Dynamics of the Asian methanol market

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Senior Editor, ICIS

Indian Petrochem Conference 2014
Hotel The Lalit, Mumbai
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Agenda

- India methanol and the influence of China
- China prices and its drivers
- The rise of Methanol-to-Olefins/Propylene
- Demand outlook
Methanol

Net exporters: **Iran**, **Saudi Arabia**, Oman, southeast Asia producers
Net importers: China, Taiwan, South Korea, Singapore, India, EU and US

*Figures for the year of 2013*
**Market Brief**

<table>
<thead>
<tr>
<th>Indian market at a glance</th>
<th>Consumption ≈ 2m tonnes/year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Import: 1.4m-1.5m tonnes/year</td>
</tr>
<tr>
<td></td>
<td>70-80% imports are Iranian origin</td>
</tr>
<tr>
<td></td>
<td>Five local producers</td>
</tr>
</tbody>
</table>

Source: India’s Ministry of Commerce & Industry
Market Brief

Applications

Chemical
- Formaldehyde
- Acetic Acid
- DME
- Solvent

Energy
- MTBE
- TAME
- DME

Source: India’s Ministry of Commerce & Industry
Key price drivers

External
- China market
- Southeast Asia market
- Asia supply/demand balance

Internal
- Demand in India
- Domestic market, eg. Currency fluctuations, seasonality..
- Logistics, i.e. Vessel delivery

Source: Industry
Market overview

Source: ICIS Pricing
Key drivers for spot CFR India prices

- China prices
- Ex-tank prices
- SE Asia prices
- Currency fluctuations
Correlation Coefficient

• A measure that determines the degree to which two variable's movements are associated.

• The correlation coefficient will vary from -1 to +1. A -1 indicates perfect negative correlation, and +1 indicates perfect positive correlation.
India: CFR WCI versus CFR China

- Movements in CFR China prices will highly likely impact India
- Correlation coefficient = 0.90

Source: ICIS data
India: CFR WCI versus CFR SE Asia

- Movements in CFR SE Asia prices will also influence India
- Correlation coefficient = 0.89

Source: ICIS data
India: CFR WCI versus ex-tank prices

- Highly correlated
- Correlation coefficient = 0.93

Source: ICIS data
India: CFR WCI versus currency exchange rate

- Medium-to-low impact
- Correlation coefficient = 0.37

Source: ICIS data
Key drivers for spot CFR India prices
China: key end-user market
China: Supply in key end-user market

Source: ICIS data
Intra-region trade opportunities

• China-SE Asia arbitrage opportunities often appear
Factors affecting prices

- Inventory levels
- Local material availability
- Methanol futures
- Crude oil and global factors
- Domestic prices
Domestic prices versus import prices

- Key Chinese players often use local prices as a benchmark
- Correlation coefficient = 0.93

Source: ICIS data
Factors affecting prices

- Domestic prices
- Inventory levels
- Methanol futures
- Local material availability
- Crude oil and global factors

Key drivers for spot CFR China prices
Futures versus import prices

- Futures’ prices can sometimes influence China’s market sentiment
- Correlation coefficient = 0.69

Source: ICIS data
Factors affecting prices

- Inventory levels
- Methanol futures
- Local material availability
- Domestic prices
- Crude oil and global factors

Key drivers for spot CFR China prices
Inventory levels versus import prices

- Inventory levels in China can drive or cap buying activities
- Correlation coefficient = 0.61

Source: ICIS data
Key drivers for spot CFR China prices

Factors affecting prices

- Inventory levels
- Local material availability
- Methanol futures
- Domestic prices
- Crude oil and global factors
Overall supply in China versus import prices

- Actual/expected supply often affects sentiment
- Correlation coefficient = 0.34

Source: ICIS data
Supply in key end-user market

Source: ICIS data
Domestic supply versus import prices

- How important are operating rates among local producers
- Correlation coefficient = 0.54

Source: ICIS data
Imported supply versus import prices

- Imported volumes and their prices
- Correlation coefficient = 0.60

Source: ICIS data
Key drivers for spot CFR China prices

Factors affecting prices

- Methanol futures
- Inventory levels
- Local material availability
- Domestic prices
- Crude oil and global factors
Crude oil versus methanol import prices

- Crude oil prices provide a direction for the broader market
- Correlation coefficient = 0.39

Source: ICIS data
Key factors in monitoring spot CFR China prices

- Key drivers for day-to-day spot prices:
  - Methanol futures
  - Chinese domestic prices

- Key drivers for long-term price trend
  - Supply
  - Demand

Factors affecting prices:

- Methanol futures (0.69)
- Inventory levels (0.61)
- Local material availability (0.54-0.60)
- Domestics prices (0.93)
- Crude oil and global factors (0.39)
## Demand structure in China

<table>
<thead>
<tr>
<th>Year</th>
<th>Traditional</th>
<th>Non-Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2013</td>
<td>57.5%</td>
<td>30-35%</td>
</tr>
</tbody>
</table>

### Average Growth Rate

<table>
<thead>
<tr>
<th>GDP</th>
<th>Traditional</th>
<th>Non-Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-2013</td>
<td>57.5%</td>
<td>30-35%</td>
</tr>
<tr>
<td>2014-2015 (E)</td>
<td>30-35%</td>
<td></td>
</tr>
</tbody>
</table>

### Demand divided by products (%)

- MTO/MTP
- Methanol
- Gasoline
- DME
- Conventional
- MTBE
- AA
- Formaldehyde

Source: ICIS China
<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Facility</th>
<th>C2 ('000 tonnes/yr)</th>
<th>C3 ('000 tonnes/yr)</th>
<th>Start-up schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>China Coal Yunlin Energy</td>
<td>Yulin, Shaanxi province</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>End-Jun 2014</td>
</tr>
<tr>
<td>Shaanxi Yanchang Chinacoal Yulin Energy &amp; Chemical</td>
<td>Jingbian, Shaanxi province</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>End-Jun 2014</td>
</tr>
<tr>
<td>Shenhua Ningxia Coal Industry</td>
<td>Ningdong, Ningxia province</td>
<td>CTP</td>
<td></td>
<td>500</td>
<td>End-Aug 2014</td>
</tr>
<tr>
<td>Shandong Shenda Chemical Co</td>
<td>Tenzhou, Shandong province</td>
<td>MTO</td>
<td>170</td>
<td>200</td>
<td>End-2014</td>
</tr>
<tr>
<td>Shandong Yangmei Hengtong Chemical</td>
<td>Linyi, Shandong province</td>
<td>MTO</td>
<td>117</td>
<td>180</td>
<td>End-2014</td>
</tr>
<tr>
<td>Pucheng Clean Energy Chemical</td>
<td>Pucheng, Shaanxi province</td>
<td>CTO</td>
<td>300</td>
<td>400</td>
<td>End-2014</td>
</tr>
<tr>
<td>Qinghai Salt Lake Industry</td>
<td>Golmud, Qinghai province</td>
<td>CTO</td>
<td>160</td>
<td>170</td>
<td>Q4 2014</td>
</tr>
<tr>
<td>Ningxia Baofeng Energy Group Co</td>
<td>Ningdong, Ningxia province</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>Q4 2014</td>
</tr>
<tr>
<td>Zhejiang Xingxing New Energy Technology</td>
<td>Jiaxing, Zhejiang province</td>
<td>MTO</td>
<td>300</td>
<td>300</td>
<td>Q1 2015</td>
</tr>
<tr>
<td>Shanxi Coking (Group) Co</td>
<td>Hongdong, Shaanxi province</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>Q2 2015</td>
</tr>
<tr>
<td>Mengda New Energy Chemical Base Development Co</td>
<td>Erdos, Inner Mongolia</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>Q2 2015</td>
</tr>
<tr>
<td>Shaanxi Shenmu Chemical</td>
<td>Shenmu, Shaanxi province</td>
<td>MTO</td>
<td>300</td>
<td>300</td>
<td>Q4 2015</td>
</tr>
<tr>
<td>XinAo Group</td>
<td>Erdos, Inner Mongolia</td>
<td>CTO</td>
<td>300</td>
<td>300</td>
<td>Q4 2015</td>
</tr>
<tr>
<td>Fude Changzhou</td>
<td>Changzhou, Jiangsu province</td>
<td>MTO</td>
<td>165</td>
<td>165</td>
<td>Q4 2015</td>
</tr>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>3,312</td>
<td>4,015</td>
</tr>
</tbody>
</table>
Going forward

- Over **2.6m** tonnes/year MTO/P capacity have been launched
- Around **10m** tonnes/year of coal-methanol-olefins projects have been approved in China
Demand Outlook

Demand from traditional sectors is expected to grow in line with China’s GDP

- **Traditional sectors**: Formaldehyde, acetic acid, 1-4 butanediol, methyl methacrylate (MMA), methylamines and chloromethanes
- China’s GDP growth is estimated at 7% in 2014 and 6% in 2015

Source: Industry, ICIS
Demand from non-traditional sectors is expected to gather pace in the near term

- **Non-traditional sectors**: MTO, fuel cells, DME, gasoline derived from methanol as well as the blending of methanol into gasoline
- China’s demand in 2013 reached 9m tonnes
- Expected growth rate in 2014-2015 is 30-35%

Source: Industry, ICIS
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