Soaring Asian demand is transforming world oil markets. While Asian oil supply cannot match demand, Asia has big plans for refinery building. *Eric Fishhaut* of GlobalView Software investigates

Shifting flows in Asia

★ Global oil demand continues to outgrow expected supplies and experts are nearly unanimous in agreement that the lines will cross in the not-so-distant future. Global demand is expected to grow at an annual rate of 1.9% for the next five years, according to the most recent International Energy Agency (IEA) report. Focusing on Asia, demand for petroleum far exceeds supply. IEA reports demand in 2007 at 25.1 million barrels per day (bpd) while output is only 7 million bpd.

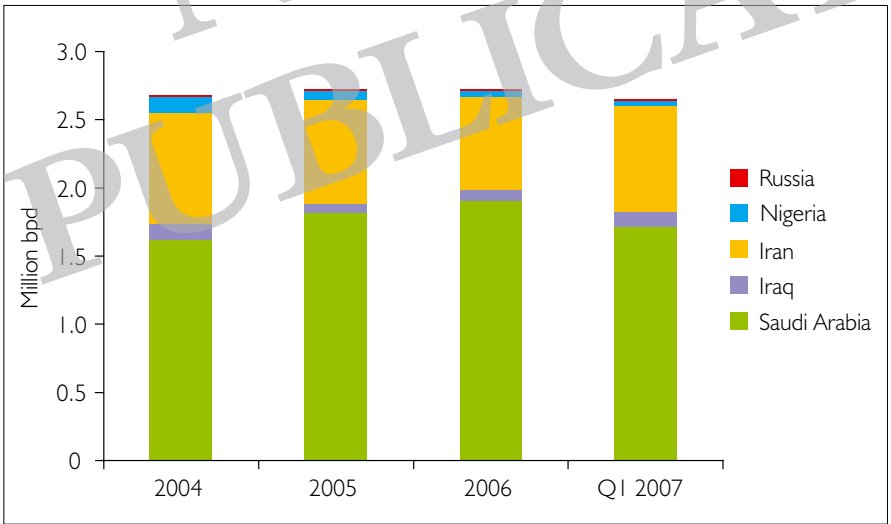
China and India are commonly identified as the major fuel demand growth areas due to their rapidly expanding economies. China's success has seemingly outpaced even its own expectations as its National Bureau of Statistics has just raised its measure of growth rate for 2006 from 10.7% to 11.1%. With total output of $2.7 trillion, China is close to overtaking Germany as the world's third largest economy behind the US and Japan. On the energy side, sales of vehicles in China grew over 23% in the first half of this year while production increased only 22%.

At the same time, India's economy has grown at more than 8% annually for the last four years and is on track to exceed that in the current year. In comparison, global growth accelerated for five straight years to 5.4% in 2006, the highest in at least 27 years, according to the International Monetary Fund. That's despite oil prices doubling over that time.

Expanding refining capacity

A major contributing factor to current petroleum price trends has been identified as shortage of refining capacity. As demand has grown, global refinery facilities have not nearly kept pace. Worldwide, refining capacity has increased by less than 2 million bpd while consumption has risen by almost 4 million bpd in the past couple of years alone. In the US, where consumption leads the world, no new refinery has been built in 30 years because of environmental restrictions. According to a recent refinery-construction survey, a potential 9 million bpd of new capacity is in the pipeline, almost double that recorded last year. Refineries have been profiting from the ongoing global shortage in refining capacity, which has sent crack spreads soaring.

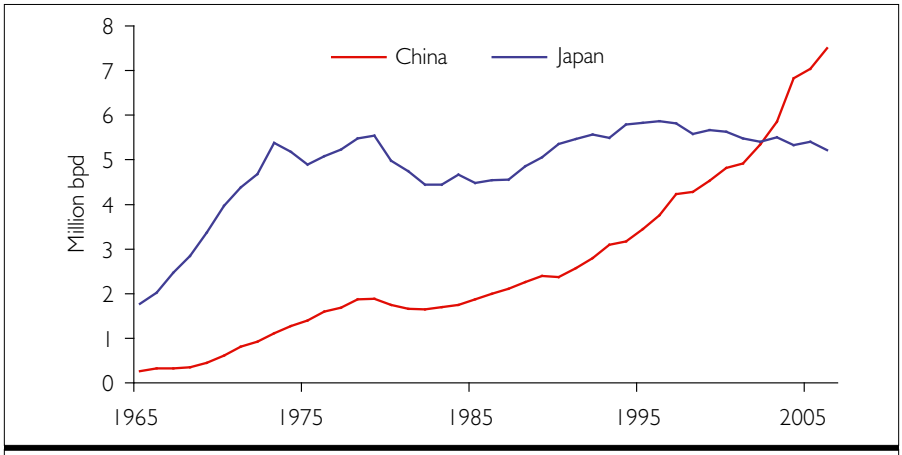
Asia's share of global fuel demand is projected to increase to 30% by 2015, particularly for middle distillates. To match the soaring demand for fuel from Asia and the rest of the world, plans for building a spate of new refineries over the next five years have been announced, with a total capacity of 7 million bpd. Half of this new capacity will be in Asia. China and India, Asia's



F1. Comparison of crude import sources for IEA Asian members
Recent crude oil streams show increased imports from Iran and Iraq and a notable drop off from Saudi Arabia. The Asian IEA member countries include Japan, Korea, Australia and New Zealand *Source: IEA*

key energy consumers, have set out their plans to expand refining capacities.

In June, Iran announced it plans to help build five new refineries across Asia with a total capacity of 1.1 million bpd. This represents its bid to strengthen ties and boost cooperation in the region. These refineries will be built in China, Singapore, Indonesia, Malaysia and Syria.



F2. Petroleum product consumption (1965–2006)
China's long-term growth trend in the consumption of products stands in contrast to the trend reversal that Japan has accomplished in the past several years *Source: BP*

Growth in India

Interestingly, India is looking to play a big role in closing the gap in global refining. With a stated goal of turning the country into the 'world's refinery hub', state-owned oil-refining companies have lined up investments of $12 billion to upgrade their refineries. The Indian government has recently unveiled plans to expand refining capacity by 62% to 4.82 million bpd over the next five years as it steps up efforts to become a major global fuel exporter.

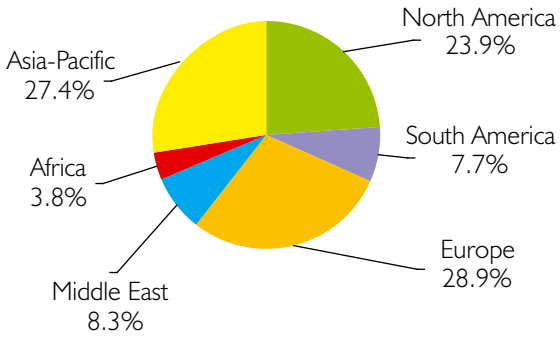
India's exports of petroleum products have already increased to $10 billion in the first six months of the present year and are expected to reach $20 billion during the whole year. Refining is seen as a major foreign-exchange earner for India to offset the money spent to import 70% of the country's energy-consumption needs.

Reliance Industries (RIL), India's largest private company, formed a 100% subsidiary called Reliance Petroleum (RPL) to set up a greenfield petroleum refinery and polypropylene plant at Jamnagar, Gujarat. RPL's new refinery is to begin operation in December 2008 with production of 580,000 bpd. This coupled with an existing RIL facility at Jamnagar with capacity of 660,000 bpd (making it third largest in the world) will firmly establish the city as an energy-outsourcing hub. The new refinery will be the sixth largest, while the combined capacity will turn the Jamnagar complex into the world's largest single-location refinery, with a capacity of 1.2 million bpd. That output will be 20% higher than the world's current number one, Venezuela's Paraguana.

China expansion

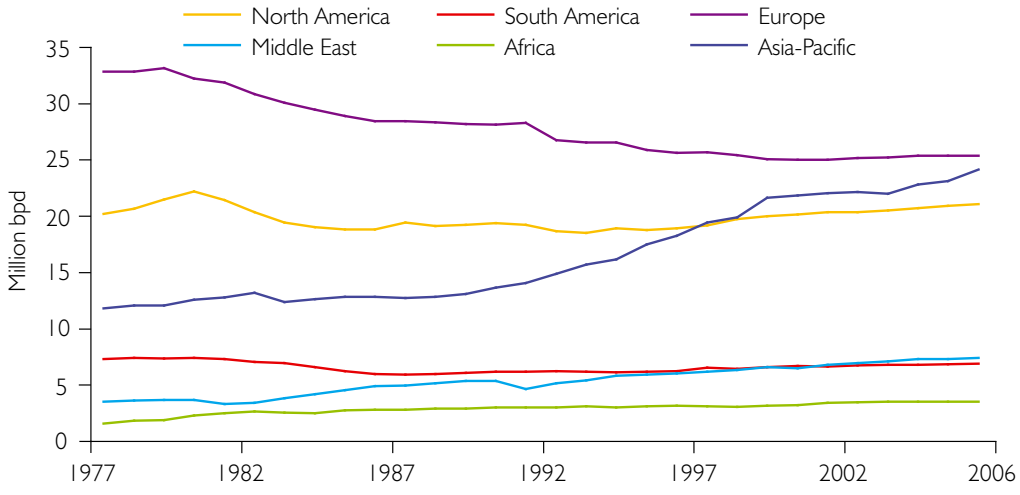
China's expectation of growing dependence on oil imports has brought it to acquire interests in exploration and production in places like Kazakhstan, Russia, Venezuela, Sudan, West Africa, Iran, Saudi Arabia and Canada. But despite its efforts to diversify its sources, China has become increasingly dependent on oil from the Middle East. Today, 58% of China's oil imports come from the region. At this pace, by 2015, the share of Middle East oil will reach 70%. Though historically China has had no long-standing strategic interests in the Middle East, its relationship with the region from where most of its oil comes is becoming increasingly important.

According to data released by China Customs, China exported 27.6% more oil products in the first half of this year than in the same period of 2006, following the country's initiation of an ambitious plan to expand refinery capacity.



F3. Regional refinery capacity in 2006
The Asia-Pacific[1] region accounts for over a quarter of global refining capacity
Source: BP

1 During the collection of the data for figure 3 and figure 4, 'Asia-Pacific' and 'Europe' comprised the following countries:
- *Asia-Pacific: Australia, China, India, Indonesia, Japan, Singapore, South Korea, Taiwan, Thailand and other.*
- *Europe: Belgium, France, Germany, Greece, Italy, Netherlands, Norway, Russian Federation, Spain, Sweden, Turkey, UK and other.*



F4. Refinery capacity trends
The Asia-Pacific[1] region is the clear leader in refinery capacity growth and has been on a steady trend towards this for the last two decades *Source: BP*

The IEA has forecast that China will add 170,000 bpd of refining capacity by the end of this year through Sinopec's 60,000 bpd expansion of its Yanshan facility in Beijing and PetroChina's 110,000 bpd expansion of its Dushanzi refinery in the northwestern Xinjiang Autonomous Region. It also expects China's oil refinery capacity to expand four-fold next year (706,000 bpd), nearly half of the predicted 1.49 million bpd that will be added globally, with a 200,000 bpd project from Sinopec, a 240,000 bpd project from offshore oil giant China National Offshore Oil Corporation and an additional 260,000 bpd from the expansions of five other refineries.

While other countries are investing in biofuels, the Chinese government has stated it will not approve new grain-based ethanol fuel projects due to grain supply concerns and that companies currently engaged in corn-based ethanol projects will be ordered to gradually shift to non-grain ethanol projects. The country continues to invest in coking and hydrocracking capacity, as well as in its ability to process the high-sulphur, but cheaper, crude oil that typically comes from the Middle East.

Other shifts

South Korea's fuel oil exports are on the decline, with estimates of a 36% drop in July compared to one year ago. Demand from domestic utilities has grown while refiners have lost orders to competitors Venezuela and Iran. These sources are reportedly supplying heavy fuel oil to China at one-quarter the premium over benchmark prices for Korean shipments.

Imports to China from Venezuela rose 33% year-on-year in the first five months of this year according to Bloomberg, cutting the supply from Korea nearly in half. Korean fuel oil premiums, including shipping costs, have been as high as $20 a metric ton while competing cargoes from Venezuela and Iran have been sold at about a $5 premium.

Meanwhile, Japan has managed to curb consumption of petroleum products in 2006, reducing this by 3.6% by shaving off nearly 200,000 bpd. In comparison, China's utilisation grew by 539,000 bpd. At the same time, refinery production had a modest increase that reverses a downward trend over the previous five years.

While popular consensus is that the supply-demand gap is shrinking, there are some reports that are contrarian. According to the recently released BP Statistical Review of World Energy 2007, oil reserves continue to grow. The current estimate is 1.2 trillion barrels of reserves, which is an increase of 15% in the past decade. It also states that consumption grew in 2006 by only 0.6 million bpd, only half of the prior year's rate. Some may question these figures.

As the abundance of information is sorted, we seek to determine trends that will provide guidance to future directions. At this point, we are assured that the Asian petroleum products market is more dynamic and fluid than ever. The risks have grown and the stakes are on an upward movement with no indication of where it may end. The increase in the number of participants is evidence enough. This is a market that necessitates continuous attention and examination by those who care to take part. ER

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