

New Horizons for China Petrochemical Industry



2019

Report series of China energy and petrochemical industry

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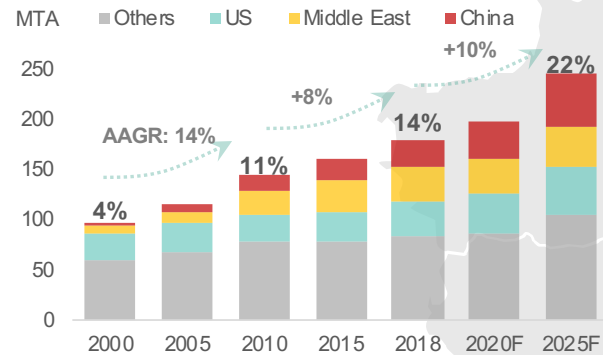
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Increasing Petrochemicals Capacity of China

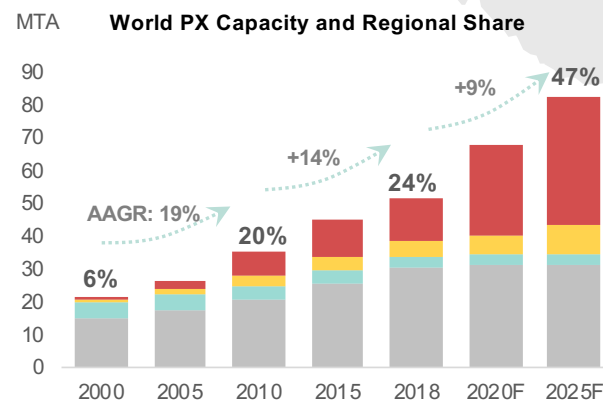
Petrochemicals Giants Cooking Up Major Expansion for China

Capacity of ethylene and PX of China has reached 25MTA and 13.8MTA in 2018, which is expected to reach 53MTA and 40MTA by 2025, both ranking the 1st in the world.

World Ethylene Capacity and Regional Share



World PX Capacity and Regional Share



Bohai Gulf

2025
C2 13.5/24%
PX 13.3/30%

Yangtze River Delta

2025
C2 15.3/27%
PX 20.2/45%

Pearl River Delta

2025
C2 6.4/11%
PX 2.0/4.5%

Announced Integrated Projects 2019-2025

2020: Hengli PC
2021: North Huajin PC
2021: RISUN

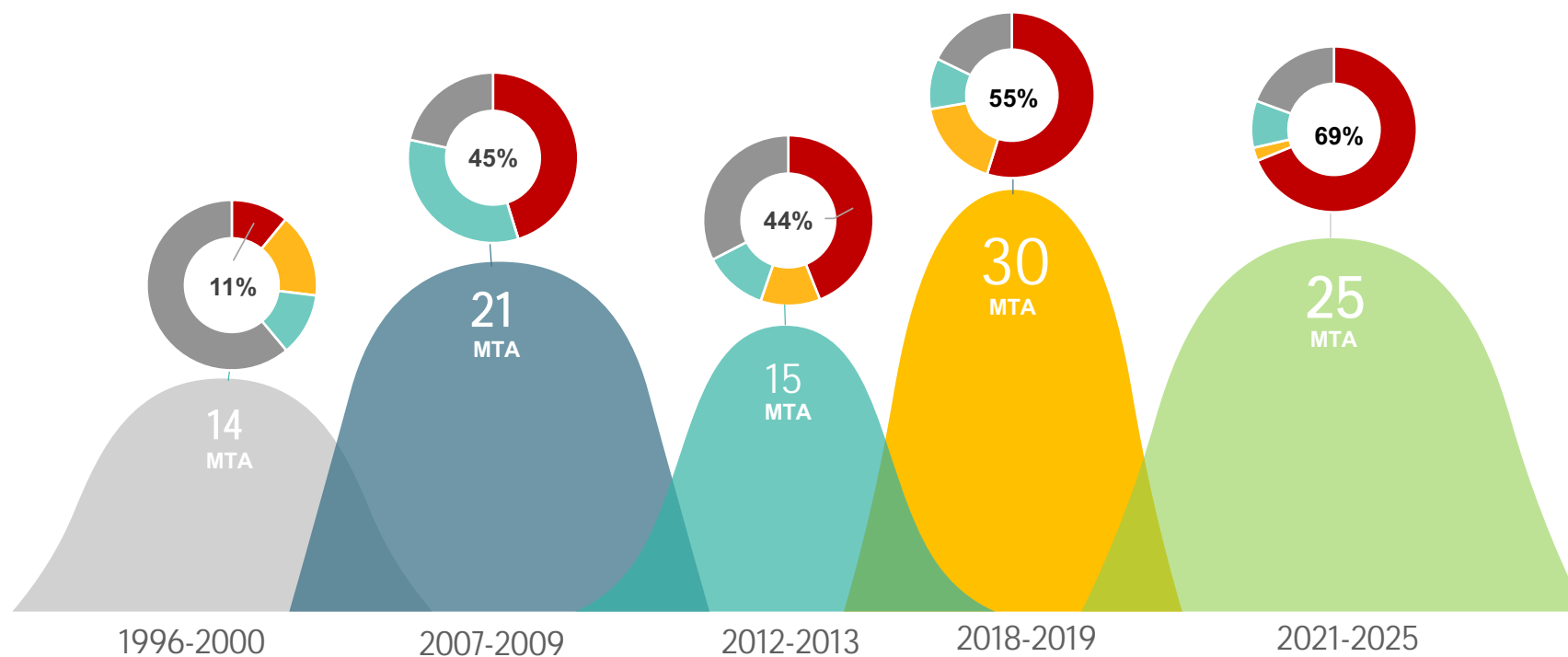
2019: Zhejiang PC Phase I/II
2021: Shenghong PC
2020-2025: ZRCC

2020: Gulei PC
2020: Quanzhou PC
TBD: FHC & SABIC JV

2018: CNOOC & Shell JV
2020: ZRPC
2021: CNPC
2023: ExxonMobil OTC Project
2020-2025: Hainan Refining & Chemical

China Empowering the World Capacity Growth

China alone contributes 50-70% of the new capacity during another two round of expansion in 2019 and 2023.



Note: Basic chemicals including ethylene, propylene, butadiene, benzene, toluene, PX and methanol

■ China ■ Middle East ■ US ■ Others

Average Annual New Capacity of Basic Petrochemicals

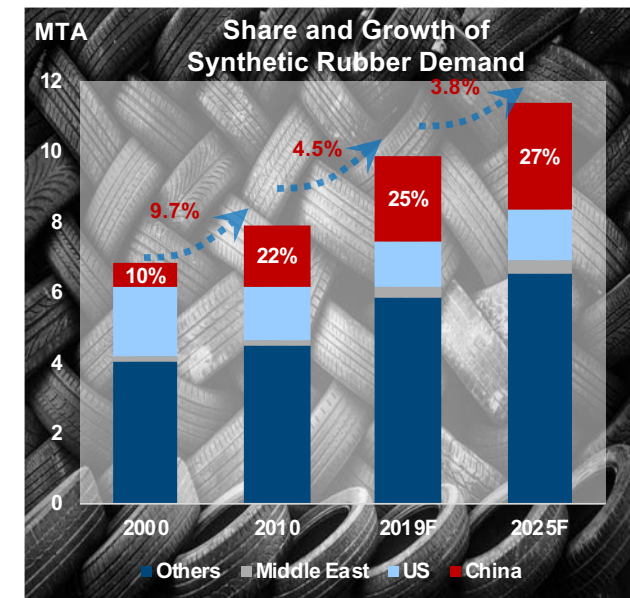
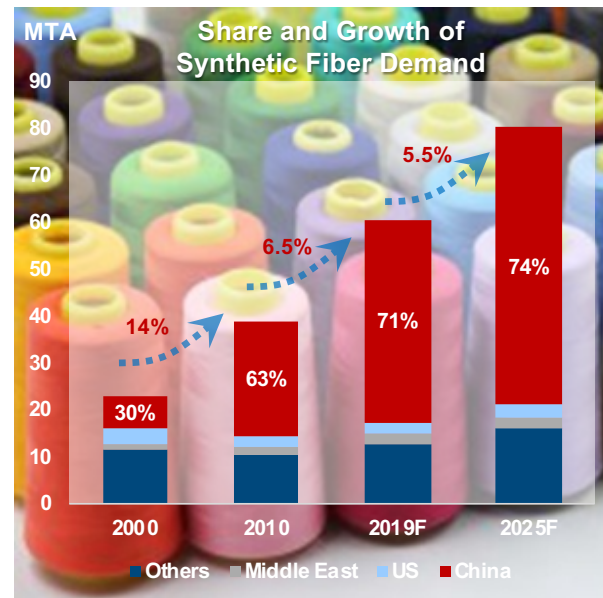
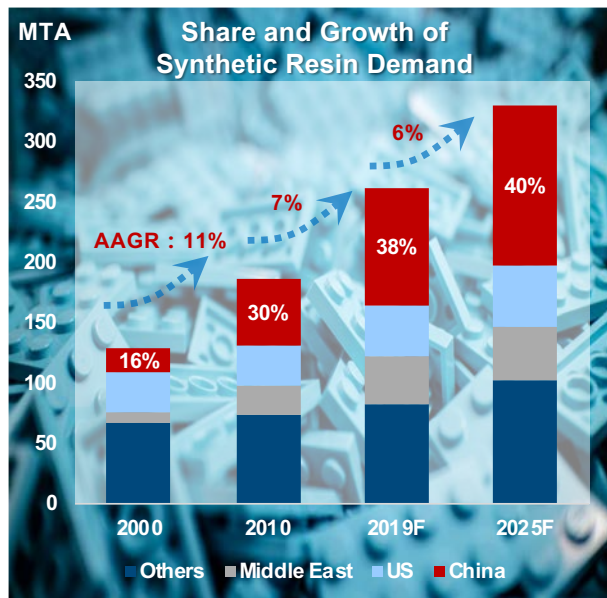


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Booming Petrochemicals Market of China

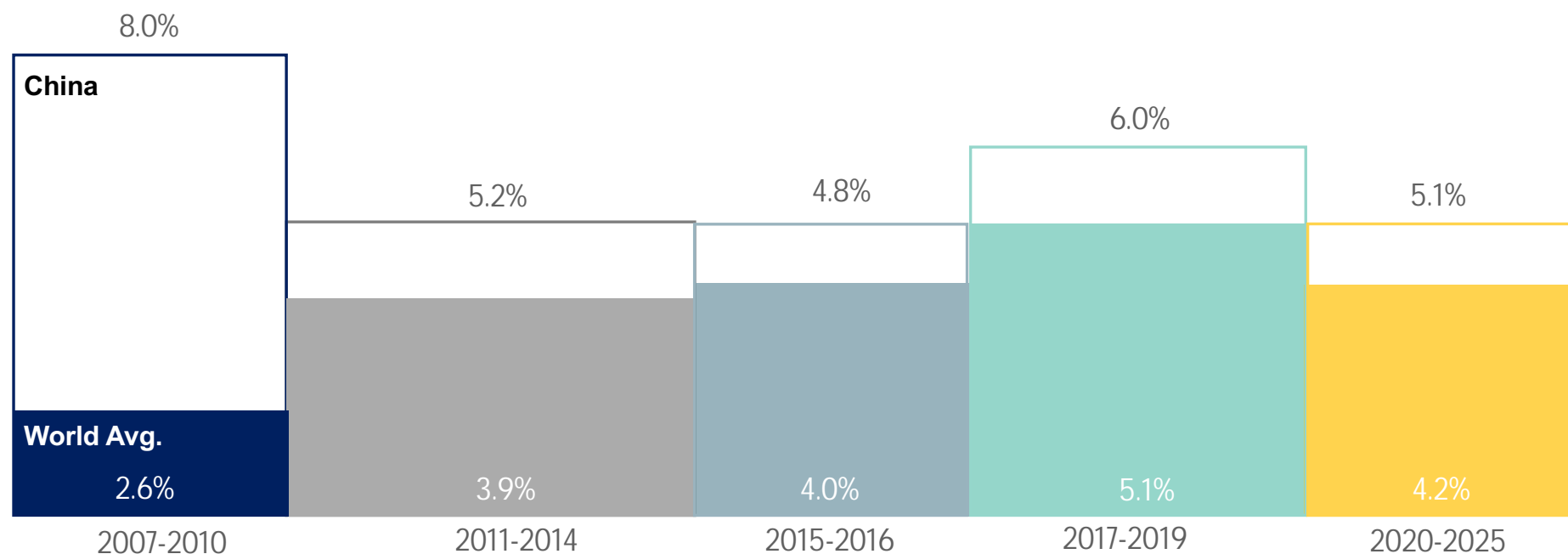
China Still the Largest Petrochemicals Market

China still holds the largest share of world petrochemicals demand, which is expected to maintain a high growth after the recent booming period. Demand of synthetic resin, fiber and rubber is expected reach 135MTA, 60MTA and 3.2MTA respectively by 2025.



China Driving the World Demand Growth

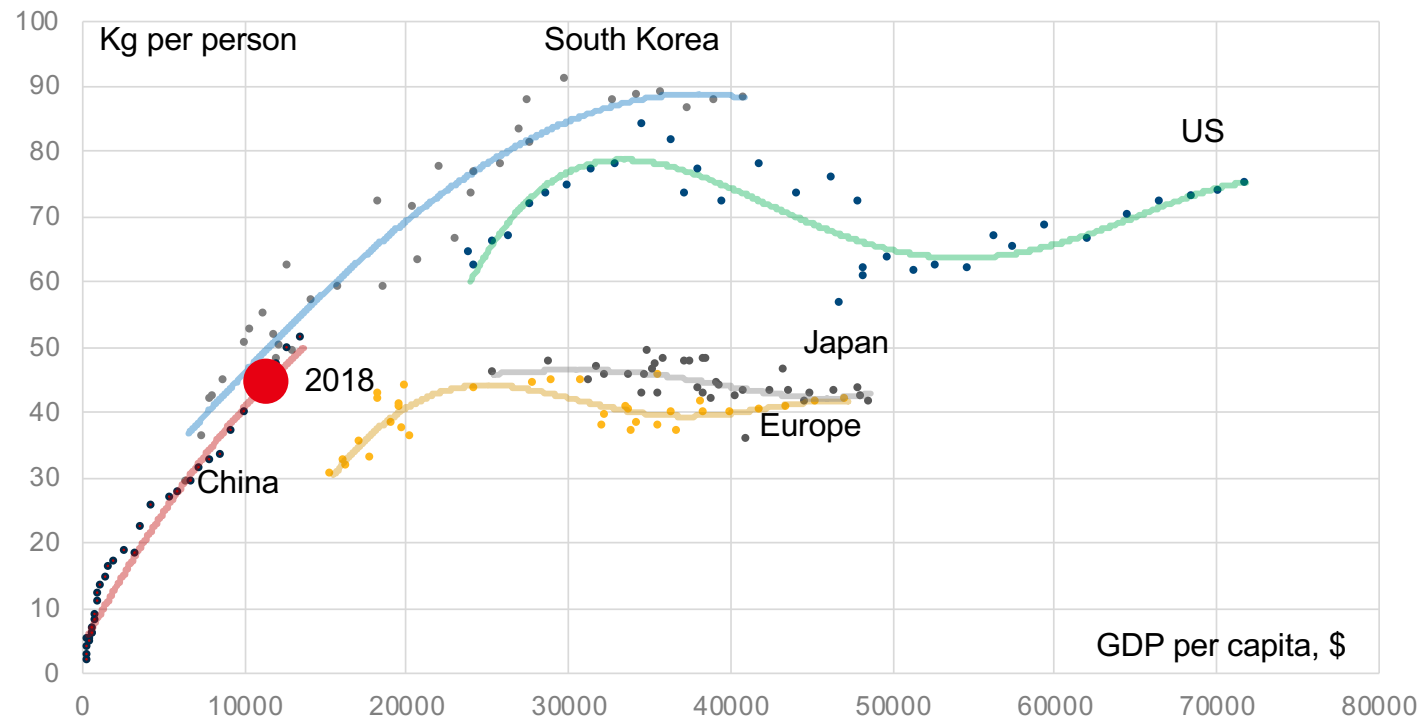
World petrochemicals demand are recovering from years before, growth of which outruns the world GDP. China, as a key driver, is expected to hold 1% higher than the world average demand growth by 2025.



AAGR of World Synthetic Resin, Fiber and Rubber Demand

Consumption Still Shows Great Potential

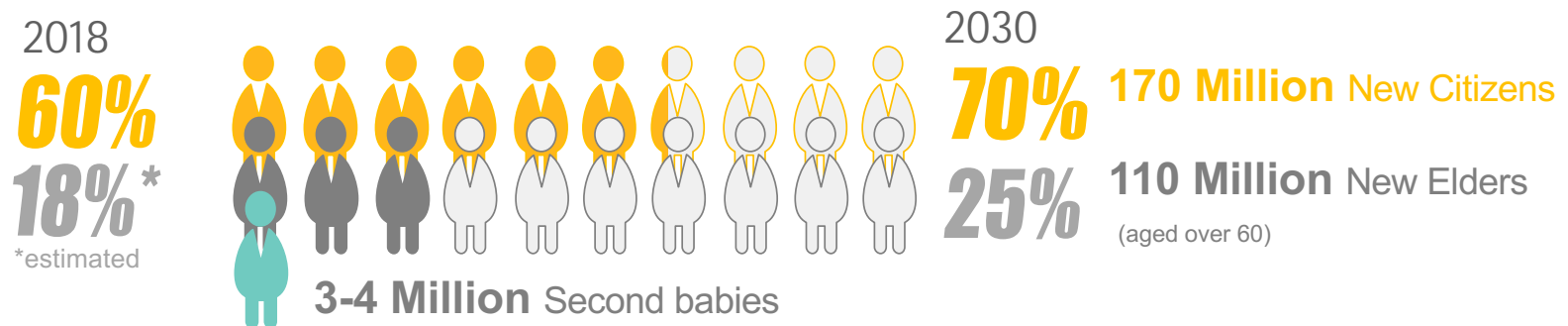
China per capita consumption of petrochemicals is catching up with Japan and Europe in the coming years. But 43kg(in equivalent ethylene) still has a long way to go compared with South Korea(89-90kg) and U.S.(70-80kg).



Consumption per capita of Equivalent Ethylene vs GDP per capita from 1990-2025

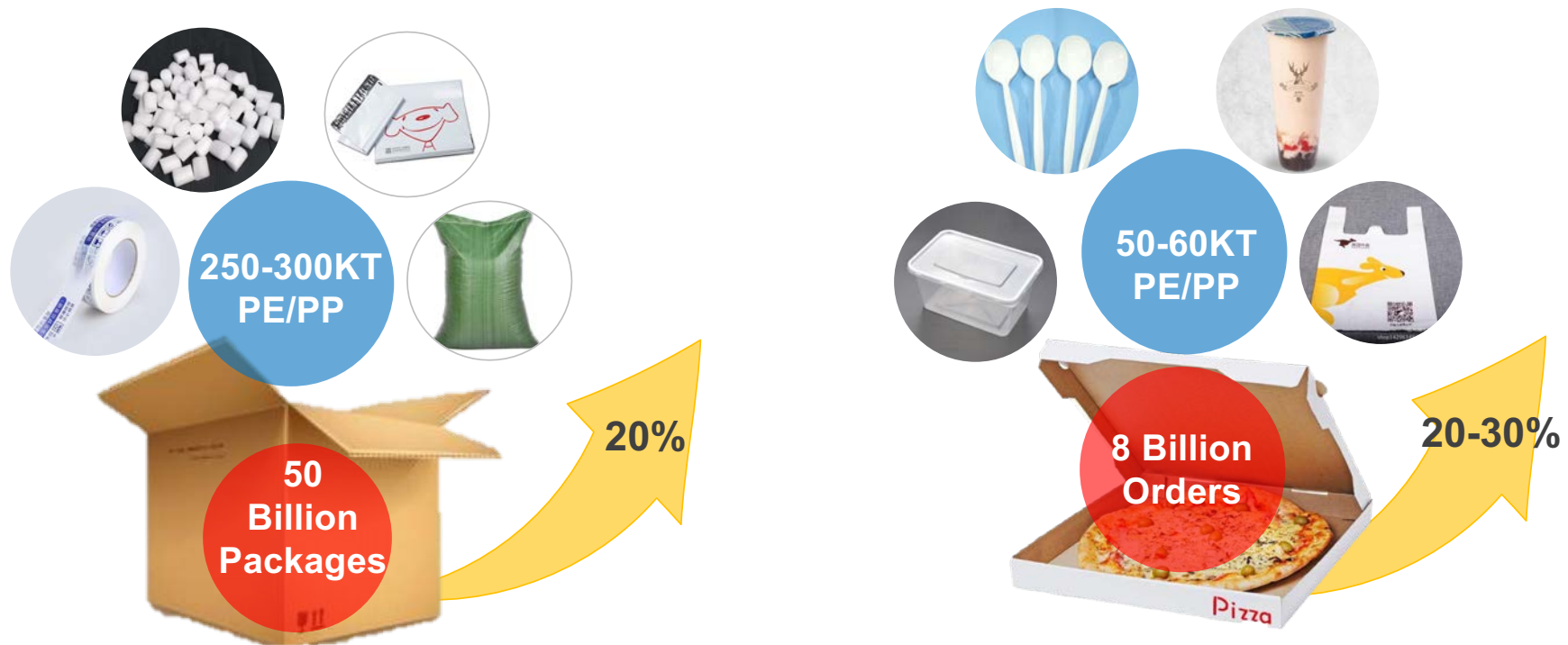
Aging Population VS Massive Urbanization

Massive urbanization is the best answer to the aging problem. Besides the second baby boom, we will see 170 million new citizens moving to cities by 2030, which means at least 250 billion \$ new consumption and 2750 billion \$ new investment.



Explosive Growth of E-commerce Boosting the Polymers Demand

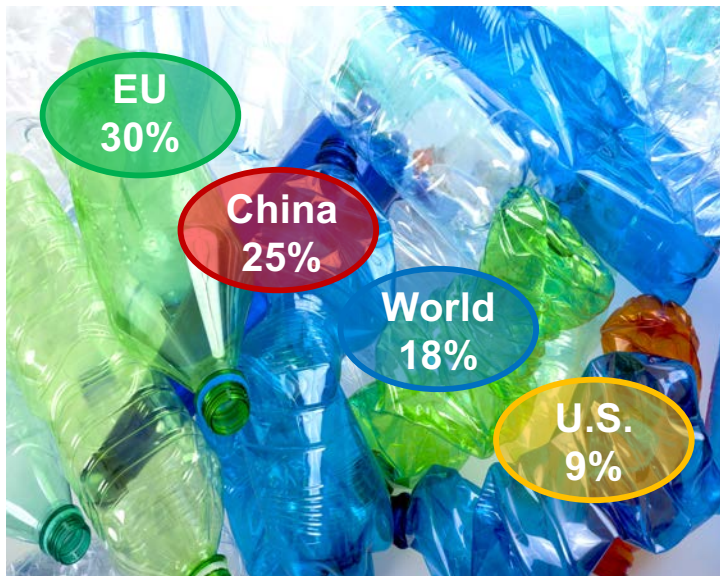
Billions of online orders and catering services are creating a whole new area for polymers consumption, which is growing by 20-30% each year and increasing the demand of polyolefins by 1-2%.



Fast Delivery and Catering Services Boosting the Polymers Demand

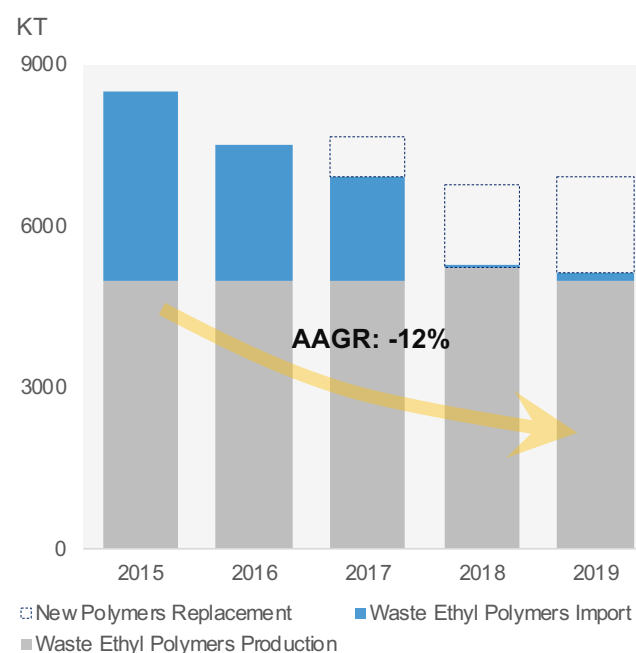
New Demand from Environmental Protection Business

Recycling rate of China has been much higher than the average of the world, which makes it harder to get significantly improved in years, together with waste plastics import ban, increased the virgin PE demand by 0.7-1.0 million ton. While air-pollution control regulation has driven the natural gas pipeline demand by 10%.

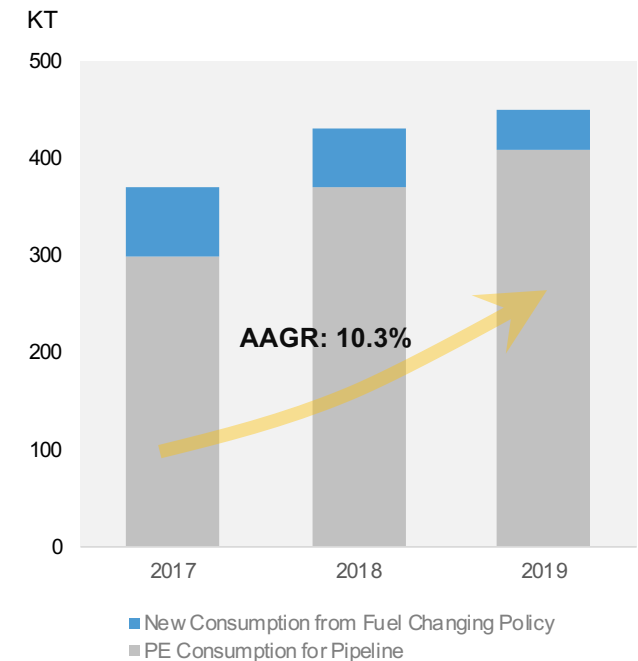


Sources: Roland Geyer, Jenna R. Jambeck, Kara Lavender Law

Recycling Rates of Non-Fiber Plastics



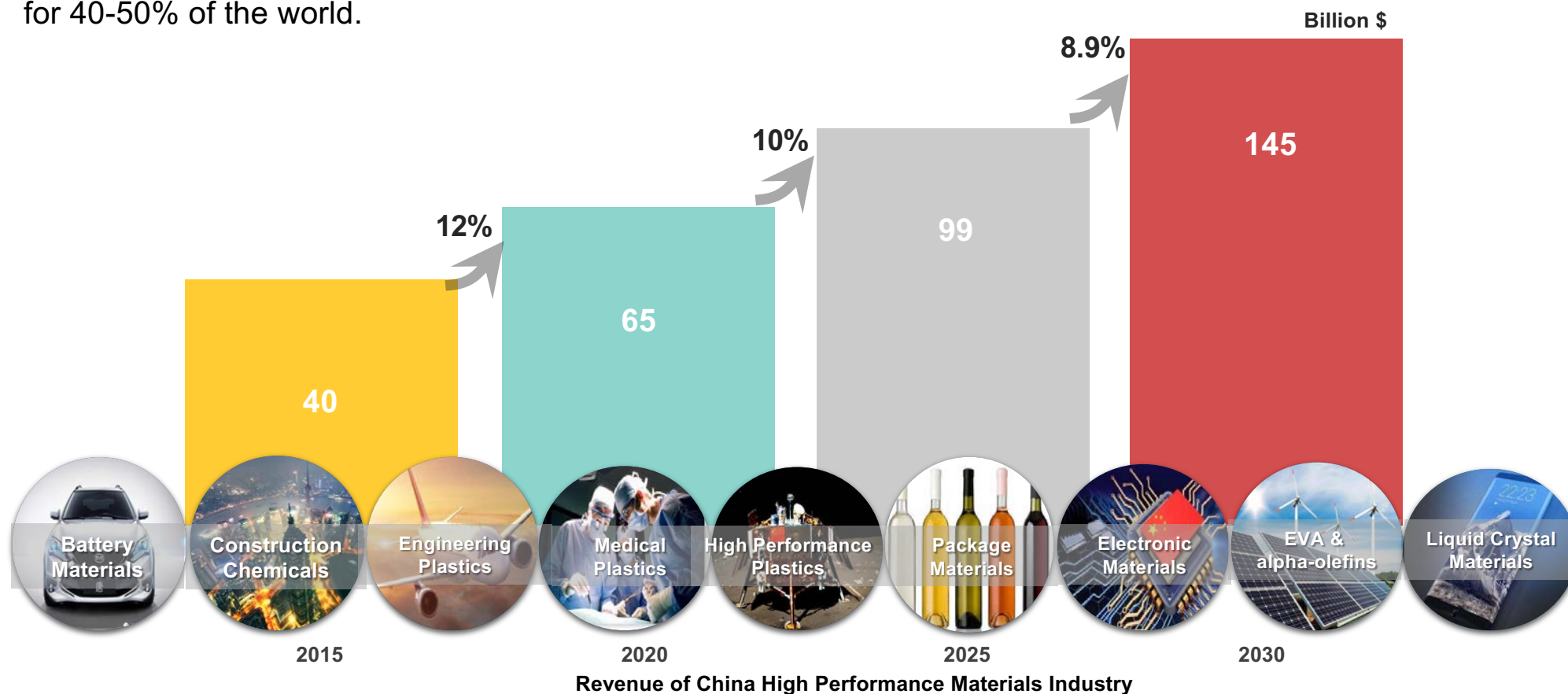
Waste Polymers Import and Domestic Production



Natural Gas Pipeline Demand for Polyolefins

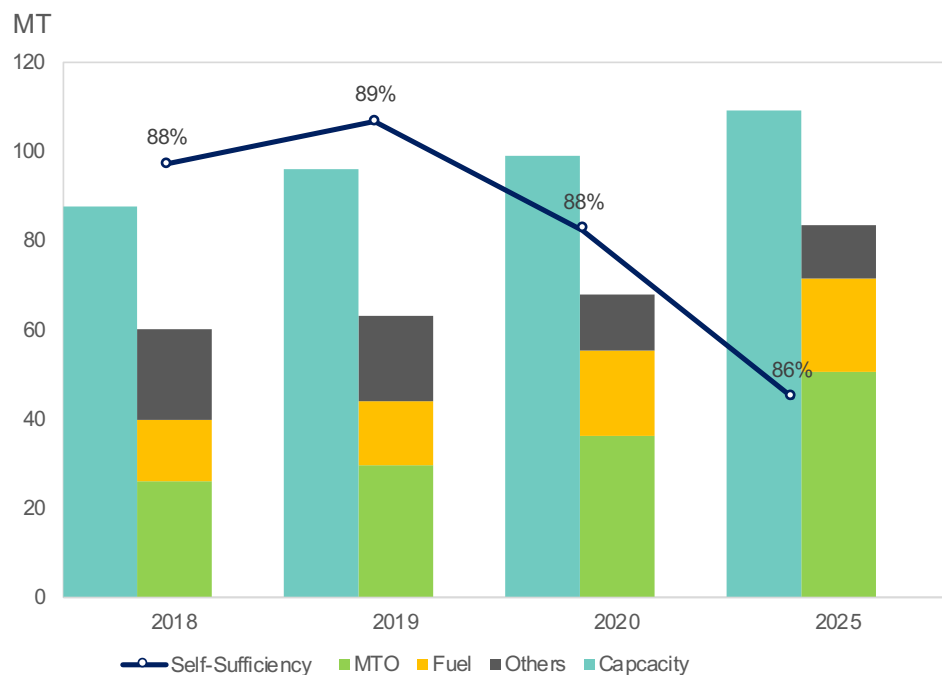
A Prosperous Outlook for High Performance Materials

Consumption upgrading promotes the high performance materials demand. A more than 10% growth will be expected in the coming years, and the revenue of this area will reach 145 billion \$ by 2030, accounting for 40-50% of the world.



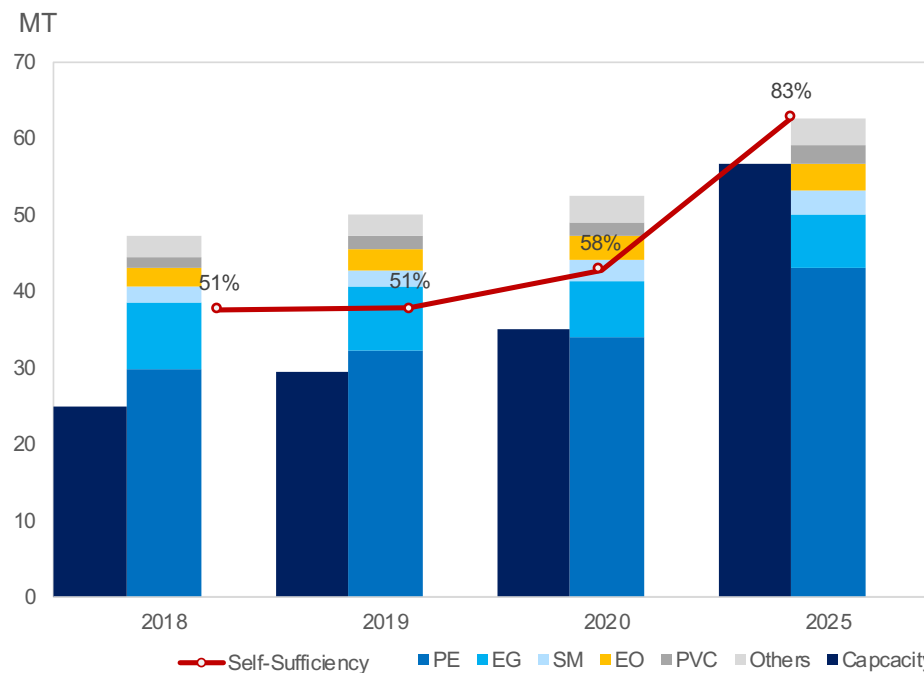
C1/C2: Large Import Still There

Methanol effective supply cannot fully meet the fast growing MTO and fuel demand, net export approaching 10 MT. Self-sufficiency of ethylene is rocketing, while more than 10MT of equivalent ethylene still has to be imported.



Note : Self-Sufficiency Rate=Production/Demand

Methanol Supply and Demand of China

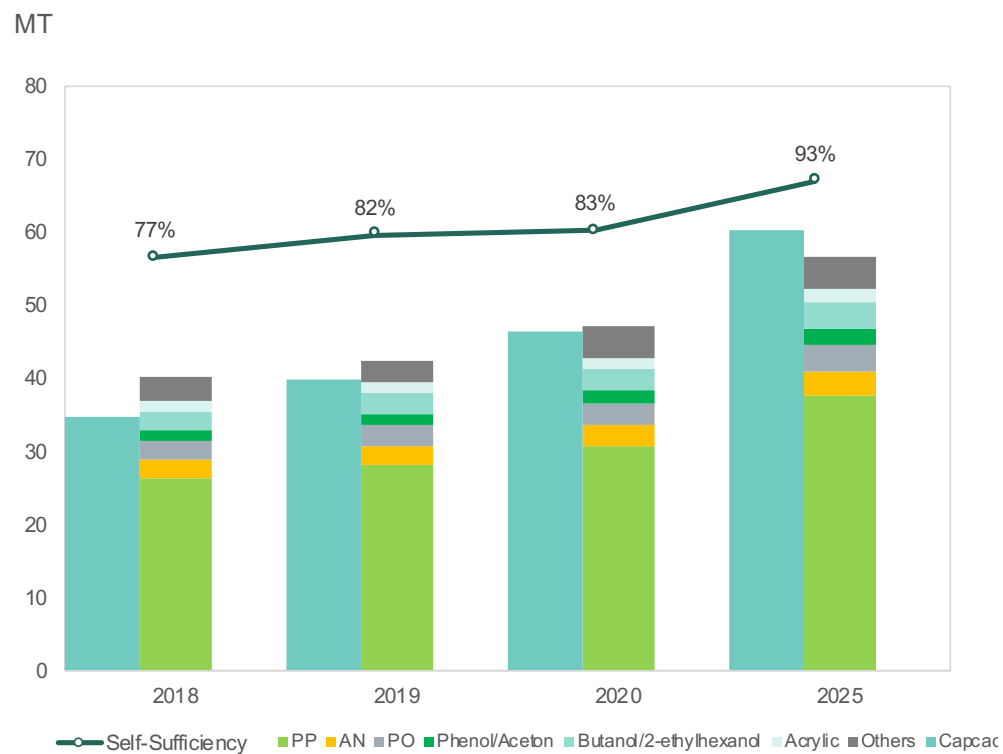


Note : Ethylene Demand including derivatives demand(in ethylene)

Ethylene Supply and Demand of China

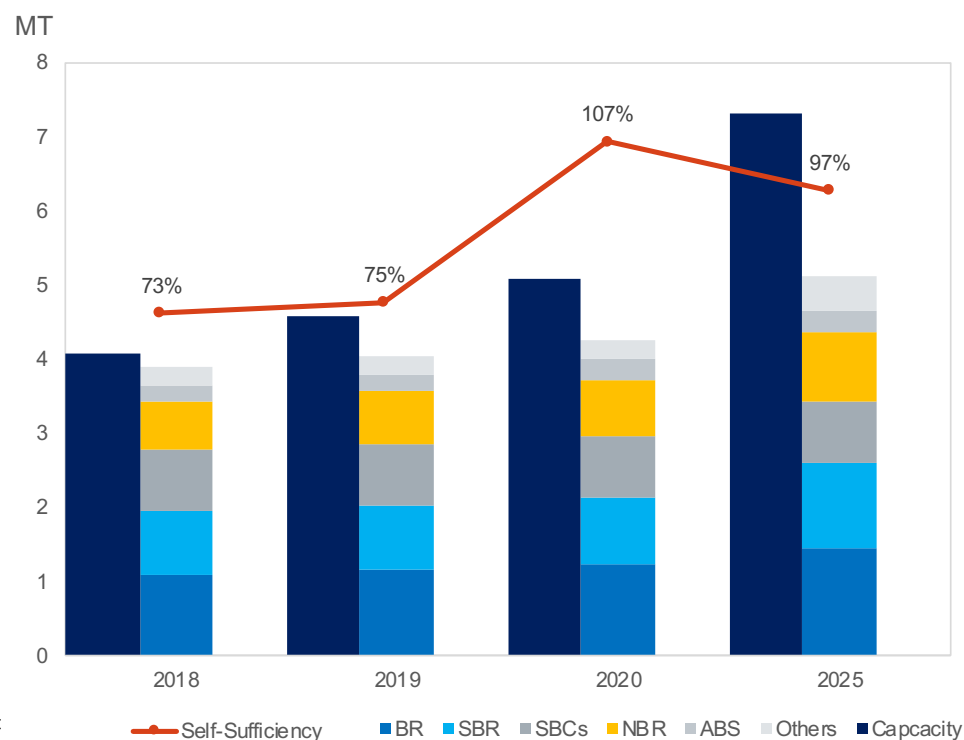
C3/C4: Balance is on the Horizon

Expanding propylene capacity and demand are getting near the balance point, while PP still needs import; Not only the large integrated projects but also the BDH has changed the whole landscape for butadiene.



Note : Propylene Demand including derivatives demand(in Propylene)

Propylene Supply and Demand of China

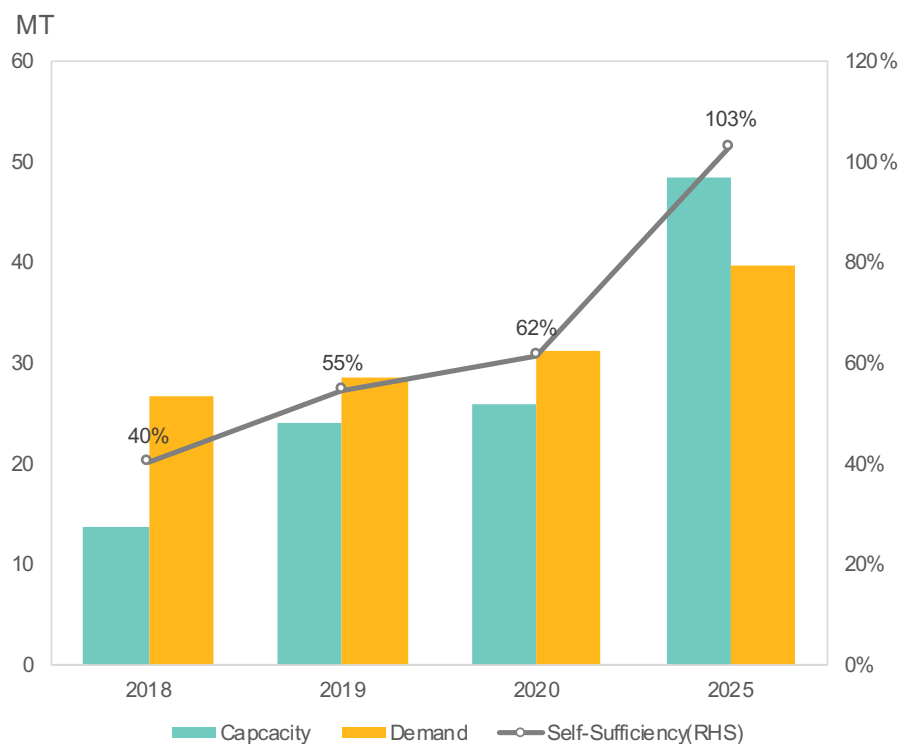


Note : BD Demand including derivatives demand(in BD)

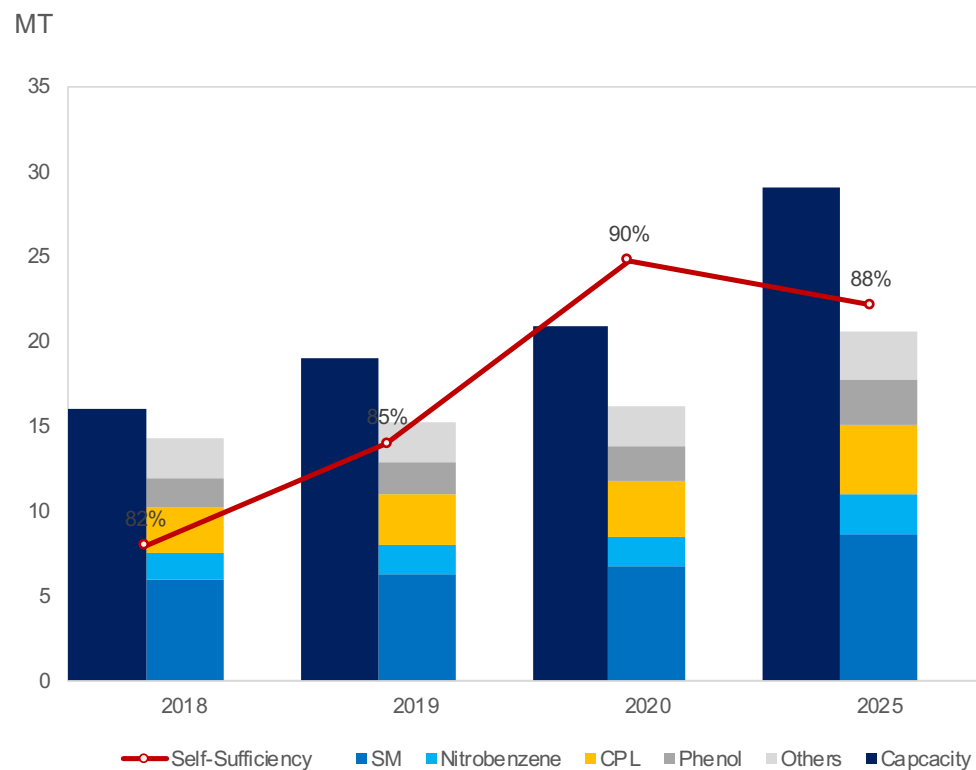
Butadiene Supply and Demand of China

Aromatics: Nearing the Overcapacity

Extensive investment on PX has dramatically change the outlook for it, balanced or even overcapacity is expected by 2025. For benzene, import won't be absent, but potential increase of the capacity utilization clouded the market.



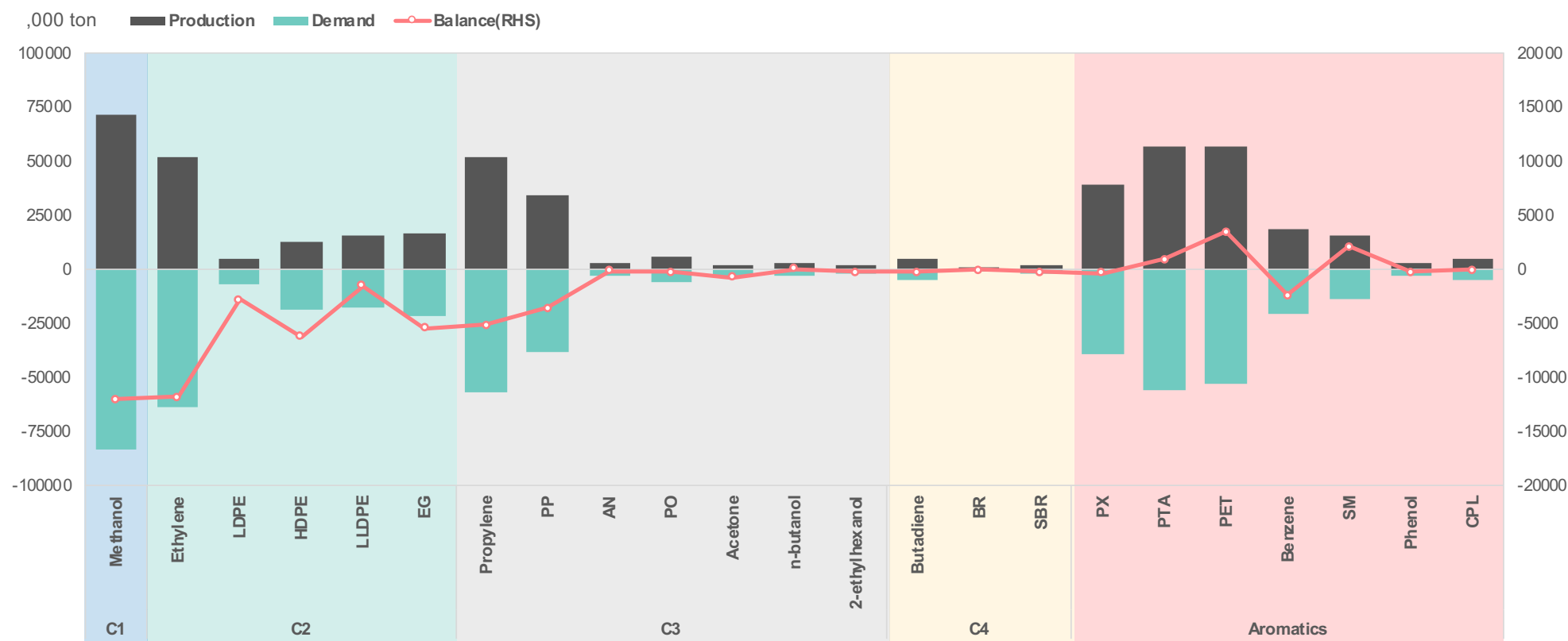
PX Supply and Demand of China



Benzene Supply and Demand of China

Balance across the Spectrum

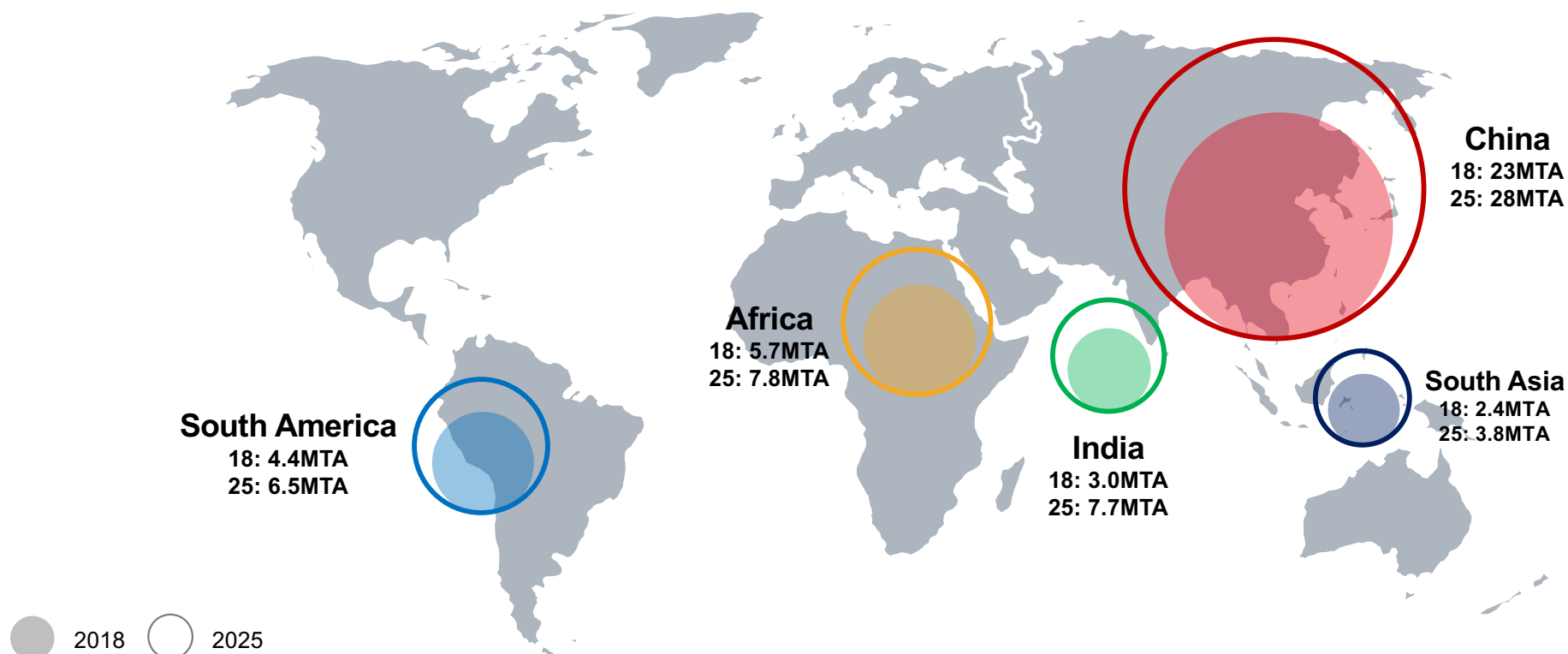
Polymers supply still cannot meet the demand by 2025, while some, especially the aromatics, will be facing the overcapacity pressure.



Balance of China Major Petrochemicals in 2025

Gap Still Widening Up

In 2018, China polymers gap reach up to 23 MTA, which will be increased by at least 5 MT by 2025. Far more incremental imports will be expected than other areas.



Note: Polymers including synthetic resins, fibers and rubbers

Polymers Balance Change of Major Import Areas from 2018-2025



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Trends and Challenges

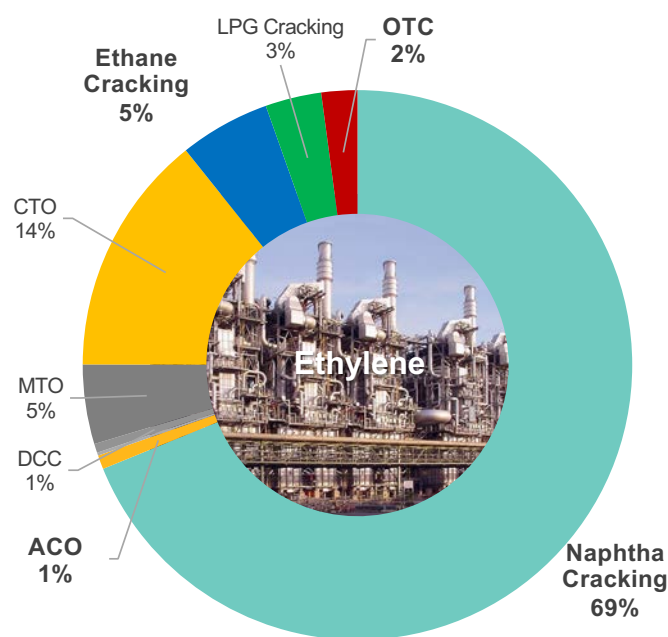
A Further Opening-up Market

A series of measures are implemented to reduce the market access barrier, which has attracted not only the domestic private investors but also the foreign investors, like Saudi Aramco, SABIC to join the game.

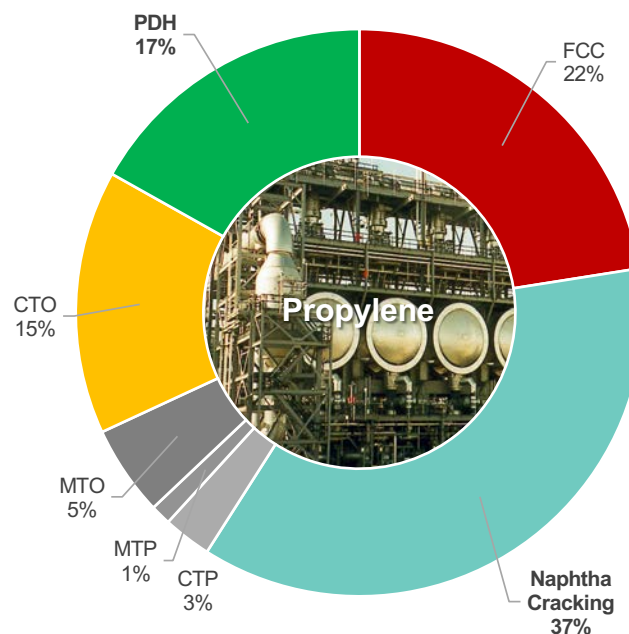


A More Diversified Market

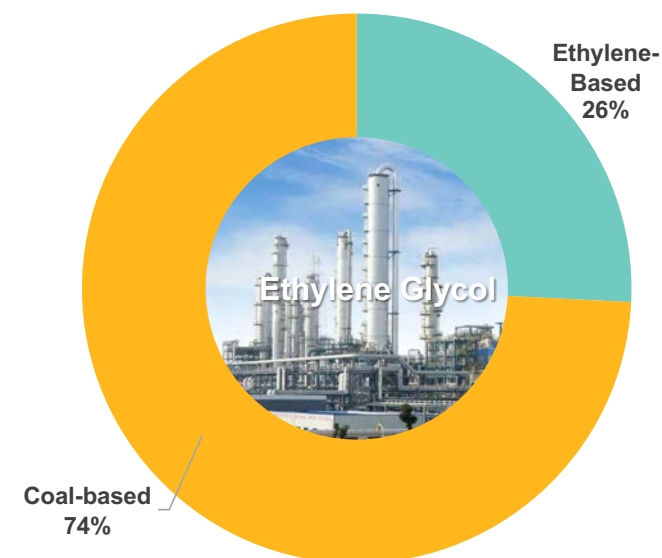
In 2019, Zhejiang and Hengli PC will bring the aromatics version of OTC on board, and ExxonMobil will bring the olefins version to Huizhou, China years later. Meanwhile the first ethane VLEC will arrive in China and the first ACO unit gets into production.



China Ethylene Capacity Share by Process 2025



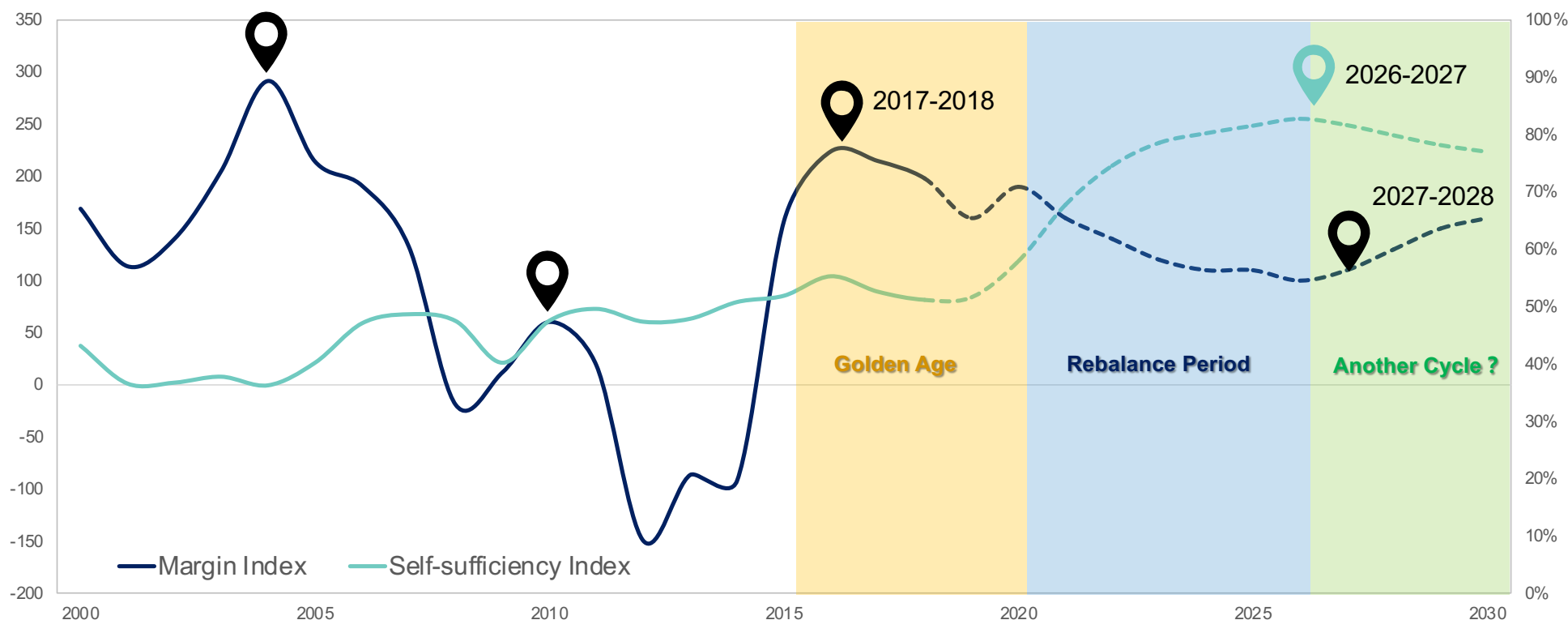
China Propylene Capacity Share by Process 2025



China Ethylene Glycol Capacity Share by Process 2025

Profitability Facing Temporary Downward Pressure

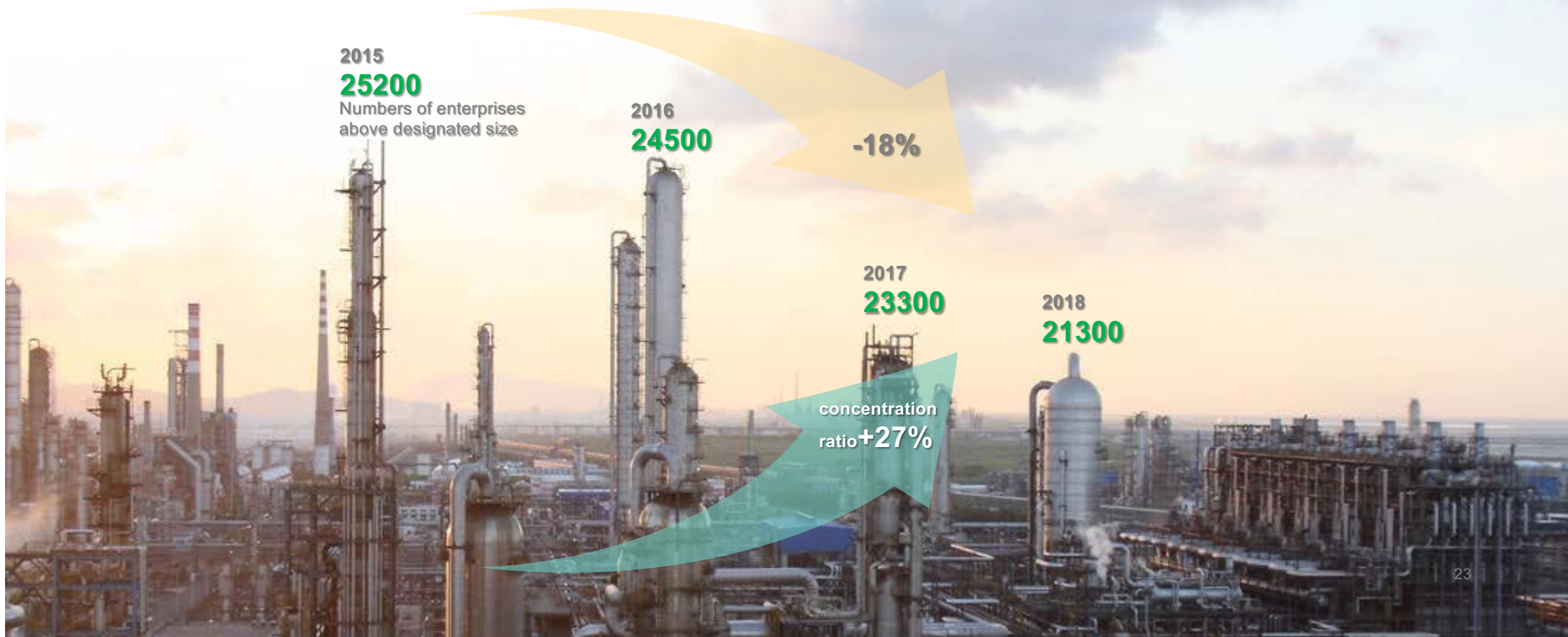
Overcapacity of some products will bring downward pressure to the overall profitability. As the rebalance goes on, the self-sufficiency will decline again and the profitability will get rebound sometime after 2025.



Margin Index and Self-sufficiency Index of China Petrochemical Market

Consolidation on the Way

Stricter environment regulations and fierce competition are forcing the disadvantages out of the games. Rapid decreasing small companies/units and climbing concentration ratio indicate the on-going consolidation.



Takeaways

- As the largest producer and consumer, China petrochemical market to maintain a steady annual demand growth of 6-7% and a capacity growth of 9-10% before 2025.
- Opportunities are emerging from massive urbanization, consumption upgrading, infrastructure construction, e-commerce, environmental protection business and further opening up.
- China will take more imports from the Middle East and U.S., as the polymers gap of China will be widening up by 5 million tons by 2025.
- Steady economy and huge demand will help the market to get rebalanced quickly. And a rebound is expected sometime after 2025.

Q&A

