Mr. Steve Jenkins

Head Global PX and Derivatives
PCI X&P
Malaysia

- Recognized as a leading global authority in the commercial analysis of the paraxylene and derivatives industry sector, Mr. Steve Jenkins, has broad experience in the petrochemical industry gained during the past 28 years in a range of functional and product management roles within ICI and the specialist polyester and intermediates consultancy PCI.
- He has managed many assignments for clients in the petrochemical sector and works closely with producing and consuming companies in the fields of paraxylene and PTA, providing strategic, commercial and technical analysis and recommendations.
- A graduate from Oriel College Oxford, he has conducted several major industry-wide studies analyzing the commercial development of paraxylene and feedstock markets and their impact on future corporate operating strategies.

Paraxylene – Is the Tail Wagging the Dog ?

IOC Petrochemical Conclave

Steve Jenkins
PCI Xylenes & Polyesters Asia Sdn Bhd
March 18th, 2013

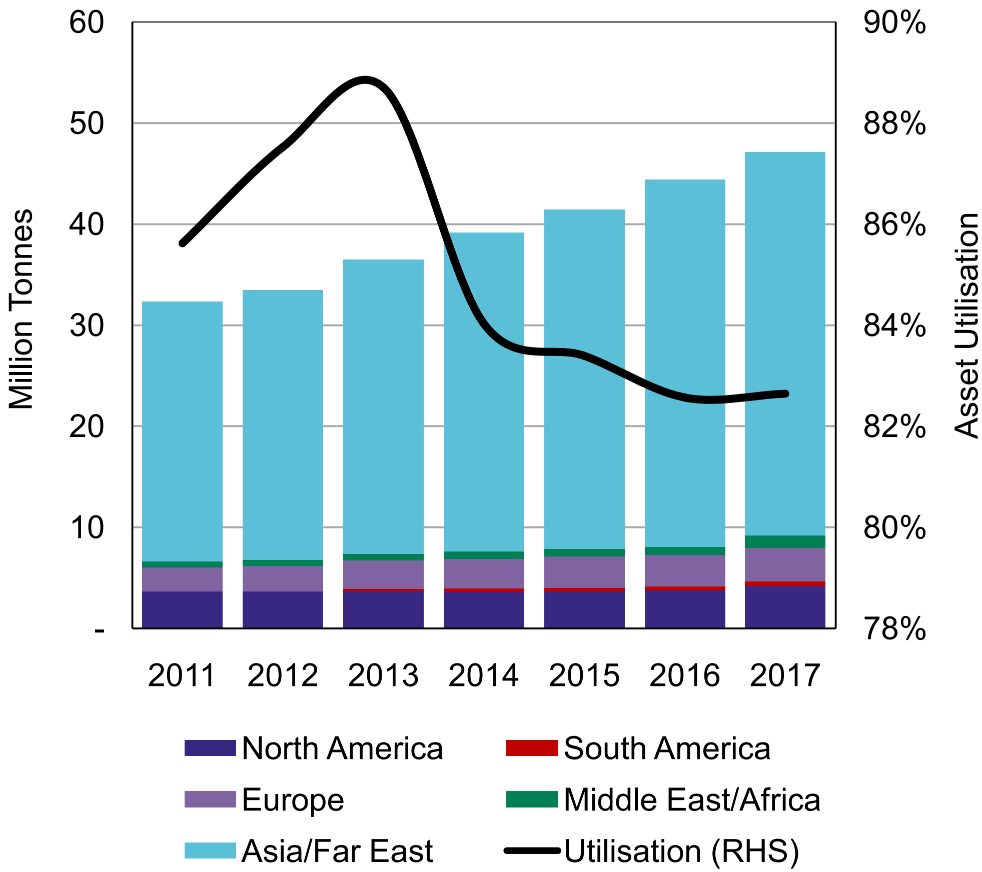
About PCI Xylenes & Polyesters

- Formed in 1988, PCI Xylenes & Polyesters provides integrated consultancy services in the polyester and upstream raw material sector
- Team of 10 industry consultants, each with over 20 years industry experience in refining / aromatics / PTA / polyester EO and glycols
- Expertise in all aspects of the refinery/cracker – polyester business (commercial/strategic/technical/investment)
- Located in Guildford, UK and Kuala Lumpur, Malaysia with representatives in India, Pakistan, Taiwan, Korea, China, USA and Brazil

Agenda

- Paraxylene Supply - Demand Review
- Paraxylene Trade Development
- Evolution of Aromatics Feedstocks Sources
- Polyester Chain and Refinery Challenges

World Paraxylene Supply-Demand 2011-2017



- Expect 2013 to remain tight until new capacity coming on line is fully established.
- 2014 - 2017 forecast growth at trend level of 6 to 7% (approx 2.5 million tonnes per annum).
- Capacity additions in excess of demand growth from 2014 onwards.
- Supply based on several varying sources of feed

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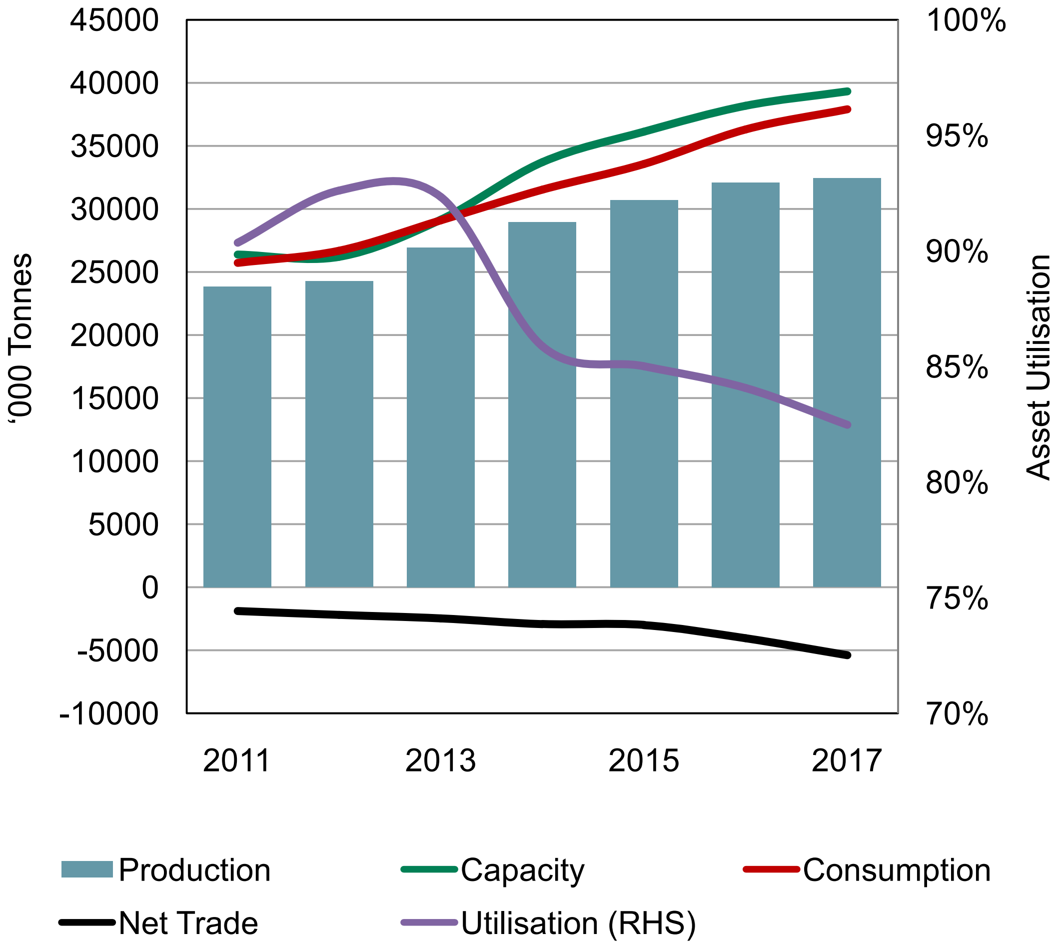
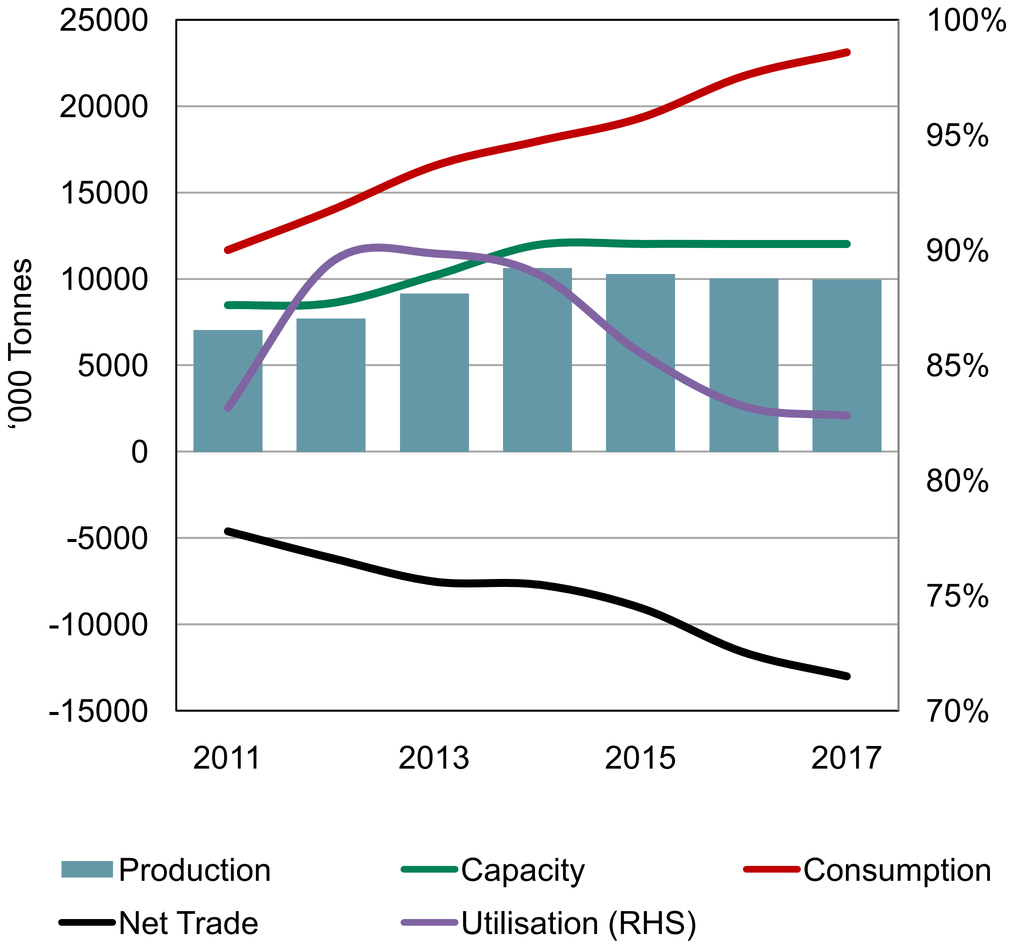
Asia Paraxylene Supply-Demand 2011-2017



- Asian system running hard until the end of 2013 when more capacity fully on line.
- Most PX projects are major investments ($1bn+) usually associated with new or re-vamped refineries - inevitably taking longer than expected to completion
- The region will gradually import increasing quantities from the Middle East.
- Constraints on feedstocks supply currently encouraging JV's with existing mixed xylenes suppliers thus avoiding heavy investment in reforming.

China Paraxylene Supply-Demand 2011-2017



- Chinese paraxylene consumption continues to vastly outpace the ability to produce.
- Trade gap will grow to over 7 million tonnes in 2013.
- Three major projects scheduled in 2013 either linked to major refining project completions, have other significant feedstock supply challenges or are deploying new Chinese technology
- Trade gap filled by suppliers in South Korea and the Middle East.
- It remains challenging for Chinese private investors to fill the gap between the state run refining industry and a dynamic polyester chain.

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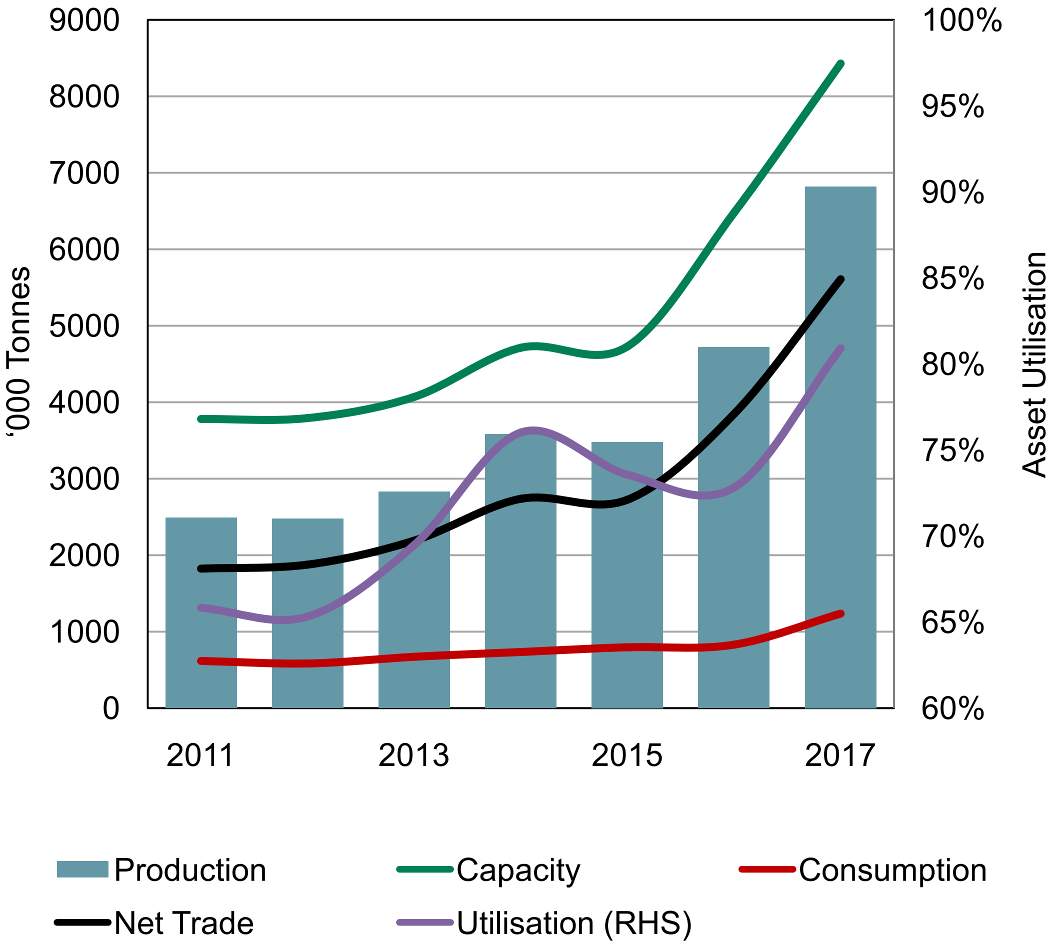
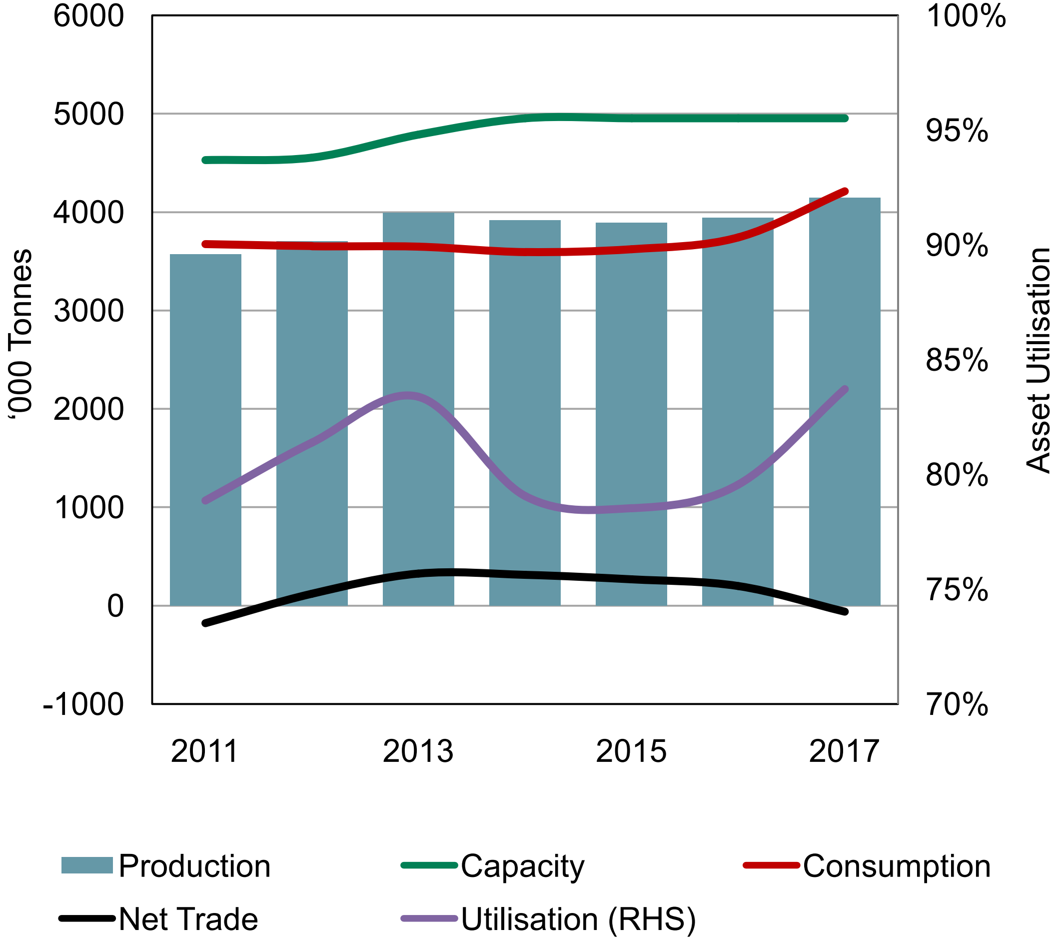
Middle East Paraxylene Supply-Demand 2011-2017



- SATORP JV in 2013 first new paraxylene unit in the region for 4 years - also slightly delayed into Q3
- Four major investments scheduled from 2016/17 by Saudi Arabia and Qatar adding almost 4 million tonnes of paraxylene capacity.
- Limited in-region demand growth with only one PTA project forecast to be completed by 2017.
- Strategy of new paraxylene units aimed at the Asian deficit but capable also of servicing Europe and South America.

North America Paraxylene Supply-Demand 2011-2017



- North America assumed not to add any additional capacity through this period although BP is expected to re-start Decatur.
- Trade flow from South America reverses from 2013 with the start up of the PQS PTA plant.
- NA also assumed to export to Asia as and when economics will support.

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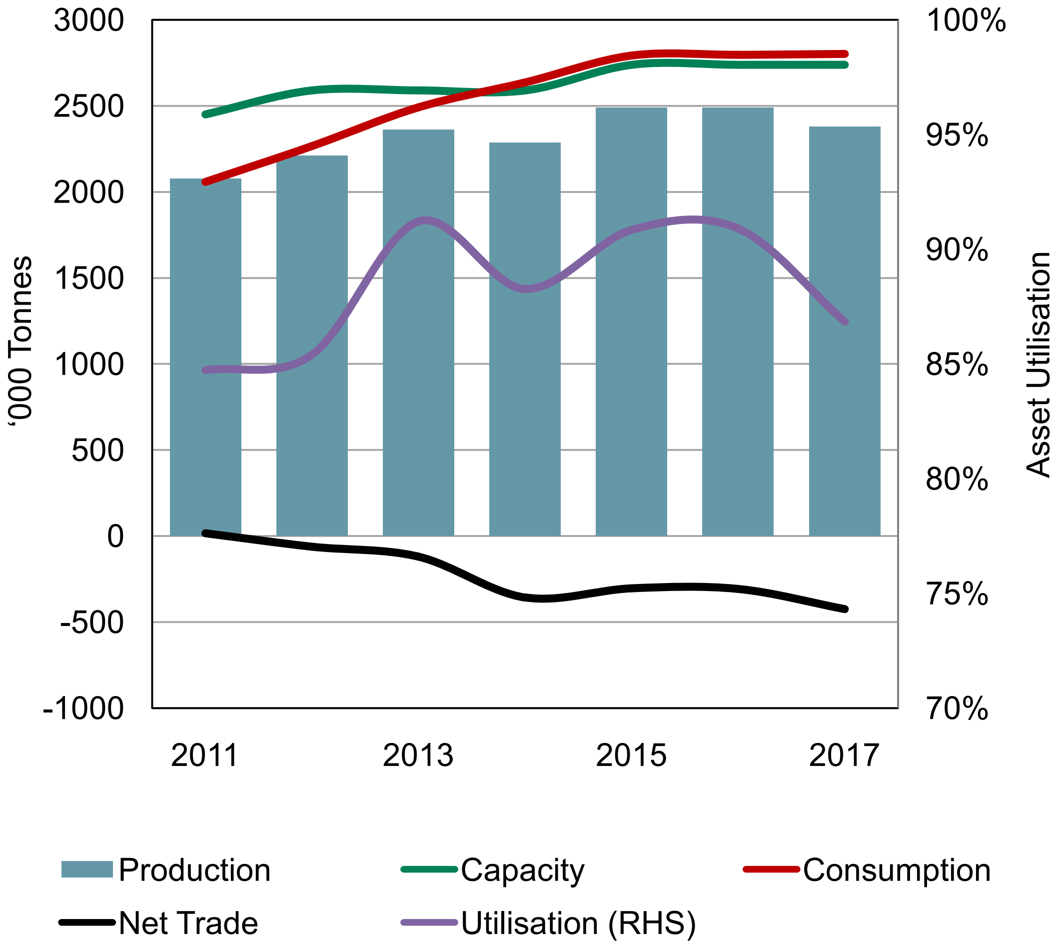
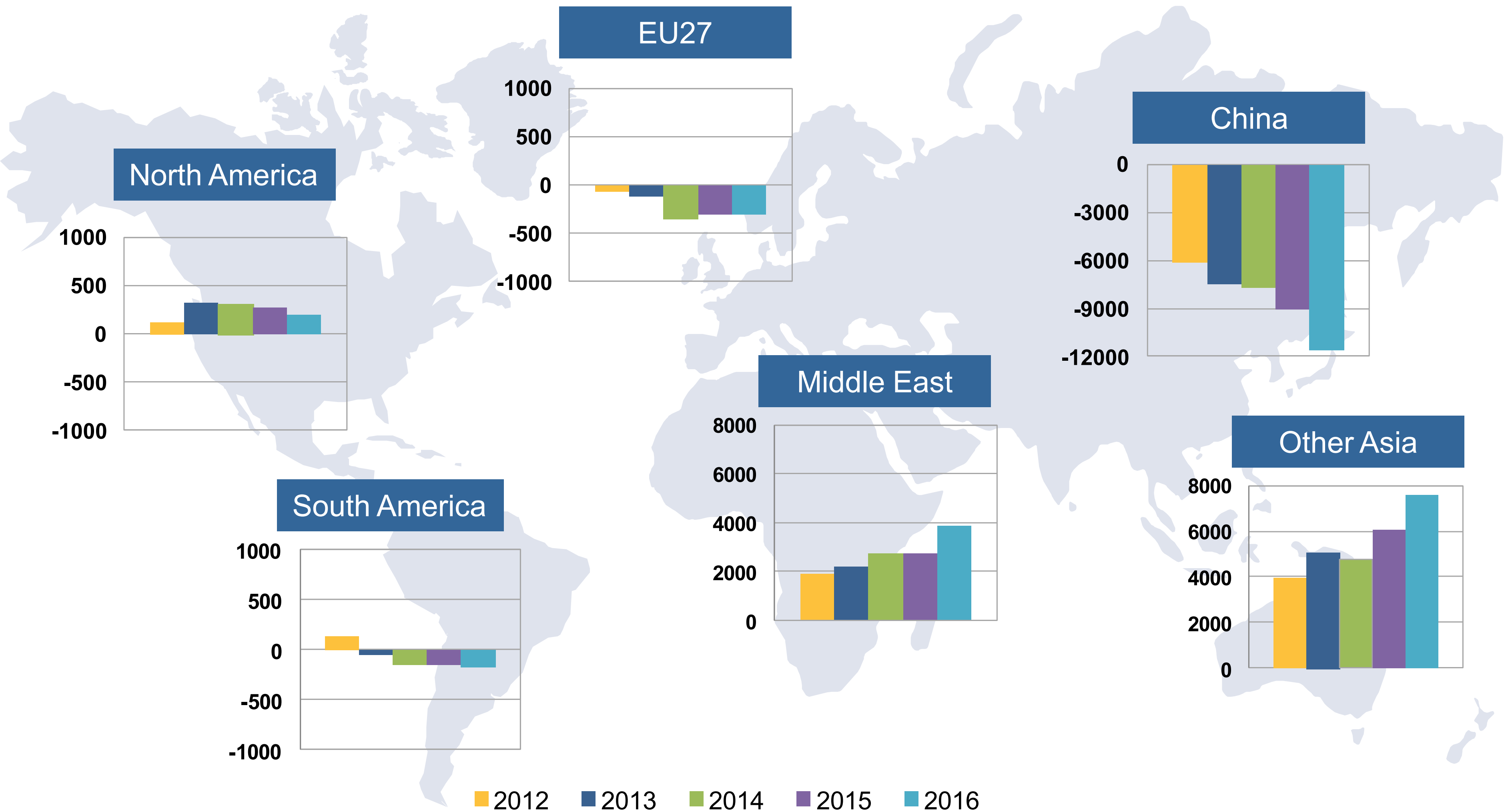
EU27 Paraxylene Supply-Demand 2011-2017

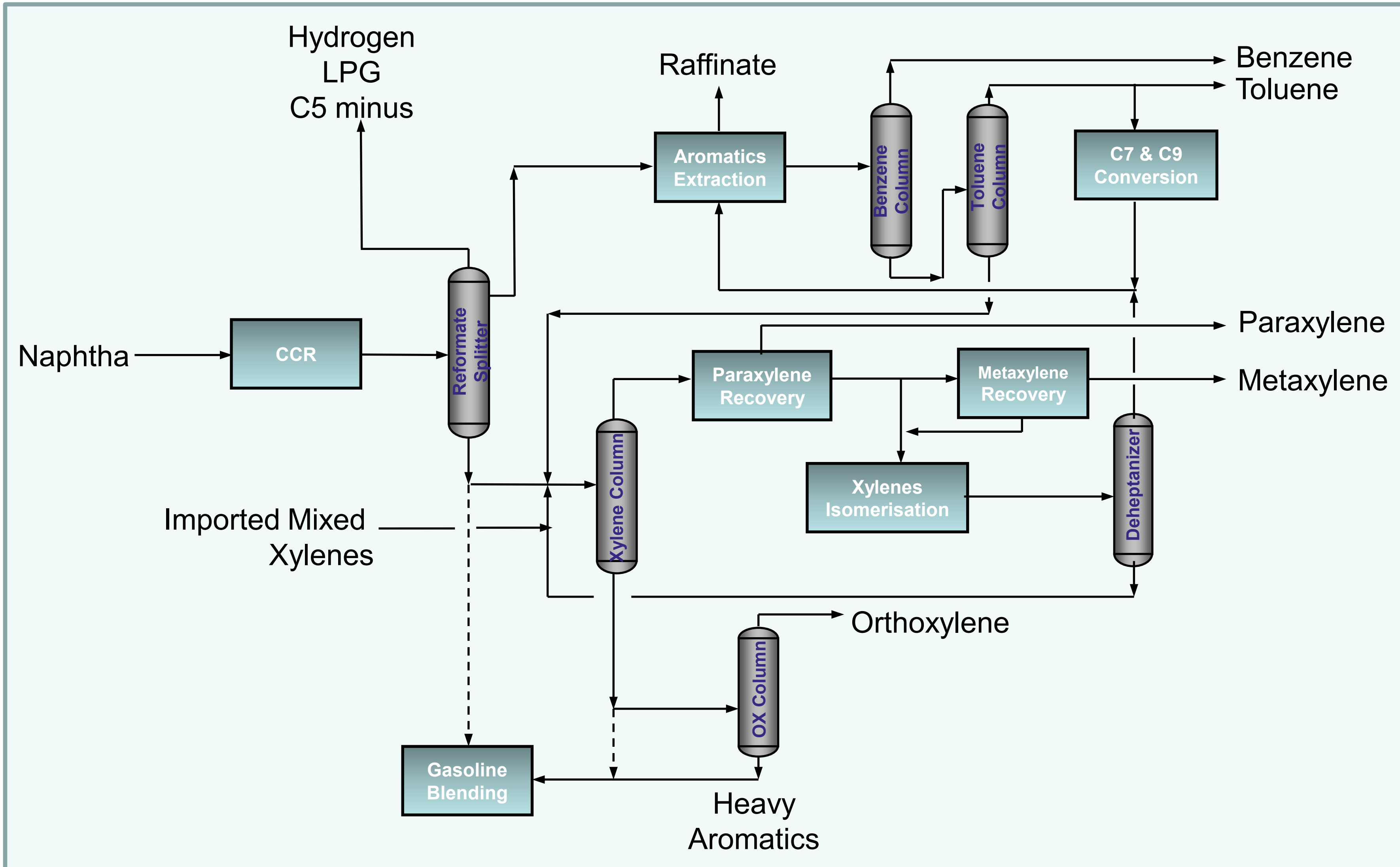


- Modest consumption growth in 2013 but critically dependant on PTA exports.
- Net trade peaks at around 0.4 million tonnes by 2014 with assets running relatively hard through the period.
- The region remains long on aromatics feedstocks providing an incentive to divert from a long gasoline market to a short paraxylene market.

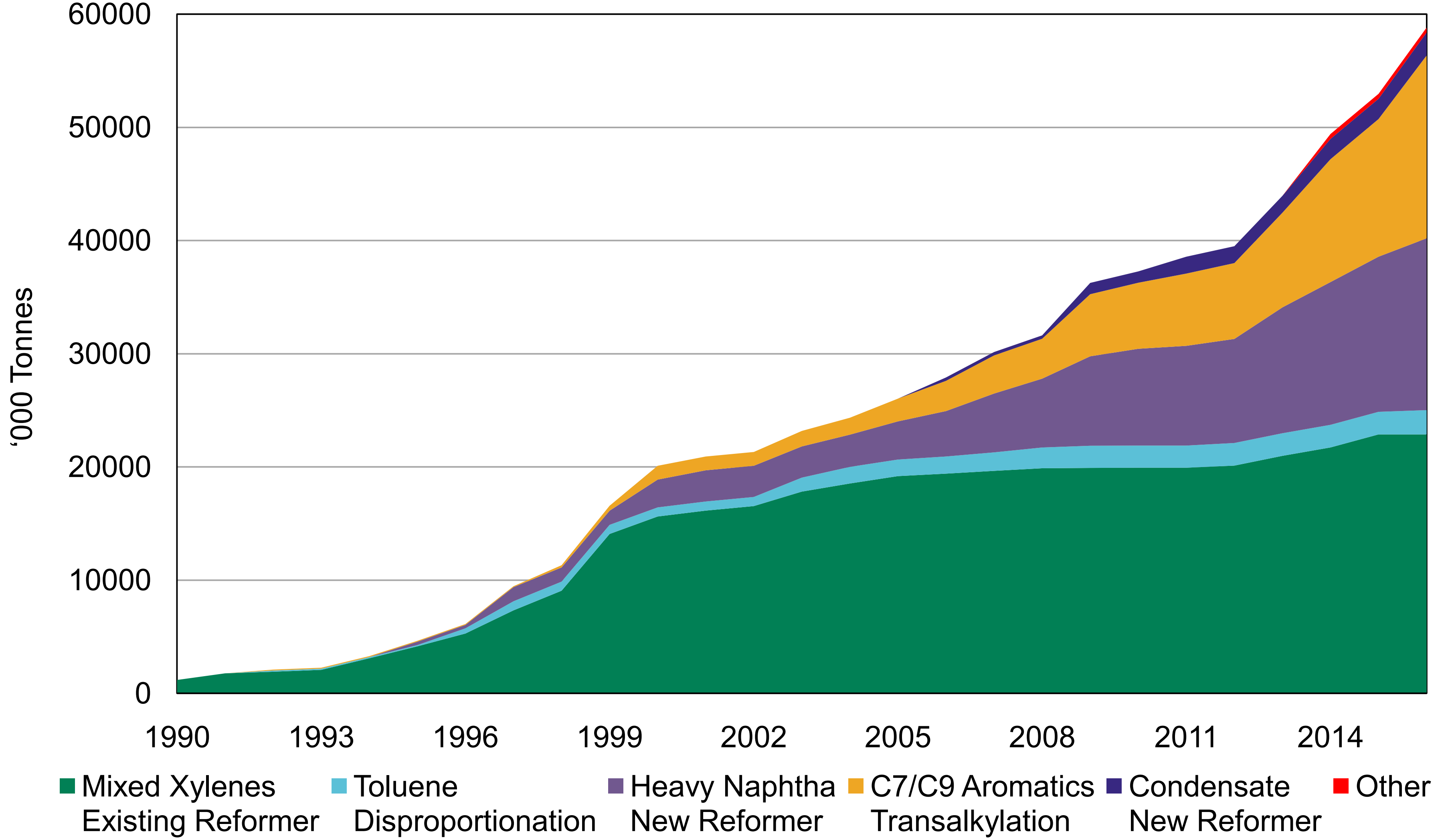
Regional Paraxylene Net Trade 2012-2016



Aromatics Complex



Cumulative Paraxylene Feedstock Trends



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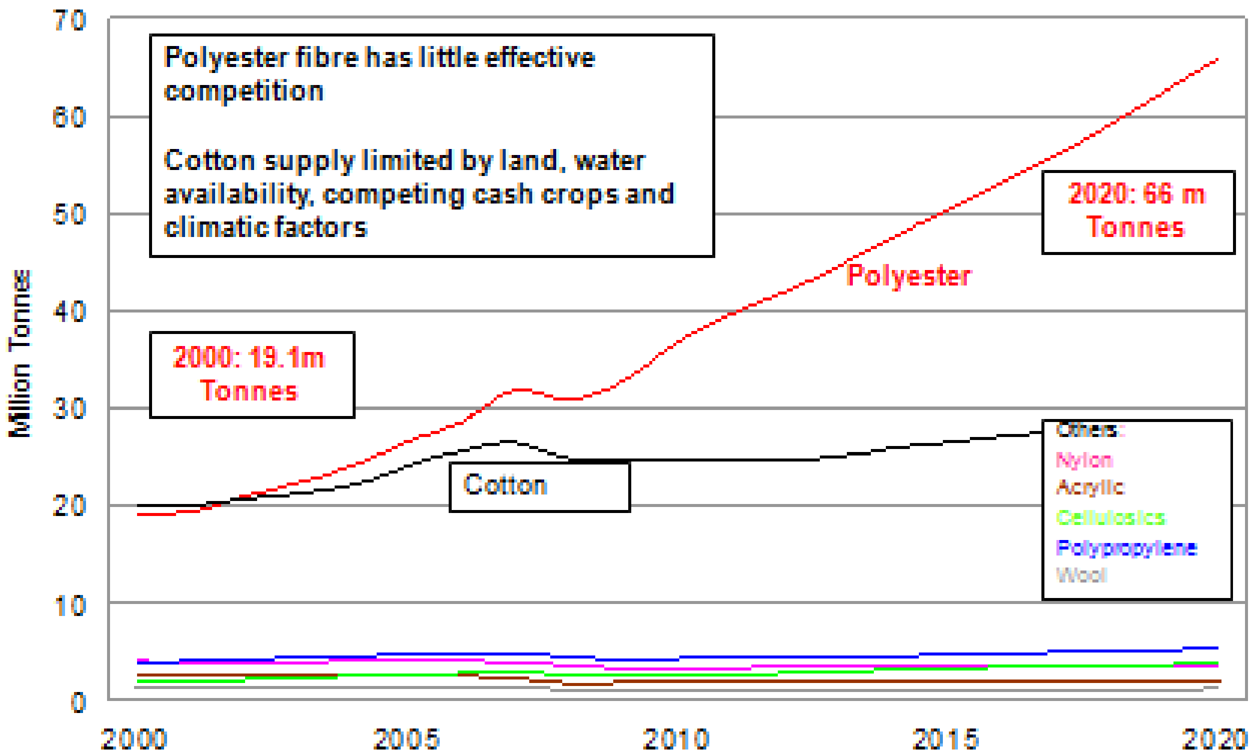
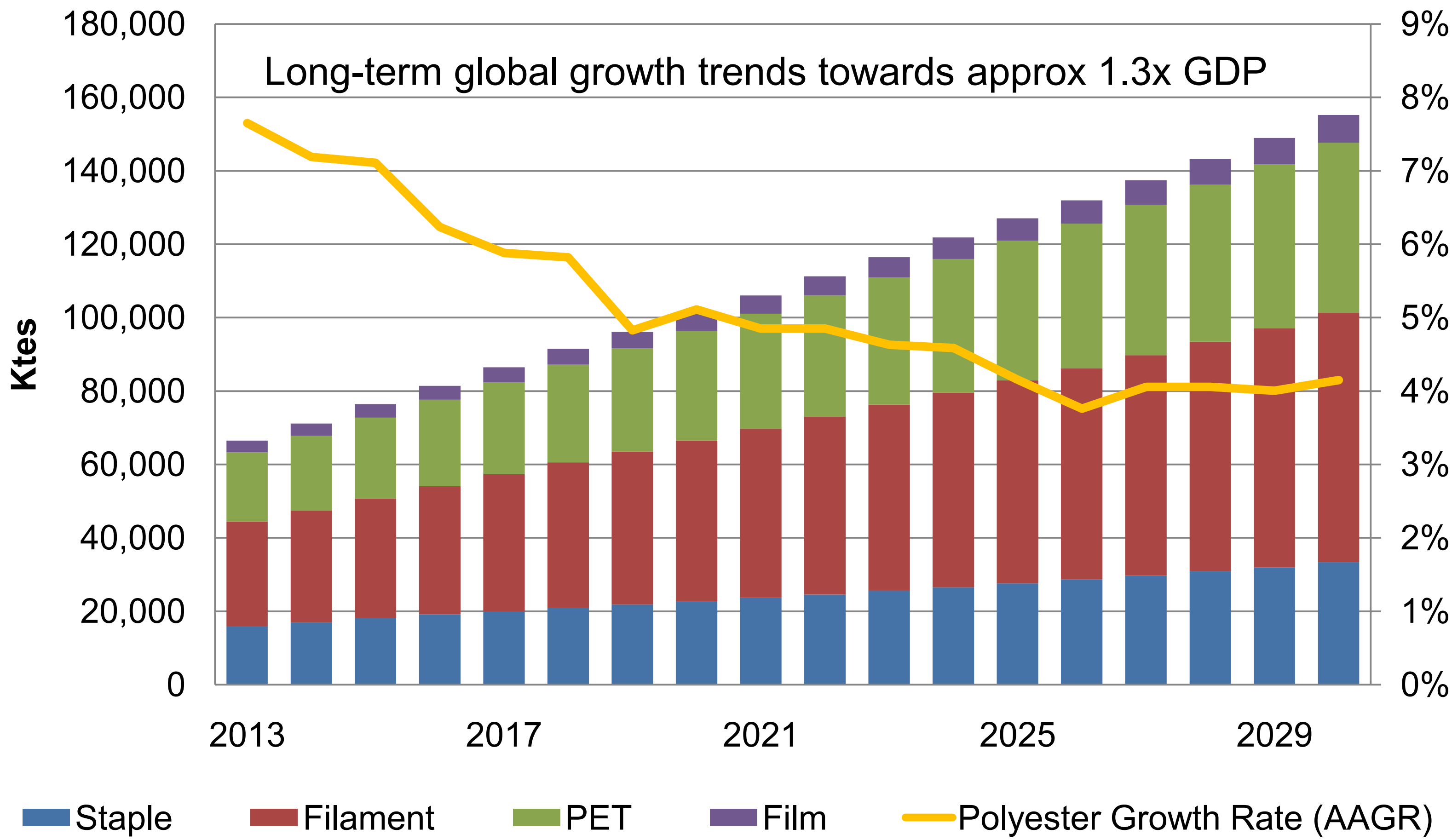
Polyester Fibre Mill Consumption Growth to 2020

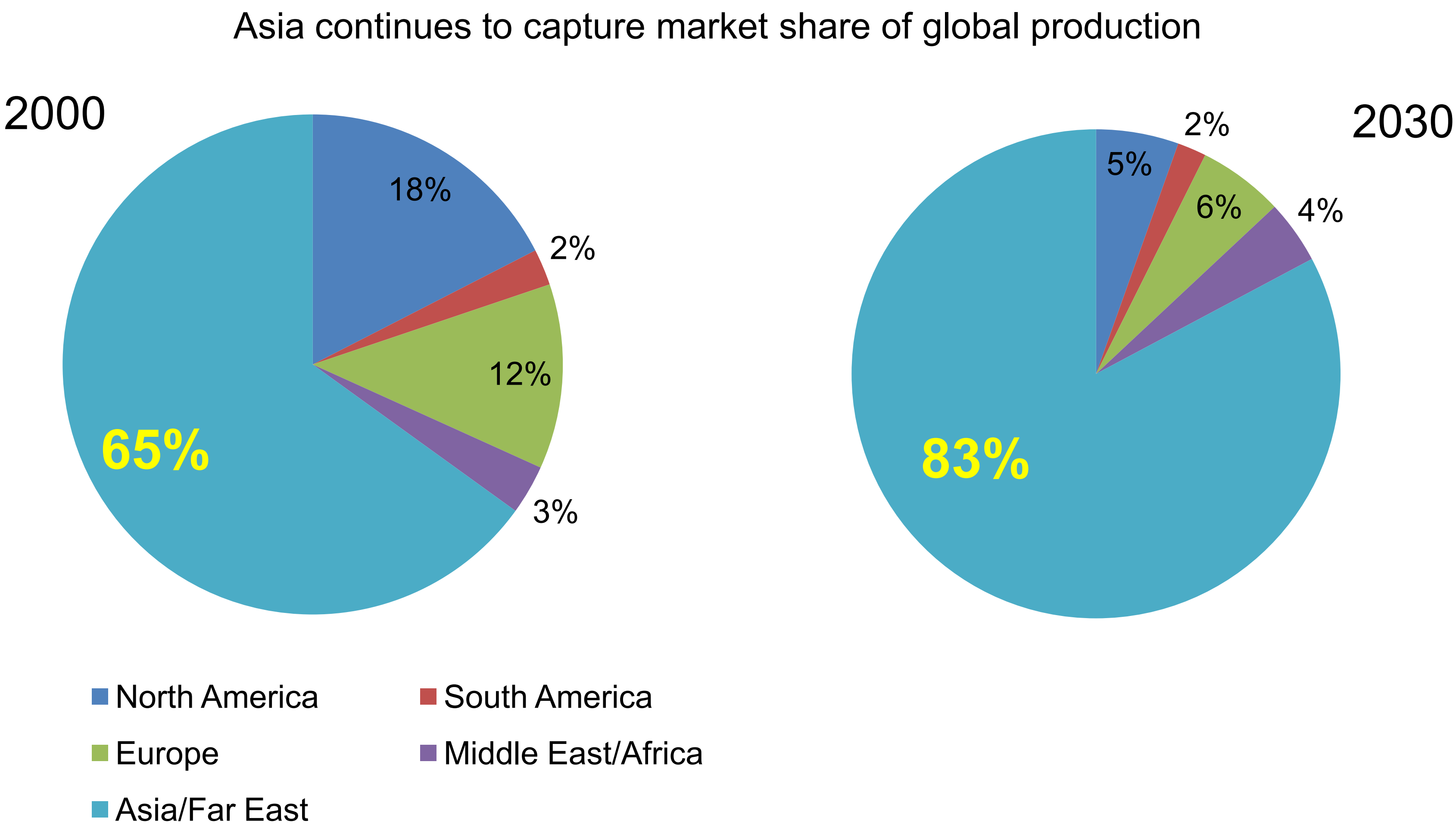


World Polyester Production Long-term Forecast

(excludes Recycle)



Polyester Polymer Production by Region 2000-2030



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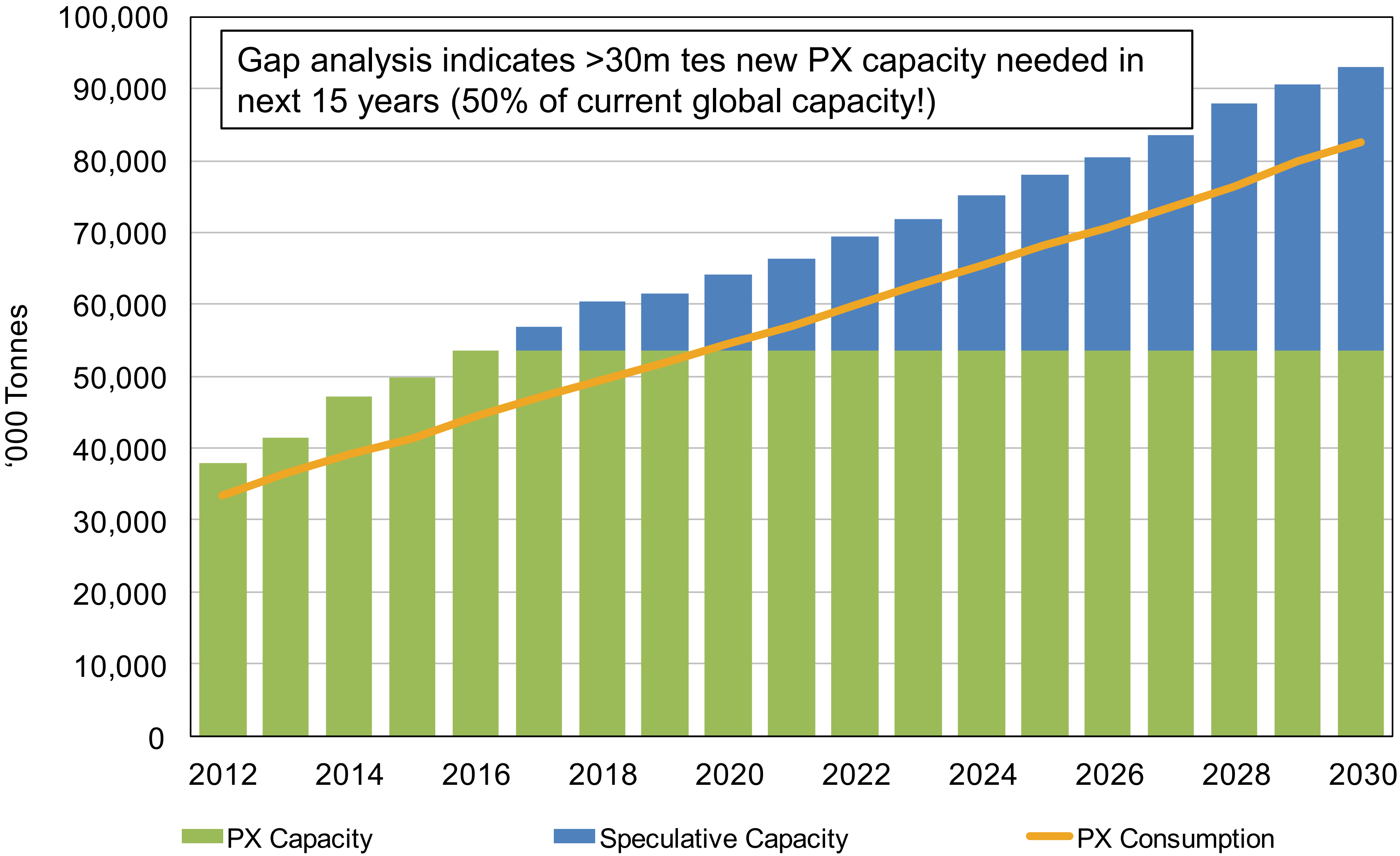
Global Paraxylene Capacity & Consumption 2012-2030 - The Market Gap



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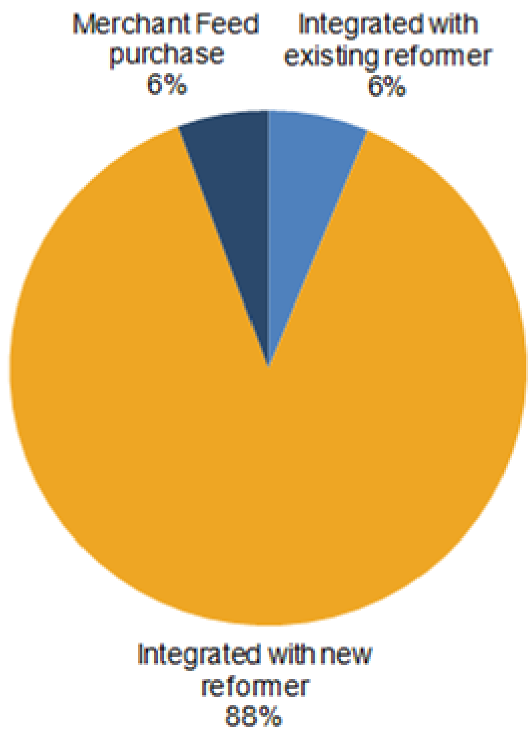
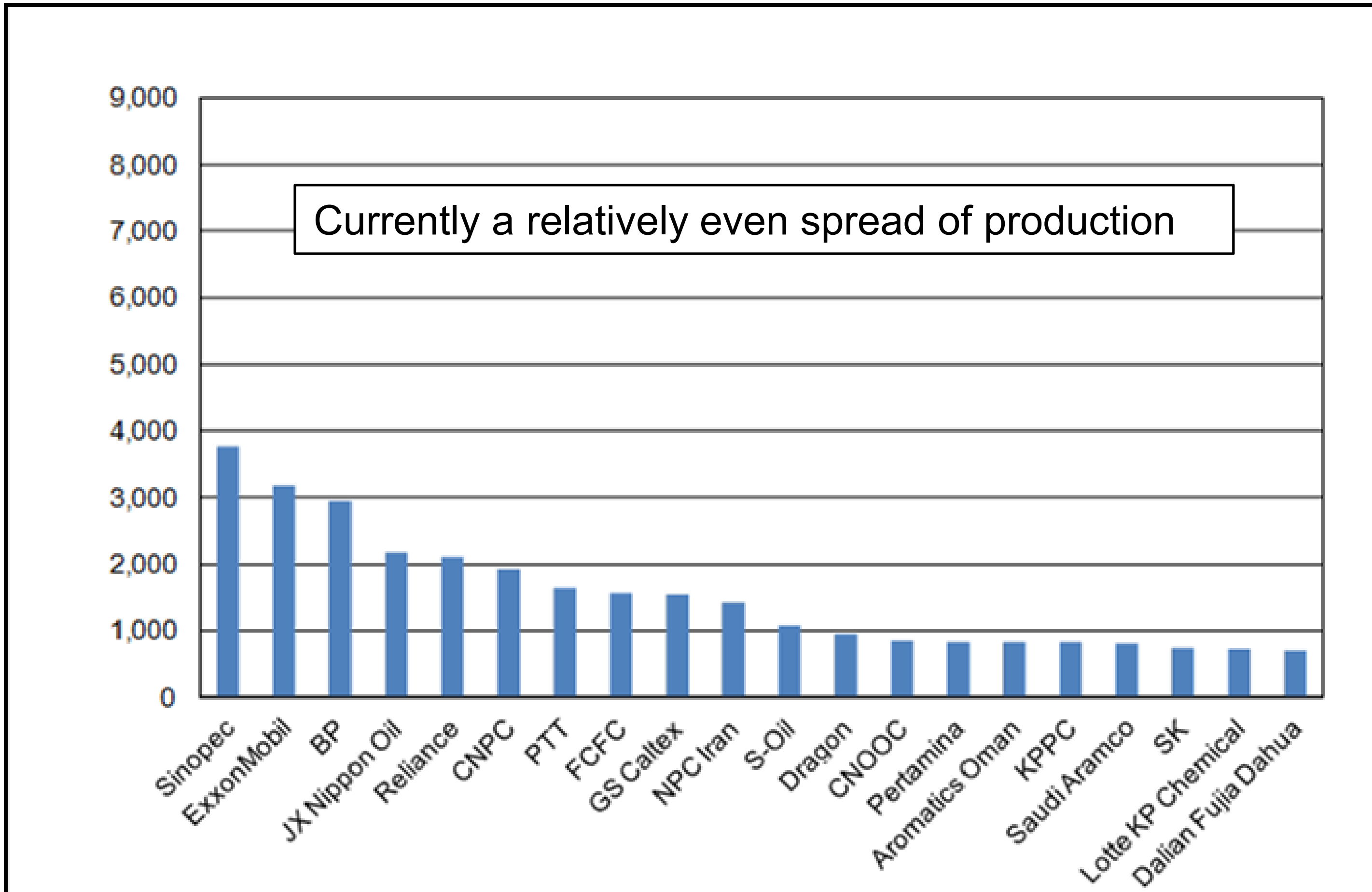
New PX Capacity Development 2012-2030

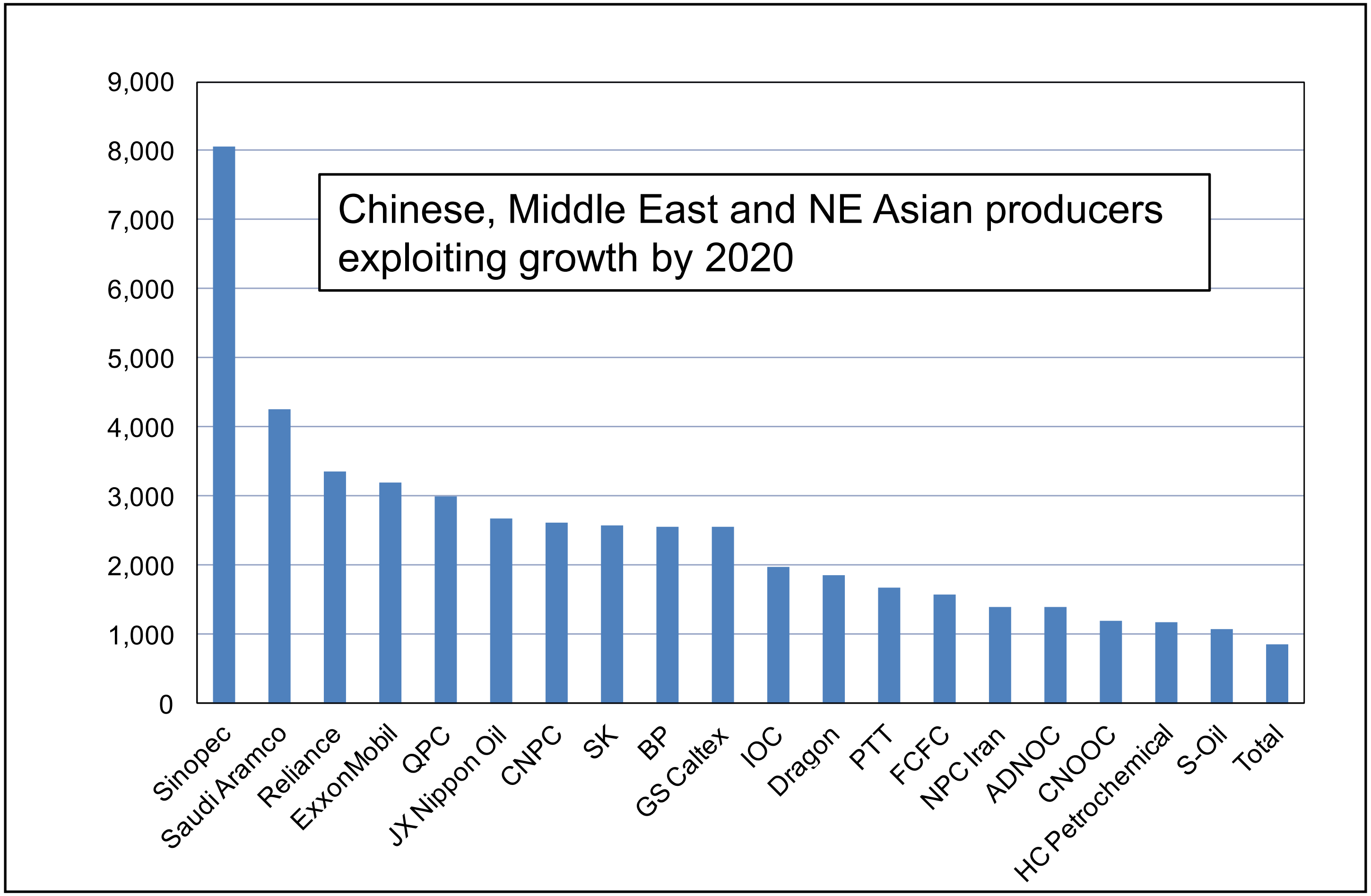


C8's now have to be created. Existing MX pools have dried up.
Capex therefore much higher for new investment

Top 20 PX Producer Groups – 2012 ('000 Tonnes)



Top 20 PX Producer Groups – 2020 ('000 Tonnes)



Paraxylene Conclusions

- Polyester chain set to deliver strong long-term growth
- Long-term issues regarding availability of feedstocks for the polyester chain in N Asia
- Opportunities exist to upgrade heavy naphtha and condensates to aromatics in South Asia
- The emergence of US shale oil & gas not as positive for the US Aromatics industry due to the impact on naphtha composition and reforming economics
- JV's currently being established between Japanese mixed xylenes aligning with new paraxylene capacity in South Korea, avoiding large capex and timing delays to plug short-term gap
- Most new projects will need significant access to feedstock (FRN/HVN/condensates)
- Investment options come with wide range of capex and risk

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