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# AROMATICS

## HEAD INTO CALMER WATERS



**By Rob Peacock and Rhian O'Connor**

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**MORE BALANCED MARKETS ARE EVIDENT AS RESTARTS AND NEW PLANTS WILL HELP TO MEET GENTLY RISING DEMAND, FOLLOWING A VOLATILE PERIOD IN DERIVATIVE SECTORS SO FAR THIS YEAR**

**BY ROB PEACOCK & RHIAN O'CONNOR FIRST PUBLISHED 22 SEPTEMBER 2017**

Many aromatics and derivatives markets have been back in a more volatile mood in 2017 than was generally seen in 2016. Through most of 2016, the European benzene contract price benchmark stayed within a relatively narrow range. Partly this was due to crude prices, but also as global markets were usually well balanced. Then styrene and benzene prices shot up in the fourth quarter (see chart), as traders in Asia went on a buying spree on the back of low inventory levels and news of significant shutdowns in US styrene production in Q1 2017.

That has meant that 2017 has been more of a rollercoaster so far. On one hand, aromatics prices fell in the second quarter as global supply and demand became more balanced, while on the other hand a number of derivatives, such as caprolactam and methyl di-p-phenylene isocyanate (MDI), continued to be affected by supply issues, having already seen raw material-led price increases.

## ROBUST BENZENE INVENTORIES

Looking to 2018, benzene inventory levels, in particular in China, appear to be more robust. Although demand is not high, that is likely to change, as styrene inventories are falling. That said, there are no significant outages expected in Q1 2018. Hence, at this stage, we do not envisage a return to the behaviour of late Q4 2016 and early 2017.

Although the effects of Hurricane Harvey are likely to affect pricing levels in Q4 2017 through 2018, we expect less extreme waves. Benzene supply, which has improved with new plants in Asia this year, is expected to be on a more even keel with demand. Some new, small non-integrated benzene units are expected on stream in Asia, but no significant new capacity. Benzene demand is expected to increase incrementally, as new derivative start-ups are limited and mostly all in line with increased integrated benzene capacity.

In Saudi Arabia, Sadara is expected to utilise all its benzene production, as well as taking material from other local benzene producers. The same is true of the delayed Petro Rabigh units. These two new integrated consuming units are not expected to have a significant effect on benzene exports from Saudi Arabia, which have risen in the past couple of years.

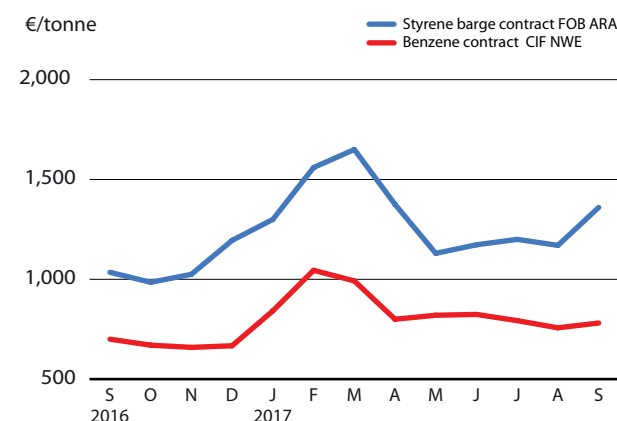
Within the next two years, additional benzene is expected from the Nghi Son refinery in Vietnam and from China National Offshore Oil Corp (CNOOC)/Shell in China. Also in China, Ningxia Baota Petrochemical announced a new integrated aromatics unit, which was expected on stream in 2018, and additional benzene capacity is expected at the Sinochem Quanzhou site, alongside additional paraxylene (PX). There is also the potential for restarts at the idled units of Trans-Pacific Petrochemical Indotama (TPPI) in Indonesia and Dragon Aromatics in China.

PX prices were also on a rollercoaster during late 2016 and mid-2017, firstly on the back of raw materials prices, and then on production issues in Europe that tightened supply. Increased global supply in the next few years is expected to have a calming effect on prices.

If we look further out, the potential for new benzene supply to outstrip demand comes from the announcement of a number of integrated PX units. Most of these units are part of planned refineries, and would be set up to maximise PX output. The capacities recently announced could mean an additional 16m tonnes of PX, and go a long way to making China self-sufficient in the material. The obvious effect will be on exporters to China, as imports are pushed out, with only low-cost producers likely to be able to compete directly.

However, ICIS still expects robust growth in PX demand

## EUROPE – STYRENE AND BENZENE PRICES



to account for this additional supply. Another impact will be from the co-produced benzene. We estimate around 4m tonnes of additional benzene capacity could be built (see chart). If all the planned integrated plants are built by Hengli Petrochemical, Zhejiang Petroleum and Chemical, Shenghong Petrochemical and Ningbo Zhongjin, by 2022, this could oversupply the market. We forecast this additional capacity will outstrip regional growth in benzene demand. There will also be an impact on Chinese import levels and global trade flows, of both PX and benzene.

## STYRENE OUTAGES

For European and global styrene, the key driver of price has been supply issues, particularly the triple outage in the US of Cos-Mar, Styrolution and AmSty in the first half of 2017. This effectively stopped exports out of the US and made the rest of the world more self-reliant. No sooner were the problems fixed than Hurricane Harvey caused the closure of some Texas ports, as well as a force majeure at LyondellBasell's 1.25m tonne/year Channelview plant. Global styrene prices rose again and the European contract for September increased by €190/tonne.

But how much of the European pricing froth is due to real shortages and how much down to hype? For that we need to look to Asia. China is the world's largest consumer of styrene and styrenic derivatives, but is still largely reliant on the rest of the world (principally other northeast Asian countries, the US and the Middle East) to supply it with styrene. The China supply/demand balance is crucial for global, and thus European, pricing.

Interestingly, in the first quarter, while European contract prices rose by 38%, Chinese styrene inventories soared from 59,000 tonnes to 230,000 tonnes, as shown in the chart. Two things happened simultaneously as predicted by the most basic of economic models: demand fell and supply rose.

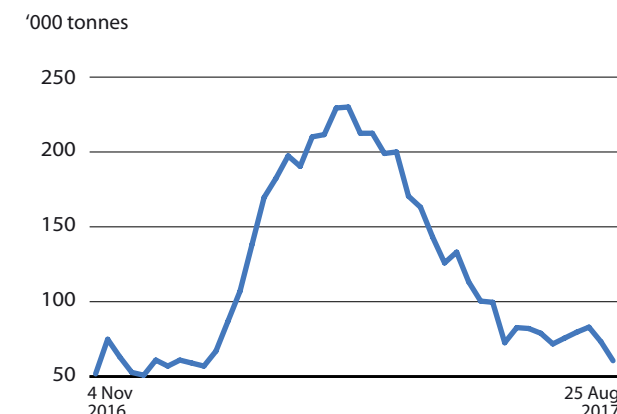
## RAW MATERIALS

On the supply side, a number of Chinese styrene plants with more marginal profitability swung back into production or increased operating rates. These plants are typically smaller, non-integrated, and often inland, where raw materials are harder to source. Some are tied to coal-to-ethylene or coal-to-benzene plants which may not be running any more. However, the increased styrene price meant these units could finally make money and their operators were not slow to cash in.

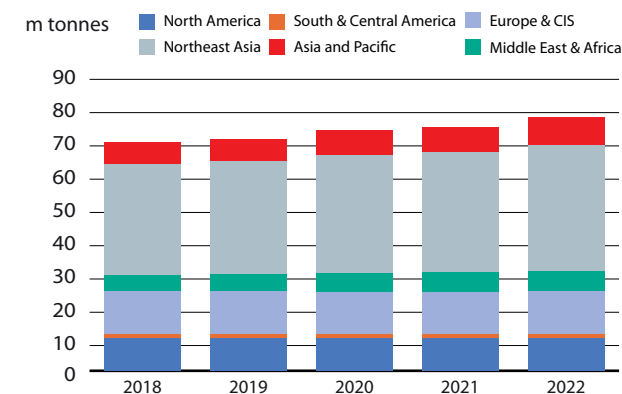
In addition, a number of sizeable styrene plants have come on line in China over the last year. In total 1.6m tonnes/year of capacity has opened, or will shortly open, in the country since June 2016. This means that China can supply 88% of its own demand in 2018 (at full capacity), up from 79% in 2015.

On the demand side, derivative units ran slower, as

## CHINA EAST STYRENE INVENTORIES



## FORECAST GLOBAL BENZENE CAPACITY



manufacturers chose to do shutdowns early, run down inventories of raw materials and finished plastics/rubber or just sell lower volumes to customers in the slow season for China.

Europe is now largely self-sufficient. In the first quarter of 2017, we believe Europe's styrene imports were exactly equal to exports. That even includes more than 50,000 tonnes of exports to South America, which would normally be supported by US supply. However, this was a period of low demand. Realistically, Europe will continue to be dependent on either the Middle East or the US for some supply. As such, European pricing will always be influenced by Asia as it competes for product from the exporting nations.

So, if global supply is more able to adjust, why did September prices rise so much? September and October are high season for electronics, toys and household goods in China, with manufacturing well under way ahead of the Western holiday buying season. So, underlying demand is stronger than in February/March, and delayed purchases harder to make.

As a result of the hurricane, east Chinese inventory fell



sharply around the beginning of September, as customers bought ahead of any price rises. By 1 September inventory was down to 60,600 tonnes – the lowest level in 2017.

## PRODUCTION MARGINS

But the supply response kicked in, too. One example of this was Shandong Yuhuang Chemical, which announced on 29 August that it was delaying the shutdown of its two styrene lines in Shandong indefinitely because of healthy production margins. The company had initially planned to shut the two lines – each with 200,000 tonnes/year of capacity – one after another for a month each for maintenance and to replace catalysts. No doubt, other smaller producers have made similar decisions.

In Europe, one producer has had its own problem with flooding and there have been other domestic supply concerns. Flexibility in Europe is more limited, with most plants running at high operating rates because of good demand. Volumes in September and October normally pick up after the summer, although this year demand was strong throughout the summer as lean supply chains were replenished.

The conclusion to this is that styrene supply disruptions should continue to impact prices. In particular, ageing plants in the US and Europe should continue to lead to unexpected outages. Weather impacts could also be significant – whether hot summers in Europe causing cracker outages, or low Rhine levels, or a hurricane in the US taking out refineries and styrene units.

But with importers such as China and Europe edging towards self-sufficiency, exporters such as the Middle East willing to exploit pricing opportunities, and consumers more flexible on timing, we believe pricing impacts of outages will be short-lived. Essentially, globally, the volume is now there to deal with incidents, but it can take some time to get to where it is needed, or for supply and demand to react.



## ABOUT THE AUTHOR

### ROB PEACOCK

Rob Peacock is a consultant in the Consulting and Analytics business at ICIS and has spent most of his 20-year career in the chemicals market analysis and consulting business. For the past ten years, he has focused on the aromatics and derivative markets, from polyurethanes and polystyrene to benzene and xylenes. At ICIS he is responsible for the Benzene Global price forecast report and aromatics and derivatives in the ICIS Supply & Demand database



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Rhian O'Connor is a Senior Analyst in the Consulting and Analytics business at ICIS. She covers the styrenics markets as well as some propylene derivatives. She has analysed the European chemical industry for more than ten years, both in ICIS editorial department as a Senior Editor and prior to that in investment banking as a chemicals sector equity analyst.

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