



Tim Guinness



Will Riley



Jonathan  
Waghorn

October 2015

**Commentary and Review by portfolio managers  
Tim Guinness, Will Riley & Jonathan Waghorn**



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## REPORT HIGHLIGHTS

### FUND NEWS

- Fund size \$45.8 million at end of September

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### OIL

- **Brent and WTI declined sharply over the quarter; both global oil supply and demand strengthen**  
Brent oil declined from \$61/barrel (b) to \$47/b in the quarter while the West Texas Intermediate (WTI) oil price declined from \$59 to \$45, keeping the Brent/WTI discount at around \$2/b. Global oil demand grows strongly and US production has peaked, but the markets remained oversupplied due to elevated OPEC (Organization of the Petroleum Exporting Countries) production.

### NATURAL GAS

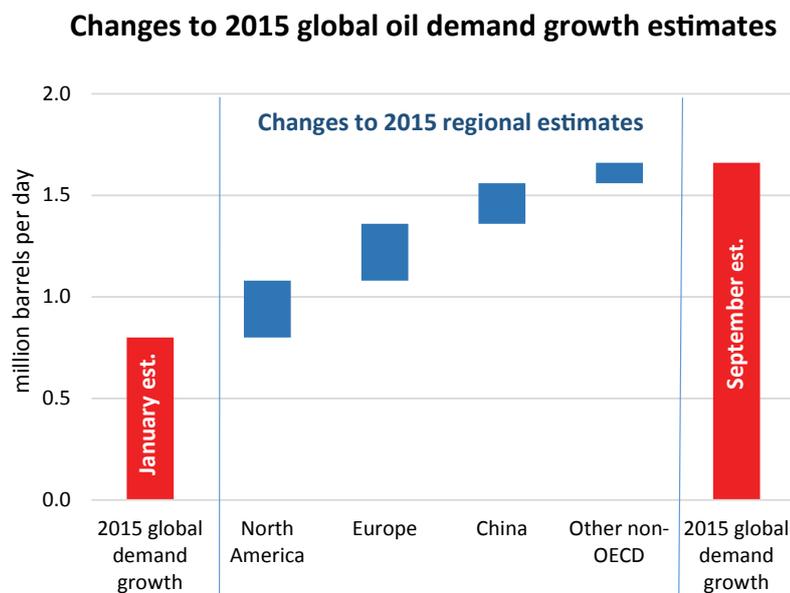
- **US gas price down; gas market remains structurally oversupplied**  
Henry Hub gas fell during the quarter, down from \$2.83 to \$2.50. Strong US gas production continued, driven by production from the Marcellus, though year on year growth has slowed considerably, helped by declines in associated gas. We expect natural gas inventories to reach around 4.0 trillion cubic feet (tcf) at the end of the injection season, close to the top end of the 10 year historic range.

### EQUITIES

- **Energy underperforms the broad market**  
The third quarter of 2015 was weak for global equities, with energy equities especially weak in the face of a declining oil price. The MSCI World Energy Index was down 17.87%.

- ➔ Q3 2015 in Review
- ➔ Manager’s Comments
- ➔ Performance: Guinness Atkinson Global Energy Fund
- ➔ Portfolio: Guinness Atkinson Global Energy Fund
- ➔ Outlook
- ➔ Appendix: Oil & Gas Markets, Historical Context

**CHART OF THE QUARTER – 2015 global oil demand growth estimate doubles**



Source: IEA; as of 9/30/15

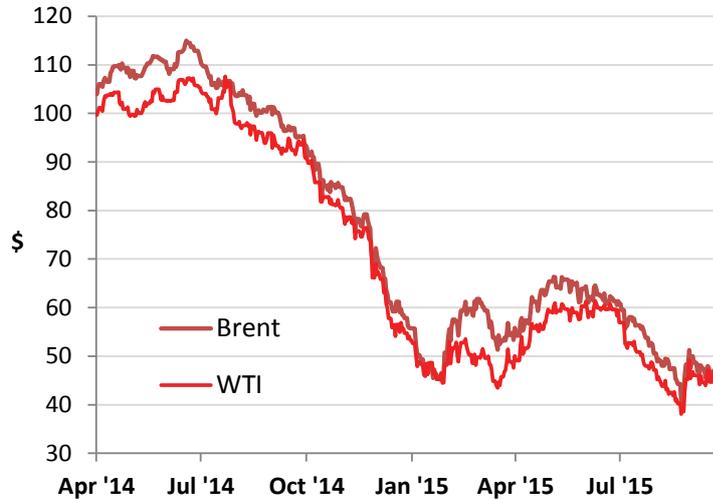
Global oil demand growth expectations from the International Energy Agency (IEA) have steadily increased through 2015 as a result of lower oil prices. Having initially estimated 0.8 million(m) b/day of demand growth at the start of 2015, the IEA now expects demand growth of just over 1.7m b/day for 2015. Their Organisation for Economic

Co-operation and Development (OECD) estimate has increased by 0.6m b/day (split 50/50 between North America and Europe) while their estimate for non-OECD has increased by 0.3m b/day (almost entirely from China). The sources of global oil demand recovery in 2015 have been well distributed globally, in our opinion.

## 1. Third Quarter 2015 Review

### Oil market

Figure 1: Oil price (WTI and Brent \$/barrel) 18 months March 31, 2014 to September 30, 2015



Source: Bloomberg LP

The West Texas Intermediate (WTI) oil price started July at \$59.5/b and traded down over the quarter to close at \$45.1/b. WTI has averaged \$51.0 so far in 2015, having averaged \$93.1 in 2014, \$98.0 in 2013 and \$94.1 in 2012.

Brent oil traded in a similar way, opening the quarter at \$61.4/b and weakening before closing the quarter at \$47.1/b. The gap between the WTI and Brent benchmark oil prices therefore stayed flat at around \$2/b. The WTI-Brent spread averaged \$5.8/b during 2014, having been well over \$20/b at times since 2011.

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

- **Concerns of Chinese economic growth**

The devaluation of the Renminbi against the US dollar, falls in Chinese interest rates and a falling domestic stock market in late August and early September all contributed to concerns of a slowing Chinese economy (and globally) and associated slowdown in oil demand growth. Of the 1.4m b/day oil demand growth forecast globally for 2016, around 20% (0.2m b/day) is attributable to China.

- **Elevated level of OPEC supply, particularly from Iraq and Saudi Arabia**

Initial estimates suggest that OPEC production averaged 32.05m b/day in September, down slightly versus the August estimate of 32.1m b/day but still at an elevated level compared to the start of the year (December 2014 production was 30.4m b/day) and the calculated 'call on OPEC' for 2015. The main contributors to OPEC's higher production since December 2014 continue to be Iraq (at 4.2m b/day) and Saudi (at 10.3m b/day).

- **Negotiations over Iran's nuclear program and implications for oil exports**

Debate continues over the likely timing of Iranian oil returning to the market post a successful resolution to negotiations between US/Europe and Iran over its nuclear program. Iran's oil exports have fallen by around 1m b/day over the last 3 years, with the recovery forecast to be between 0.5m b/day and 1m b/day, over 12 to 18 months.

- **Elevated OECD inventories**

OECD total product and crude inventories at the end of August (the latest data point available) were estimated by the IEA to be 2,936m barrels. This is 225m barrels (8%) above the 10 year average. The changes in storage reported for June, July and August have in fact been close to historic norms, implying that the build in inventories occurred before the summer.

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

- **IEA forecasts stronger decline in non-OPEC production and sustained stronger global oil demand**

The IEA report for September 2015 forecasted that ‘oil’s latest tumble is expected to cut non-OPEC supply in 2016 by 0.5m b/day – the biggest decline in more than two decades’. This change in expectation clearly tightened the IEA’s expectation for supply/demand imbalances in 2016 and is a sign that low oil prices are clearly starting to cause investment problems and concern over production growth in 2016 and beyond. At the same time, demand growth expectations were maintained at strong levels, with 2015 demand growth at 1.7m b/day and 2016 at 1.4m b/day.

- **US oil production in decline**

Monthly data published by the EIA (Energy Information Agency) shows US onshore oil production peaking in March 2015 at 7.7m b/day (ex Alaska) and now in decline. Production in July (the latest data point available) was reported to be down 0.4m b/day at 7.3m b/day. The year-on-year growth rate has been reduced to 0.3m b/day, and is likely to be flat/negative by the fourth quarter.

- **US oil drilling rig count falls further, plumbing new lows for 2015**

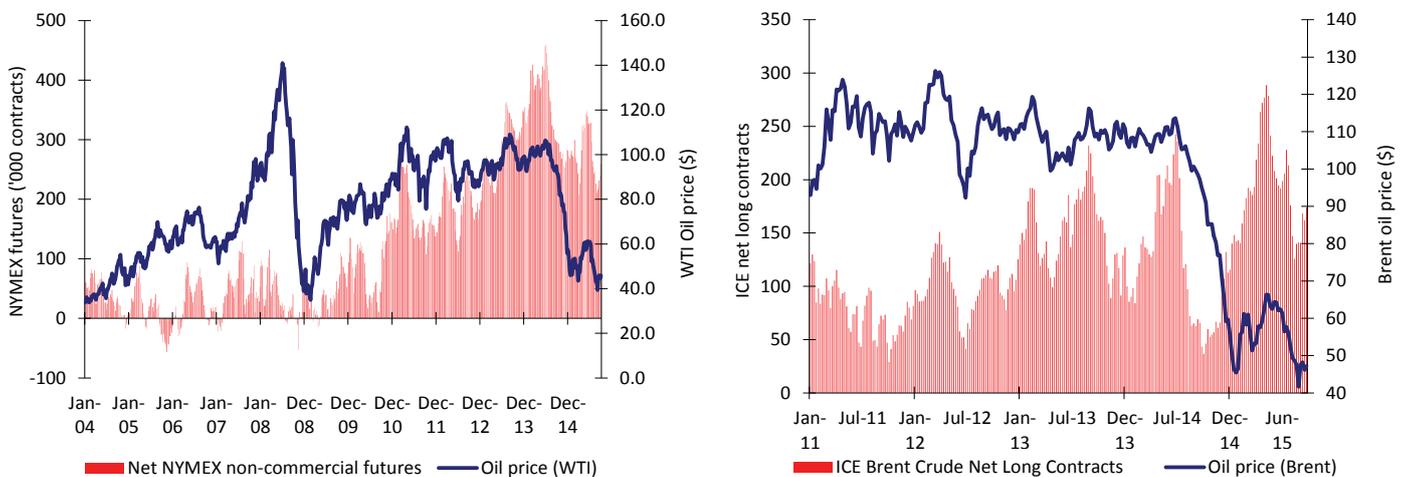
The Baker Hughes oil directed rig count continued to roll over the quarter, falling to 614 on October 2. The last week of the month witnessed a fall of 26 rigs (4.1%), bring the index to the lowest level so far during 2015.

**Speculative and investment flows**

The New York Mercantile Exchange (NYMEX) net non-commercial crude oil futures open position (WTI) grew in September, ending the month at 259,000 contracts long versus 216,000 contracts long at the end of September. The current net long position of 259,000 contracts is still well down from its peak of 460,000 contracts in June 2014.

The equivalent non-commercial position for Brent oil, ICE (Intercontinental Exchange) Brent crude oil net long contracts, grew in September, up from 141,000 contracts to 174,000 contracts long.

**Figure 2: NYMEX Non-commercial net futures contracts: WTI January 2004 – August 2015;  
ICE Brent crude net long contracts : January 2011 – September 2015**

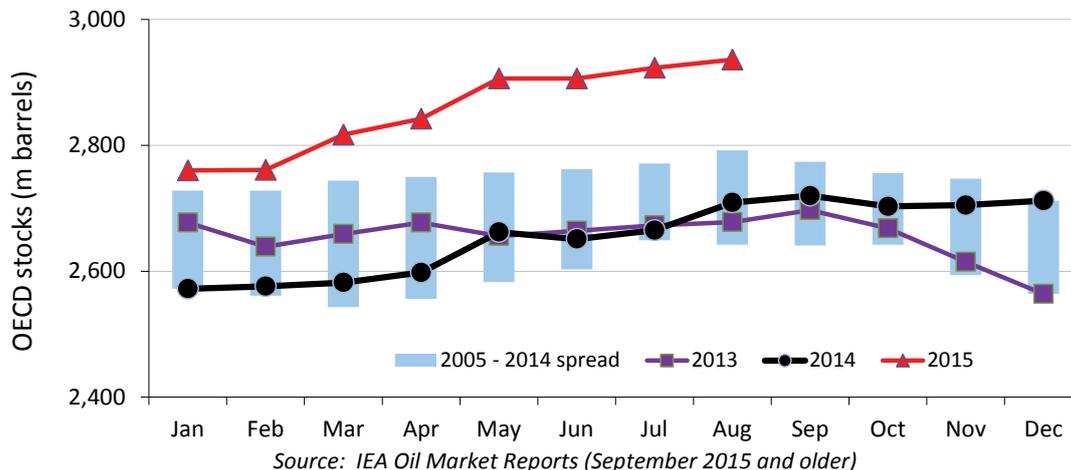


Source: Bloomberg LP/NYMEX/ICE (2015)

**OECD stocks**

OECD total product and crude inventories at the end of August were estimated by the IEA to be 2,936m barrels. The month on month increase in inventories of 13m barrels compares to an average 12 million barrel build that has been witnessed over the last ten years. On the one hand, the close to average build in August can be seen as a positive data point, suggesting that market is not as oversupplied as some headline data would suggest, but still leaves inventories considerably above the top of the 10 year historic range.

**Figure 3: OECD total product and crude inventories, monthly, 2004 to 2015**



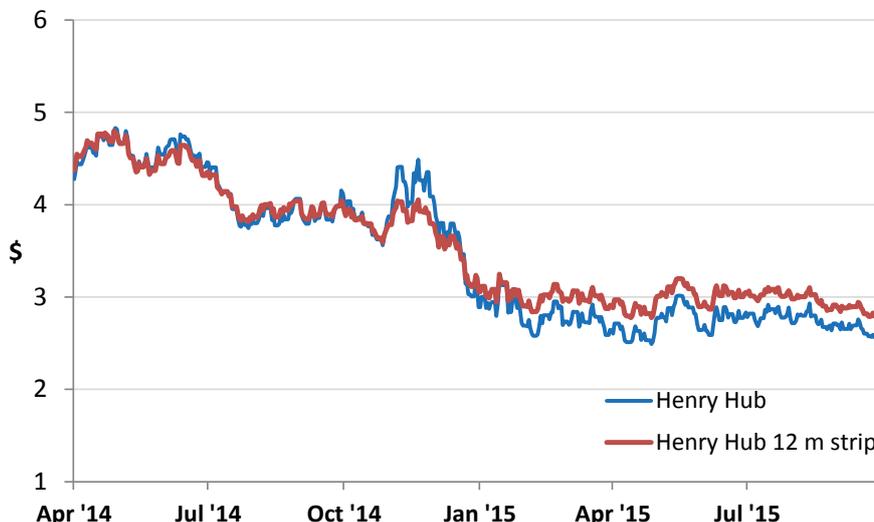
Source: IEA Oil Market Reports (September 2015 and older)

**2. Natural Gas Market**

The US natural gas price (Henry Hub front month) opened the quarter at \$2.77 per Mcf (1000 cubic feet). The price traded steadily lower to close September at \$2.47 per Mcf. Year to date, the spot gas price has averaged \$2.78/mcf, which compares to an average gas price in 2014 of \$4.26 (assisted by a very cold 2013/14 US winter). The price averaged \$3.72 over the preceding four years (2010-2013), significantly below the average in each of the previous five years (2005-2009).

The 12-month gas strip price (a simple average of settlement prices for the next 12 months' futures prices) traded in a similar fashion, starting the quarter at \$3.05 and closing the quarter at \$2.75. The strip price has averaged \$2.98 so far in 2015, having averaged \$4.18 in 2014, \$3.92 in 2013, \$3.28 in 2012, \$4.35 in 2011, \$4.86 in 2010 and \$5.25 in 2009.

**Figure 4: Henry Hub Gas spot price and 12m strip (\$/Mcf) March 31, 2014 to September 30, 2015**



Source: Bloomberg LP

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

- **Structurally oversupplied market**

Adjusting for the impact of weather over the quarter, the most injections of gas into storage over the quarter suggest the market is, on average, about 2 billion cubic feet (Bcf)/day oversupplied. The market has been consistently oversupplied over recent months, causing natural gas inventory levels to trend towards the top of the five year range.

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

- **US shale oil production declining, lowering associated gas**

The decline in US shale oil production since March 2015, noted in the oil comments above, will have resulted in associated gas (gas from oil wells) also starting to decline. Overall US onshore gas production grew by just 0.2 Bcf/day over the three months reported in the quarter, and year-on-year growth is down to around 3 Bcf/day, having been nearly 6 Bcf/day at the same point 12 months before.

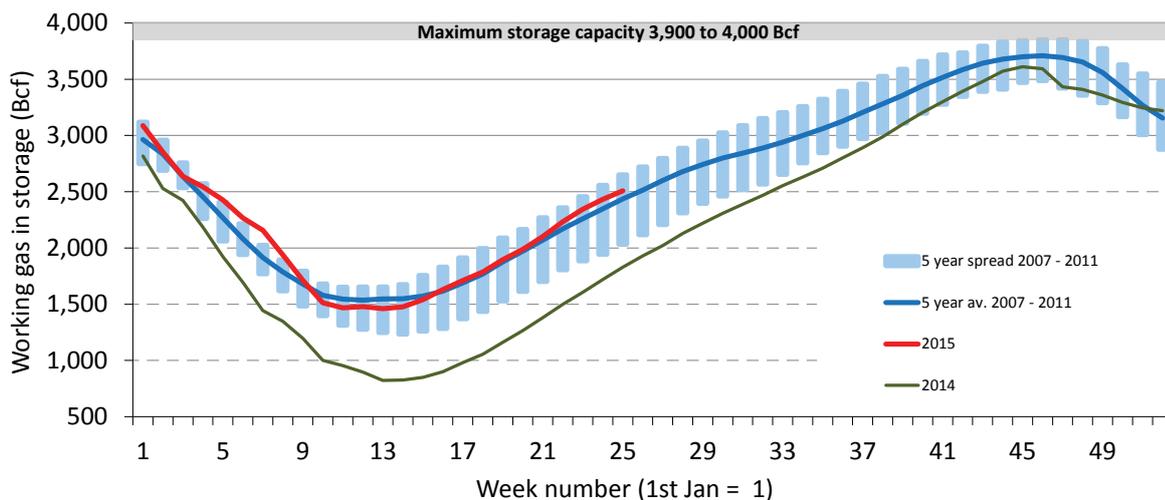
- **Coal to gas switching**

With the natural gas price below \$3, we estimate that gas is a more economic fuel to consume by electric utilities than almost all grades of coal. As a result, we are seeing coal to gas switching by the utilities. Average consumption of natural gas by the utility sector so far this year has been 3.8 Bcf/year higher than 2014 (though note that some of this is due to structural shift away from coal as well as price).

**Natural gas Inventories**

Swings in the supply/demand balance for US natural gas should, in theory, show up in movements in gas storage data. Natural gas inventories at the end of June were reported by the EIA to be 2,233 Bcf. The quarter on quarter build was slightly greater than average, leaving inventories just above the 5 year average level at the end of the quarter. Indications are that natural gas storage will end the injection season at between 3.8 and 4.0tcf, i.e. towards the upper end of the historic range for the end of the injection season.

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



Source: Bloomberg; EIA (July 2015)

The 2013/2014 winter saw gas in storage tighten very considerably as a result of extremely cold weather rather than any structural tightening. Coal regained some market share in the spring and summer of 2014 as a result of the higher natural gas prices, though gas in storage remains lower than average. A surge in onshore production, particularly from the Marcellus region, has since led to gas in storage levels above the previous year.

### 3. Manager's Comments

#### It's darkest before the dawn – but is the time now 1am or 5am?

#### What is causing oil prices to fall so far?

It has been a pretty brutal summer for the energy markets. Brent oil fell from \$65 in May to below \$40, and the MSCI World Energy Index was down around 25% over the same period leaving energy as the worst performing sector year-to-date and the most out-of-favor among all the portfolio manager surveys that we see. Long-dated Brent oil has also fallen; having started the year at \$78 and traded in a fairly tight \$75-\$80 range until the end of June, it fell to a low point of just over \$60, over 40% off its highs last year.

The reasons for this, in our opinion, are as follows:

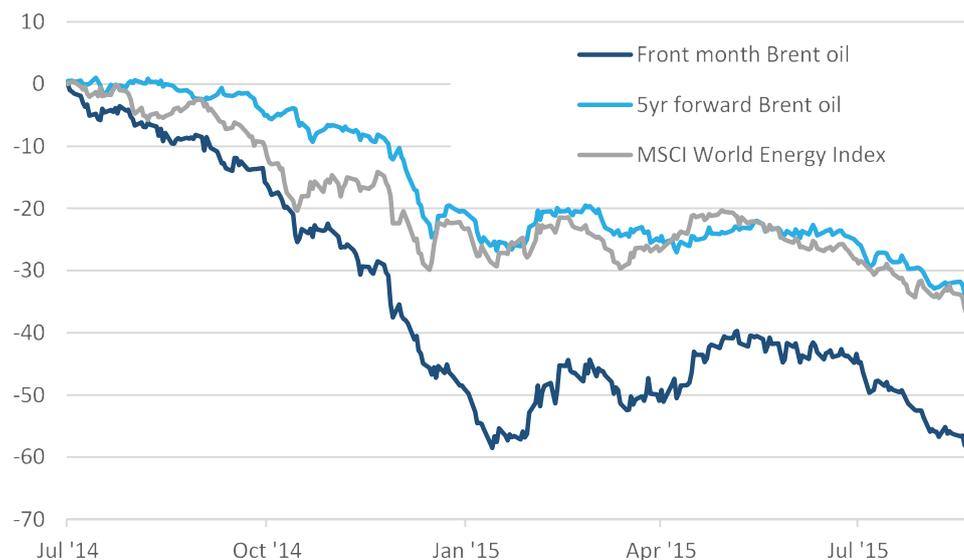
- The US production trajectory is still unclear, although we think it is now declining. Monthly US oil production data for April and May showed that production had stopped growing and is starting to trend downwards (month over month). Weekly data (including data up to mid-August) contradicts this somewhat. The weekly data is low quality (but timely) while the monthly data is good quality (but heavily delayed). As we are writing, new monthly oil production data from the EIA for June has been released and it shows a clear downward trend in US oil production (June production was 9,264 thousand(k)b/day vs May 9,379kb/day and April 9,601kb/day – and July production has been reported at 9,358kb/day) We are still in the eye of the storm for the US, but the trend looks downwards to us – it looks like April 2015 probably was the peak for US oil production.
- The rest of non-OPEC is relatively steady. Russia has been remarkably robust in terms of production (as the weaker RUB (ruble) has helped domestic producers) but significant capex cuts across the industry will lead to big production declines. We've seen 6 million barrels/day of new projects being cancelled in recent months: not impactful in 2015 but will start to have relevance in 2016/17 in terms of rebalancing the market. \$60 oil or less is clearly not sufficient for new projects to be economic in these regions.
- OPEC production has been substantially stronger than expected. This has been a surprise. OPEC was producing 30.6m b/day in December 2014, and has risen by 1.5m b/day to around 32.1m b/day in September 2015, with Saudi production up by 0.9m b/day and Iraq up by 0.7m b/day. These countries are following their market share strategy very firmly. Both Saudi and Iraq are producing at 30yr+ record levels. We question how much spare capacity remains here. In addition, Iran is likely to restart oil exports later this year and there is a wide range of opinion on what Iran can add to the mix (Iranian oil minister says 1.2m b/day in six months, we think more like 0.5-0.7m b/day in 6 months). Either way, Iran could delay the global rebalancing. There's also the prospect of Libya returning, although there appears to be no improvement in the political situation at this stage. If Iran and Libya come back, we see little to no spare capacity in OPEC or in the world.
- Concerns over global economic growth (led by China) are driving recent poor performance (both energy sector and the broad market). Despite this, China (representing 10% of world oil demand) is growing oil demand as expected (around 0.4m b/day in 2015), while the rest of the non-OECD world is robust. US demand is particularly strong. World oil demand growth expectations are being steadily increased (now about 1.7m b/day in 2015, the strongest year since 2010), and will likely trend higher while oil prices remain low. A relief but not enough to bring balance today, given how strong OPEC production has been.

We can observe these moving parts of the supply/demand equation for oil but the question remains: how long does energy equity weakness persist? Answering this with any precision is of course difficult. Energy equities appear to be pricing in around \$55 long-term oil prices on our calculations, while the five year forward Brent oil price is around \$65/bl. Energy equities will only start to work once Brent oil shows signs of recovering and long-dated Brent oil prices stabilize.

### Why have energy equities not followed spot oil prices?

We usually compare energy equities with forward oil prices (as opposed to spot) – correlation is better and absolute percentage changes tally up better over time. This current bear market appears to be no different to what we would have expected, given the move in long dated prices. The MSCI World Energy Index is down 39.6% from June 23, 2014 (the oil price peak) to September 30, 2015, while five year forward Brent oil is down by 36.4%. That's very close in terms of movement, and (as we usually expect) the equities led the commodity price movement at the start of the downturn. We would expect the equities to lead on the way up as well.

On the chart below, five year forward Brent oil has declined broadly in line with the MSCI World Energy Index, and both have outperformed the front month Brent oil price.



Source: Bloomberg, as of 9/30/15

### What makes Brent oil stabilize?

The market continues to search for signs of a definitive tightening in the balance between oil supply and demand. We think it will most likely be a supply sign: either that US shale oil production is in clear decline, or action from OPEC to reduce their supply. There have been rumors of an emergency OPEC meeting. Various members are under economic stress from the low oil price; a number of Middle East countries are raising debt – their budgets are not covered at current oil prices (and barely covered at \$75 oil prices). In terms of an oil price floor, we have judged \$40 to be the cash cost of supply for the highest cost oil producers today. That cost is gradually coming down, with notable efficiency gains made this year (maybe we are at \$35 or so now), but we have touched the cash cost of supply level in August. Historically this has signified the bottom of the oil price cycle, but this could be sustained for a while yet. Seasonal refinery downtime (and recent unplanned downtime) in the US in the third quarter will probably see US crude oil inventories continue to build, though once through this shoulder period, we would expect solid confirmation of US supply declines, limited OPEC growth and some signs that other non-OEPC production growth is starting to slow.

The history of the oil price over its whole life has been dominated by two key factors. First, small imbalances of supply and demand can cause disproportionately large price fluctuations (because short run price elasticity of demand and supply is very low). But the second key factor is that these can be dampened by the behaviour of one or more large market participants if and when they decide to play a price management role. Standard Oil, the Texas Railroad Commission and the seven sisters (i.e. BP, Gulf Oil, Chevron, Royal Dutch Shell, Exxon, Sacony and Texaco) have all played this role in the past. Most recently, from 1999-2014, it's been OPEC who were happy to act as the swing producer.

**Shifting to the bigger picture, is there enough world growth to drive demand for oil?**

We believe so. We work on the assumption of world oil demand growth growing, on average, between 1.0 and 1.5m b/day each year. Last year was an exception (as a result of European weakness and China slowdown) with demand being only 0.9m b/day while 2015 has seen significant improvements with demand expectations growing from under 1m b/day at the start of 2015 to around 1.7m b/day now. The key driver here has been lower oil prices incentivising consumers to buy bigger, less efficient cars and to drive greater distances. Fears of China's recent devaluation causing economic weakness in Asia (and subsequently in the rest of the world) are only partially relevant for oil demand in our opinion. We are concentrating more on driving and transportation dynamics, and, as it stands, the world demand outlook remains robust.

Growth in demand for energy has been a key feature of economic progress for 250 years. For 100 years oil has been the key transport fuel because its energy density is unequalled by any other transport fuel. After a spurt in the 1950-70 period as the developed world adopted the motor car, over the last 19 years global oil demand has grown steadily at between 1 and 2% per annum (p.a.) behind GDP (gross domestic product) growth. Thus, from 1995 to 2014, oil demand has grown 31% (from 70.3 million b/day to 92 million b/day), or 1.4% p.a., while real global GDP has grown 68.4% (from \$44.9tn to \$77.5tn, or 2.8% p.a. Over this period oil has mostly been displaced from electricity generation and heating by cheaper alternatives. But its place as transport fuel du jour has not been seriously challenged.

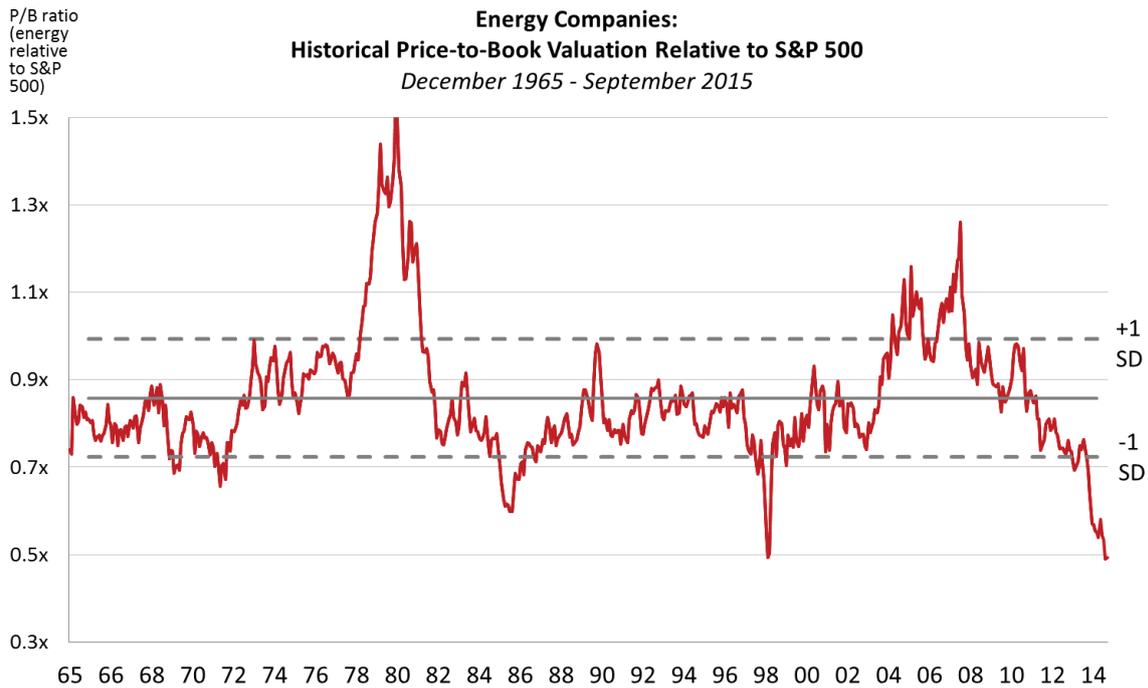
We see no reason for this picture to change much over the next 30 years as the 6 billion non-OECD population raise their standard of living up to match those of the OECD's 1.25 billion inhabitants. We estimate, for example, that the world vehicle fleet is expanding from 1 billion vehicles in 2010 to 2 billion in 2030. None of the current considered projections of electric or gas powered vehicles make a significant dent in this picture. We forecast oil demand in 2035 to be 115 million b/day.

**When might supply and demand get squeezed and we begin to see an impact on oil prices?**

When OPEC changed its strategy at the end of November 2014, we thought that US unconventional oil supply growth would slow in the middle of 2015. We are now in the middle of 2015 and the signs are still tentative that this is happening. US supply is one part of the overall mix, and the convergence of supply and demand at a global level has been delayed by substantially greater OPEC production (especially Saudi Arabia and Iraq), more robust non-OPEC production outside the US, and upward revisions of historic US oil production levels. Nonetheless, the convergence is coming, and, all things being equal, global oil demand will likely outpace global oil supply in 2H 2016, with global oil inventories probably peaking at that time. With little or no spare oil production capacity in the world at that time, the global oil inventory overhang will get worked off and oil prices will have to be stronger to incentivise investment in new production.

**What will this imply about the upside for equities?**

Energy equities are unloved (institutional under-ownership, for example, is at an extreme level) and the sector's valuation, on some metrics, is at extreme lows. We think energy equities will recover when sentiment towards crude oil improves; given the poor sentiment currently, the recovery is likely to be significant. The fall in the long-dated oil price (five year forward Brent oil trading at \$65) explains the fall in energy equities; should sentiment in the commodity markets improve, we would expect to see long-dated oil improve as well. As it stands, we believe that energy equities are reflecting an oil price of around \$55/b long-term (based on current cost and taxation assumptions). If the companies deliver further cost control and efficiency gains then the implicit oil price that they are reflecting will be lower than \$55/b.



Source: Bloomberg; SD = Standard Deviation

### What is the likely timing of all this playing out?

On the basis of analysis that suggests a rebalancing may not come until the second half of 2016, perhaps it is only 1am? However, there is an important element this analysis overlooks – Saudi behavior. We believe there is a strong likelihood that when Saudi's objective is achieved (say evidenced by nine months of successive US production decline, perhaps next March, and signs that global oil inventories are peaking), they will start to manage supply again. At the end of last week, OPEC's tone shifted somewhat, with the following statement:

*“Cooperation is and will always remain the key to oil's future and that is why dialogue among the main stakeholders is so important going forward” and “if there is a willingness to face the oil industry's challenges together, then the prospects for the future have to be a lot better than what everyone involved in the industry has been experiencing over the past nine months or so” (source: OPEC July/Aug 2015 bulletin).*

We don't think Saudi will aim to get the price up to \$100/b immediately, more likely \$70-80/b. On this basis, maybe it is more like 4am, and given equity markets typically are anticipatory by 6-9 months it may even be 5am – the very darkest moment before the dawn.

#### 4. Performance – Guinness Atkinson Global Energy Fund

The main index of oil and gas equities, the MSCI World Energy Index, was down by 17.87% in the third quarter of 2015. The S&P 500 Index was down by 6.43% over the same period. The Fund was down by 24.02% over this period, performing in line with the MSCI World Energy Index (all in US dollar terms).

Within the Fund, the third quarter's stronger performers were Suncor Energy, Valero, Total, John Wood Group and JA Solar. Poorer performers were Helix, Unit, Tullow, Carrizo and Devon Energy.

#### Performance as of September 30, 2015

Inception date 6/30/04	Full Year 2009	Full Year 2010	Full Year 2011	Full Year 2012	Full Year 2013	Full Year 2014	YTD 2015	1 year (annualized)	Last 5 years (annualized)	Last 10 years (annualized)	Since Inception (annualized)
Global Energy Fund	63.27%	16.63%	-13.16%	3.45%	24.58%	-19.62%	-26.74%	-44.16%	-5.06%	-0.74%	6.12%
MSCI World Energy Index	26.98%	12.73%	0.71%	2.54%	18.98%	-10.93%	-21.65%	-32.67%	0.07%	1.06%	5.38%
S&P 500 Index	26.47%	15.06%	2.09%	15.99%	32.36%	13.66%	-5.27%	-0.62%	13.31%	6.79%	6.93%

Source: Bloomberg

Gross expense ratio: 1.30%

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 [www.gafunds.com/performance.asp](http://www.gafunds.com/performance.asp) or call (800) 915-6566.

#### 4. Portfolio - Guinness Atkinson Global Energy Fund

##### Buys/Sells

In July we made a handful of switches in the portfolio:

##### 1) Sale of Dragon Oil

Dragon Oil has been subject to acquisition by its majority shareholder, ENOC, since mid-June. We opted to sell the position in mid July, at a small discount to the acquisition price.

##### 2) Sales of Stone Energy and Chesapeake

Stone Energy and Chesapeake have been underperformers this year, however, we have become increasingly vigilant towards balance sheet risk in the current oil price environment, and made these sales due to concerns that their debt positions are uncomfortably high. Key ratios such as debt to EBITDA may become particularly stretched looking into next year as both companies enjoy good 2015 oil and gas production hedges which roll off in 2016.

##### 3) Purchase of Tullow Oil

Tullow Oil is an international E&P (exploration & production) with a focus on oil assets in West Africa. The company achieved notable exploration successes in the period between 2005 and 2011, since when the equity has struggled due to a combination of weaker exploration results and developing its assets in the face of the lower oil price. We are attracted to the company at this point by the depressed level of the equity and shift of strategy from exploration to production, which should eventually yield strong free cashflow.

4) Purchase of CNOOC

We added CNOOC, the oiliest of China's three national oil & gas companies, to the portfolio as we like the combination it brings of good upside to an oil price recovery, plus deep financial resources to weather the current downturn. CNOOC's share price had been strong earlier in the year as it enjoyed the general rise in the H share market in Hong Kong, but has since given up those gains, providing what we saw as a good entry point.

**Sector Breakdown**

The following table shows the asset allocation of the Fund at **September 30, 2015**.

(%)	31 Dec 2008	31 Dec 2009	31 Dec 2010	31 Dec 2011	31 Dec 2012	31 Dec 2013	31 Dec 2014	30 Sept 2015	Change YTD
<b>Oil &amp; Gas</b>	<b>96.4</b>	<b>96.1</b>	<b>93.2</b>	<b>98.5</b>	<b>98.6</b>	<b>95.6</b>	<b>95.3</b>	<b>94.5</b>	<b>-1.1</b>
Integrated	53.7	47.2	41.2	39.6	39.1	39.6	37.5	39.8	0.2
Exploration and production	28.7	32.0	36.9	41.5	41.6	36.8	38.1	37.8	1.0
Drilling	5.2	8.4	6.3	6.0	7.4	6.8	3.1	1.6	-5.2
Equipment and services	6.4	5.4	5.3	6.6	7.1	9.0	13.1	11.1	2.1
Refining and marketing	2.4	3.1	3.5	4.8	3.4	3.4	3.5	4.2	0.8
<b>Coal and consumables</b>	<b>2.3</b>	<b>0.0</b>	<b>0.0</b>						
<b>Solar</b>	<b>0.0</b>	<b>0.0</b>	<b>3.2</b>	<b>1.2</b>	<b>1.2</b>	<b>2.8</b>	<b>3.5</b>	<b>4.6</b>	<b>1.8</b>
<b>Construction and engineering</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.4</b>	<b>0.6</b>	<b>0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>-0.9</b>
<b>Cash</b>	<b>0.9</b>	<b>3.5</b>	<b>3.2</b>	<b>-0.1</b>	<b>-0.4</b>	<b>0.7</b>	<b>1.2</b>	<b>0.9</b>	<b>0.2</b>
<b>Total</b>	<b>100.0</b>	<b>0.0</b>							

Source: Guinness Atkinson Asset Management

Basis: Global Industry Classification Standard (GICS)

**Guinness Atkinson Global Energy Fund Portfolio**

The table below shows the fund valuation in terms of historical and forward (analyst consensus estimates) price/earnings ratios versus the S&P500 Index.

	2010	2011	2012	2013	2014	2015
<b>Guinness Atkinson Global Energy Fund P/E</b>	6.7	6.9	7.0	7.5	7.9	15.6
S&P 500 P/E	22.9	19.9	19.8	17.9	17.0	17.3
Premium (+) / Discount (-)	-71%	-65%	-65%	-58%	-54%	-10%
Average oil price (WTI \$)	\$79.5/bbl	\$95/bbl	\$94/bbl	\$98/bbl	\$93/bbl	

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

**Portfolio Holdings**

Our integrated and similar stock exposure (c.40%) is comprised of a mix of mid cap, mid/large cap and large cap stocks. Our four large caps are Exxon, BP, Royal Dutch Shell and Total. Mid/large and mid-caps are ENI, Statoil, Hess and OMV. At September 30 2015 the median P/E ratios of this group were 8.9x/15.1x 2014/2015 earnings. We also have one Canadian integrated holding, Suncor. The company has significant exposure to oil sands in addition to its downstream assets.

Our exploration and production holdings (c.38%) 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, Carrizo, Southwestern and QEP Resources), with four other names (Apache, Occidental, Noble, CNOOC and SOCO) having significant international production and two (Enquest and Bankers Petroleum) which are North Sea and European focused respectively. 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 and include three of the industry leaders (Devon and Southwestern).

We have exposure to four (pure) emerging market stocks in the main portfolio, though one is a half-position. Two are classified as integrated (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 2.5x 2015 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.

We have useful exposure to oil service stocks, which comprise just under 13% 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, Wood Group and Shawcor).

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 a single position split equally between two companies: JA Solar and Trina Solar. Both companies are Chinese solar cell and module manufacturers. They were loss making in 2012 and 2013 due to sharp falls in solar prices during the year but returned to profitability during 2014.

Portfolio at September 30, 2015

Guinness Atkinson Global Energy Fund 30 September 2015														
Stock	ID_ISIN	Curr.	Country	% of NAV	2007 B'berg mean PER	2008 B'berg mean PER	2009 B'berg mean PER	2010 B'berg mean PER	2011 B'berg mean PER	2012 B'berg mean PER	2013 B'berg mean PER	2014 B'berg mean PER	2015 B'berg mean PER	
<b>Integrated Oil &amp; Gas</b>														
Exxon Mobil Corp	US30231G1022	USD	US	350	10.21	8.8	19.1	12.4	8.8	9.4	10.1	10.1	19.2	
Royal Dutch Shell PLC	GB000803MLX29	EUR	NL	3.49	4.8	5.5	10.9	7.7	5.7	5.7	7.5	6.6	11.9	
BP PLC	GB0007980591	GBP	GB	353	4.7	3.7	6.5	4.5	4.5	5.6	6.9	8.1	15.2	
Total SA	FR0000120271	EUR	FR	353	5.4	4.4	11.3	8.8	7.9	7.5	8.4	8.5	11.4	
ENI SpA	IT0003132476	EUR	IT	3.43	5.5	5.0	9.9	7.5	7.2	7.0	11.2	13.1	28.4	
Statoil ASA	NO0010096985	NOK	NO	3.81	9.0	6.8	12.3	9.3	8.0	7.5	8.3	9.4	17.0	
Hess Corp	US42809H1077	USD	US	3.55	8.4	6.8	26.1	9.7	8.3	8.5	8.7	12.0	nm	
OMV AG	AT0000743059	EUR	AT	<u>3.63</u>	4.1	3.4	8.7	5.4	6.8	4.7	5.9	7.2	8.8	
				28.48										
<b>Integrated Oil &amp; Gas - Canada</b>														
Suncor Energy Inc	CA8672241079	CAD	CA	4.08	15.0	11.2	33.8	22.5	10.0	11.1	11.2	11.1	34.1	
Canadian Natural Resources Ltd	CA1363851017	CAD	CA	<u>3.48</u>	12.3	8.0	10.8	10.7	11.2	16.3	11.6	7.5	5,198.0	
				7.57										
<b>Integrated Oil &amp; Gas - Emerging market</b>														
PetroChina Co Ltd	CNE1000003W8	HKD	HK	3.59	5.5	7.0	7.5	6.0	5.9	6.8	7.5	7.4	15.8	
Gazprom OAO	US3682872078	USD	RU	<u>3.58</u>	nm	nm	4.8	3.7	2.5	2.7	2.5	3.8	2.5	
				7.17										
<b>Oil &amp; Gas E&amp;P</b>														
Apache Corp	US0374111054	USD	US	3.72	4.5	3.5	7.0	4.2	3.3	4.1	4.8	7.0	nm	
Occidental Petroleum Corp	US6745991058	USD	US	3.64	12.6	7.4	17.8	11.7	8.0	9.5	9.5	11.4	173.2	
QEP Resources Inc	US74733V1008	USD	US	1.73	nm	nm	nm	9.1	7.7	10.1	9.0	8.9	nm	
Southwestern Energy Co	US8454671095	USD	US	2.71	20.0	8.2	8.5	7.4	6.9	9.2	6.3	5.6	42.0	
Devon Energy Corp	US25179M1036	USD	US	3.48	5.3	3.7	10.3	6.2	6.1	11.5	8.7	7.2	17.6	
Noble Energy Inc	US6550441058	USD	US	3.49	11.1	8.6	17.8	14.6	11.5	13.2	9.8	12.9	201.2	
Newfield Exploration Co	US6512901082	USD	US	3.84	10.2	10.5	6.5	7.1	8.1	13.6	18.3	17.8	42.0	
Carrizo Oil & Gas Inc	US1445771033	USD	US	<u>2.00</u>	43.6	17.0	20.7	24.0	29.7	21.0	13.8	13.8	33.7	
				24.61										
<b>International E&amp;P</b>														
CNOOC Ltd	HK0883013259	HKD	HK	3.72	9.1	6.6	9.7	5.6	4.3	4.5	4.6	5.5	12.9	
Bankers Petroleum Ltd	CA0662863038	CAD	CA	1.31	nm	nm	438.2	19.3	7.0	6.7	4.6	4.1	52.6	
Tullow Oil PLC	GB0001500809	GBP	GB	1.12	8.0	5.2	33.9	16.4	3.7	3.3	25.2	nm	43.6	
EnQuest PLC	GB008635TG28	GBP	GB	0.91	nm	nm	nm	4.4	5.0	1.5	1.7	3.1	12.4	
Soco International PLC	GB008572ZV91	GBP	GB	<u>1.30</u>	20.9	22.5	14.0	19.3	12.5	3.5	3.7	5.7	26.9	
				8.36										
<b>Drilling</b>														
Unit Corp	US9092181091	USD	US	<u>1.56</u>	2.0	1.7	4.3	3.7	2.8	2.7	3.1	2.6	nm	
				1.56										
<b>Equipment &amp; Services</b>														
Halliburton Co	US4062161017	USD	US	3.46	13.9	16.3	27.0	17.6	10.6	11.9	11.4	9.0	23.0	
Helix Energy Solutions Group Inc	US42330P1075	USD	US	1.09	1.4	2.0	8.3	9.1	3.2	2.6	4.5	2.5	21.0	
ShawCor Ltd	CA8204391079	CAD	CA	3.43	17.5	14.4	15.3	22.4	38.3	12.5	7.7	11.0	21.2	
John Wood Group PLC	GB0085N0P849	GBP	GB	<u>2.99</u>	24.4	17.4	23.2	24.1	15.9	11.0	9.4	9.6	11.6	
				10.97										
<b>Solar</b>														
Trina Solar Ltd	US89628E1047	USD	US	2.37	12.4	7.4	5.5	2.7	332.2	nm	nm	11.1	7.8	
JA Solar Holdings Co Ltd	US4660902069	USD	US	<u>2.26</u>	10.2	4.2	nm	1.1	nm	nm	nm	8.5	6.0	
				4.63										
<b>Oil &amp; Gas Refining &amp; Marketing</b>														
Valero Energy Corp	US91913Y1001	USD	US	<u>4.21</u>	7.7	11.1	nm	37.9	15.1	12.3	14.6	9.9	7.1	
				4.21										
<b>Construction &amp; Engineering</b>														
Cluff Natural Resources PLC	GB00865YK01	GBP	GB	0.59	nm									
JXX Oil & Gas PLC	GB0004697420	GBP	GB	0.35	0.4	0.6	0.6	0.7	0.8	1.0	2.0	5.5	nm	
Ophir Energy PLC	GB00824CT194	GBP	GB	0.14	nm	2.1	nm							
Shandong Molong Petroleum Machinery Co Ltd	CNE1000001N1	HKD	HK	0.13	6.9	4.6	12.7	5.0	6.9	nm	nm	nm	nm	
Sino Gas & Energy Holdings Ltd	AU0000005EH2	AUD	AU	0.24	nm	nm	nm	nm	nm	82.0	nm	82.0	nm	
Triangle Petroleum Corp	US89600B2016	USD	US	0.08	nm	2.5	2.8							
WesternZagros Resources Ltd	CA9600081009	CAD	CA	<u>0.05</u>	nm									
				1.57										
				Cash	<u>0.87</u>									
				Total	100									
				PER	7.6	6.4	11.0	6.7	6.9	7.0	7.5	7.9	15.6	
				Med. PER	9.0	6.8	10.9	8.8	7.4	7.5	8.3	8.3	18.4	
				Ex-gas PER	7.4	6.5	11.5	6.7	7.1	6.7	7.4	7.7	13.7	

Research holding

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 over the last 11 years, together with the IEA forecasts for 2015.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015E	2016E
<b>World Demand</b>	82.5	84.0	85.2	87.0	86.5	85.5	88.5	89.5	90.7	91.9	92.7	94.4	95.8
<b>Non-OPEC supply</b> (includes Angola and Ecuador for periods when each country was outside OPEC <sup>1</sup> )	50.3	50.4	51.3	50.5	49.6	51.4	52.7	52.8	53.3	54.6	57.0	58.1	57.7
<b>Angola supply adjustment<sup>2</sup></b>	-1.0	-1.2	-1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Ecuador supply adjustment<sup>2</sup></b>	-0.5	-0.5	-0.5	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Indonesia supply adjustment<sup>2</sup></b>	1.0	0.9	0.9	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Non-OPEC supply</b> (ex. Angola/Ecuador and inc. Indonesia for all periods)	49.8	49.6	50.3	51.0	50.6	51.4	52.7	52.8	53.3	54.6	57.0	58.1	57.7
<b>OPEC NGLs</b>	4.2	4.3	4.3	4.3	4.5	5.1	5.5	5.9	6.2	6.2	6.4	6.6	6.8
<b>Non-OPEC supply plus OPEC NGLs</b> (ex. Angola/Ecuador and inc. Indonesia for all periods)	54.0	53.9	54.6	55.3	55.1	56.5	58.2	58.7	59.5	60.8	63.4	64.7	64.5
<b>Call on OPEC-12<sup>3</sup></b>	28.5	30.1	30.6	31.7	31.4	29.0	30.3	30.8	31.2	31.1	29.3	29.7	31.3
<b>Iraq supply adjustment<sup>4</sup></b>	-2.0	-1.8	-1.9	-2.1	-2.4	-2.4	-2.4	-2.7	-3.0	-3.1	-3.3	-3.9	-4.0
<b>Call on OPEC-11<sup>5</sup></b>	26.5	28.3	28.7	29.6	29.0	26.6	27.9	28.1	28.3	28.0	26.0	25.8	27.3

<sup>1</sup>Angola joined OPEC at the start of 2007, Ecuador rejoined OPEC at the end of 2007 (having previously been a member in the 1980s)

<sup>2</sup>Indonesia left OPEC as of the start of 2009

<sup>3</sup>Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi, U.A.E. Venezuela

<sup>4</sup>Iraq has no official quota

<sup>5</sup>Algeria, Angola, Ecuador, Iran, Kuwait, Libya, Nigeria, Qatar, Saudi, U.A.E. Venezuela

Source: 2003 - 2008: IEA oil market reports; 2009 - 15: September 2015 Oil market Report

Global oil demand in 2014 was 6m b/day up on the pre-recession (2007) peak. This means the combined effect of the 2007/08 oil price spike and the 2008/09 recession was quite small and was shrugged off remarkably quickly. The IEA estimate that demand rose 0.8m b/day in 2014 and forecast a further rise of 1.7m b/day in 2015, which would take oil demand to an all-time high of 94.4m b/day.

### OPEC

In December 2011, OPEC introduced a group-wide target of 30m b/day without specifying individual country quotas. The 30m b/day figure included 2.7m b/day for Iraq, so the target for OPEC-11 (excluding Iraq) was 27.3m b/day.

At the date of the announcement, and in the period since, OPEC’s production has been complicated by numerous issues: notably (1) erratic production from Libya, affected by the ongoing civil war; (2) depressed production in Iran due to western sanctions over its nuclear programme; (3) real difficulty in forecasting how Iraq might develop. In response to lower Libyan and Iranian production, and to cope with rising global oil demand, the three key swing producers within OPEC (Saudi, Kuwait and UAE) have each raised their production significantly, as the following table shows:

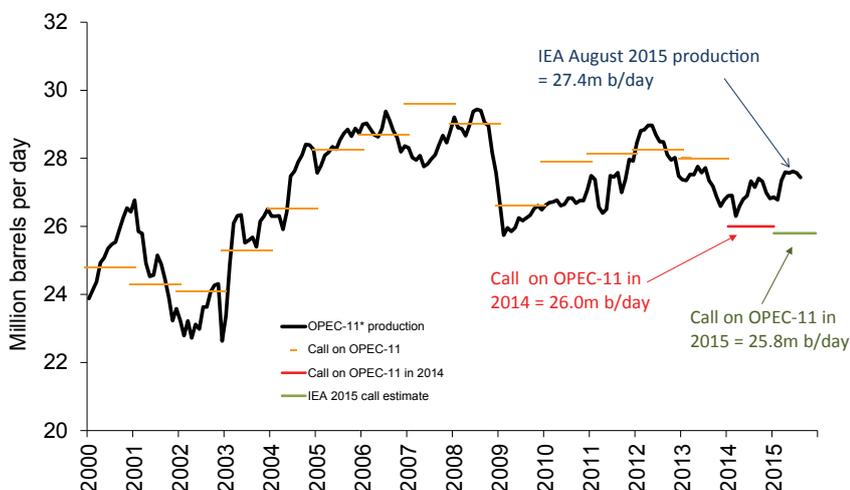
('000 b/day)	31-Dec-10	30-Sep-15	Change
Saudi	8,250	10,300	2,050
Iran	3,700	2,800	-900
UAE	2,310	2,900	590
Kuwait	2,300	2,940	640
Nigeria	2,220	1,980	-240
Venezuela	2,190	2,500	310
Angola	1,700	1,776	76
Libya	1,585	350	-1,235
Algeria	1,260	1,100	-160
Qatar	820	650	-170
Ecuador	465	538	73
<b>OPEC-11</b>	<b>26,800</b>	<b>27,834</b>	<b>1,034</b>
Iraq	2,385	4,214	1,829
<b>OPEC-12</b>	<b>29,185</b>	<b>32,048</b>	<b>2,863</b>

Source: Bloomberg

The effect from 2011 to the middle of 2014 was OPEC-12 producing at around 30m b/day, plus or minus 1m b/day, in an attempt to keep the global oil market in balance.

Since the second half of 2014, we have moved into a period where the global oil balance has become looser, driven principally by surging non-OPEC supply (+2.4m b/day in 2014). The effect of \$100+ oil, enjoyed for most of the 2011-2014 period, has emerged in the form of an acceleration in US shale oil production and a slowdown in declines in other non-OPEC regions. And as a result, we estimate that the call on OPEC-11 for 2015 has been reduced to 25.8m b/day, around 1.6m b/day lower than August 2015 production of 27.4m b/day (according to the IEA). In the graph below we show how the call on OPEC-11 has evolved since 2000:

Figure 6: OPEC-11 apparent production vs call on OPEC 2000 – 2015



Source: IEA Oil Market Report (August 2015 and prior); Guinness Atkinson estimates

OPEC met in November 2014, with the growing looseness in the physical market and a falling oil price (in the mid \$70s at the time of the meeting) prompting anticipation that OPEC would either reduce their overall quota or announce a firm commitment to comply with the 30m b/day target. In the event there was no quota cut, and a confirmation that the 30m b/day target would be maintained. This marked a significant change in OPEC strategy to one that prioritized market share over price.

While OPEC could have chosen to cut their quota and support the price, we regard their decision not to cut as a rational one. The decision was born out of a realization that the loosening market in 2014 was principally a function of non-OPEC over-supply, making short-term quota cuts a fools' errand as they would simply encourage more non-OPEC growth. Saudi have been eyeing US shale oil growth and would likely prefer a shallower oil price recovery for the time being rather than a 'V' shaped recovery that restores it to \$100/b, i.e. one that doesn't allow US oil growth to accelerate unabated. It is therefore logical for Saudi & co to tolerate a lower oil price for as long as it takes to achieve this.

Saudi went through a similar experience in the first half of the 1980s, trying to maintain price at the expense of volume as non-OPEC supply grew, causing them to reduce their production from 9.6m b/day in 1979 to 3.4m b/day in 1985. Eventually the strategy failed and Saudi shifted to an alternative plan of boosting supply and allowing oil prices to fall, slowing non-OPEC supply growth and invigorating demand. This time Saudi are short-cutting the problem, acting sooner rather than later to choke off non-OPEC supply.

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

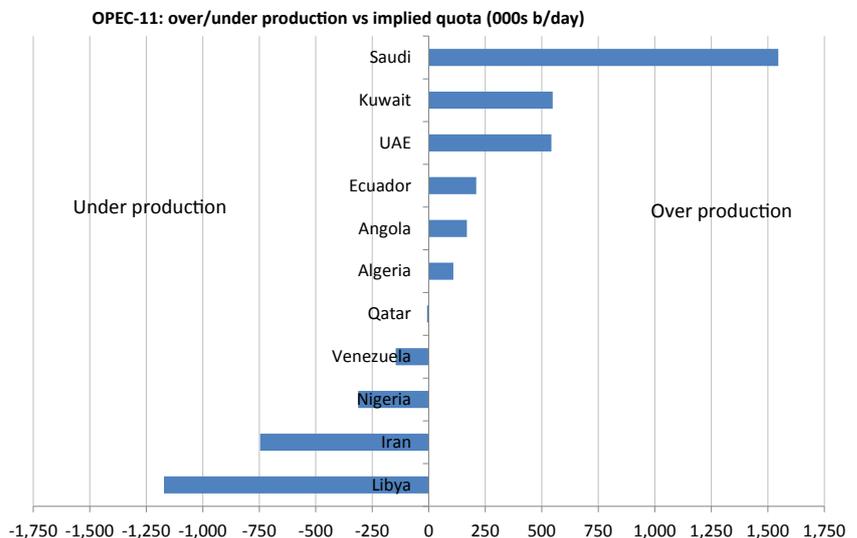
Saudi's decision not to shoulder an OPEC production cut for the time being is consistent with both of those objectives.

The most recent OPEC meeting was held on June 5, 2015, at which their production quota was left unchanged, signaling a continuation of the market share over price strategy. OPEC's most recent statement, released at the end of August 2015, had a somewhat more conciliatory tone, hinting that co-operation among producers could return:

*"Needless to say, OPEC, as always, will continue to do all in its power to create the right enabling environment for the oil market to achieve equilibrium with fair and reasonable prices. As the Organization has stressed on numerous occasions, it stands ready to talk to all other producers. But this has to be on a level playing field. OPEC will protect its own interests. As developing countries, its Members, whose economies rely heavily on this one precious resource, can ill afford to do otherwise. Cooperation is and will always remain the key to oil's future and that is why dialogue among the main stakeholders is so important going forward. There is no quick fix, but if there is a willingness to face the oil industry's challenges together, then the prospects for the future have to be a lot better than what everyone involved in the industry has been experiencing over the past nine months or so. Only time will tell."*

(source: OPEC July/Aug 2015 bulletin)

As an important aside, we also point to the complicated production picture within OPEC, illustrated here by an estimation of the amount of over/under production versus each country's implied quota:



Source: IEA; Guinness Atkinson estimates (August 2015)

Saudi, Kuwait and UAE are over-producing versus their implied quota by nearly 2.7m b/day, while Iran and Libya, but also Nigeria and Venezuela, are under-producing. Unified action by OPEC has been made difficult by the current position, with the under-producing nations reluctant to contribute.

All of that said, nothing in the market has changed our view that OPEC have the ability to put a floor under the price – as they did in 2008, 2006, 2001 and 1998 – should they choose.

### Supply looking forward

The non-OPEC world has, since the 2008 financial crisis, grown its production more meaningfully than in the six years before 2008. The growth was 0.2% p.a. from 2002-2008, increasing to 2.3% p.a. from 2008-2014.

Non-OPEC production growth in 2014 (+2.4m b/day) was the strongest since 1978 and the fourth strongest ever. Growth in the non-OPEC region over the last 3 years has been dominated by the successful development of shale oil and oil sands in North America (up around 5m b/day since 2010), implying that the rest of non-OPEC region has declined by around 1m b/day over the period, despite the sustained high oil price until mid 2014.

Of the 2.4m b/day of growth in 2014, North America dominates (+1.8 m b/day) with Brazil (+0.2m b/day) supporting. As mentioned earlier, non-OPEC supply growing this strongly in 2014 has had a loosening effect on the global oil balance.

Non-OPEC growth in 2015 is expected to be around 1.1m b/day, well down on 2014 but resilient in the context of sub \$60 oil. Just over half of the growth is expected to come from North America. However, the effect of sub \$60 oil really starts to impact in 2016 when non-OPEC supply is expected to fall by 0.4m b/day.

Looking further ahead to how global oil supply may evolve, we must consider in particular increases in supply from two regions: North America and Iraq.

The growth in US shale oil production, in particular from the Bakken, Permian and Eagleford basins, raises the question of how much more there is to come. So far, new oil production from these sources amounts to over 3.5m b/day. Our assessment is that US shale oil is a high cost source of oil but one that is viable, on average, at \$70-80 oil prices. In total, it could be comparable in size to the UK North Sea, i.e. it could grow by around a further 3m b/day over the next five years. We observe that since the discovery of the Bakken, Eagleford and Permian, the US has struggled to find another large shale resource, despite 3 years of trying, but that there is now the opportunity to fully exploit those three discoveries. We note that while US shale oil may be viable with prices around \$70, the rate of development is heavily dependent on the cash flow available to producing companies, which tends to be recycled immediately into new wells. Naturally, cash flows available for reinvestment in a sub \$60 world are far lower than in a \$100+ world, so would slow the growth rate. It is now clear that onshore production is in decline and we note that year-over-year production at the end of 2015 could well be around zero.

As for Iraq, the questions of how big an increase is likely, in what timescale, and how other OPEC members react are all important issues. Our conclusion is that while an increase in Iraqi production may be technically possible (say, 0.5m - 1m b/day over the next 3 years), if it occurs it will be surprisingly easily absorbed by a combination of OPEC adjustment and continuing growth in demand from developing countries of c.10-15m b/day over the next 10 years. Iraqi production was running at 4.2m b/day in September 2015 (according to Bloomberg), maintaining high levels. Despite this potential, the recent unrest in the country and a likely slowdown in investment from foreign partners does not fill us with confidence that significant growth beyond here can easily be achieved.

Other opportunities to exploit unconventional oil likely exist internationally, 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 being 5-10 years behind North America.

## Demand looking forward

The IEA are forecasting growth in oil demand in 2015 of around 1.7m b/day, comprising an increase in non-OECD demand of around 1.2m b/day and 0.5m b/day increase in OECD demand. The components of this non-OECD demand growth can be summarized as follows:

**Figure 7: Non-OECD oil demand**

m b/d	Demand								Growth							
	2009	2010	2011	2012	2013	2014e	2015e	2016e	2010	2011	2012	2013	2014	2015	2016	
Asia	18.25	19.70	20.35	21.42	22.05	22.61	23.49	24.25	1.45	0.65	1.07	0.63	0.56	0.88	0.76	
M. East	7.10	7.32	7.43	7.76	7.91	8.08	8.20	8.42	0.22	0.11	0.33	0.15	0.17	0.12	0.22	
Lat. Am.	5.70	6.03	6.17	6.42	6.68	6.84	6.91	7.01	0.33	0.14	0.25	0.26	0.16	0.07	0.10	
FSU	4.00	4.15	4.39	4.61	4.71	4.88	4.82	4.81	0.15	0.24	0.22	0.10	0.17	-0.06	-0.01	
Africa	3.37	3.48	3.48	3.78	3.89	3.96	4.08	4.25	0.11	0.00	0.30	0.11	0.07	0.12	0.17	
Europe	0.70	0.68	0.66	0.65	0.66	0.68	0.70	0.71	-0.02	-0.02	-0.01	0.01	0.02	0.02	0.01	
	<b>39.12</b>	<b>41.36</b>	<b>42.48</b>	<b>44.64</b>	<b>45.90</b>	<b>47.05</b>	<b>48.20</b>	<b>49.45</b>	<b>2.24</b>	<b>1.12</b>	<b>2.16</b>	<b>1.26</b>	<b>1.15</b>	<b>1.15</b>	<b>1.25</b>	

Source: IEA Oil Market Report (September 2015)

As can be seen, Asia has settled down into a steady pattern of growth since 2010. Collective growth in the Middle East, Latin America, FSU (Former Soviet Union) and Africa in 2014 almost exactly matched that in Asia. These other non-OECD regions are all central to the developing world industrialization and urbanization thesis: it is much more than just a China story. In 2015, non-OECD oil demand is expected to slow a little, yielding 1.2m b/day of growth as an acceleration in Asian demand growth is dampened by falling demand in Russia.

For the OECD region in 2014, the IEA estimates that demand declined by 0.5 million barrels per day, made up of North American demand essentially flat and declines from Europe and Asia Pacific. We believe that the decline in the Pacific region reflects the gradual switching away from the temporary move to oil by Japan post Fukushima. OECD demand in 2015 is forecast to be up 0.5m b/day, with North America, Europe and Pacific all up, as lower prices stimulate a reversal of last year's demand declines. The IEA have consistently revised demand expectations higher this year, but we continue to think that they may be being conservative in their outlook, particularly in North America.

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, and price. At current prices, the world oil bill as a percentage of GDP is around 2.5%, the lowest level since 2002, and a likely stimulant of strong multi-year demand growth. If oil prices return to a higher range (say \$75-100/bbl, representing 3-4% of GDP), we probably return to the pattern established over the past 5 years, with a flat to shallow decline picture in the OECD more than offset by strong growth in the non-OECD area. The small decline in the OECD reflects improving oil efficiency over time, though this effect will be 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. Overall, we would not be surprised to see average annual non-OECD demand growth of around 1.5m b/day to the end of the decade. This would represent a growth rate of 3% p.a., no greater than the growth rate over the last 15 years (3.2% p.a.).

## Conclusions about oil

The table below summarizes our view by showing our oil price forecasts for WTI and Brent in 2015 against their historic levels, and rises in percentage terms that we have seen in the period from 2002 to 2014.

**Figure 8: Average WTI & Brent yearly prices, and changes**

Oil price (inflation adjusted)	Est															
12 month MAV	1986-2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
WTI		30	33	38	49	66	75	82	104	68	84	99	94	98	93	55
Brent		30	32	35	46	64	75	82	103	67	84	115	112	108	99	60
<b>Brent/WTI (12m MAV)</b>		<b>30</b>	<b>33</b>	<b>37</b>	<b>48</b>	<b>65</b>	<b>75</b>	<b>82</b>	<b>104</b>	<b>68</b>	<b>84</b>	<b>107</b>	<b>103</b>	<b>103</b>	<b>96</b>	<b>58</b>
<b>Brent/WTI y-on-y change (%)</b>			8%	12%	30%	37%	15%	9%	26%	-35%	24%	27%	-4%	0%	-7%	-40%
Brent/WTI (5yr MAV)		30	25	32	37	42	51	61	75	79	82	89	93	93	99	93

Source: Bloomberg; Guinness Atkinson Asset Management (estimates)

MAV = Moving Average

We expect oil to trade in a \$45-65 range in the near term. This is an unsupported level which may fluctuate significantly. If this price range persists, we expect North American unconventional supply growth to slow rapidly. This points to a rise in oil prices in the second half of 2015/ first half of 2016.

In 2016/17 the likelihood is that the price will fluctuate quite widely but move on an upwards trajectory as accelerating emerging country demand growth and US shale oil growth flattening slowly tightens the global oil supply/ demand balance. The world oil bill at \$75 per barrel would represent 3% of 2015 Global GDP, 14% under the average of the 1970 – 2014 period (3.5%).

We believe that Saudi's long-term objective remains to maintain a 'good' oil price, significantly higher than current levels.

## Natural gas market

### US supply & demand: recent past

On the demand side, industrial gas demand and electricity gas demand, each about a third of total US gas demand, are key. Commercial and residential demand, which make up the final third, have been fairly constant on average over the last decade – although yearly fluctuations due to the coldness of winter weather can be marked.

Industrial demand (of which around 35% comes from petrochemicals) tends to trend up and down depending on the strength of the economy, the level of the US dollar and the differential between US and international gas prices. Between 2000 and 2009 industrial demand was in steady decline, falling from 22.2 Bcf/day to 16.9 Bcf/day. Since 2009 the lower gas price (particularly when compared to other global gas prices) and recovery from recession has seen demand rebound, up in 2015 to around 21.2 Bcf/day.

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 2014, 27.2% of electricity generation was powered by gas, up from 21.6% in 2007. The big loser here is coal which has consistently given up market share over the past 10 years.

Total gas demand in 2015 (including Canadian and Mexican exports) is expected to be 80.9 Bcf/day, up by 3.1 Bcf/day (4.0%) vs 2014 and up 7.2 Bcf/day (10%) vs the 5 year average. The biggest change in 2015 vs 2014 is power generation (+2.9 Bcf/day), with low prices causing an acceleration in coal to gas switching by the electric utility sector. Exports of gas to Mexico (+0.7 Bcf/day) are also up strongly in 2015, as the network of gas pipelines from Texas into Mexico expands.

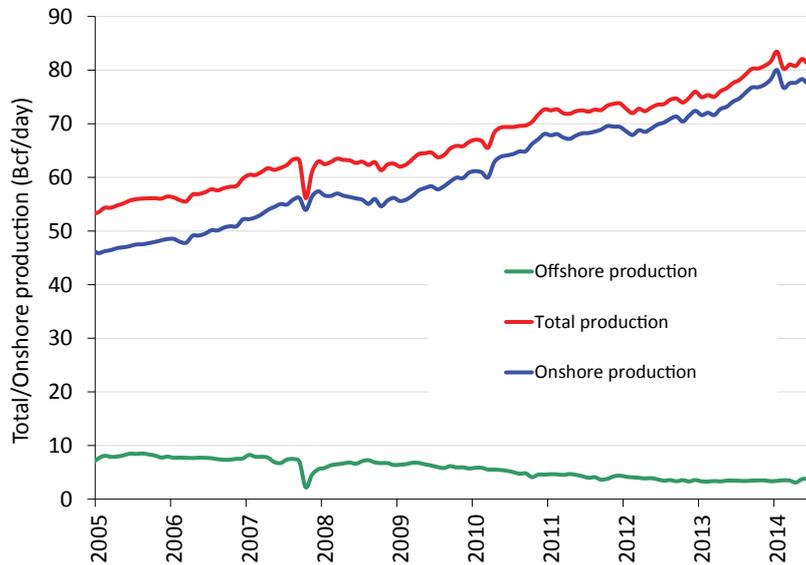
Overall, while gas demand in the US has been strong over the past five years, it has been overshadowed by a rise in onshore supply, pulling the gas price lower.

The supply side fundamentals for natural gas in the US are driven by 5 main moving parts: onshore and offshore domestic production, net imports of gas from Canada, exports of gas to Mexico and imports of liquefied natural gas (LNG). Of these, onshore supply is the biggest component, making up over 85% of total supply.

Since the middle of 2008 the weaker gas price in the US reflects growing onshore US production driven by rising gas shale 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 197 at the end of September 2015.

However, offsetting the fall, the average productivity per rig has risen dramatically as producers focus their attention on the most prolific shale basins. Onshore gas supply (gross) is now at 78.4 Bcf/day, 21 Bcf/day (37%) above the 57.4 Bcf/d peak in 2009 before the rig count collapsed.

**Figure 9: US natural gas production 2005 – 2015 (Lower 48 States)**



Source: EIA 914 data (July 2015 published in September 2015)

**Supply outlook**

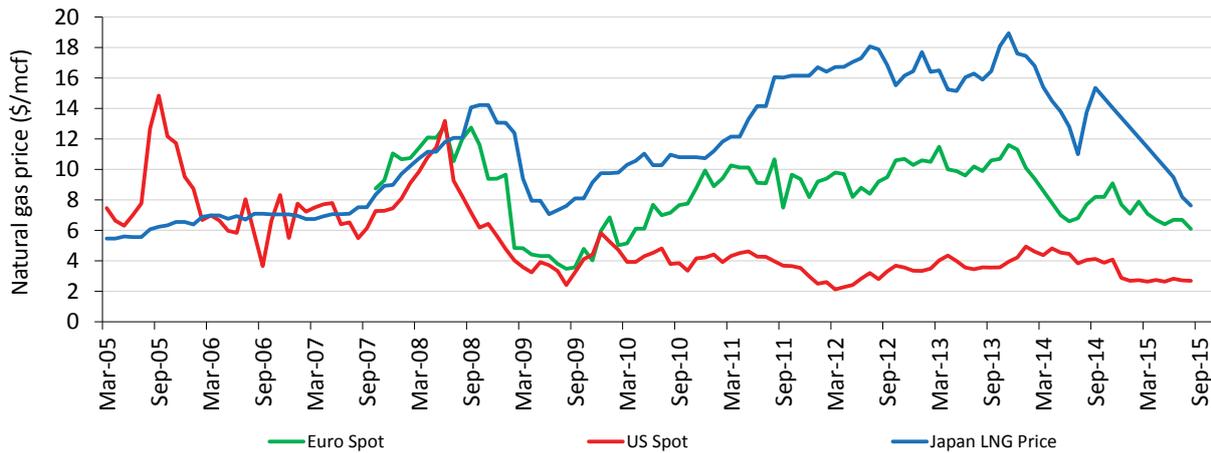
The outlook for gas production in the US depends on three key factors: the rise of associated gas (gas produced from wells classified as oil wells); expansion of the newer shale basins, principally the Marcellus/Utica, and the decline profile of legacy gas fields. The outlook for US oil production growth has changed significantly over the last 12 months with the decline in the oil price. US onshore oil production peaked in April 2015 and is now declining, which will cause associated gas production to decline. Generally, we expect to see rates of around 1-2 Bcf/day of associated gas per 1m b/day of oil production. The Marcellus/Utica region, which includes the largest producing gas field in the US and the surrounding region, reached production of around 15 Bcf/day in mid 2014 and growth continues in 2015. Further growth of 3-4 Bcf/day is likely over the next couple of years. Balanced against these increases is an expected decline in legacy gas fields, particularly if the gas drilling rig count stays low. We estimate that ‘other gas’ (onshore production ex associated and Marcellus) will decline by around 1.5 Bcf/day in 2015 (compared to a decline of 3.5 Bcf/day in 2014). Considering these factors together, we expect total onshore production gains to continue (c.1-2 Bcf/day per annum for the next two or three years), though at a more moderate rate than the 2011-2015 period.

	2009	2010	2011	2012	2013	2014	2015(est)
Onshore production - average (Bcf/day)	55.9	58.6	64.6	68.4	70.2	75.3	78.0
Change (Bcf/day)	0.9	2.7	5.9	3.9	1.8	5.1	2.7
Change (%)	1.7%	4.8%	10.1%	6.0%	2.6%	7.2%	3.6%

Source: EIA; Guinness Atkinson estimates

Liquid natural gas (LNG) arbitrage

The UK national balancing point (NBP) gas price – which serves as a proxy to the European traded gas price – has weakened so far in 2015, falling to around \$6/mcf, predominantly as a result of price-linkage to oil prices. We note that it still remains at a premium to the US gas price (c.\$6.0 versus c.\$2.50), albeit reduced from 12 months ago. Asian LNG prices have also fallen, now trading at just under \$9/mcf, also pulled lower by their link to oil prices and due to a negative demand response in Asian markets to previously higher natural gas prices.



Source: Bloomberg

Demand outlook

We expect US total demand in 2015 (including exports to Canada and Mexico) to be around 81 Bcf/day, nearly 3 Bcf/day higher than 2014. Assuming normal weather for the rest of the year, residential/commercial demand are likely to be down by around 0.5 Bcf/day, normalising after demand was boosted by a very cold 2014 winter. Demand from power generation is expected to be up strongly, helped by low prices (relative to coal) and a gain in market share as the retirement of coal power utilities accelerates. Industrial demand is also likely to up on 2014 as the strength in the US economy shows through.

Looking out further, the low US gas price has stimulated various initiatives that are likely have a material impact on demand from 2016 onwards. The most significant is the group of LNG export terminals in the US and Canada which are in the planning/ construction stages. There are over 20 Bcf/day of LNG export projects proposed in the US today, plus a further 20+ Bcf/day in Canada.

Not all the proposed facilities will be built (and the contraction of the spread between US and international gas prices brings this into sharper focus) but by the end of 2015, it looks likely that around 10 Bcf/day of capacity will be under construction, much of which will come online by 2020. As the table below of Department of Energy (DoE) approved projects shows, first exports are expected in 2016 (Q1) from Cheniere’s Sabine Pass terminal:

Company	Project	Location	Currently under construction (Bcf/day)	Date of first exports	Likely under construction by end 2015 (Bcf/day)	Total potential capacity (Bcf/day)
Cheniere Energy	Sabine Pass	LA	2.4	Q1 2016	3.6	4.1
FLNG Liquefaction	Freeport LNG	TX	1.4	Q4 2017	1.8	1.8
Sempra Energy	Cameron LNG	LA	1.7	Q2 2018	1.7	1.7
Dominion	Cove Point LNG	MD	0.8	Q3 2018	0.8	0.8
Cheniere Energy	Corpus Christi LNG	TX	-	Q1 2019	1.8	2.1
Lake Charles Exports	Lake Charles LNG	LA	-	tba	-	2
Veresen	Jordan Cove LNG	OR	-	tba	-	0.8
LNG Development Comp	Oregon LNG	OR	-	tba	-	1.3
<b>Total</b>			<b>6.3</b>		<b>9.7</b>	<b>14.6</b>

Source: Johnson Rice

Industrial demand will also grow thanks to the increased use of gas in the oil refining process and the construction of new petrochemical plants: Dow Chemical and Chevron Phillips have large new Gulf Coast facilities planned for 2017, the first new crackers to be built in the US since 2001.

We also believe that gas will continue to take the majority of incremental power generation growth in the US and continue to take market share from coal. Coal fired power generation closures will be a feature of 2015 as pollution standards come into force in an effort to reduce mercury and acid gases emissions, which likely accelerates the switch to gas. Our working assumption is for gas fired power generation to grow 0.8-1.5 Bcf/day per year, although this will be affected by actual gas prices.

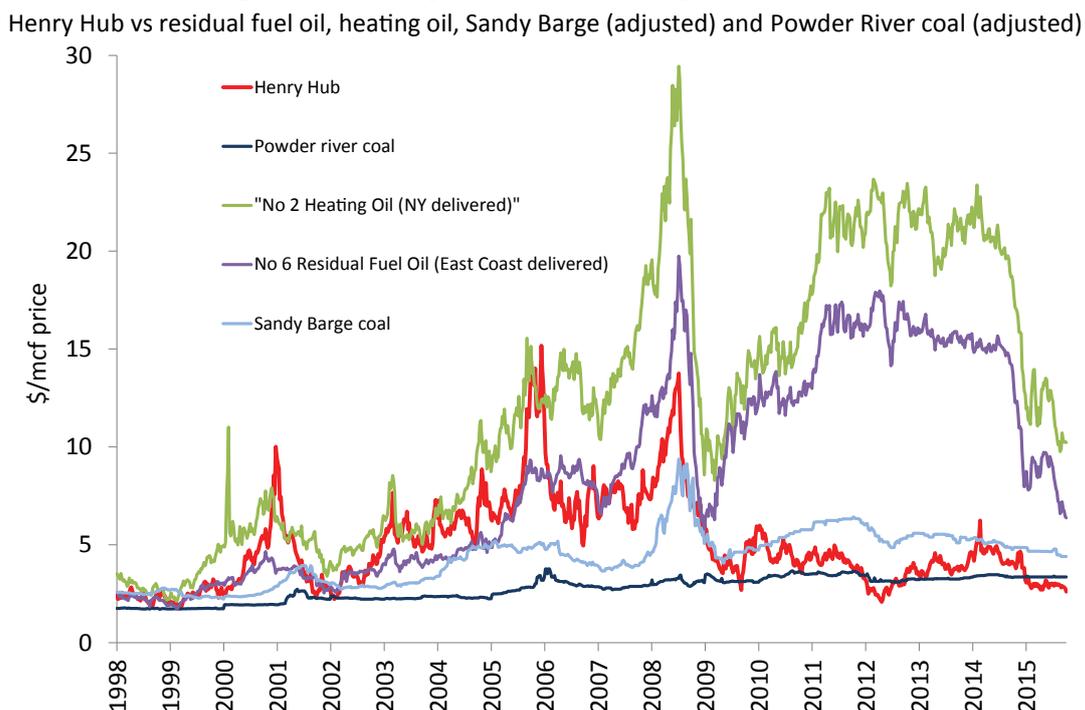
Increased demand from natural gas vehicles (compressed natural gas typically for shorter haul and liquefied natural gas for longer haul journeys) is coming, but starts from such a small base that it is unlikely to contribute meaningfully to the overall demand picture in the next 5 years.

**Other**

The oil/gas price ratio (\$ per bbl WTI/\$ per mcf Henry Hub) of 17.9x at the end of September continues well outside the more normal ratio of 6-9x. Recent weakness in both oil and natural gas prices has continued to keep the ratio elevated but, at \$70 oil, this would imply the gas price increasing to around \$8 once the gas market has returned to balance. This is quite a thought and a long way away from current market sentiment, for both oil and for natural gas.

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. With the gas price trading below the coal price support level for the first 8 months of 2012, resulting coal to gas switching for power generation was significant. With strong production growth depressing the price below \$3 again today, we expect to see coal to gas switching re-accelerate.

**Figure 10: Natural gas versus substitutes (fuel oil and coal)**



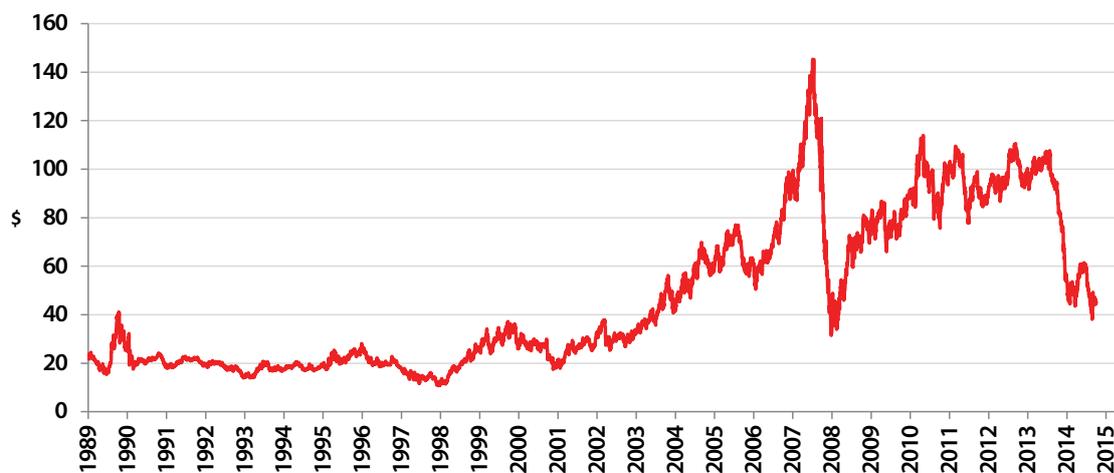
Source: Bloomberg LP (September 2015)

## Conclusions about natural gas

The US natural gas price bottomed in 2012 and a tepid recovery is underway, although strength in gas supply and the dynamics of coal to gas switching are keeping a lid on prices near term. Average 2014 natural gas prices (at around \$4) were more than double the April 2012 low, though we suspect that the (full cycle) marginal cost of supply remains a little higher. We do not believe the excess in production over demand can continue indefinitely with natural gas trading at this level: a combination of reduced capital spending by the producing companies and growing natural gas demand stimulated by the low gas price will create a new market equilibrium. As this all happens we expect the price to stabilise in the \$3.00 – 4.00 range. It may be held at this level for a period until demand grows further (2016 and beyond), and longer term we expect the price to normalize to \$4.00+.

## 6. Appendix

Figure 11: Oil price (WTI \$) last 25 years.



Source: Bloomberg LP; chart to Sept 30, 2015

For the oil market, the period since the Iraq Kuwait war (1990/91) can be divided into two distinct periods: the first 9-year period was 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.

The last 13 years, by contrast, have seen 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

\$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.

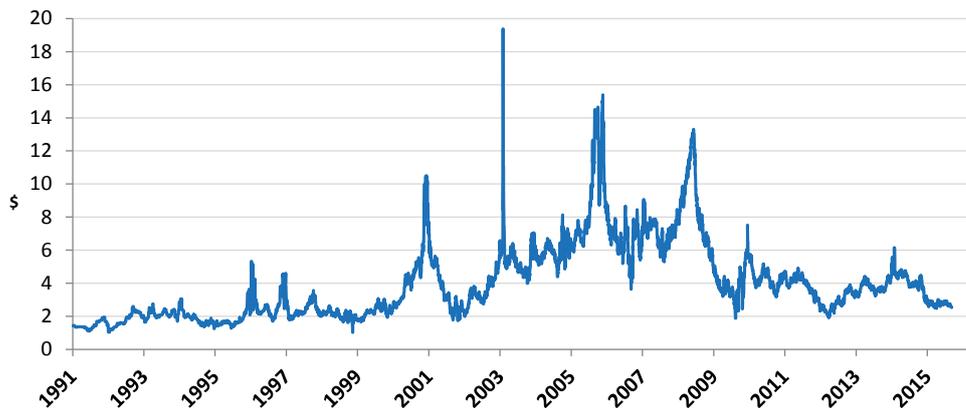
After 2005 we saw a further strong run-up in the oil price. Hurricanes Katrina and Rita, which devastated New Orleans, caused oil to spike up to \$70 in August 2005, and it spiked up again in July 2006 to \$78 after a three week conflict between Israel and Lebanon threatened supply from the Middle East. OPEC implemented cuts in late 2006 and early 2007 of 1.7 million barrels per day to defend \$50 oil and with non-OPEC supply growth at best anaemic demonstrated that it could to act a price-setter in the market at least so far as putting a floor under it.

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.

Most recently, since the end of 2014, Brent and WTI have dropped well below these trading ranges, as non-OPEC supply (especially US) has accelerated and OPEC have made clear their intention not to support the price for the timebeing.

**Figure 12: North American gas price last 22 years (Henry Hub \$/Mcf)**



Source: Bloomberg LP; chart to Sept 30, 2015

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 because the infrastructure to export LNG from North America is not yet in place.

Commentary for our views on Dividends, Alternative Energy and Asia markets is available on our website. Please [click here](#) to view.

**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 funds 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.

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.

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

Free cash flow (FCF) represents the cash that a company is able to generate after laying out the money required to maintain or expand its asset base.

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

Capital expenditure, or CapEx, are funds used by a company to acquire or upgrade physical assets such as property, industrial buildings or equipment.

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.

Price to book ratio (P/B Ratio) is a ratio used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share.

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.

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