EDISON

Oil & gas

Oil & gas macro outlook

Tightening market buffered by abundant inventories

Oil price volatility remains high, with Brent crude having risen $17/bbl or 51% since our last macro outlook in January 2016. Since then we have seen supply affected by a 1.2mmbpd reduction in Canadian output due to wildfires, combined with underinvestment and instability-driven supply interruptions across OPEC members Venezuela, Libya and Nigeria. Some of these temporary supply effects will reverse over the coming months; nonetheless, we expect the oil market to tighten over 2016. Although record levels of inventory and uncertainty over the sustainability of emerging market demand growth may limit near-term price gains, longer term, we expect prices to rise to c $70/bbl in line with levels required to incentivise non-OPEC supply expansion. Our short-term oil price assumptions remain aligned to EIA STEO forecasts at $43/bbl Brent in 2016 and $52/bbl in 2017.

Rebalance underway

IEA short-term supply and demand forecasts point towards a market re-balancing over 2016, with the agency's base case forecasts suggesting just 0.18mmbpd of oversupply in Q416. Stress-testing key assumptions including LTO output, Iranian volumes and emerging market growth suggest under all scenarios we should see a tighter market in H216 than H1. The precise timing of the inflexion point for sustained inventory draw-down is uncertain and a slow-down in emerging market growth rates could push this tipping point well into 2017.

Short-term uncertainty remains

Given the volatility in the oil markets and considerable uncertainty in macroeconomic trends, we feel it prudent to align our short-term assumptions with that of the global agencies. We maintain our assumptions aligned to the latest EIA forecasts for Brent of $43/bbl in 2016 (from $40/bbl) and $52/bbl in 2017 (from $50/bbl). The implied volatility of future contracts remains exceptionally high with the December 2016 WTI contract implying a 95% confidence interval of $26.5/bbl to $83/bbl and 68% confidence interval of $35/bbl to $63/bbl.

Long-term assumption unchanged at $70/bbl

Break-even prices for marginal producers continue to fall after a c 15-25% reduction in 2015. Our research indicates offshore projects can already be executed for full-field costs 20% below the levels of 2014, with further cost deflation expected in H216. Against this backdrop, we expect there will be a structural shift in the market to lower break-even prices in the short term; however, cost-curves remain dynamic and we should start to see a shift back upwards if oil prices rise substantially, albeit with a lag. Assuming OPEC remains an observer rather than a price-setter, our approach remains to set our long-term oil price assumption around the economic return for marginal developments on the global supply curve; we maintain our long-term Brent assumption at $70/bbl.

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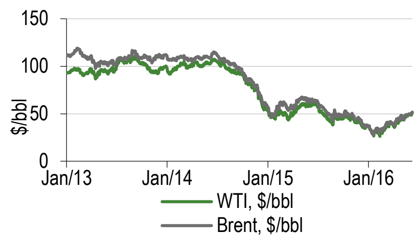
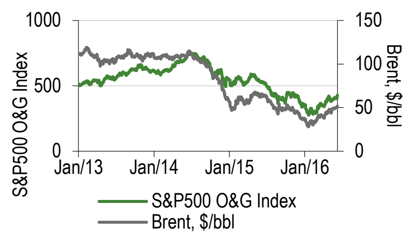
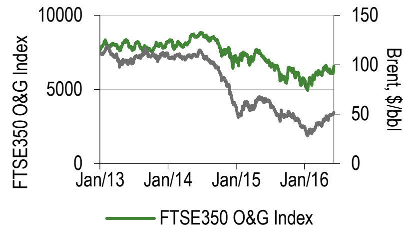
WTI vs Brent



S&P 500 Oil & Gas Index



FTSE 350 Oil & Gas Index



Source: Bloomberg

	WTI $/bbl	Brent $/bbl
2013	98.0	108.8
2014	93.2	99.1
2015	48.7	54.2
2016e	42.8	43.0
2017e	51.8	51.8

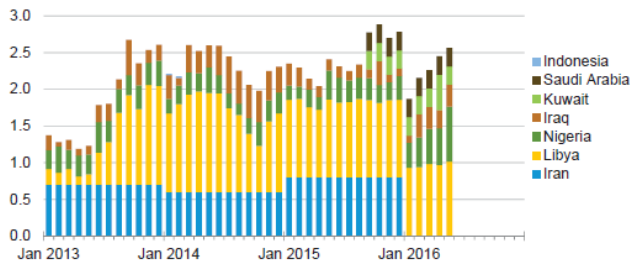
Source: EIA, Edison Investment Research

Crude oil price short-term outlook

A tightening market buffered by abundant inventories

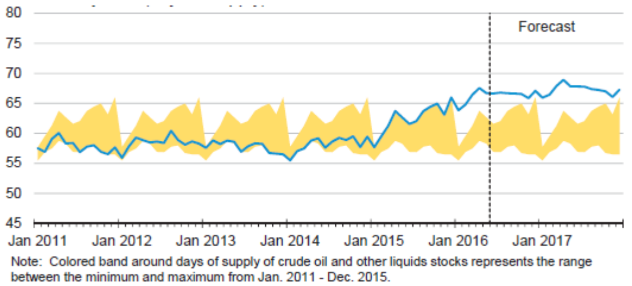
A Saudi-led OPEC market-share protectionist policy has driven a marked increase in inventories over 2015, providing a buffer against short-term supply shocks. A 1.2mmbpd reduction in Canadian output in late May 2016 would have historically sent oil prices skyrocketing, but with OECD crude inventories 360mmbbls above their five-year average, short-term supply-shocks are currently little cause for concern. Of greater significance are the longer-lasting impacts of underinvestment and instability across OPEC, Nigeria, Libya and Venezuela in particular. To date a combined 450mbod y-o-y decline in production amongst this group of three has played a significant role in offsetting the post-sanction increase in Iranian output.

Exhibit 1: Unplanned OPEC production outages



Source: EIA

Exhibit 2: Global crude inventories remain well above the five-year range



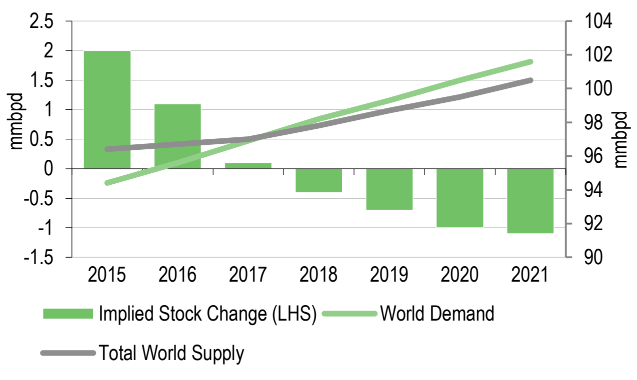
Source: EIA

Looking ahead to H216, uncertainty remains with over the timing of the inflexion point at which consumption exceeds supply. The IEA expects the market to trend towards balance by Q416, a sharper contraction in oversupply than forecast in January 2016. Un-anticipated supply disruptions appear to be the key delta. Other than unplanned supply disruption, key areas of uncertainty within the agency's current supply and demand forecasts include:

- **Supply:** US LTO production response
- **Supply:** Recovery in post-sanction Iranian volumes
- **Demand**: Chinese demand and the impact of recent monetary policy
- **Demand**: The sustainability of Indian demand growth

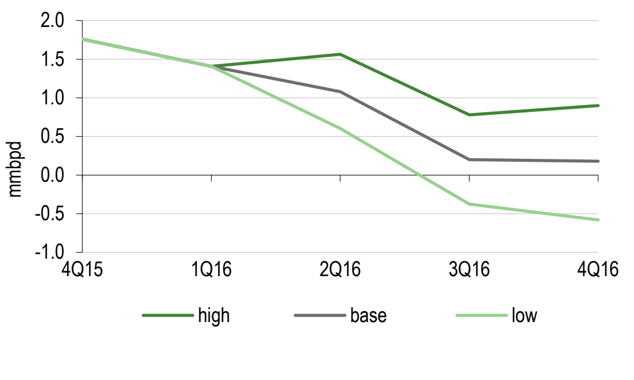
Flexing US LTO production and Iranian volumes by +/-200mbd from IEA base-case forecasts and Chinese and Indian annual demand growth by +/-1%, we see a wide range in potential implied crude stock change outcomes over the remainder of 2016 (Exhibit 4). Despite uncertainty, all scenarios suggest that the market is set to tighten over the rest of 2016, which we believe will provide price support.

Exhibit 3: IEA base case implied stock change



Source: IEA Medium Term Oil Market Report February 2016, Edison Investment Research

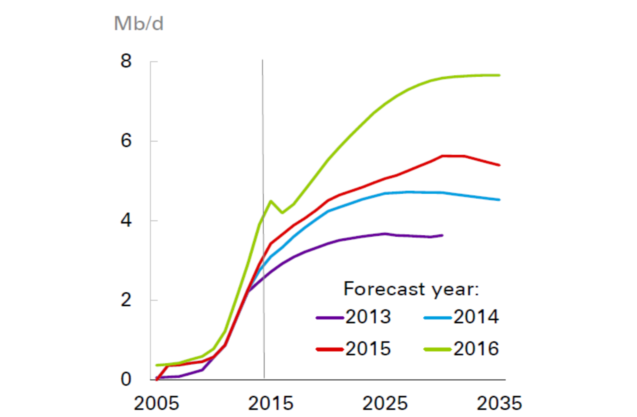
Exhibit 4: 2016 implied stock change (IEA base case and Edison sensitivity)



Source: IEA, Edison Investment Research

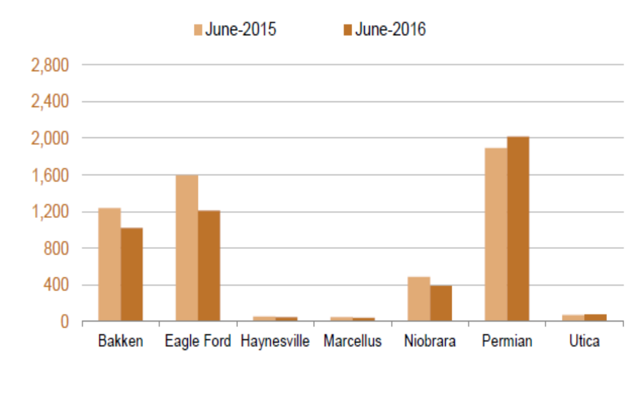
Among the uncertainties, US LTO production in particular has proven to be exceptionally hard for analysts to forecast, despite leading indicators such as the Baker Hughes rig count. LTO production dynamics remain complex and are driven by numerous factors including well productivity, decline rates, wells drilled but un-completed, operator cash constraints and pace of service sector cost deflation. Investors should play close attention to the monthly EIA drilling productivity report to track the course of US LTO production over 2016.

Exhibit 5: US tight oil forecasts, historical underestimation



Source: BP

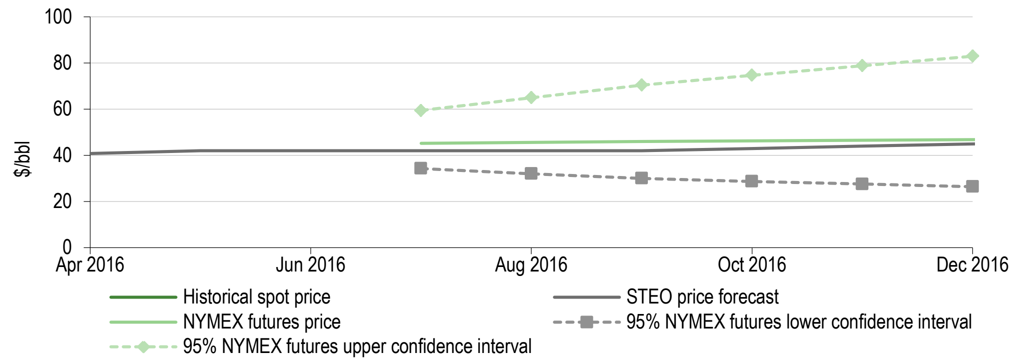
Exhibit 6: US shale oil production change y-o-y mbpd



Source: EIA

Given the uncertainties, it is unsurprising to find that the implied volatility of future oil contracts through to the end of 2016 remain near record highs suggesting a December 2016 95% confidence interval for WTI from $26.5/bbl to $83/bbl and 68% confidence interval (one standard deviation) $35/bbl to $63/bbl (see Exhibit 7).

Exhibit 7: WTI 95% confidence interval

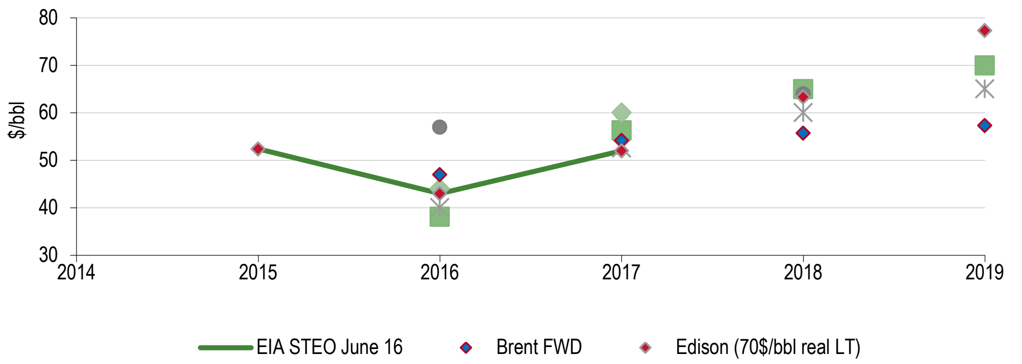


Source: EIA, Edison Investment Research

2016/17 base case outlook: Sticking to EIA forecasts

We maintain our alignment with EIA oil price projections for 2016 and 2017. The EIA published its Short-Term Energy Outlook on 7 June 2016 and we use this data to drive our current short-term assumptions of $43/bbl Brent in 2016 and $52/bbl in 2017. EIA forecasts are shown against Bloomberg analyst consensus, the forward curve and Edison forecasts in Exhibit 8.

Exhibit 8: EIA forecasts vs research analyst estimates

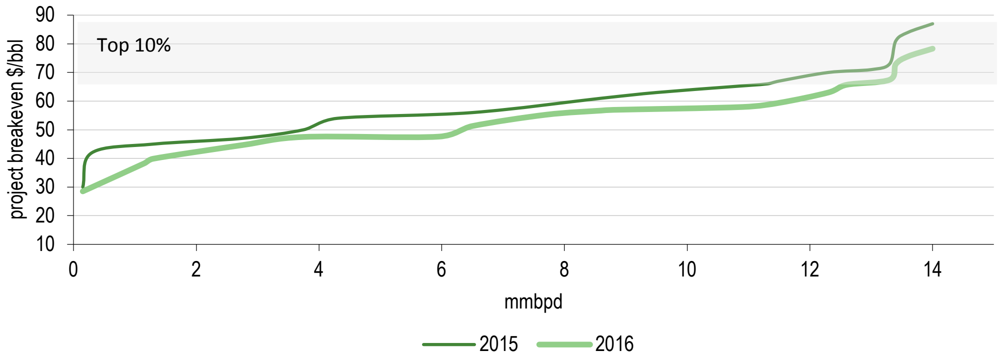


Source: Bloomberg, Edison Investment Research

Crude oil price long-term assumptions

In the long term, we expect global inventory levels to normalise and OPEC spare capacity to remain below 3mmbpd (c 3% of demand), driving prices back up towards non-OPEC marginal cost. We maintain our long-term oil price assumption at $70/bbl Brent based on a normal return for a pre-FID project towards the top end of the cost curve. Estimates of the breakeven cost (defined as the price at which a development generates zero return NPV(10%)=0) for new developments have shifted over time, taking in to account new sources of supply (eg US LTO) combined with service sector cost deflation. The cost curve presented below (Exhibit 9) uses a combination of company data on project breakevens and published cost curves from a range of industry sources. We have shifted our base-case curve down to provide a broad-brush indication of the impact of further cost deflation over the course of 2016 assuming a further 5% reduction in breakeven for onshore projects, 10% for offshore and 15% for US LTO.

Exhibit 9: Global liquids cost curve for yet to be developed discovered resource, FID due over the next 10 years



Source: Various, Edison Investment Research

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