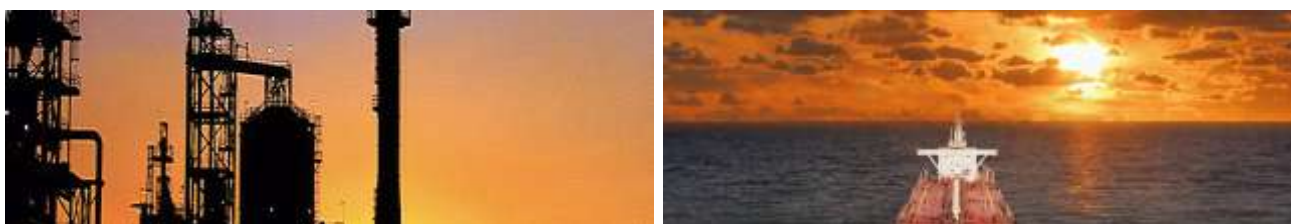


Asia still #1 target for huge increase in GCC/Iran petrochemical capacities “Middle East export boom . . . supply chain bust?”

Contributing Expert: **Leslie McCune, Chemical Management Resources Limited**



Exports to Asia of the leading petrochemical commodities produced in the GCC are set to boom as recent capacity additions come on stream and other major projects in the Middle East move forward. But will the supply chain assets and architecture currently moving product from the Middle East to Asia cope with the massive increase in demand or will the export boom turn to supply chain bust, with recent infrastructure investments, new business models and new trade routes unable to absorb the growth?

In a recent seminal study on Middle East petrochemicals and petrochemical supply chain, commissioned by the Gulf Petrochemicals and Chemicals Association (GPCA), Middle East-focused consultancy **Chemical Management Resources Limited** forecasts a 52 million tonne surge in the annual production capacity of the top 18 petrochemicals, chemicals and fertilisers commodities in the GCC – Saudi Arabia, Kuwait, Bahrain, Qatar, the United Arab Emirates and Oman - by 2015. This would bring GCC annual capacity to 125 million tonnes. Iranian capacity would increase this to 172 million tonnes, although capacity growth in the country is far less certain given the chronic funding difficulties within the petrochemicals sector and the increasingly debilitating effect of UN, US and EU trade sanctions. Despite these, exports to China (which accounts for 27% of total Iranian exports) remain strong.

Overall, the compound annual growth rate for the capacities of the region’s top commodity petrochemicals will be 9%. This capacity boost will inexorably fuel an export boom to Asia, with annual GCC exports increasing by 50%, equivalent to 19 million tonnes, by 2015.

Dr Abdulwahab Al-Sadoun, Secretary General of the GPCA, said that “the supply chain is critically important to the sustainable competitive advantage of the Middle East petrochemicals sector. This comprehensive and authoritative study, from a highly-regarded and insightful consultancy, defines the current landscape of the petrochemicals supply chain sector in the region. It brings to the attention of stakeholders both the challenges and numerous opportunities to enhance the competitiveness of Gulf producers”.

Unusually, the study considers the dynamic interactions between petrochemical capacities, exports and the supply chain.

Leslie McCune, Managing Director of **Chemical Management Resources Limited**, said “The huge growth in exports is underpinned by the continuing cost competitiveness of Middle East production, despite the enforced move to heavier feedstocks and the inevitability of a higher ethane price – possibly tiered depending on its use as a feedstock for either commodity or differentiated value chains - in Saudi Arabia from 2012.”

“Output has jumped this year as six new major projects have come on stream – Yansab, Sharq, Kayan in Saudi Arabia; Ras Laffan Olefins in Qatar; Borouge II in the UAE and Morvarid in Iran. Export growth of this order is a major challenge to the region’s supply chain, which was stretched to capacity in the period leading up to the global economic heart attack that occurred in Q3 2008. However, despite the crisis, Middle East governments and institutions maintained their commitment to the development of strategically important supply chain infrastructure projects and a new array of supply chain alternatives is opening up for petrochemical exporters to Asia.”

The study assesses the olefin, methanol, benzene and paraxylene value chains, together with PVC and MTBE. The capacities and export orientation of all 386 current and planned plants are defined. These are matched against the seaborne and land-based supply chain assets that could be leveraged to satisfy regional, Asian and European customers. Five categories of shipping were considered – LNG, LPG, chemical tankers, container (so-called ‘cellular’ ships) and dry bulk – together with a comprehensive review of port developments and comparative port costs. Road, rail and intermodal facilities were also analysed.

Over the period, Saudi Arabia’s share of the total volume exports will fall nine points to 45% with the biggest gainer being the UAE, where exports will be driven by the multi-million tonne Borouge expansions and Chemaweyaat’s investments, which are scheduled to come on stream before 2015.

According to Leslie McCune “Investment in major port and terminal upgrades has continued although these are based on a phased investment approach instead of the previous, more iconic, project plans. Major new terminals opened in 2009 in Bahrain (Khalifa bin Salman Port), Jebel Ali in the UAE (the region’s largest port with a capacity of 14 million TEU and at Jeddah Islamic Port in Saudi Arabia, where the new Red Sea Gateway Terminal increased capacity to 6 million TEU.” TEU (Twenty Equivalent Units) is a standard unit of measurement for dry freight containers.

“Unusually, Jeddah Islamic Port still sits within the ancient city whereas most new port developments have been developed on new, open access sites where hinterland and infrastructure can be easily developed. However, the notorious congestion in Jeddah is in the process of being relieved by a major road construction program. Like most infrastructure projects, it will inevitably get worse before it gets better. And with many petrochemical offtakers paying for slots on vessels, even if they are not used, they’ll be tensions and costs if congestion prevents containers being loaded, or if shippers, under pressure to keep to tight schedules, skip congested ports where the risk of high demurrage claims caused by long turn-around times is high.”

New larger ports can now accept the larger ‘mother’ ships calling in the Middle East from Asia - direct calling reduces the time and cost of having to tranship onto smaller vessels. According to **Chemical Management Resources Limited**, the major transshipment ports for Asian traffic will continue to be Jebel Ali in the UAE,

Jeddah Islamic Port in Saudi Arabia and Salalah in Oman although a worrying number of other ambitious port investments are predicated on also developing into new transshipment hubs.

Some ports may well be left isolated by the major increases in portside logistics facilities and petrochemical throughput volumes at key production locations such as Al Jubail in Saudi Arabia. This, and other key production centres such as Ruwais in Abu Dhabi, will increasingly support direct shipments to Asian hubs. While this has been the conventional model for large volume commodity liquid products, export volumes of polymer are reaching a scale where a 'polymer pipeline' of specially-adapted, dedicated vessels may become a reality. This would improve the schedule integrity of shipping lines and enable the consequential cost savings and customer service benefits to be captured.

In the shipping sector, the study shows how record losses following the collapse in freight rates from the end of 2008 forced a change in the pricing behaviour of owners, with a renewed focus on profitability rather than volume. Shipping lines have constrained supply by withdrawing surplus capacity, scrapping older ships, temporary lay-ups, delaying investments and slow steaming (which also saves bunker costs).

However, most shipping categories will remain over-supplied with chemical tankers matching demand most closely. For LNG, where the 2007 order book was equivalent to 88% of the fleet, no further vessels will be required for long-term contracts until 2015.

Container carriers have brought back additional capacity in 2010 and have flooded the market in a Pavlovian response to increase trade levels. Vessels with a capacity of 1.45 million TEU, equivalent to 11% of the fleet, will be delivered in 2010.

Leslie McCune warns "More critical is the availability of containers themselves (especially ISO tank containers) – ironically, these are the least capital-intensive component of the physical supply chain but may well be its weakest link, at least in the short term. The increase in GCC exports of the five major dry bulk polymers (polyethylene, polypropylene, polystyrene, PET and PVC) will drive container demand to double the current demand."

China-based CIMC and Singamas, the two largest container manufacturers in the world with an annual capacity of 3.5 million TEU, will only produce about a third of their capacity this year due to the unexpected strength and suddenness of the recovery in demand. Prices at the end of 2009 of \$2,700/TEU were reportedly at a 20 year high.

The availability of ISO tank containers, used to move hazardous chemicals and high purity foodstuffs on cellular container ships, has also tightened with demand high and the vital repositioning legs being impacted by the occasional preference of shippers to carry standard dry freight containers. The shift to heavier, mixed-feed cracker feedstocks is creating a new portfolio of specialty liquid derivatives – these will require a much larger number of ISO tank containers.

For rail, the \$7 billion Saudi Landbridge will create a new freight and passenger link between the Red Sea and the Arabian Gulf. The new line will connect Jeddah with Riyadh, the existing line between Riyadh and Dammam will be upgraded and a new rail line will be built between Dammam and Al Jubail. The Landbridge is part of 4,000 kilometre increase in rail track, with new lines linking the phosphate and bauxite mines in the north at Al Jalamid and Az Zabirah with the processing facilities on the Arabian Gulf at Ras Az Zour.

