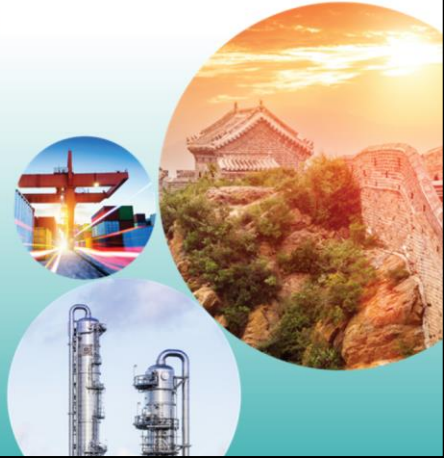




China next: evolution to revolution

21 March 2018
Hilton Americas | Houston, TX, US



After nearly two-decades of fast growth, China has started steering its manufacturing industry from “raw growth” model to “quality” growth model. Phasing out outdated capacity, upgrading value chain, tightening control on environment, encouraging energy efficiency and “Green” economy will be key themes for the next decade. Some sectors and many plants will be phased out, and replaced with newer, more efficient plants, and the products will be higher quality and higher value-added. This also will be the next growth arena. The presentation will focus changes happening in China and opportunities for oil and chemical companies.

Agenda

Macro economy

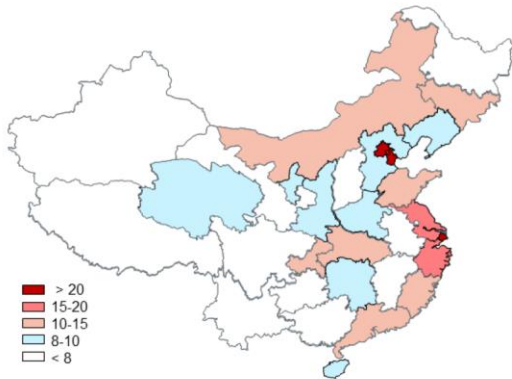
Industry review

What's next?



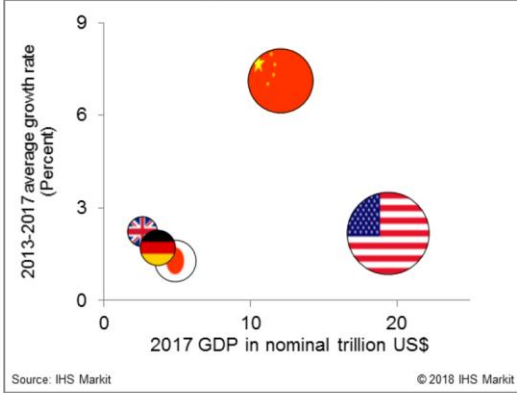
China remains the global growth engine

GDP per cap in 1,000 US\$ in 2017



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China is the most dynamic economy



Transforming to sustainable growth



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FROM

- Export driven
- Meeting basic living
- Investment driven
- Developing coastal region

TO

- Consumer driven
- Satisfying quality living
- Upgrading to high value chain
- Developing interior region

Despite progress, hurdles remain

Desire

- Growing consumer demand
- Quality living
- Innovation
- Fast economic growth

VS.

Reality

- Industry capability
- Deteriorating environment
- Imitation
- Slow political reform

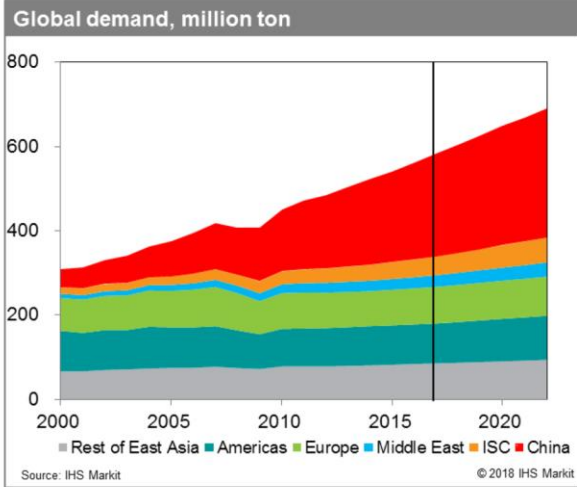


A photograph of an industrial facility, likely a refinery or chemical plant, at dusk. The sky is a gradient of blue and orange. The facility is illuminated with warm yellow lights, highlighting various structures, pipes, and towers. A prominent teal horizontal bar is overlaid across the middle of the image, containing white text.

Industry review: A successful evolution

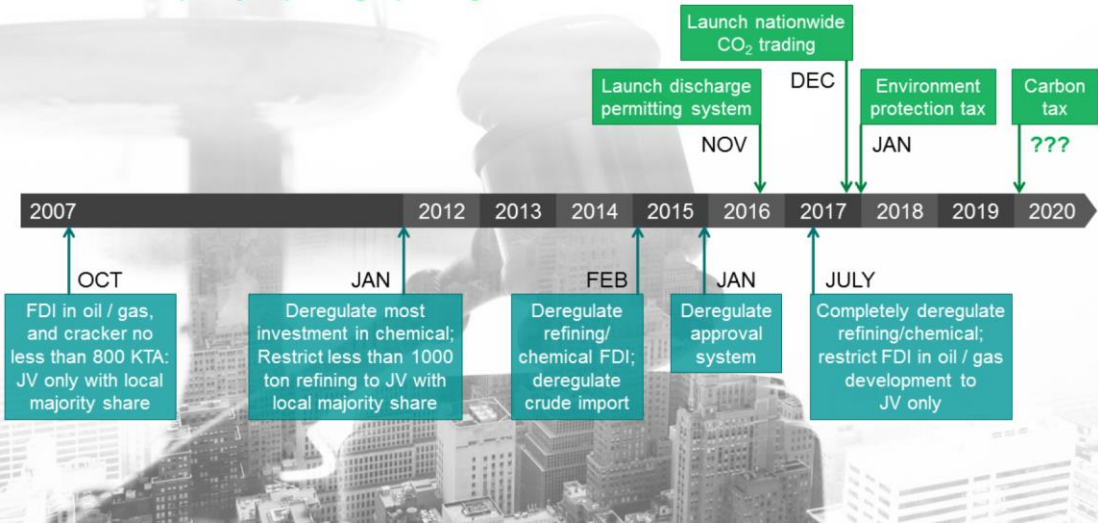
Strong growth continues

- Economic success propels demand growth for chemicals
- Key drivers:
 - World manufacturing floor
 - Infrastructure buildup
 - Growing domestic consumption



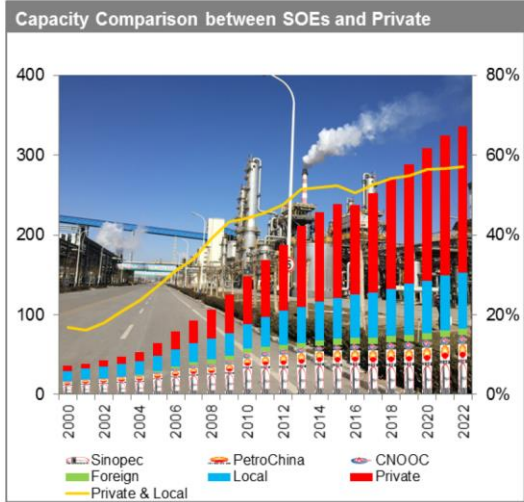
Product: Benzene/PTA/MEG/Methanol/PE/PP/PVC/SM/Caustic/Soda ash

Evolution of policy: opening up but gradual

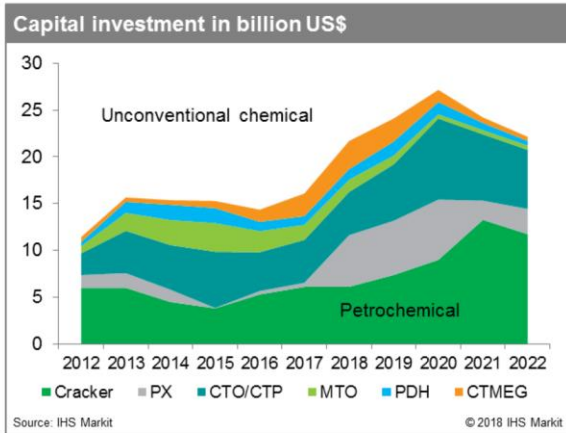


Private investment is leading the growth

- Policy change paves way for private investment
- Private companies are more nimble and efficient
- Strong entrepreneurship
- Grow big to survive: eat or be eaten

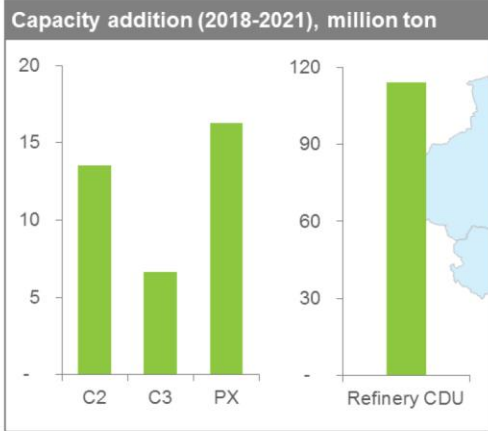


Conventional petrochemical leads growth again



- Conventional
 - High profitability
 - Lowered entry barriers
- Coal chemicals
 - High CAPEX
 - High emission
 - Less policy incentives
 - Competitive cash cost

A wave of integrated refining / petrochemical complexes



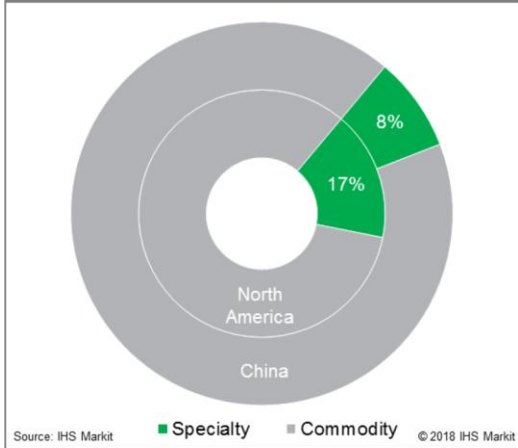
■ Standalone light feed cracker
 ■ Integrated complex

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Commodity versus specialty

- Strong in commodity but weak in specialty
- Short-term focus investment strategy
- Short history in the business
- Insufficient investment into R&D, due to poor IP protection

Commodity and specialty chemicals by value





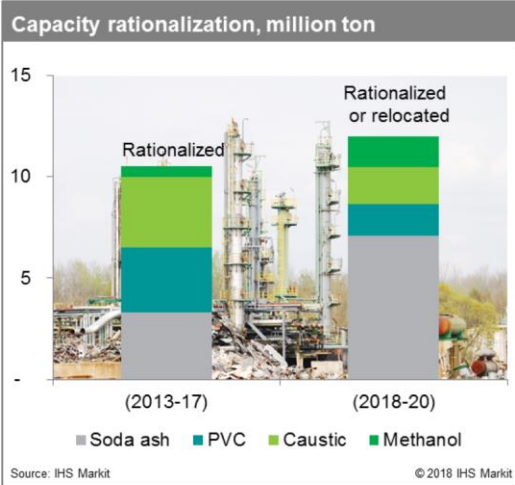
Change from volume growth to quality growth

- Focus on higher quality rather than higher volume
- Move up the value chains
- Increase technology content
- Enhance integration to increase competitiveness



Stepping up supply-side reform

- Phase out outdated capacity
- Move plants into industry parks
- Consolidate industry



Pollution issue: too serious to be ignored further

- Nation-wide carbon trading
- “Gas for coal” in “2+26” regions
- Enforcement of new regulations
- Ban on waste imports



2017: toughest action ever on pollution

- Reduce energy consumption
- Enforce strict waste discharge permit
- Implement tight control on VOC emissions
- Close down uncompetitive capacity
- Scrutinize environmental impact and energy-saving for new project approval
- Key target sectors: aluminum, coal coking, steel, construction materials, carbide, and ammonia

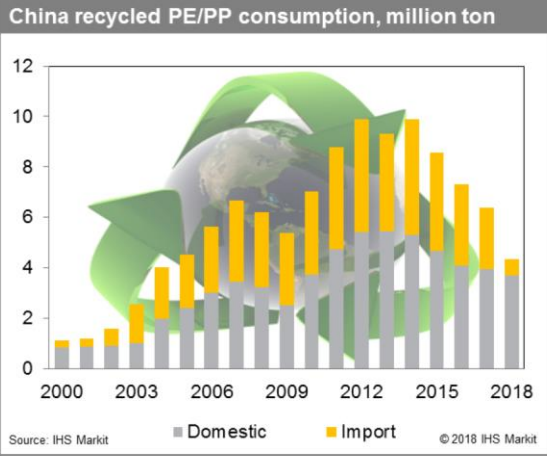


Result: mostly positive

- Led to short-term shock on energy sector
- Disrupted certain supply chains
- Speed up supply-side reform
- Winner: large and established companies; loser: small and medium companies
- Environment push is largely welcome
- Concern: unpredictability of policy and way of implementation
- Tough environmental control – a long-lasting stance



Ban on waste import: a big impact in recycling materials



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One Belt One Road™ : a global ambition



- Takes advantage of international transport routes, core cities and key ports to strengthen collaboration and economic integration
- Covers massive economic areas
- Connects Asia, Europe and Africa along five routes

It is far beyond regional expansion

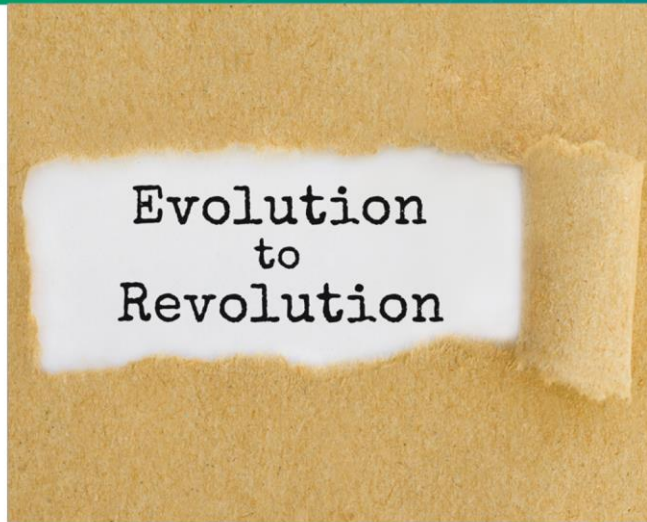


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- Expand China's soft power
- Capture business opportunity in infrastructure buildup
- Move products efficiently within common trade beltways
- Access to huge consumer base
- Access to vast natural resources
- Strengthen RMB role as a global currency

Strategic implications

- China is reaching a turning point for revolutionizing its manufacturing industry
- Macro policy change is reshaping refining and chemical industry
- The companies venturing into high-end and "Greener" products will take the lead
- China's global ambition creates another growth area



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