Impact of Middle East Refining on Asian and Global Refining Markets

GLOBAL PRESENCE:
- UAE
- SINGAPORE
- MALAYSIA
- INDIA
- LONDON
- NIGERIA
- TANZANIA
- KENYA
- SOUTH AMERICA

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GP BUSINESSES: Refining, Oil Trading (Bitumen, Base Oil, FO/GO, Naphtha), Bunkering, Grease, Lubes, Petrochemicals, Oil Storage, Shipping & Logistics
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| **Recent Developments in Middle East** | • Surge in Refining Capacities  
• Iran Nuclear Deal  
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| **Impacts** | • Lower Crude oil prices in Short-to-mid Term  
• Product Oversupply  
• Lower GRMs & utilization  
• Inefficient Refineries Shutdown |
| **Conclusion** | |
The Oil Crash of 2014-15

Pre 2014 – Shale Revolution:
In 2005, fewer than 150 oil wells were drilled in the state of North Dakota. The number soared to 850 by 2010 and more than 2,000 in 2013.

Output increased by 160,000 bpd in 2011, 850,000 bpd in 2012, 950,000 bpd in 2013 and 1.2 million bpd in 2014.

June 2014: $115 / bbl
Libya’s crude production which had dropped to 250,000 bpd from 1.8 million bpd in 2011, rebounded unexpectedly to 900,000 bpd.

Oct 2014 end: $86 / bbl
Saudi Arabia cuts OSPs in battle for market share.

Nov 2014 end: $70 / bbl
OPEC holds oil production unchanged.

Dec 2014 end: $57 / bbl
In Iraq, Kurds allowed to export 0.55 mbpd.

Jan 2015: $47 / bbl
US rig count 1480.

June 2015:
Iran nuclear deal
China slowdown
Greece nearly avoided Eurozone exit
US rig count 628

Aug 2015 end: $42.69 / bbl
US rig count 675

‘Sustained output from oil producers keeps pressure on oil prices…Countries fight for market share’

Source: Reuters, Baker Hughes, Secondary Sources

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Crude Oil Price Trend

Range bound movement – after OPEC & Non OPEC deal

- January: Iran back on markets
- April: Doha’s meeting failure
- March/April: first “freeze deal” saga
- May: supply disruptions
- 20-Jan: 13-year low touched at $27.1/b
- Summer 2016: range bound trading
- 23-June: UK vote for Brexit
- 8-Nov.: Trump victory
- January 2017: OPEC/Non-OPEC deal comes into force
- 30-Nov & 12-Dec: OPEC & Non-OPEC deal
- 03-Jan-17: 16-month high touched at $57.3/b

Source: ENGIE
Structures of Crude Futures

- Structure become flattish from contango after OPEC-Non OPEC deal
- Slight downward pressure on back end of the curve – Hedging activities by U.S. shale oil producers
- Longer dated curve structure by 2020 almost flattish

Source: ENGIE
Supply growth is outpacing demand growth, contributing to the global supply glut
- Saudi & Iraq are the biggest contributor for this supply growth
- Supply is expected to grow further with Iranian oil reaching markets, post uplifting of sanctions
- Opportunity to deregulate the fuel prices & move to market driven prices (like UAE has done this summer)
Refinery Projects in Middle East till 2020 (Additional 3 mbpd)

- Over 2 mb/d capacity of new refineries by 2020 (excluding Iraq’s TBC refineries)
- Various other expansion / upgrade projects increasing the refining capacity by ~1 mb/d
- Saudi Arabia’s Refineries Jubail SATORP & Yanbu YASREF (400,000 bpd each) have already been commissioned (By offering 2.8 million barrels of low-sulphur diesel to Asian & European markets, Saudi has sparked a product war)
Recent Developments in Middle East

- Surge in Refining Capacities
- Iran Nuclear Deal
- Conflict & Violence in Syria, Iraq & Yemen
- Oil Price war ‘Shale v/s OPEC’
- Saudi, Iraq & Iran fight for Market share for their crude oil

Recent Developments in Middle East

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Implication 1: OPEC assuming once again the role of Swing Producers

OPEC compliance, January levels

- Iraq
- Algeria
- UAE
- Venezuela
- Gabon
- Qatar
- Kuwait
- Ecuador
- Saudi
- Angola

OPEC compliance of its promised 1.16 mb/d of cuts is extremely robust at 97%

Iranian floating storage

- Iran and Venezuela’s ability to cheat is limited and Iran has been running its floating storage down
Implication 2: Formation of a Vicious Triangle: OPEC, U.S. & Middle East

- Middle East politics will play a major role in the game of chickens, i.e., U.S. and OPEC cartel.

**US** is the new swing producer and shale production will be the global balance buffer through price levels.

- The foreign policy of Donald Trump will be crucial in the Middle East, especially regarding the war in Iraq/Syria, the alliance with Riyadh and the deal with Iran.

- **Tensions** in the Middle East, especially between Shiites and Sunni countries, can complicate relations between members and paralyze the cartel again.
Implication 3: Middle East a Product Hub….Tough times ahead for Asian refiners

Middle East’s shifting focus to domestic refining

- Value addition through forward integration (will save refinery margins & freight cost)
- Secure domestic supply
- Provide cushion from market/price risk
- Lesser availability of cheaper Heavy crude from Middle East (even the differential between Heavy & light crude may reduce)
- This might impact large, modern refineries in Asia who have huge secondary/treatment units – whose economics depend on L/H differentials

Europe & Asian refineries under pressure

- Lower GRMs & utilization rates
- Rationalization of refining capacities in Asia & Europe
- Refineries with low capacities, low Nelson complexity index and lower GRMs would face pressure (Since 2013, approx. 1.5 mbpd of refining capacity has been closed; further 2 mbpd of capacity is under risk by yearend 2016)
- Increasing role of clean energy in the primary energy mix (Japan switching towards nuclear & LNG; advancement in technology & government incentives has increased renewables role)

Change in Product trade flows

- Middle East will start exporting products (particularly middle distillates) to the European market
- Asian refiners to lose their export market share
- Changing diesel fundamentals, particularly East of Suez (lot of Far east Asian diesel will be trapped)
Change in Product Supply Balances

Regional Gasoline / Naphtha Balances in 2013 and 2019

Thousand barrels per day

North America
-205
1320

Latin America
154
138

Europe
718
652
469

FSU
528

Middle East
702
1023

Africa
-143
-332

Asia
-974
-1490

Source: IEA
Change in Product Supply Balances

Regional Gasoil / Kerosene Balances in 2013 and 2019

Thousand barrels per day

North America

Latin America

Europe

Middle East

Africa

FSU

Asia

Source: IEA

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Change in Product Supply Balances

Regional Fuel Oil Balances in 2013 and 2019

*Thousand barrels per day*

Source: IEA

<table>
<thead>
<tr>
<th>Region</th>
<th>2013</th>
<th>2019</th>
<th>Change</th>
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<tbody>
<tr>
<td>North America</td>
<td>175</td>
<td>207</td>
<td>+32</td>
</tr>
<tr>
<td>Latin America</td>
<td>140</td>
<td>113</td>
<td>-27</td>
</tr>
<tr>
<td>Europe</td>
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<tr>
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<tr>
<td>FSU</td>
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<tr>
<td>Africa</td>
<td>-67</td>
<td>-110</td>
<td>-43</td>
</tr>
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</table>
Refined products demand growth will average 1.1 million b/d through 2020 following 1.2 million b/d in 2015

- Low-sulfur bunker fuel requirements in 2025 result in a spike in diesel demand; the duration of the spike is limited by rapid adoption of scrubber technology, enabling continued fuel oil usage.

- Excluding the effects of the bunker specifications, gasoline and diesel combined see average demand growth of less than 0.3% from the early 2020s onward as efficiencies and fuel substitution limit gains and GDP growth decelerates.

- In contrast, jet/kero and naphtha see average annual growth around 1%.

- Asia retains a dominant share of global demand growth through most of the forecast, supported by tremendous gains in China’s car fleet over the long term.

- Shifts in global demand and growth in large export refining capacity is resulting in a shift in refining centres.

- Net 14.2 million B/D of crude capacity (and associated conversion capacity) is expected on-stream by 2040 to meet demand.

- Diesel demand growth slower than prior forecasts, and with a slightly higher growth than gasoline. Shifts require a modification in conversion capacity outlook.

- Delayed cokers capacity has reached end of current cycle – no new North American coking capacity expected on stream prior to 2025.
Regional Refinery Capacity - Change 2009 to 2016

- Significant ineffective refining capacity has been closed worldwide since 2009
- Significant refinery capacity will be added in Asia and the Middle East over the remainder of this decade
- Capacity rationalization and capacity conversion to produce the desired product slate are the trends for future capital investment in refining industry globally
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- By 2030, over 50% of global refinery runs will be in Asia or the Middle East
Conclusion

Crude Oil
- Current oversupply of 2.27mbpd
- Additional supply of 2.5mbpd (Iran & Iraq-1mbpd each; 0.5mbpd from non-OPEC producers)
- Lesser availability of Heavy crude
- Near-to-medium term oversupply of crude

Refining
- Net capacity increase of 1.1 mbpd in each of 2016 & 2017
- Lower GRMs & utilization
- Refinery closures
- Near-to-medium term oversupply of products

Product Quality
- Economies adopting stricter specifications products (Euro 5 / 10 ppm)
- Pressure on refineries for modernization
- Renewables & biofuels
THANK YOU
Implication 1: Low oil prices in Short to Medium Term

OPEC’s rising production

- Saudi Arabia along with its partners continue to saturate the market with oil in order to protect their market share
- OPEC is expected to keep its output policy unchanged at its next meeting in December 2015

Iran Nuclear Deal

- Iran oil minister aims to add 500,000 bpd to production within two months of easing Western sanctions (by 1Q2016), and as much as 1 million bpd in six to seven months (end 2016)
- Initial sale would be coming from the floating storage, Iran has over 43 million barrels of crude oil & condensate in floating storage
- To encourage major E&P majors, Iran has proposed contracts with far more favorable terms (contract expected to be announced in London in Nov)

Middle East Geopolitics

- Iran & Iraq are looking to increase production in order to alleviate ailing economies
- Will Saudi Arabia try to keep oil prices low to suppress Iran’s re-entry & attempt to take market share?