Investment and challenges in the petrochemical and refining sectors
IEA-IEF-OPEC Symposium
Johnny Stewart, Principal Analyst, February 2019
Demand growth slowing, transitioning west to east, end-use changing

Europe and NA lead the decline in global demand, petrochemical feedstock use grows

Global demand by region

Global demand by product

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Annual Growth</th>
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<tbody>
<tr>
<td>2000-17</td>
<td>1.2 mbd 1.4%</td>
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<tr>
<td>2017-40</td>
<td>0.5 mbd 0.5%</td>
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Source: Wood Mackenzie
Refining capacity additions start to outpace global demand growth

Greenfield integrated complexes are highly competitive, pressuring weaker sites

Global refining capacity versus demand

Hengli, China, integrated complex

Aromatics

Refinery

Cracker

Source: Wood Mackenzie, Product Markets Service
### Middle East NOCs are evolving through the value chain

Margin ‘leak’ a thing of the past, exposure to different segments insulates from volatility

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Note: ✓ indicates participation, ✗ indicates no participation.
Customer base is changing, relationships have to evolve

Heavy crude demand increases due to upgrading projects, sources of supply change

Key changes to heavy crude trade (2025 minus 2017), kb/d

Canada oil sands to Asia increases after Trans Mountain Expansion (TMX) is completed

New supply from Johan Sverdup project. Majority of the volumes will be processed domestically, with some exported to Asia

Steep declines in Angola and Mexico. Offset by new heavy supply from Canada, Europe and the Middle East

Exports = domestic supply – domestic demand

Source: Wood Mackenzie
Opportunities are very rarely uniform, molecule placement is key.

Ethylene derivative import requirement slowing as capacity additions complete.

China All Supply Balance

China Ethylene balance

Source: Wood Mackenzie

Conclusions

• Global demand continues to grow but at a slower pace

• Greenfield integrated sites are more resilient through utilisation downturn

• Participation along the entire value chain protects against different business cycles

• There is no one-size-fit-all-option; need a holistic approach across your business
Johnny Stewart
Principal Analyst EMEARC, Dubai, UAE

Biography

Johnny Stewart is a core member of Wood Mackenzie’s Downstream, Midstream and Chemicals Research team and is responsible for developing and delivering research content to clients.

Johnny has worked in Wood Mackenzie’s research division for nine years and is responsible for analysing refinery supply, infrastructure and investments across the Middle East, Europe and Africa.

Johnny compiles Wood Mackenzie’s long and short term view on all products supply/demand balances in the Middle East and is responsible for individual refinery asset benchmarking and analysis in the region.

Prior to joining Wood Mackenzie, Johnny achieved an Honours Degree in Mechanical Engineering with Management from The University of Edinburgh, Scotland.
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