

# 2015 Outlook for Energy

The Guinness Atkinson Global Energy Team, January 2015

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2014 was a turbulent year for energy markets. We'd like to share with you some big picture thoughts on the key events that occurred in 2014 and our outlook for 2015 and beyond.

## Highlights

### 2014 IN REVIEW

- **Although the Brent (global) oil price averaged around \$100/barrel(bbl) for the fourth year in a row, it fell sharply towards the end of the year to close at around \$55/bbl.** An acceleration in North American unconventional shale oil production growth, together with weakening Far East and European oil demand, combined in mid-to-late 2014 to weaken the supply/demand balance and pressure oil prices.
- **The dominant themes for global oil markets last year were:**
  - i) Surging non-OPEC supply, up by around 1.9million(m) barrels(b)/day(d).**

This is the largest annual growth from non-OPEC (Organization of Petroleum Exporting Countries) since 1978 and the fourth largest ever. The growth was dominated by the US, up 1.4m b/day, as shale oil producers took advantage of high oil prices for the first nine months of the year to accelerate oil drilling.
  - ii) Weaker global oil demand, expected to have grown by around 0.6m b/day.**

This is made up of non-OECD (Organization for Economic Cooperation & Development) oil demand growth of 1.1m b/day and OECD oil demand shrinkage of around 0.5m b/day. Demand growth of over 1m b/day in 2014 had initially been expected, but forecasts were lowered, coincident with downgrades to global Gross Domestic Product (GDP) forecasts in the middle of the year.
  - iii) A shift in policy from OPEC.**

In response to falling oil prices, OPEC announced in November that they were leaving their production quota unchanged, whilst providing no clarity on when any action might be taken. Saudi have since amplified this message, declaring an intention to maintain production regardless of price.
- **For natural gas in the US, 2014 continued the theme of the past few years.** Production growth from newer gas shales (the Marcellus in particular) along with gas produced as a by-product of new shale oil production regularly outran demand growth. Henry Hub averaged \$4.27/million cubic feet(mcf) in 2014, vs \$3.73 in 2013; this increase can largely be attributed to an unusually cold start to the year, boosting heating demand for gas, rather than anything fundamental.
- **It was a tough year for energy equities, which fell in sympathy with the decline in the oil price.** The MSCI World Energy Index produced a total return of -10.9% versus the MSCI World Index +5.6%. The first half of 2014 delivered strong gains but the second half erased those gains, and more, as a result of the crude oil price weakness. The performance of the MSCI World Energy Index was only part of the story, with a number of energy equity subsectors finishing 2014 down by 20% to 50%, particularly those more levered to oil.

## OUTLOOK FOR 2015

- **We expect the oil price to remain volatile for a number of months**, with a potential recovery to \$75+/bbl likely over the next 12 months. A necessary part of this outcome is for US oil shale growth to fall back by the end of 2015. After 2015, the likelihood is that the price will fluctuate quite widely, but move on an upwards trajectory as accelerating emerging country demand growth and flattening US shale oil growth slowly tighten the global oil supply/demand balance.
- **The oil price at \$50-60/bbl is not yet at an economic extreme, leaving a reasonable chance that it continues to decline while the market starts to rebalance.** An oil price in the \$50-60/bbl range is not high enough to justify new investment in higher cost and more marginal non-OPEC projects. However, it is not low enough to warrant existing high cost producers to shut in reasonable volumes of supply. We believe that oil prices would need to fall to around \$35-40/bbl to warrant this.
- **Saudi and other OPEC members are acting rationally in their response to the falling oil price.** OPEC's decision not to cut production is born out of a realization that the falling price is principally a function of non-OPEC over-supply, making 'emergency' quota cuts a fools' errand, as they would simply encourage more non-OPEC growth. We sense that Saudi are eyeing US shale oil growth and would prefer a shallower oil price recovery for the timebeing (i.e. one that doesn't allow US oil growth to accelerate unabated), rather than a 'V' shaped recovery that restores it to \$100/bbl. If we are right, it is logical for Saudi & co to tolerate a lower oil price for as long as it takes to achieve this.
- **We expect oil demand to bounce back to growth of over 1m b/day (vs 0.6m b/day in 2014).** Not only will there be a demand response to lower oil prices, but the negatives (Europe and Japan weakness) are not expected to persist and global GDP growth is expected to be stronger. The International Energy Agency (IEA) is forecasting oil demand growth recovering to 0.9m b/day in 2015 (from 0.6m b/day in 2014). We won't be surprised if oil demand is substantially more robust than this, both near and long-term.
- **The most relevant precedent for comparison with current oil markets is probably 1985-87.** This was an oil price fall caused by supply/demand imbalance, as opposed to one related to an external demand shock like we saw in 2000/01 and 2008/09. In late 1985, Saudi did much as now, announcing that they would no longer support the oil price. The price fell by 65% before doubling over the following 12 months. If history were to repeat itself, we could see the oil price bottoming at \$35-40/bbl, before recovering to \$70-80/bbl.
- **The political backdrop to OPEC's actions remains as complicated as it ever has been.** At time of writing, we have a major disruption announced in Libya as heavy fighting continues close to the two oil export ports of Es Sider and Ras Lanuf (which have a combined export capacity of 0.6m b/day). ISIS in Iraq is regrouping. North-south tensions are very high in Nigeria. Saudi's King Abdullah is 91 and may be terminally ill.
- **Energy equities have now underperformed the broad market for longer than they did after the price declines in 1986** the MSCI World Energy Index has underperformed for 43 months (to end December 2014) while it underperformed for 27 months to February 1983 and 26 months to July 1986. If you believe, as we do, that a recovery in the oil price to \$75-80/bbl is very possible (and to \$100/bbl over a slightly longer timeframe), the case for accumulating energy equities at this level looks strong.
- Our analysis shows that, at the equivalent point to today in the oil price declines of 1985-87 and 1996-98, an investment in the energy sector outperformed the S&P500 over the following 1 year, 3 years and 5 years\*. **Past performance is no guarantee of future results.**
- **Steel yourselves to be ready to buy the sector when other investors are most fearful.**

\*Reference recovery performance data of sector vs. S&P 500 as demonstrated on pg. 12

## Review of 2014

In terms of **oil prices**, 2014 was a year of two halves. The first half saw Brent oil trade between \$100 and \$120 per barrel, averaging \$109, while the second half saw Brent collapsing. Although it averaged \$91 in the second half of the year, it closed 2014 at around \$55, close to its lowest level of the year. An acceleration in North American unconventional shale oil production growth, together with weakening of Far East and European oil demand, combined in mid to late 2014 to weaken the supply/demand balance and pressure oil prices.

All eyes were then on OPEC and how they might respond in their official meeting at the end of November. In the event, OPEC chose to leave their production quota unchanged, while providing no clarity on when a cut might be forthcoming, which caught the market by surprise. The lack of visibility and pricing volatility have continued and we believe are likely to persist through the early part of 2015. The major components to oil supply/demand for 2014 were as follows:

- **Non-OPEC oil supply** is likely to have grown by around 1.9 million barrels per day in 2014, principally 1.4m b/day from the US (driven by shale oil) and 0.2m b/day from Canada (driven by oil sands production). This is the largest annual growth from non-OPEC since 1978 and the fourth largest ever;
- **OPEC oil supply (including natural gas liquids, i.e. NGLs)** is likely to have been essentially flat versus 2013 (36.7m b/day versus 36.8m b/day). Libyan production was around 0.4m b/day lower in 2014, offset by a slight recovery in Iranian supply (up 0.2m b/day) and growth of 0.1m b/day from both Saudi and Iraq. Importantly, however, Saudi announced a new production policy – to maintain their production regardless of price;
- **Global oil demand** is likely to have grown by around 0.6 million barrels per day in 2014, according to the IEA. This is made up of **non-OECD oil demand** growth of 1.1m b/day and **OECD oil demand** shrinkage of around 0.5m b/day, with Europe down 0.2m b/day and Japan down 0.3m b/day. We will not be surprised if the ultimate oil demand numbers for 2014 are revised upwards somewhat (as usually happens), but that still leaves 2014 as a mediocre oil demand growth year;
- **OECD oil inventories** at the end of November 2014 were estimated to be 2,712 million barrels (versus 2,615 million barrels at the end of November 2013). While still within the ten-year range, OECD inventories have therefore loosened and are now at elevated levels versus recent history.

For **natural gas**, 2014 ended up being a continuation of the same theme as in the past several years. Production growth from newer gas shales (the Marcellus in particular) along with by-product gas from new shale oil production (i.e. associated gas) regularly outran demand growth until the price dipped and coal-to-gas switching kicked in. As ever, weather was an important wildcard. Henry Hub averaged \$4.26/mcf in 2014, versus \$3.73 in 2013; this increase can largely be attributed to strong demand amid an unusually cold start to the year, rather than anything fundamental. The year ended on a weak note, with Henry Hub testing \$3 as natural gas inventories recovered to average levels having been severely depleted by the cold winter at the start of the year.

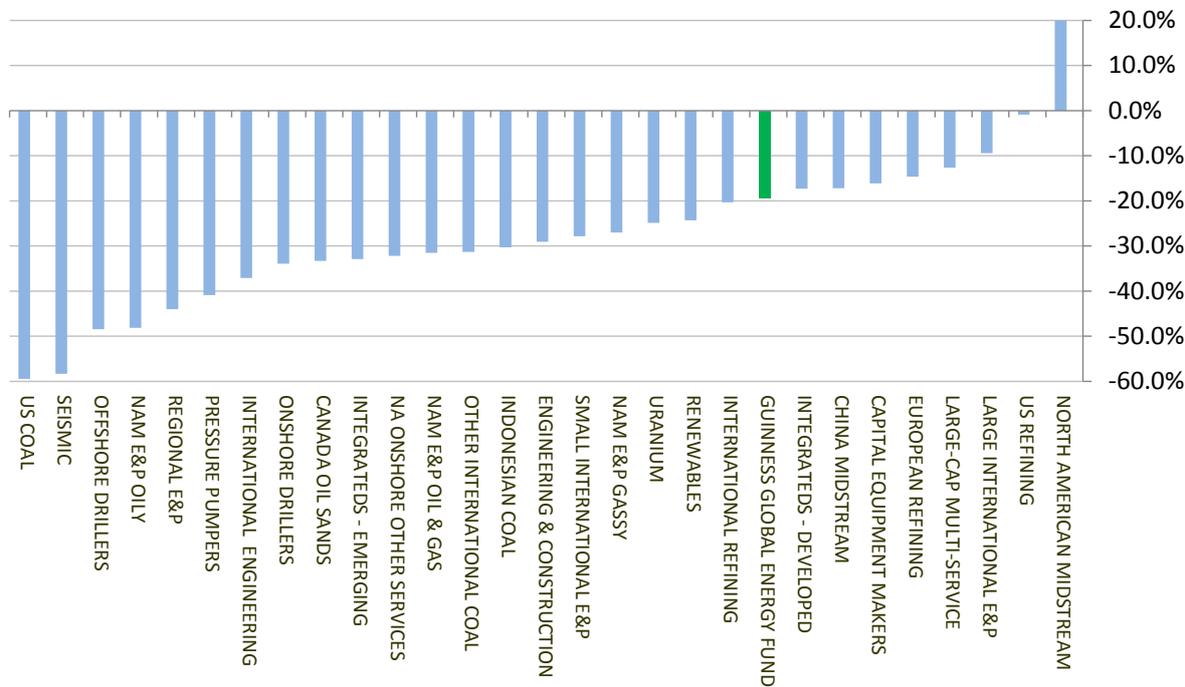
Outside the US, natural gas prices began to retreat from their highs, helped by warm winter weather in Europe and the weakening of the oil price. European natural gas averaged \$8/mcf (vs \$11/mcf in 2013) and Asian natural gas (as measured by the ICAP JKM North-East Asian company liquid natural gas, i.e. LNG, contract) averaged \$14.7/mcf (vs. \$16.6 in 2013).

It was a tough year for **energy equities**. The first half of 2014 delivered strong gains (the MSCI World Energy Index was up 14.3% to June 30 versus the MSCI World +6.6%), but the second half erased those gains, and more, as a result of the crude oil price weakness. In the second half of the year, the MSCI

World Energy Index fell 22.0% (vs MSCI World -0.9%), ending 2014 with a total return of -10.9% versus the MSCI World +5.6%.

And the performance of the MSCI World Energy Index was only part of the story, with a number of energy equity subsectors finishing 2014 down by 20% to 50%, particularly those more levered to oil.

**Global energy equity sub-sectors: median total return in 2014 (%)**



Source: Bloomberg LP; Guinness Atkinson Asset Management  
E&P = Exploration & Production; NAM & NA = North American

**Past performance is no guarantee of future results.**

We saw energy equities as being 20-25% cheap in both relative and absolute terms at the beginning of 2014 (based on a \$100 Brent oil price assumption). The questions now are:

1. **Should we revise our oil price assumptions given the change in Saudi stance?**
2. **If so to what?**
3. **And are energy equities still cheap if we conclude it should be revised?**

# The outlook for 2015

## Oil supply

Rising supply was the principal factor behind the fall in oil prices in 2014, in our opinion; moderating this supply growth is the solution to recovering oil prices. Hence, we will cover the supply outlook for the coming 12-24 months in more detail than we would usually at this time of year. As a starting point, it is sensible to remind ourselves of some of the pricing issues affecting the underlying economics of crude oil production:

### Schematic of oil production economics

\$/bl (Brent eq)	\$10	\$20-40	\$40-90	\$60	\$50-60	\$40-90	\$77.5	\$90	\$90	\$100	\$125
cash operating cost of MENA producers		Cash cost of tar sands	Full cycle cost of new tar sands	Incentive price - average non-OPEC new project	Current spot Brent oil price	Incentive price - NAM shale oil	Current 5yr forward Brent oil price	Required price for OPEC to balance budgets	Incentive price - high cost non-OPEC new project	Brent oil price sought by many OPEC members	Demand destruction

As of January 2, 2015; Source: Guinness Atkinson Asset Management

MENA = Middle East and North Africa

On our calculations, the current oil price of \$50-60 per barrel is best described as being:

- **Not high enough** to justify new investment in higher cost and more marginal non-OPEC projects (both North American unconventional and global conventional fields). It is high enough for the best unconventional North American shale, but the majority of the shale industry is not economic at \$50-60 per barrel (in our view);
- **Too high** to warrant existing high cost producers to shut in reasonable volumes of oil supply. We believe that oil prices would need to fall to around \$35-40/bbl (or maybe lower) to warrant any non-OPEC production shut-ins (e.g. from Canadian tar sands operations).

The oil price is not currently at either economic extreme, and therefore, there is reasonable chance of heightened price volatility in 2015 while the market rebalances. In other words, it is perfectly possible to see the oil price lower in the coming months before it recovers to a higher level than we see today. As we look out over the next year, we see the following regions and groups as being critical to forecasting the trajectory for oil supply:

- **North American shale** growth and its sensitivity to capital expenditure plans
- **Iraq** and, increasingly, potential new growth from **Kurdistan**
- **Libya's unpredictability** due to the current fighting among contending militias
- **Russian** production decline amid sanctions and lower reinvestment
- **OPEC** rhetoric and potential actions

### North American shale oil

This is a brave new world for the shale oil industry in North America, being the first time since shale oil basins were commercialized that these companies have had to face up to low oil prices. What we do know is that North American Exploration & Production (E&P) companies live hand-to-mouth, converting one year's cash flows into next year's capital spending. The oil price fall has occurred during capital budgeting season for 2015 for the North American E&P industry, and we have witnessed some significant capital expenditure (capex) budget cuts from many E&P companies. We have tracked the capex cuts that have been announced to date and associated production growth targets, to give an indication of what oil production growth could be like in 2015.

Summary table of capex and production guidance for North American oil E&Ps

	2014 actual				Guidance for 2015				Production mix % oil and liquids
	Capex (US\$m)	Capex chg vs 2013	Production (kboe/d)	Production change	Capex (US\$m)	Capex chg vs 2014	Production (kboe/d)	Production change vs 2014	
Baytex	780	40%	74	30%	615	-21%	90	21%	90%
Oasis	1400	40%	46	35%	800	-43%	49	8%	90%
Goodrich	320	28%	11.7	-11%	175	-46%	12	3%	53%
MEG	1200	20%	70	95%	305	-75%	70	0%	100%
Denbury	1000	-20%	75	7%	550	-50%	75	0%	100%
Continental	4600	24%	170	25%	2700	-41%	201	18%	70%
Cenovus	3000	-8%	278	4%	2600	-13%	278	0%	75%
Concho	2600	42%	112	21%	2000	-23%	132	18%	64%
Whitecap	330	74%	32	62%	245	-26%	37.5	17%	76%
ConocoPhillips	6500	17%	580	18%	5000	-23%	638	10%	49%
Halcon	1500	-32%	42	31%	900	-40%	49	17%	50%
Rosetta	1200	40%	66	32%	950	-21%	78	18%	63%
Laredo	1100	47%	32	4%	525	-52%	35.8	12%	100%
Legacy Oil+Gas	400	25%	23.1	22%	238	-41%	24.5	6%	85%
Husky Oil	5100	2%	341	9%	3400	-33%	340	0%	70%
<b>NAM</b>	<b>31030</b>	<b>16%</b>	<b>1953</b>	<b>20%</b>	<b>21003</b>	<b>-32%</b>	<b>2110</b>	<b>8%</b>	<b>67%</b>

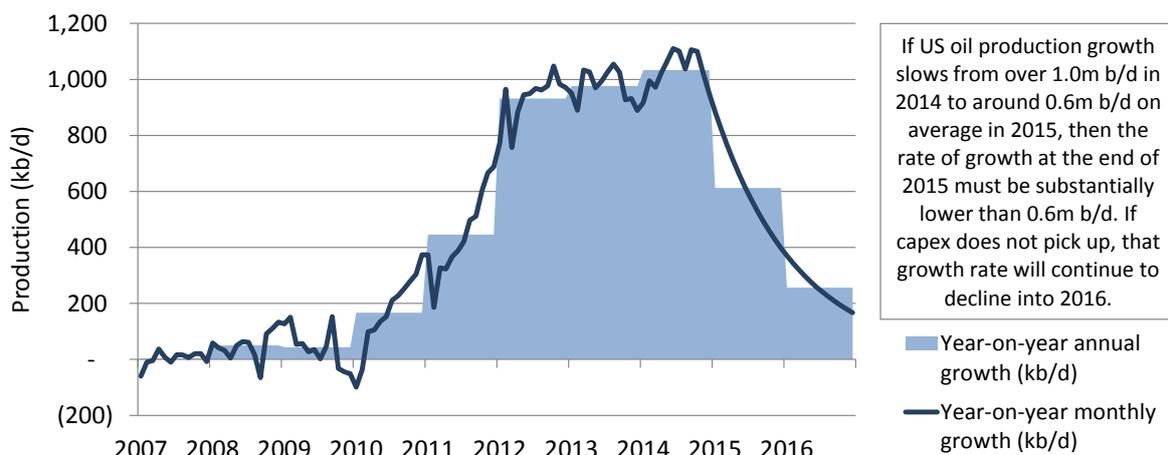
	2014 oil growth (kboe/d)	Est. 2015 oil growth (kboe/d)
Sample companies:	257	114
	Implied sample 2015 growth as % of 2014 growth <b>44%</b>	
Total NAM (US & Canada)	1600	711
	Implied total NAM growth	

Source: Guinness Atkinson Asset Management

NAM = North American; kboe/d = thousand barrels of oil equivalent per day

Our sample of 15 predominantly North American oil-oriented companies intend to reduce capex by 32% in 2015 (versus 2014 levels) and deliver oil-weighted production growth of around 8% in 2015. In absolute terms, this group of companies intend to deliver around 114,000 barrels per day of oil growth in 2015, in comparison to 257,000 barrel per day of oil growth in 2014. We believe that this group is a fair representation of the North American E&P industry, and extrapolating the data implies that 1.6m b/day of oil (and other liquids) growth in 2014 would slow to around 0.7m b/day growth in 2015.

US onshore oil production growth (year-on-year), forecasts from November 2014



Source: Guinness Atkinson Asset Management

If this is the case, then the global oil supply/demand imbalance will be well on the way to correcting by the middle of 2015. Moreover, if our estimate of 0.7m b/day of growth on average in 2015 is correct, the implicit growth rate at the end of 2015 will be substantially lower. In fact, a number of companies in our

sample are indicating that year-end 2015 production will be flat versus year-end 2014. This is just the pure maths of the situation – a decline in production growth could be forthcoming.

We must be realistic here. The supply response to lower activity and capex will take some time to come through in 2015, a function of previously drilled wells, lower service costs, high grading of drilling opportunities and attractive existing commodity price hedges. But we believe the response will come, and will intensify in 2016 if oil prices are still low.

It is early days, but the first signs of an activity slowdown can be seen. Baker Hughes' oil-directed rig count is off 8% from the October 2014 peak of 1609. We expect to see much sharper falls in the first quarter of 2015. A good leading indicator is drilling permit application activity; recently we have seen a 40% month-on-month decline in permitting activity across the three major US shale oil basins. While there is usually a seasonal decline in applications, the fall is particularly severe this year.

### Comparison to the US natural gas markets

A recent historic analogy is the response of the North American shale gas industry to lower natural gas prices in 2008/2009. Despite a large fall in the gas-directed drilling rig count and lower prices, US onshore gas production has continued to grow strongly. Onshore US gas production is expected to average 75.1 bcf/day in 2014 – up by 28% since 2010. However, in our view, there are a number of key differences between the oil market now and the gas market as it has evolved over the last five years:

Item	2008/2009 gas industry	2014/2015 oil industry
<b>Drilling to hold acreage</b>	A massive leasing boom in 2007/2008 meant that gas companies had to drill through weak gas prices to hold acreage.	Most oil lease acreage is now held and there should be relatively little uneconomic drilling to hold acreage.
<b>Associated Gas</b>	Gas supply was significantly augmented by associated gas production from oil production growth.	There is little 'black oil' production growth associated with increasing gas production. We see the risk of 'Associated Oil' as being low.
<b>Efficiency gains reduce cost of supply</b>	Longer laterals, pad drilling, tighter frac spacing and larger fracs all contributed to improving production and recovery rates from gas wells; this brought the marginal cost of supply down.	The efficiency gains made in the gas market were a necessity to achieve oil production from shale in the first place. We expect some additional efficiency gains, but not the step changes that occurred in the gas markets.
<b>Marcellus and Utica</b>	From 2010 to late 2014, the Marcellus and Utica have grown gas production from less than 0.5 bcf/d to circa(c) 16 bcf/day; thus going in just 5 years from 1% to 20% of total US production.	We do not currently see a similar-sized, transformational new source of supply in the oil market. Maybe Iraq and/or Kurdistan could be large, but no new oil shale has been discovered in the US over the last three years. Total US shale oil represents only 4% of the current global oil market.
<b>Hedging</b>	The gas forward curve was in steep contango providing good hedging opportunities.	The oil forward curve is in contango but not particularly steep. We expect E&P oil companies to hedge only moderately at the current 12 month WTI strip level of under \$55 per barrel.
<b>Imports and exports</b>	As US gas supply increased, there was no option to export it; thus prices fell sharply as inventory levels reached new records	The oil market is globally traded and we would expect higher US production to be compensated with lower US imports. Supply and demand imbalances should not cause step changes in commodity pricing.

The two most important differences are the growth of associated gas (i.e. gas that been produced as a by-product from shale oil growth) and the emergence of the Marcellus/Utica gas field in the north-east US. We do not expect equivalent factors to arise in US shale oil. The Permian oil field looks to be the most prolific, but production rates are not considerably better than other US shales in the way that the Marcellus/Utica has proved to be. We see that other US gas production peaked in late 2011, falling since by more than 20%.

## Russia

Russian oil production is a minor wildcard in the oil supply equation for 2015. The effect of sanctions, lower oil prices, and a substantially weaker Rouble currency will all act to put pressure on the Russian oil industry and government. So far, we believe that the dramatically weaker Rouble (down in 2014 from 32 R/USD to 61 R/USD), together with the structure of the Russian taxation regime, serves to offset some of the lower oil price effect for Russian energy companies. Despite headlines that Russian production is at record levels, it has been growing only slowly since 2010. It peaked at the start of 2014 at just over 11m b/day, and has been just under that level since then. We are minded to predict further stagnation (and even declines) as a result of lower investment levels and a less visible list of new project start-ups.

## Iraq

The situation in Iraq has changed dramatically over the last twelve months. On the negative side, the rise and rapid expansion of the Islamic State (ISIS) has raised a serious question over the future growth potential of Iraq (12 months ago the IEA were forecasting Iraq to deliver 60% of OPEC's production growth to the end of the decade). In the near term, the Iraq drilling rig count has fallen to 50/60 rigs, down from 95 rigs in mid-2014, and commentary from service companies indicates that the operating environment remains very tough and that the outlook is not clear.

On the positive side we are more optimistic about Kurdistan, where the rise of ISIS has galvanised Baghdad to settle a long-running dispute with Kurdistan over payment for oil. This (and the US/Allied intervention to push ISIS back) is helping unlock the potential for Kurdistan to deliver meaningful production growth over the next two years, and to export this along with otherwise trapped Iraq oil from Kirkuk via Kurdish and Turkish pipelines to Ceyhan. It remains high risk production growth, but it seems logical to us that this oil will reach the market. In the second half of 2014 Iraq crude exports were running essentially flat at c.2.5m b/day, with Ceyhan exports making up for declining Basra exports.

## Rest of OPEC

At the start of 2014, we were of the opinion that Saudi, United Arab Emirates (UAE) and Kuwait, OPEC's core and key members, would act together to defend oil prices in a \$90-110 per barrel range. We were wrong. Instead, in November markets were caught out when Al-Naimi (the Saudi Oil Minister) announced an intention to defend market share and force other higher cost producers to cut back production. We cannot now predict the actions of the three core OPEC countries (or other OPEC members) with any certainty. The next scheduled OPEC meeting is in June 2015, but there is a reasonable chance that OPEC calls an emergency meeting before then if oil prices continue their decline. While budgets will be stretched as a result, we note that Saudi, Kuwait and the UAE in particular have significant currency reserves and can therefore tolerate lower short-term oil prices; the question is – for how long? Al-Naimi seems determined to hold to his strategy until there are clear signs that the pace of US shale oil development is moderating and other major producers participate in the cuts needed to support the price, e.g. Russia.

Our view is that if US production growth falls back to below something like 0.5m b/day (and Russia contribute a token cut) then Saudi, Kuwait and the UAE will take action to turn the price around. But they will not necessarily want a V-shaped recovery that restores it to \$100 per barrel. We believe they will want to restore it to the level that naturally produces a balance in world oil demand growth and non-OPEC supply growth. They may not know yet what that is. We would not be surprised if they sought to stabilise it at (or manage swings so that it averaged) around \$70 per barrel and allow it to rise thereafter (as they implicitly did in the 2003-7 period), watching carefully how non-OPEC supply responded. The timing of the recovery in oil prices is unclear.

While we focus on Saudi, UAE and Kuwait's quota and production strategies for OPEC in 2015, it is important not to forget the heightened political risk that exists throughout OPEC and gets little attention in the popular media. At time of writing, we have a major disruption announced in Libya as heavy fighting continues close to the two oil export ports of Es Sider and Ras Lanuf (which have a combined export capacity of 0.6m b/day). ISIS in Iraq is regrouping. North-south tensions are very high in Nigeria. Saudi's King Abdullah is 91 and may be terminally ill; his close colleague Al-Naimi, the Saudi Oil Minister, is 80.

## Oil demand

The IEA cut its 2014 oil demand growth expectations in the middle of 2014, mainly in response to downgrades to global GDP forecasts (3.7% revised to 3.3%). Behind the revisions were near-stagnant European and Japanese economies (Japanese oil demand declines being compounded by post-Fukushima effects) plus emerging economy demand growth of 'only' 1.1m b/day. All of this added up to global demand growth, according to the IEA, of 0.6m b/day.

Looking forward we think that 2015 is likely to see demand growth bounce back. Not only will there be a demand response to lower oil prices, but the negatives (Europe and Japan weakness) are not expected to persist, and global GDP growth is expected to be stronger (3.8% in 2015 versus 3.3% in 2014).

We note US gasoline prices are now at \$2.20 having been \$3.33 at the start of 2014. There is a virtuous circle in that demand will benefit from the economic growth which is in turn boosted by the reduction in the cost of energy.

The demand response will take time (as seen in numerous historic examples of the demand response to weaker oil prices), but we can already see some positive evidence coming through:

- Vehicle sales in the US are rising, particularly larger ones; light truck sales (i.e. SUVs) to the end of November 2014 are up 8.8% year-on-year while passenger vehicle sales are up only 1.3%.
- The 12 month moving-average 'miles driven' in the US is now trending up – the 12 month moving-average bottomed three years ago and has increased 0.8% over the last year.

Of course there will be some headwinds:

- Countries with weaker currencies won't recognize the full commodity price decline
- Subsidy removals – some countries may remove subsidies and therefore underlying consumers may not see the full price decline
- Some oil exporting countries have high self-consumption; their strong demand growth in recent years may now slow. Demand in the Middle East and Former Soviet Union (FSU) grew at 0.3m b/day in 2014, but may now drop as economic growth slows on lower oil prices

Taking all this into account, the IEA is forecasting oil demand growth recovering to 0.9m b/day in 2015 (from 0.6m b/day in 2014). We will not be surprised if oil demand turns out to be substantially more robust than this, both near and long-term.

## Conclusions on oil

The most similar situation to now that we can find in the last 50 years is 1985-87 – an oil price fall caused by a supply/demand imbalance rather than a major stock market crash (2000/1) or banking crisis (2008/9). In November 1985 the oil price was high – not as high as the spike in 1979 but still much higher than 1973. Over the following 14 months Saudi acted much as now, announcing that they would no longer support the oil price. Over the eight months from November 1985 to July 1986, the oil price fell 68% from (in 2014 USD) \$64/bbl to \$20/bbl. It then recovered over the following 12 months (July 1986 to

July 1987), doubling to \$40/bbl. If history were to repeat itself, we could see the oil price **bottoming at the end of the first quarter at \$36/bbl and then recovering to \$72 by the end of 2015.**

Another possible case study is 1997-8, again not related to a stock market or banking crisis. (One difference, however, was that the oil price started cheap and went to very cheap before recovering.) The oil price fell from \$38/bbl to \$12/bbl (in 2014 USD) over 24 months – a decline of 67%. The scale of the imbalance in the market was very similar. Oil demand suddenly weakened as a result of the Asian currency crisis and world demand dropped 0.2m b/day in 1998. Meanwhile, the UN Iraq oil-for-food program brought a lot of crude onto the market. The growth from Iraq in 1998 was around 1m b/day, producing an overall imbalance of 1.2m b/day (similar to the 1.3m b/day we in 2014, as set out above). But 1999 then saw the oil price rebound, and by early 2000 it was back at \$25/bbl. If replicated here, this could potentially see the oil price **decline from \$115/bbl to \$38/bbl but take until July 2016 to do that. It could then potentially recover to \$115/bbl by mid 2017.**

Our nose tells us some combination of these will happen over the next 12 months. We expect Brent to fall below \$40 then bounce to above \$80 over that time frame. A necessary part of this outcome is for US oil shale growth to fall back to perhaps 0.5m b/day by the end of 2015. After 2016 we think there is a likelihood that the price will fluctuate quite widely, but move on an upwards trajectory as accelerating emerging country demand growth and flattening US shale oil growth slowly tighten the global oil supply/demand balance. At \$80 per barrel, the world oil bill would represent 3.2% of 2016 Global GDP, 10% under the average of the 1970-2014 period (3.5%).

## Natural gas markets

The anticipated tightening in natural gas fundamentals (on the back of the low natural gas rig count and the mathematics of cumulative gas well decline rates) sometimes seems to be taking an eternity. Most recently we have seen surging oil supply produce more associated (by-product) gas, an end in declines in the more mature shale gas fields (e.g. Fayetteville, Barnett and Haynesville) and very warm weather. These have combined to eradicate the tightness engendered by last winter's freeze.

The growth of the Marcellus and, most recently, the neighboring Utica field, are also continuing strongly, and no rebalancing can occur until this slows (other than temporarily via coal-to-gas switching when the gas price is low enough). Although the detailed field numbers show that Marcellus/Utica growth is slowing, we are not holding our breath.

Relief is still coming eventually in the form of Liquid Natural Gas (LNG) exports and other factors which we list below, but note that these are unlikely to have a material impact in 2015:

- **LNG exports** are due to start in 2016 and ultimately we could see 7-8 bcf/day of gas being exported from the US to international markets
- As a result of low gas prices, **industrial natural gas demand** should respond positively as petrochemicals and fertiliser plants are built in the US
- Lower **associated (by-product) natural gas** production growth as a result of the slowdown in oil drilling and expected slowdown in oil production growth (although there'll still be 1 bcf/day p.a. of associated gas supply even if US shale oil production growth subsides to 0.5m b/day p.a.)
- Steady replacement of the coal utility fleet by new gas-fired electricity generation plants

Our current working assumption, therefore, is that the US natural gas price will trade in a \$3 to \$4.50 range through most of 2015 (with weather being a key determinant of near-term pricing). It remains to be seen whether 2016 (or later) will see the supply/demand imbalances of recent years start to recede and herald a period of strength in natural gas prices.

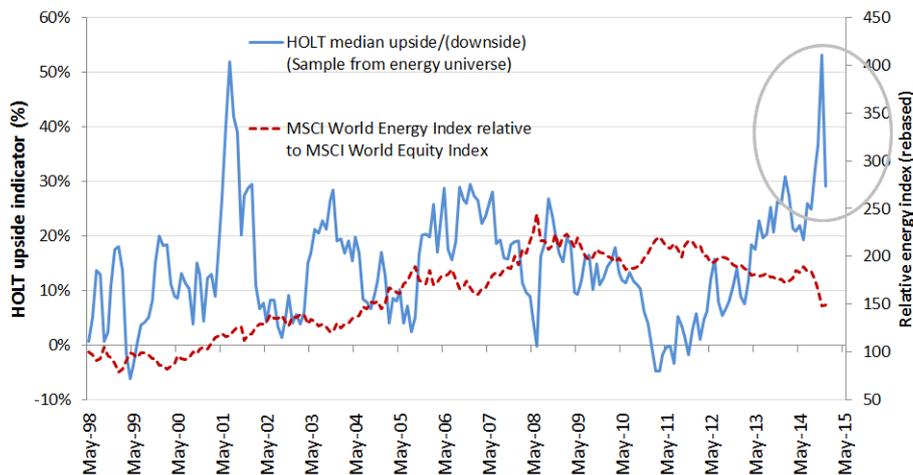
## Energy equities

Energy equities, as represented by the MSCI World Energy Index, have traded off sharply in sympathy with the recent fall in the oil price. They have now underperformed the broad market, as represented by the MSCI World Index, for longer than they did in the early 1980s (27 months of underperformance between November 1980 and February 1983 and 26 months between May 1984 and July 1986 respectively).

If you believe (as we do) that a recovery in the oil price to \$75-80 is very likely, and to \$100 quite likely (maybe not till 2017), the case for accumulating energy equities at this level looks strong.

To give some indication of the value that energy equities have offered, we show two valuation metrics below, one based on the cash flow return on investment methodology (CFROI) developed by Credit Suisse Financial Bank (CSFB) HOLT and the other on price-to-book. The chart below shows a historical record of potential upside for all the energy companies with a market capitalization today of over \$1billion(bn) which have a track record in HOLT going back to 1998.

### Historical record of Energy equities versus the MSCI World Equity Index



*data shown from 5/1/98 - 12/31/14*

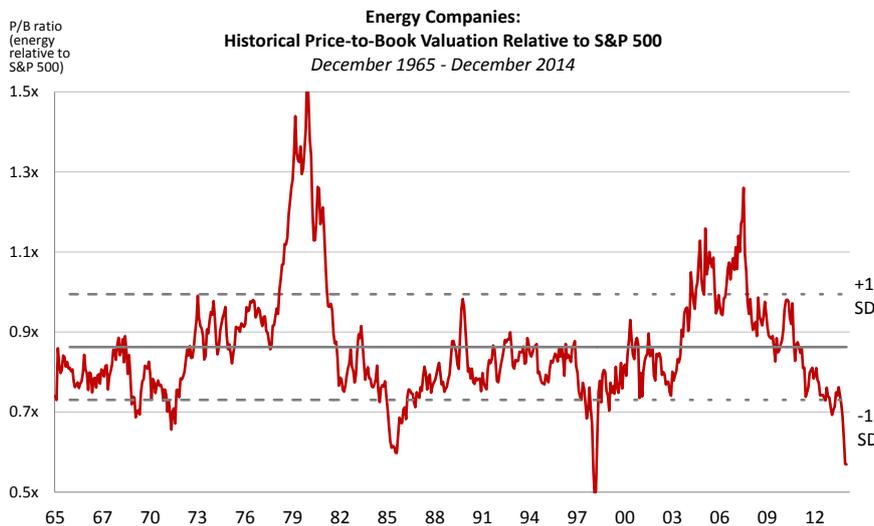
*Source: CSFB HOLT; Bloomberg LP; Guinness Atkinson Asset Management*

**Past performance is not indicative of future results. Index performance is not illustrative of fund performance. One cannot invest directly in an index. Please call 1.800.915.6565 for fund performance.**

The HOLT valuation metric is registering that energy equities could be undervalued. Historically, anything around this current level has been a good entry point for investors seeking good relative and/or absolute performance. It's important to note that the HOLT valuation system for energy companies is based on consensus earnings estimates, which in turn are based on consensus oil price forecasts. We think the consensus 2015/16 oil price being baked into this current picture is around \$75-80/bbl.

The upside indicated by this measure spiked briefly in Q4 2014— by some distance the highest over the last 10 years. The price indication in the equities was likely based on earnings estimates which reflected an oil price of around \$90-100/bbl. It may therefore be out-of-date in the short-term, but we find this useful to observe as it ties in with our longer-term expectation of where the oil price recovers to.

On a relative price-to-book (P/B) basis (versus the S&P500), the valuation of energy equities is the lowest since 1998 (when the oil price fell from \$38 to \$12 per barrel, in current USD). It's also lower than the trough in 1986 when the oil price fell from the mid \$60s to around \$20 per barrel (also in current USD).



Looking at the previous occasions when energy reached these valuation levels (end of June 1986 and mid December 1998, when the relative P/B fell below 0.6x), we find it interesting to note the relative outperformance of energy equities in subsequent years:

#### 5 year performance recovery from historical valuation lows

Total return from June 30, 1986	1 yr	2yrs	3yrs	5yrs
Energy basket*	74.7%	50.5%	83.2%	117.0%
S&P 500	21.2%	9.0%	26.8%	48.0%
Outperformance (%)	53.5%	41.5%	56.4%	69.0%
Total return from Dec 15, 1998	1 yr	2yrs	3yrs	5yrs
MSCI World Energy Index*	26.6%	25.8%	16.8%	39.5%
S&P 500	23.1%	15.6%	0.2%	-0.8%
Outperformance (%)	3.5%	10.2%	16.6%	40.3%

\*MSCI World Energy Index did not exist in 1986, therefore, shown for 1986 recovery is an equally weighted basket of current global companies in existence since 1986 - Exxon, Chevron, Hess, Occidental, Murphy, BP, Marathon and Conocophillips

*Source: Bloomberg LP, Guinness Atkinson Asset Management*

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With the relative P/B ratio today below 0.6x, this gives us some confidence that in equity terms, even if we see further dips in the short term, the worst could be behind us.

In previous cycles, either the equity market has reacted or the industry has seen substantial mergers and acquisitions (M&A) activity. We see M&A as being less likely in this cycle since many of the potential acquirers have announced 'value over volume' strategies that preclude 'bolt-on' acquisitions. So far, we have seen two large M&A transactions cancelled (Dragon Oil's bid for PetroCeltic and Technip's bid for CGG Veritas) and one announced (Repsol's bid for Talisman). The value opportunity of M&A activity exists in our opinion, and we would expect deals to be driven by cost synergies rather than growth aspirations. This will be a real test for the majors to see if they stick with their 'value over volume' strategies.

So what should investors be thinking of doing now? If the future trajectory is similar to past price drops – some further oil price weakness could be still to come, followed by a rebound that could reach up to \$70 or more – then a classic "buy when others are most fearful" for energy equities looks possible. However, one chooses to act, we think it is helpful to hold in mind those June 1986-91 and December 1998-2003 performance numbers in the tables above, keeping in mind past performance is no guarantee of future results.

Monthly commentary about the Global Energy market is available at [gafunds.com/ebriefs](http://gafunds.com/ebriefs).

Opinions expressed are those of Guinness Atkinson Funds, are subject to change, are not guaranteed and should not be considered investment advice.

*The Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectus contains this and other important information about the investment company, and it may be obtained by calling 800-915-6566 or visiting [gafunds.com](http://gafunds.com). Read it carefully before investing.*

The Top 10 holdings for the Global Energy Fund, as of 9.30.15, are: 1. Valero Energy Corp 4.21% 2. Suncor Energy Inc. 4.08% 3. Newfield Exploration Co. 3.84% 4. Statoil ASA 3.81% 5. CNOOC 3.72% 6. Apache Corp. 3.72% 7. Occidental Petroleum Corp 3.64% 8. OMV AG 3.63% 9. PetroChina Co. Ltd. 3.59% 10. Gazprom OAO - ADR 3.58%

**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.

MSCI World Index is a capitalization weighted index that monitors the performance of stocks from around the world.

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

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

Cash Flow Return on Investment (CFROI) is a valuation model that assumes the stock market sets prices on cash flow, not on corporate earnings. It is determined by dividing a company's gross cash flow by its gross investment

HOLT valuation is a valuation model that ranks stocks based on discounted cash flows.

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