

# DOWNSTREAM PETROLEUM



# INTERNATIONAL AND ASIAN REFINING

The global refining industry is fundamentally changing as emerging and maturing trends re-shape the global supply and demand patterns for crude oil and petroleum products.



Although crude oil and petroleum products are traded globally, major regional markets have developed around the main demand centres of North America, Europe and Asia, with each market having its own characteristics. Refineries play an integral role in these regional markets, with the financial viability of individual refineries heavily influenced by supply and demand in the markets.

Prior to the Global Financial Crisis (GFC) in 2008, there was a significant surge in investment in refinery upgrades and in new refinery construction commitments, largely in response to growing demand for petroleum products and the associated strong refiner margins. This was particularly apparent in Asia.

However, the GFC resulted in a substantial reduction in global petroleum product demand, with only modest prospect of a recovery of lost demand over the short to medium term. As a consequence, refiner margins dropped substantially, in some cases falling into negative territory. The refining industry, particularly in Europe and OECD Asia, reacted to this financial challenge by terminating or deferring investment plans, reducing the utilisation rates for refineries, and progressively closing less viable refineries.

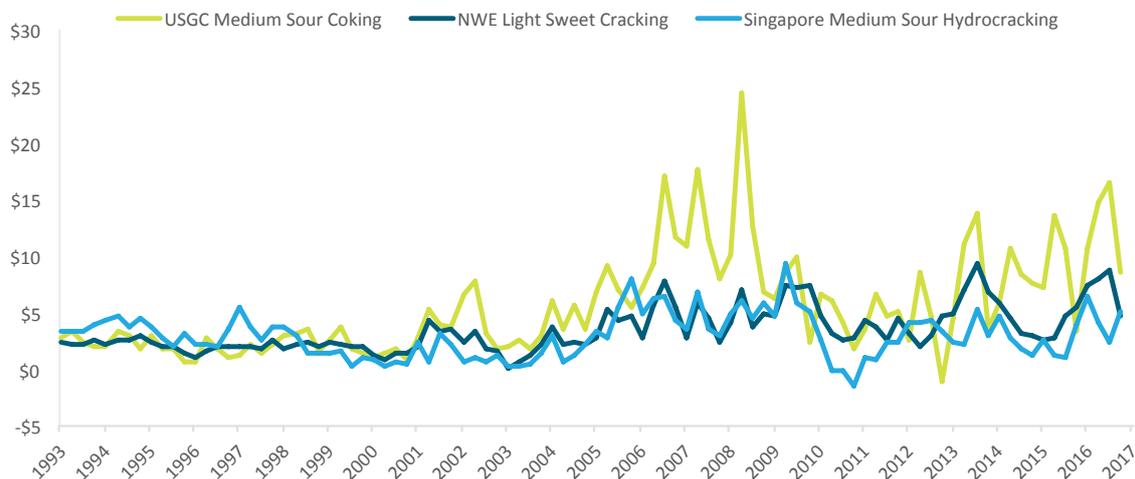
There is still currently an oversupply of petroleum products globally that will be addressed over time by growth in demand.



The three key regional benchmarks are highlighted in the chart below. The benchmark for Australian refineries is the Singapore margin.

## REGIONAL REFINING MARGINS 1992 - 2017

US\$ per barrel



Source: BP Statistical Review of World Energy

Notwithstanding these developments, a number of countries, particularly China and India, continued to press ahead with major refinery construction programs as part of national development goals.

Although petroleum product demand has slowly recovered from the GFC, these trends have continued to play out across Europe, North America and Asia, with older refineries closing, continuing refinery construction across Asia and the Middle East, and lower than usual refinery utilisation rates at many refineries.

**FOR EXAMPLE, CHINA HAS ADDED, ON AVERAGE, ALMOST 1 MILLION BARRELS PER DAY OF REFINING CAPACITY EVERY YEAR FROM 2010 TO 2015**

This construction and expansion program continued in China in 2015 with the addition of about 2 million barrels per day in new capacity. By comparison, since 2008 some 4 million barrels per day of older refining capacity has been closed in North America, Europe, Japan and Australia.

While demand for petroleum products in China has been strong it has not been sufficient to absorb all the output from new capacity additions. This has created significant surplus supplies in the Asian region which continue to depress refiner margins despite many refineries operating at below average utilisation rates.

However the rates of surplus are slowing, with the regional product balance likely to move back into balance in the middle of the next decade.

Equally important, this surplus capacity creates a significant potential for China to increase utilisation rates at existing refineries to meet increases in Asian demand, particularly if refiner margins improve.

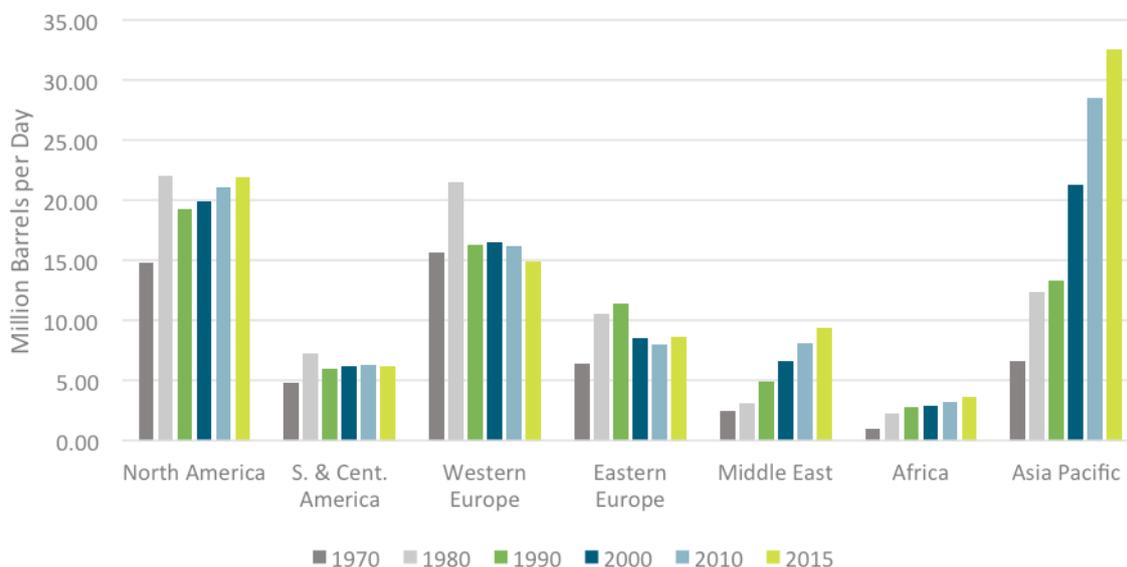
At the same time, global refining activities have been fundamentally affected by changes in the availability of domestically produced crude oil and condensate in North America.



The ready and rapidly increasing availability of ‘light tight’ crude oils from deposits such as Bakken and Eagle Ford, combined with the increasing supply of heavier crude oil from Canadian oil sands, has resulted in a very well-supplied crude oil market in the US. These substantial supplies have led to discounted crude oil prices for US refiners.

These factors now underpin the competitiveness of the US refining sector, enabling it to operate at high utilisation rates and to displace imports of diesel from Europe. Since 2008, US imports of crude oil have dropped by over 2 million barrels per day, and petroleum industry analysts, including the IEA, BP and ExxonMobil, are forecasting a continuing high level of crude oil production in North America over the next decade.

### WORLD REFINING CAPACITY



Source: BP Statistical Review of World Energy

This development in North America has compounded the effects of the other global trends in the refining industry, particularly in Europe, such that there is an ongoing global surplus refining capacity and depressed refiner margins in other markets.

**HOWEVER, WITH SUBSTANTIAL NEW REFINING CAPACITY, THE MIDDLE EAST AND ASIA IS MOVING TO BECOME THE GLOBAL HUB FOR FUTURE PETROLEUM PRODUCT REFINING AND TRADE**

In its World Energy Outlook, the IEA concluded that in looking forward 'the new geography of demand and supply means a re-ordering of global oil trade flows towards Asian markets' with the prospect that 'Asia becomes the unrivalled centre of global oil trade'.

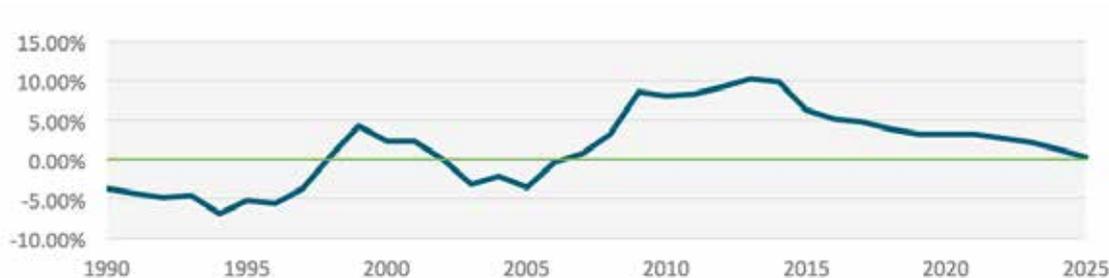
A surplus refining capacity is forecast for the Asian region through to around 2025, notwithstanding the refinery rationalisation that is occurring across Asia, particularly with less viable refineries in Japan.

Nonetheless, the extent of the oversupply is significantly below the scale that was observed from 2008 to 2015 when Australian refineries experienced substantially depressed profitability.

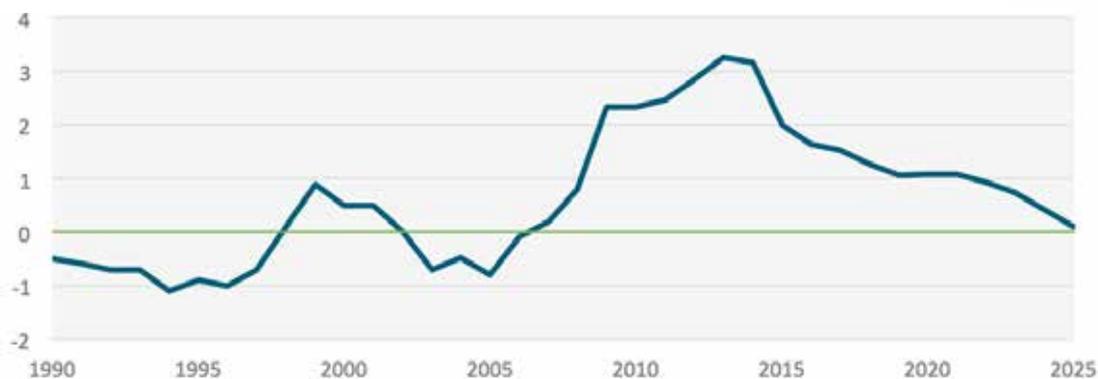
The change in the Asian regional supply balance points to a slowly improving outlook for Australian refineries and underpins investments being made to drive a sustainable ongoing future. However, history has shown that periods of improving margins lead to further investment in the refinery sector in Asia which then again suppress margins. The capital investment fluctuations generally follow the cyclical nature of the refining business.

**ASIAN EXCESS SUPPLY CAPACITY**

**Proportion of total Supply (%)**



**Excess Supply (millions of barrels)**



Source: FACTS GLOBAL ENERGY and Caltex Australia



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