

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

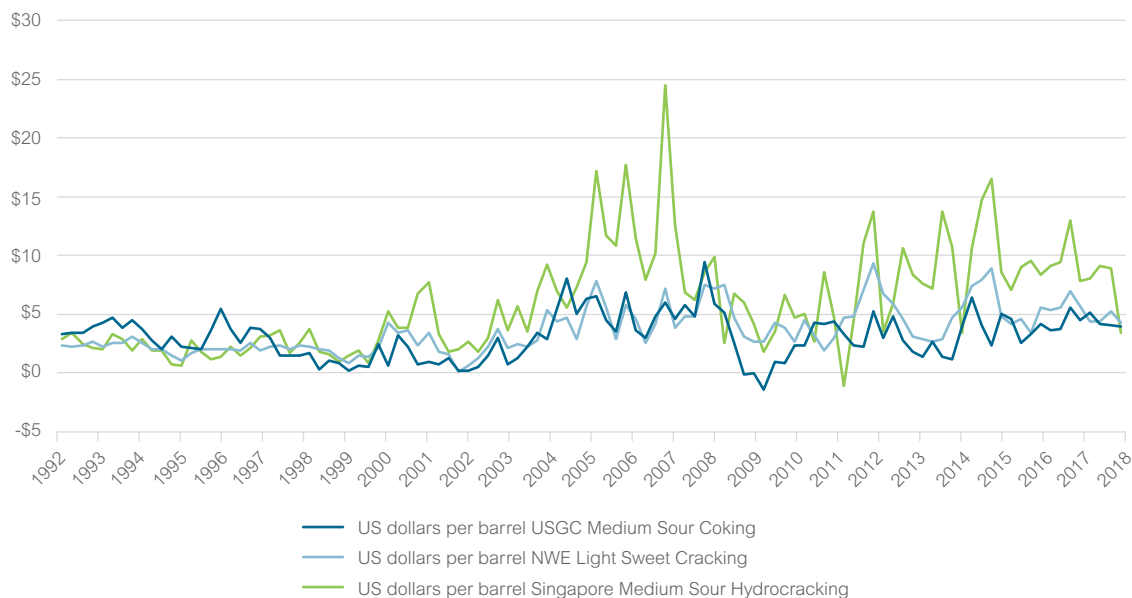
products and the associated strong refiner margins. This was particularly apparent in Asia.

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.



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

REGIONAL REFINING MARGINS 1992 - 2018



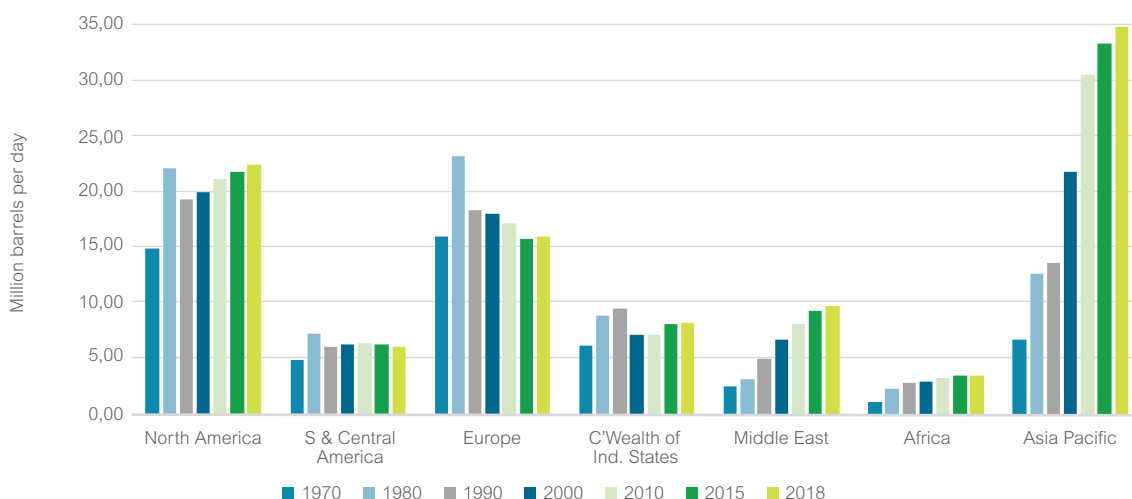
Source: BP Statistical Review of World Energy

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 added, on average, almost 1 million barrels per day of refining capacity every year from 2010 to 2015. This construction and expansion program has continued in China with the addition of more than 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.

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 ARE INCREASINGLY THE GLOBAL HUB FOR FUTURE PETROLEUM PRODUCT AND REFINING TRADE

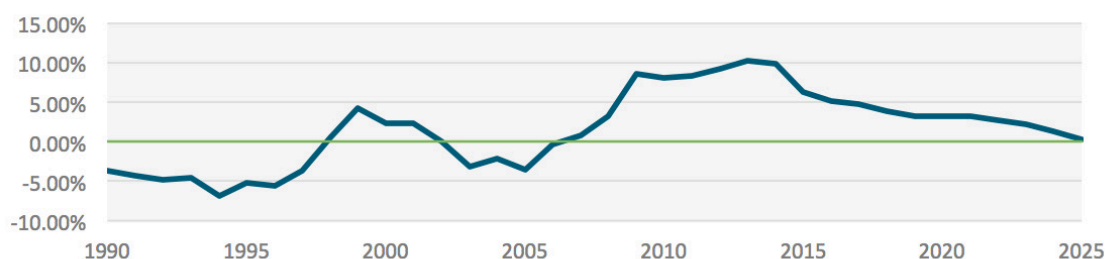
The IEA has predicted that the changing geography of oil supply and demand will transform global oil trade with Asia taking an increasing share of global imports, and gross oil exports from the United States overtaking those from Saudi Arabia by the mid-2020s.

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 and Australia. 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.

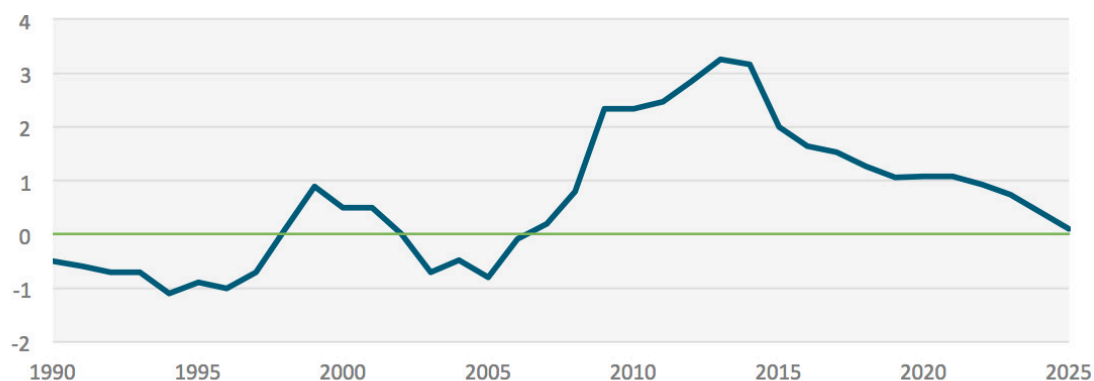
The change in the Asian regional supply balance points to a slowly improving outlook for Australian refineries and underpins investments being made to drive a sustainable ongoing future. However, history has shown that periods of improving margins lead to over investment in the refinery sector in Asia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