.87									
Oil & Gas Refining & Marketing													
Valero Energy Corp	US91913Y1001	USD	US	4.32	48.5	19.3	15.7	18.7	12.6	8.8	20.9	17.5	13.8
				4.32									
Research portfolio													
Cluff Natural Resources PLC	GB00B6SYKF01	GBP	GB	0.31	nm	nm	nm	nm	nm	nm	nm	nm	nm
EnQuest PLC	GB00B635TG28	GBP	GB	1.03	4.2	4.8	1.4	1.6	2.9	28.3	1.9	nm	8.2
JKX Oil & Gas PLC	GB0004697420	GBP	GB	0.28	0.4	0.5	0.7	1.3	3.4	nm	nm	nm	nm
Ophir Energy PLC	GB00B24CT194	GBP	GB	0.13	nm	nm	nm	nm	1.8	nm	nm	nm	nm
Reabold Resources PLC	GB00B95L0551	GBP	GB	0.34	nm	nm	nm	nm	nm	nm	nm	nm	nm
Shandong Molong Petroleum Machinery Co	CNE1000001N1	HKD	HK	0.09	2.6	3.7	nm	nm	nm	nm	nm	nm	nm
Sino Gas & Energy Holdings Ltd	AU000000SEH2	AUD	AU	0.38	nm	nm	92.0	nm	92.0	nm	nm	nm	15.3
				2.55									
			Cash	-0.34									
			Total	100									
			PER		8.2	7.2	7.4	8.2	9.0	20.1	33.1	25.5	19.9
			Med. PER		9.1	7.4	8.3	8.9	9.6	22.2	29.1	24.0	19.5
			Ex-gas PER		8.5	7.5	7.3	8.4	9.2	19.1	29.9	24.3	19.0

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.

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

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.

Contango is a situation where the futures price of a commodity is above the spot price.

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.

An integrated oil and gas company is a business entity that engages in the exploration, production, refinement and distribution of oil and gas.

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.

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