Oil Market: Short & Medium Term Perspectives

- Institute of Energy Economics Japan -

Neil Atkinson, Head, IEA Oil Industry & Markets Division, Tokyo 6 December 2017
**SHORT TERM:** Price assumption for 2018 revised up

**Brent Historical and Forward Prices ($/bbl)**

<table>
<thead>
<tr>
<th>Date</th>
<th>Current</th>
<th>1-Nov-16</th>
<th>1-Oct-17</th>
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<tbody>
<tr>
<td>1-Jan-18</td>
<td>62.38</td>
<td>51.12</td>
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<td>1-Feb-18</td>
<td>62.08</td>
<td>51.36</td>
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<td>1-Mar-18</td>
<td>61.76</td>
<td>51.60</td>
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<td>1-Apr-18</td>
<td>61.49</td>
<td>51.83</td>
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<td>1-May-18</td>
<td>61.25</td>
<td>52.05</td>
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<td>1-Jun-18</td>
<td>60.97</td>
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<td>1-Jul-18</td>
<td>60.68</td>
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<td>59.61</td>
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<td>1-Nov-18</td>
<td>59.30</td>
<td>53.09</td>
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<td>1-Dec-18</td>
<td>59.09</td>
<td>53.21</td>
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</table>

Average: 60.75  52.24

Diff %

- Current: 8.46  16.2%  10.0%
- With 99 Mbd and Ep -0.04: (0.65)  (0.4)

Price increases contributed to a 190 kb/d downward revision to our demand forecast for 2018.
SHORT TERM: Demand growth dropped to 1.3 mb/d in 3Q17

Partly reflecting impact of Harvey and Irma in the US
SHORT TERM: Strong Chinese & Indian demand in September

China and India on course for 43% of global growth in 2017

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We now expect growth of 1.5 mb/d in 2017, slowing to 1.3 mb/d in 2018.
**SHORT TERM:** Non-OPEC supply growth accelerating through 2018

US, Brazil & Canada dominate growth; Mexico & China main fallers
SHORT TERM: US production rising through 2018 ...

Crude production up 370 kb/d in 2017, accelerating to 790 kb/d in 2018
**SHORT TERM: ... Resilient at much lower prices than before**

US shale oil average cost

US shale oil can continue to deliver impressive growth, reflecting enormous cost savings & technological/productivity improvements

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**SHORT TERM: OPEC quota compliance solid ...**

**Compliance Boost**

In 2017 YTD average compliance = 87%

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SHORT TERM: … But diluted by Libyan & Nigerian comeback

Since the low point in spring 2017, joint output up by 700 kb/d
SHORT TERM: OECD total oil stocks fall below 3 billion barrel mark

OECD industry stocks were down 40.3 mb to 2 970 mb in September
SHORT TERM: OECD product surplus evaporated vs 5-yr average

At end-September, total OECD stocks were 119 mb above the five-year average.
**SHORT TERM**: Implied stock changes to 4Q18 - not a tight market

*Assumes OPEC production constant at 32.6 mb/d*
MEDIUM TERM: Forward curve in backwardation

Futures curve has flipped compared to a year ago
MEDIUM TERM: Demand growth slowing, but still solid

Roughly 70% of 5.9 mb/d oil demand growth comes from Asia/Pacific, mainly China and India (48%)
Total demand in 2022 0.3 mb/d below 2017 level: gasoline demand expected to decline from 2019.
MEDIUM TERM: Upstream investment rebounds modestly in 2017

Global oil and gas upstream capital spending 2010-2017

Ramp up of activities leads to cost inflation in US tight oil but elsewhere upstream costs decline further. NOC share in total investment reaches another record high.
MEDIUM TERM: New projects recovering from historic lows

Conventional oil resources sanctioned and discovered 2000-2017

Conventional oil resources sanctioned in 2017 remains subdued compared to historical average but expected to grow by more than 50% compared to 2016, mainly due to offshore projects.
MEDIUM TERM: … Limited recovery in investment outside US …

After two years of unprecedented decline, global upstream investment up by 3% in 2017
MEDIUM TERM: … Although conventional projects faster & smaller

Shorter project cycles across all the oil and gas industry
MEDIUM TERM: 2014 price collapse led to efficiency drive

In the US shale industry a rapid investment upswing led to the re-emergence of cost pressures
MEDIUM TERM: Oil supply growth falls away

Unless significant new projects sanctioned quickly, growth all but stalls by 2022.
MEDIUM TERM: US leads capacity growth of 6.2 mb/d

Changes in global oil supply capacity 2016-2022 (mb/d)

Growth highly concentrated: three main non-OPEC countries = 69% of total
MEDIUM TERM: Historical context for US shale growth

Largest production increases in history

mb/d

Saudi Arabia 1985 - 1992
US LTO 2010 - 2017
USSR 1972 - 1979
Russia 1999 - 2006
North Sea 1976 - 1983
Iraq 2009 - 2016

US shale oil growth results from technological progress rather than the discovery and deployment of huge oil resources

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MEDIUM TERM: Low-cost Middle East drives OPEC capacity growth

OPEC builds 2.1 mb/d of new capacity by 2022. Iraq leads gains, Venezuela is big loser.
MEDIUM TERM: Oil market grows tighter & risk of rising prices

Call on OPEC crude and stock change (mb/d)

Spare capacity shrinks without further investment: less than 3% in 2022 vs 3.7% in 2008 when prices rose sharply.