



We all know about the flood of Middle East capacity soon coming onstream. But stop to consider the enormous logistical challenges that it presents

### Consultant's corner

PAUL HODGES  
INTERNATIONAL ECHEM

MAJOR CHANGE is about to impact the supply chain for petrochemicals and polymers. The epicenter of this change will be the Middle East, where enormous quantities of new production will be coming on stream. But significant new capacity is also

expected to come online in China, India and other Asian countries. This will ensure that there is a knock-on effect into Asia's existing supply chains, and from there into the rest of the world.

So far, a lot of attention has been paid to the potential impact of these new volumes on pricing and profitability. But surprisingly little attention has been paid to the challenges and opportunities that will be thrown up in the logistics area. Yet these

are unprecedented over such a relatively short timescale.

Most of the new Middle Eastern product will need to be exported, given the relatively small size of the regional market. But where will it go? To China or India? Perhaps, but not on the scale required. And if not to these countries, then where? And what will happen to those producers, such as US exporters, who currently depend on Asian markets for part of their sales?

At this stage, there are clearly more questions than answers around the key issues. How will these vast quantities of product be moved between supplier and end-user? How will they be stored? How will the lack of existing infrastructure in Asia be overcome? Current supply-chain models will need to be modified, and new ones built, if movements are to take place cost-effectively and on an environmentally sound basis.

Equally, what about the physical constraints on this trade? Already it is estimated that ships can spend up to 30% of their time waiting to unload/load at certain bottleneck ports, due to the volume of existing traffic. Will the new volumes simply cause gridlock, or will new ways of working allow them to move smoothly to their destination?

The volumes to be moved are certainly challenging. In 2006, the Middle East produced around 12m tonnes of ethylene and 2m tonnes of propylene. It turned these volumes into 7m tonnes of polyethylene (PE), 5m tonnes of monoethylene glycol (MEG), and 1.5m tonnes each of styrene (SM) and polypropylene (PP).

### GPCA PREDICTS BOOMING CAPACITY

By 2010, the Gulf Petrochemical Association (GPCA) forecasts that the region will have nearly 33m tonnes of ethylene capacity and 9m tonnes of propylene capacity. Assuming normal operating rates, this will lead to around a 250% increase in the volume of ethylene derivatives, and a 400% increase in propylene derivatives. Yet capacity on shipping lanes is already constrained, while some supply chain experts are also starting to worry that packaging and pallets may not be available in the required quantities.

At the same time, the assumed principal destination for much of this product, China, will also be expanding its own production to meet consumption growth. Yu Jing, of the China International Chemical Consulting Corporation (CICCC), forecasts that China's net ethylene import demand will stabilize at current levels

until 2010, as will PVC imports. She expects the need for PP imports to actually drop to around 1m tonnes.

### CHINA MAY NOT BE A PANACEA

So the new Middle Eastern supply will not simply go on a conveyor belt to China, as many people assume. Nor will much of it go to India, as Reliance and other companies are also busy on major new expansions. Instead, it will have to compete with product from existing regional and global producers, several of whom are also planning to increase their production.

Inevitably, therefore, a significant percentage of this new Middle Eastern and Asian product will end up outside Asia. So the impact will be felt all over the world, particularly during economic downturns.

From the supply chain perspective, of course, the question is not "where will all this product go?" but "how will it all get there?" The Middle East exporters will be the low cost producers, due to their advantaged feedstock position. And they will also have

paying around \$3,000 (€2,200) per container to move from mainland China to the Middle East. The back haul is a mere \$300-400/container. But might these very favorable rates change as polymer volumes increase?

Equally, with all these new volumes on already crowded sea lanes, how will companies meet their Responsible Care commitments? Dow Chemical is in the middle of an RFID (Radio Frequency Identification) trial on some USA-Europe routes, in order to help meet their published 2015 Sustainability Goals. This type of 24/7 location detail will be vital if freight and turnaround costs are to be minimized.

There are already some signs that the scale of these challenges are starting to encourage existing logistics companies to consider innovative new business models. Such models might include the bringing together of all aspects of the supply chain in one organization. Focusing supply chain businesses on the customer would certainly help to catalyze the implementation of new ways of working.

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the opportunity to revolutionize the world of logistics, if they choose to do so.

Will they continue with the current hub and spoke system of moving 45,000-50,000 tonne shipments into Asia via Singapore? This strategy was originally pioneered by SABIC for methanol and MEG, but may no longer be optimum, now that volumes are increasing. If companies decide to increase flows, then where will they store the product, and how quickly will they be able to load and discharge?

Equally, will companies decide to build their own ships, in order to avoid the issue of freight lanes being dictated to them by ship-owners? Will they take control of terminal operations?

Even greater challenges face the polymer trade, as this is based on container movements. At present, the head haul route is East-West, with textile producers in China

This could prove attractive to some of the major producers on an in-house basis. It could also appeal to existing freight and logistics providers. They could pool their resources and expertise, and also add value in terms of global network design and optimization.

With the right strategy and structure, such companies would be better able to optimize not only regional freight lanes between the Middle East and Asia, but also global routings and balances. Flexibility will be key, though, whatever strategies and structures are adopted.

Change is definitely on the way, and on an unprecedented scale. Nobody can yet know how these new supply chain challenges will be met. But change on this scale also creates opportunities to gain significant competitive advantage, for those bold enough to seize it.



Paul Hodges is chairman of International eChem, commercial advisers to the chemical and associated industries [www.internationalechem.com](http://www.internationalechem.com). He also writes the ICIS Chemicals and the Economy blog, which can be found at [www.icis.com/blogs/chemicals-and-the-economy](http://www.icis.com/blogs/chemicals-and-the-economy)