

## PETROCHEMICALS

# Capacity grows despite slowdown

Cheap feedstock gives Middle East producers a competitive advantage as world economic growth slows

## REGIONAL

As with many industries, the market for petrochemicals is cyclical, the long lead times for supply making prices susceptible to peaks and troughs. When demand is high, the time taken to bring off-stream plants back on line or to build facilities means supply can take a while to catch up, so prices rise. When demand falls, the lengthy supply chain and long-term feedstock supply agreements make it hard for the industry to adjust, so prices tend to fall.

"In petrochemicals, you can go from boom to bust very quickly," says Paul Hodges, chairman of UK-based petrochemicals consultant International Echem. "In boom time, high prices mean you can ramp up more expensive capacity, which pushes up the market price.

"On the way down, the system is so integrated that people cannot easily shut down a plant. You can go quite a long way into losing money on a tonne of polymer before it is economical to shut down."

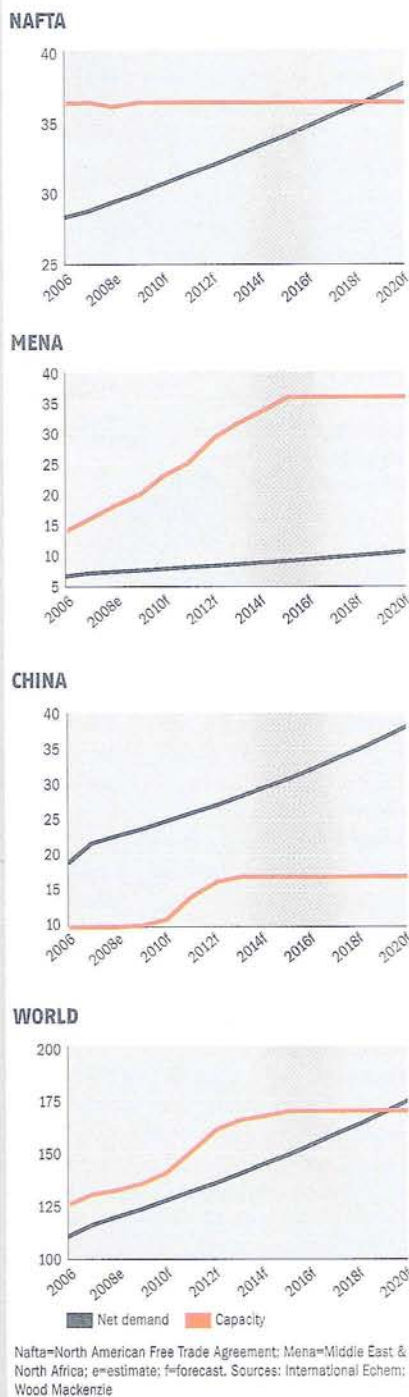
At the moment, the industry is on a high. Petrochemicals demand growth closely mirrors economic growth, and in the past four years annual growth in global gross domestic product (GDP) has averaged 3.5-4.0 per cent. In China and India, which together account for more than a third of the world's population, GDP growth has been close to double figures. Even in the West, where growth rates are inevitably more modest than in the newly industrialising regions of the world, GDP growth has been healthy, at about 2.5 per cent a year.

## Economic strength

In recent years, confidence in the strength of the US economy has led to a boom in loans to increasingly risky segments of the home-buying market – known as sub-prime lending – which has boosted home building, while car sales have also been buoyant. This has been good news for the petrochemicals industry. Each new house contains an average of \$16,000 worth of petrochemical products, and each new car \$2,500 worth, according to the American Chemistry Council.

The future is not so promising. In the past year, the sub-prime mortgage lending market

## ETHYLENE PRODUCTION (MILLION TONNES)



has collapsed, and US economic growth is grinding to a halt. The economic good times of recent years have led to a negative savings rate in the US, but this is expected to turn around, bringing a fall in consumer spending. "The US is in recession and it will probably get worse," says Hodges. "No one in the US believes housing will come back in at least 18 months. It is dead and buried."

Western Europe is not expected to be far behind. The region's economies are closely linked to the US, and they have much in common with their transatlantic neighbour, not least their growing dependence on imported energy.

## Chinese exports

To some extent, the Asian economy is insulated from the influence of the West's economic fortunes, but the importance of Western export markets to China is likely to mean that its economic growth will also slow.

The value of China's exports is growing at more than 20 per cent a year, and much of the country's plastics-based products, such as toys and white goods, are produced for export. Polymer demand in the US is about 100 kilograms per person per year, compared with about 30-40kg in northeast Asia and just 10kg in China. If China struggles to sell its finished products to foreign markets, its demand for the building blocks of these products will inevitably slow.

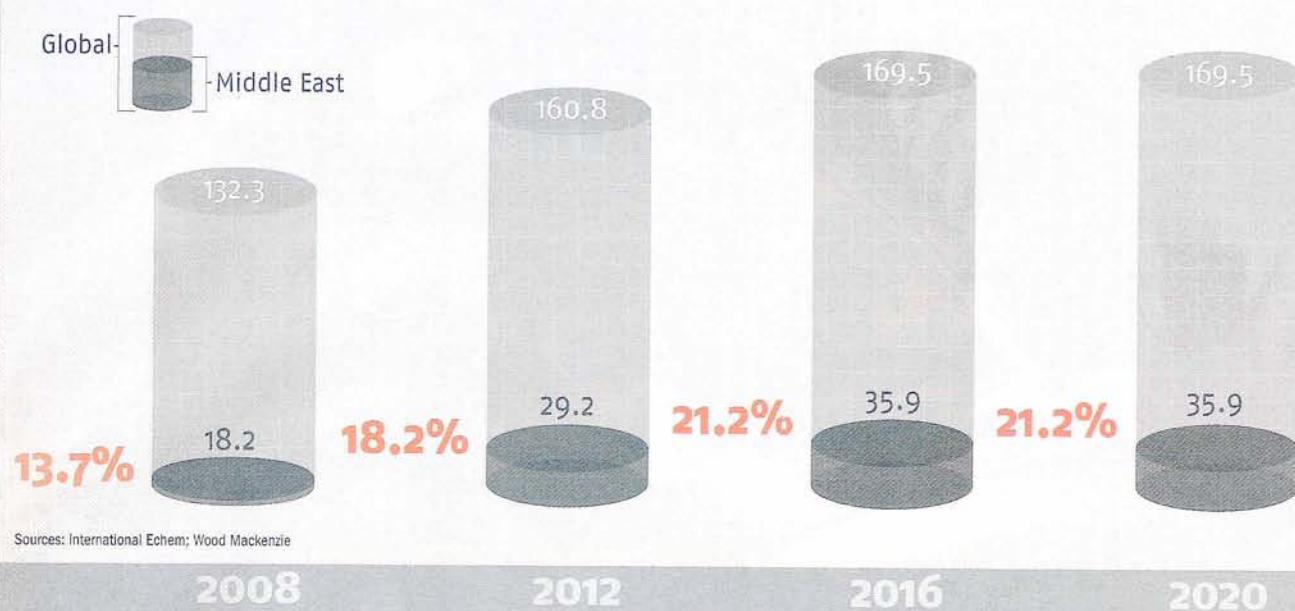
At the same time, Beijing is trying to arrest the breakneck speed of economic growth in an effort to protect itself from negative side-effects such as rising inflation, which is close to double figures. It is also trying to promote domestic industries in favour of imports.

China's petrochemicals capacity is expected to increase by 70 per cent by 2013 to 17 million tonnes a year (t/y), from 10 million t/y in 2008, according to Feedstocks for Profit, a study of the global petrochemicals market due to be published by International Echem and international energy consultant Wood Mackenzie at the end of June. Because of the political impetus behind the capacity increase, the study expects China's production to run at full capacity in the years ahead, irrespective of market conditions.

The Feedstocks for Profit study is based on three possible scenarios of global economic



**PROJECTED ETHYLENE PRODUCTION CAPACITY GROWTH ( MILLION TONNES)**



growth: a continued boom, an economic downturn and a base case. In all three scenarios, the changing supply/demand balance in the global petrochemicals industry means that capacity utilisation will reach a trough in about 2013, and in the case of an economic downturn, operating rates will fall to about 80 per cent, from about 90 per cent today.

"Under the pessimistic scenario, no more capacity is needed beyond that already committed until almost 2020," says Hodges. "Even in the base case, not much is needed until 2013/14."

Middle East producers, however, need not be deterred. In the past two global slowdowns, in 1980-85 and 1990-94, international petrochemicals producers were affected more or less equally. The majority of production was based in Europe and North America, which had a similar cost base, and more than 80 per cent of global production was based on naphtha. Now, the Middle East's access to cheap feedstock gives it a huge advantage over the competition.

Hydrocarbons feedstock accounts for 60-80 per cent of the production cost of polyolefins, which gives Middle East producers a huge competitive advantage. Cheap ethane means they can create a tonne of polyethylene – one of the most common petrochemical products – for about \$400. Admittedly, the region's ethane resources are not inexhaustible,

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Paul Hodges, International Echem

but even when it has to make the product from the more expensive naphtha, it costs no more than \$1,000 a tonne.

Elsewhere in the world, producers are struggling to produce polyethylene for less than \$1,500-1,600 a tonne. According to one industry analyst, the cost of crude oil would need to drop below \$15 a barrel for Western producers to be competitive with Middle East ethane prices.

**Cost advantage**

The Middle East's cost advantage means that, like China, it can run its petrochemicals facilities at full capacity irrespective of any change in the global supply/demand balance. By the same token, there is no disincentive for it to continue to increase its capacity. Europe is expected to become a net importer of ethylene by about 2012, and the North America region by 2020 (see charts). The Middle East's share of global ethylene capacity, on the other hand, is

expected to increase to 17 per cent by the end of the decade, from 9 per cent in 2004. The region is expected to account for about 40 per cent of all fresh capacity set to come on stream by the end of the decade.

The Middle East will play an increasingly important role in supplying the Asian market. "North America used to supply Asia, but rising gas prices mean that incremental demand is being almost entirely satisfied by the Middle East," says Andrew Spiers, senior vice-president of the US' Nexant Chemical Consulting.

Even though Beijing is set to increase its domestic capacity, China is expected to remain dependent on imports for at least 40 per cent of its petrochemicals demand (see chart opposite), and by 2010, the Middle East is set to account for more than 50 per cent of all China's petrochemicals imports.

Demand in the Asia-Pacific region as a whole is expected to exceed that from the US and Europe combined by about 2011, and by the end of the decade, the region is expected to account for 60 per cent of the Middle East's polyolefins production.

"In general terms, the global economic downturn and high oil prices have no impact whatsoever on Middle East capacity," says Hodge. "It will continue to run at maximum rates and make maximum profits. Somebody else will have to cut back." ☺

Richard Nield