

Platts | CERAWEEK | Chemical Week

S&P Global

Commodity Insights

Polyolefins: Surviving demand challenges in an uncertain economy

Seoul, APIC 2024

May 31st, 2024

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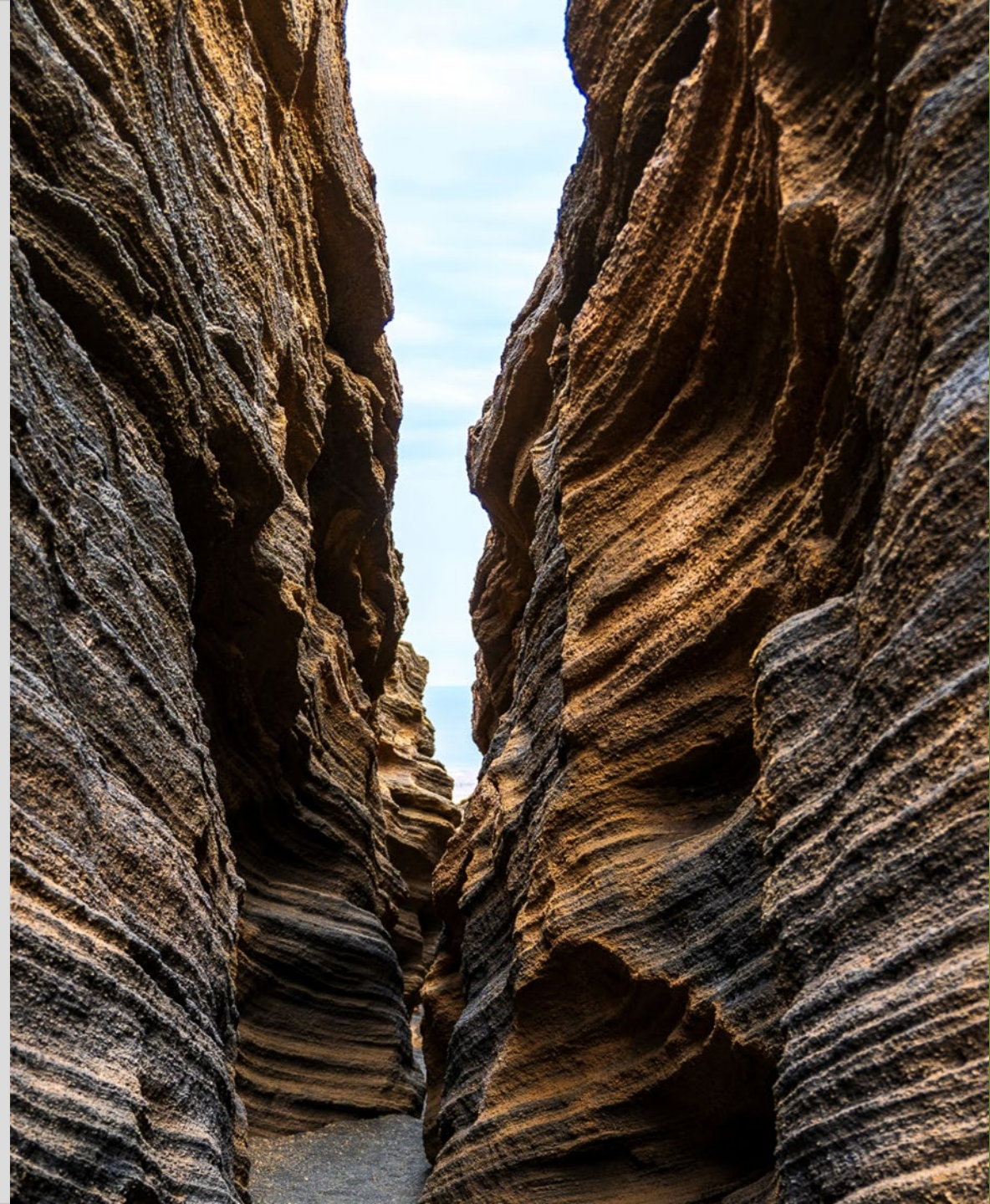
Agenda

Polyethylene: a successful polymer with long term demand growth

Over-supply calls for rationalization

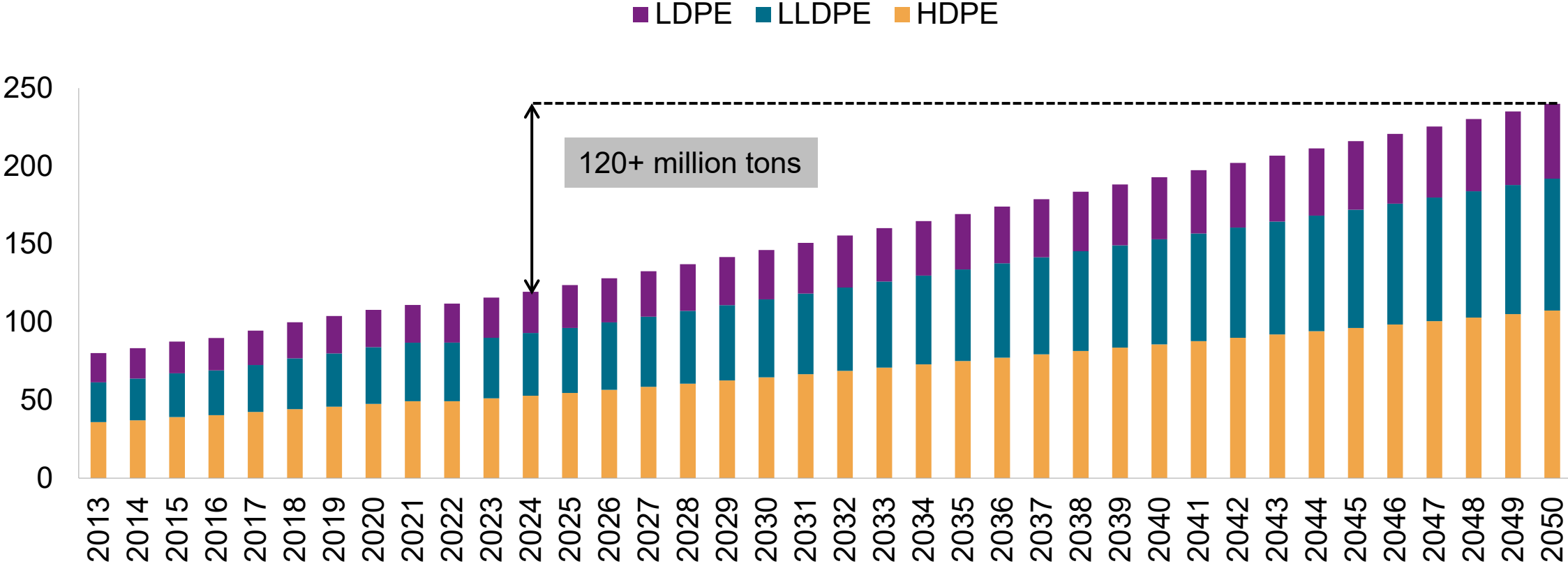
Differentiations

Sustainability and Innovation



Polyethylene, a successful polymer of versatility, competitiveness and innovation, will continue to enjoy healthy growth requiring on average 6-8 world scale PE plants annually

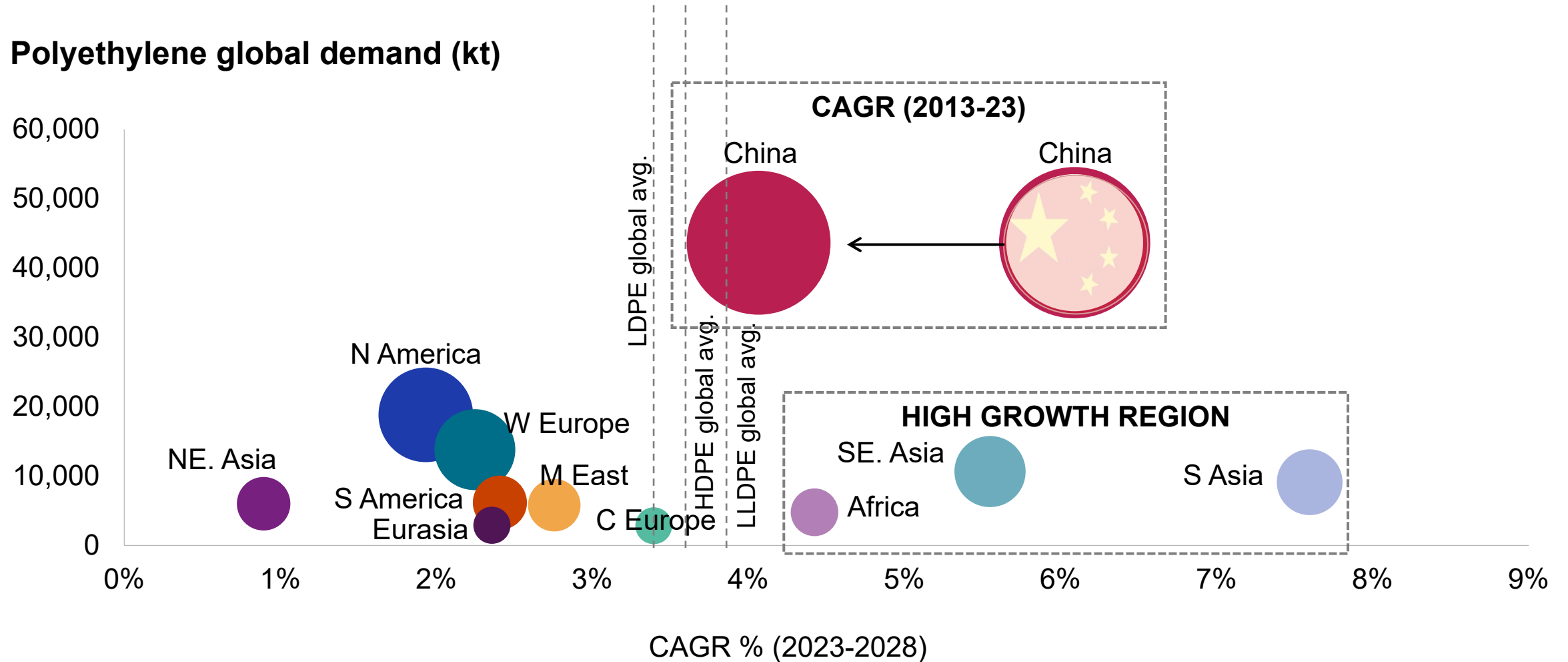
Global virgin PE demand (mmt)



Source: S&P Global Commodity Insights

South Asia & SE Asia have the highest demand growth rates. China growth has slowed

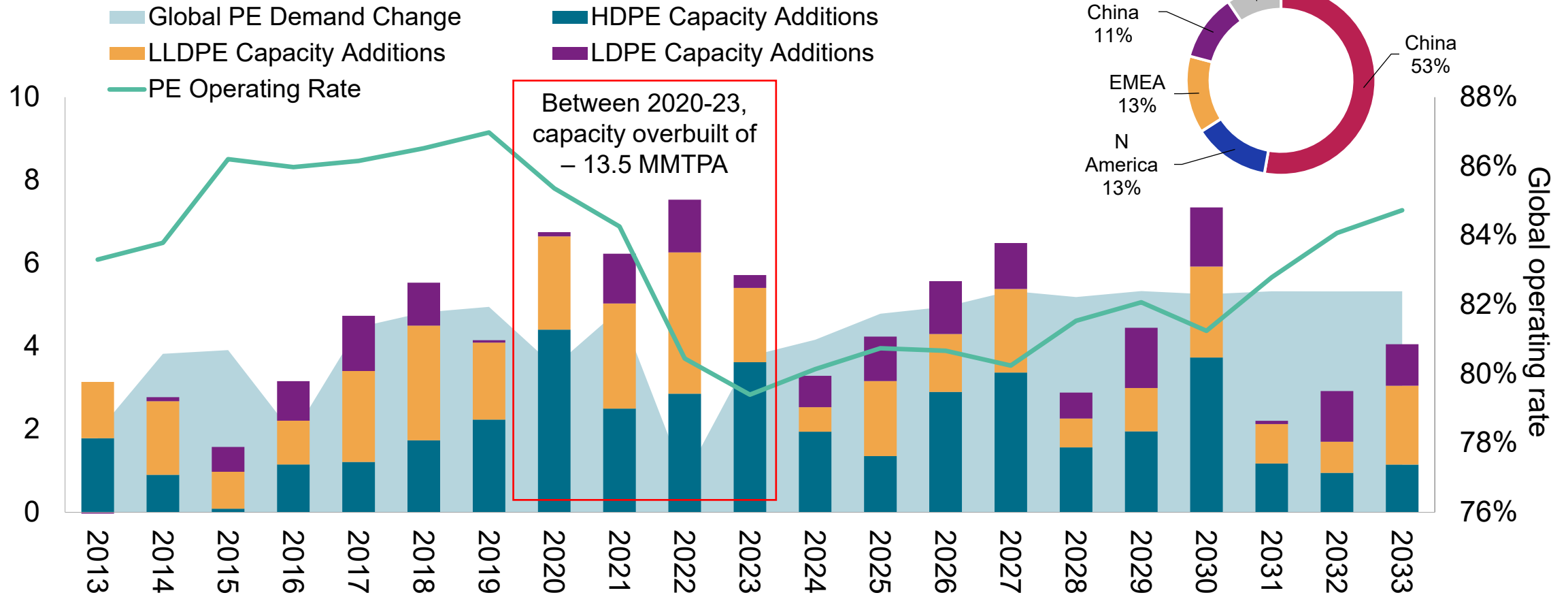
Polyethylene global demand (kt)



Source: S&P Global Commodity Insights

Polyethylene capacity additions led by China and US have out-paced demand growth across '20-23

World : PE capacity growth by PE type (mmt)



Source: S&P Global Commodity Insights

18-24 months into the downcycle, V-shape recovery no longer an option, U-shape seeming less likely, L-shape recovery now seems most likely; question is – how long will the tail be?

X



V shape

Quick recovery;
immediate return to
profitability (<1 yr)

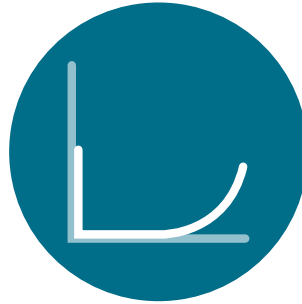
X



U shape

Slower return to
acceptable
profitability (~2yrs)

!



L shape

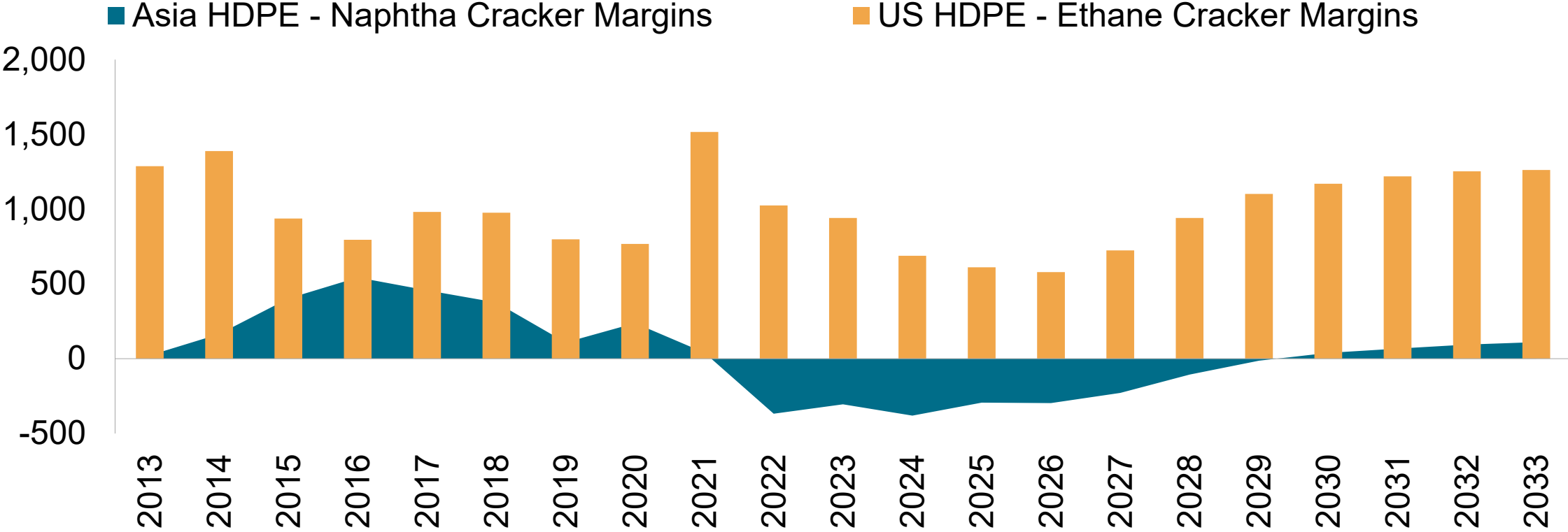
Severe decline
without any return
to meaningful profit
for many years

Supply/Demand projections suggest
meaningful action is needed to avoid
lengthy L-shape recovery

- Delaying projects closer to expected “upcycle”
- Rationalization of older assets (also improves cost basis & carbon footprint)
- Faster China recovery would also help speed up recovery

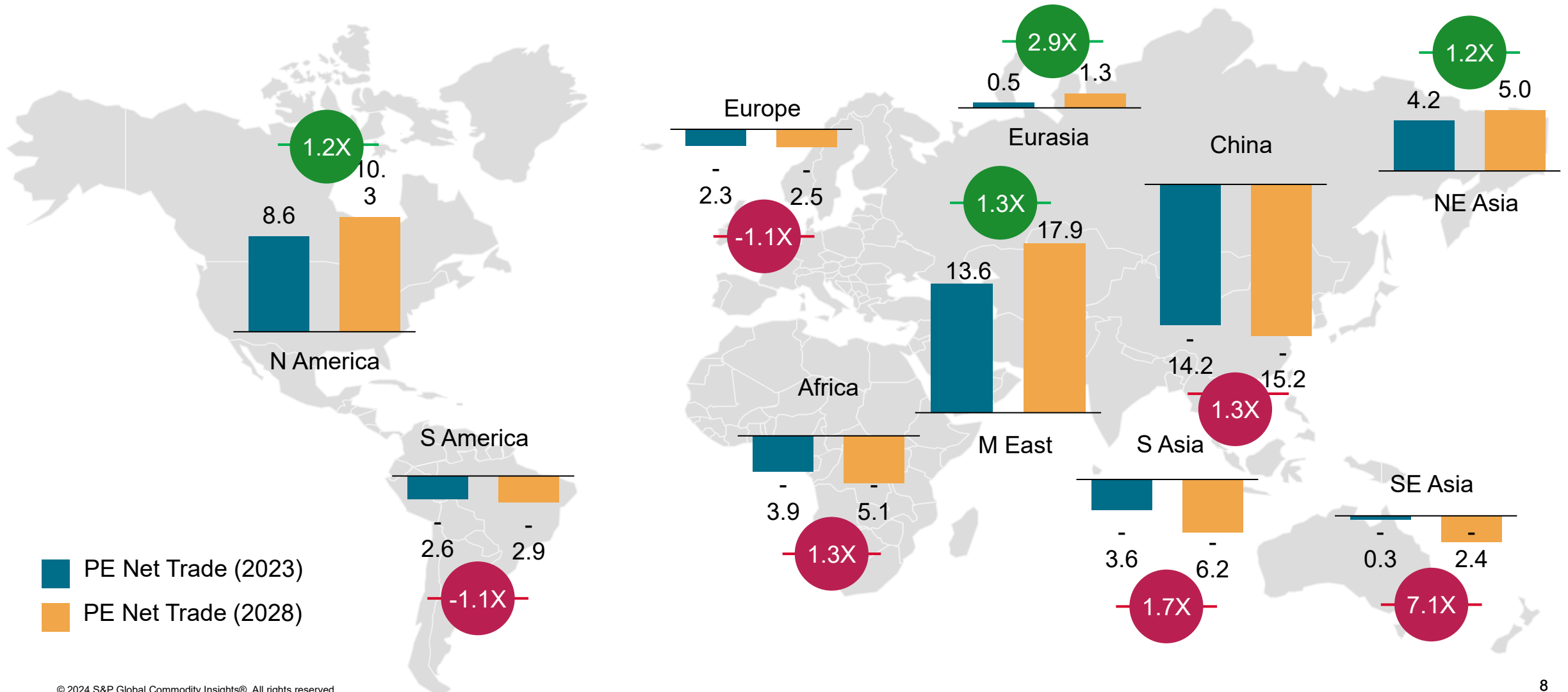
Ethane-based producers continue to enjoy a substantial cost advantage. Surplus capacity and weaker demand growth have driven Asia negative profits through 2027 unless the industry take solid rationalization action.

Integrated HDPE Cash Margin Trends (\$/mt)



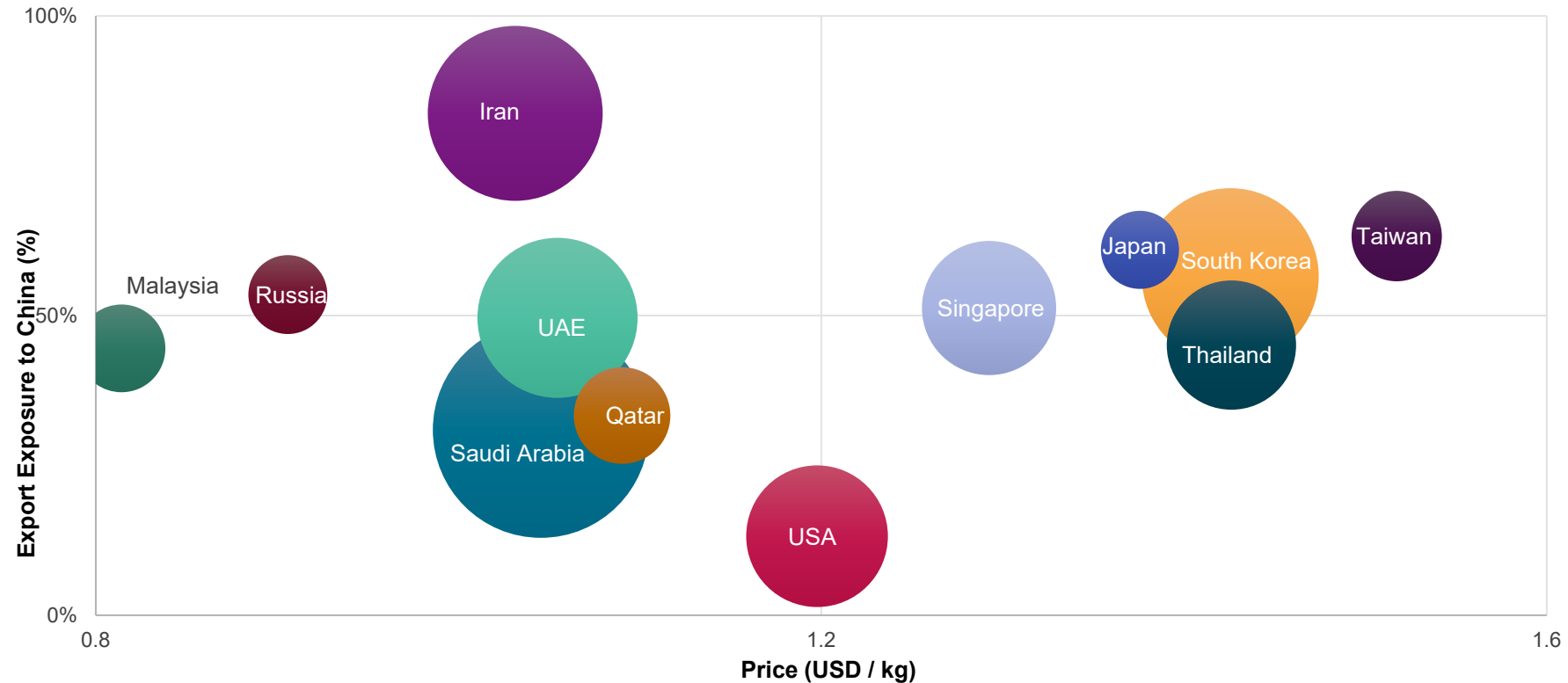
Source: S&P Global Commodity Insights.

China remains dependent on substantial PE imports even as its self-sufficiency improves; imports to South Asia and SE Asia have highest growth multiple!



China import market: Mid East countries leverage cost advantage to export large volume of commodity grades at competitive price while Northeast Asia plus Thailand and Singapore producers strive for special grade with high value

China Ethylene-Based Polymers Import Landscape 2019-2023



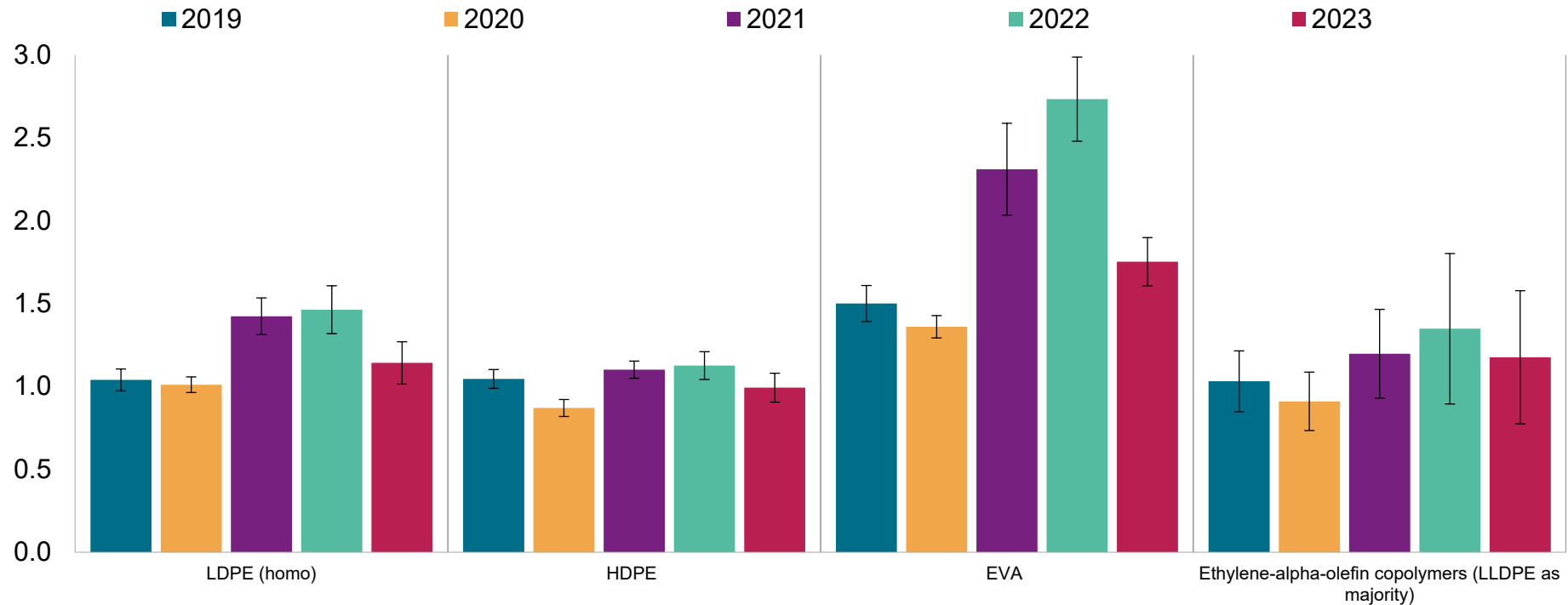
Ethylene based polymers under HS 3901. Bubble size represents export quantity to China (kt). Export Exposure to China (%) is the percentage of export quantity to China vs total export quantity

Data compiled May. 01, 2024

Source: S&P Global Commodity Insights.

China import market: EVA enjoyed the highest price while Ethylene-alpha-olefin copolymers (incl. LLDPE) has biggest price standard deviation, which reflect the production differentiation

China Imported Ethylene Based Polymers Price and Price Standard Derivation (USD/kg)



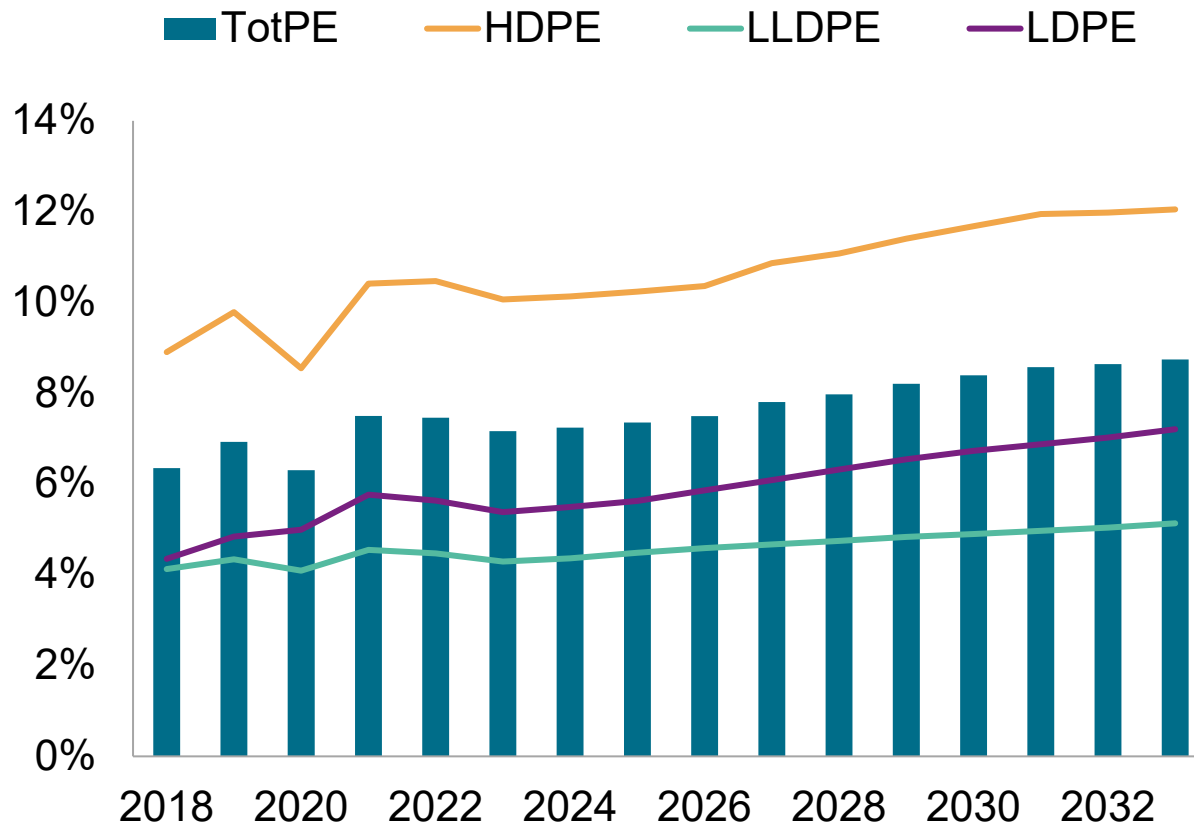
HS390110: LDPE (homo); HS390120: HDPE; HS390130: EVA; HS390140: Ethylene-alpha-olefin copolymers (LLDPE as majority)

Data compiled May. 01, 2024

Source: S&P Global Commodity Insights.

PE recycle volumes continue to grow but have slowed during the downcycle. National policies are needed to provide next the step-change improvement

Global recycle PE demand (%)



Source: S&P Global Commodity Insights

- Virgin demand growth is lower but remains robust; “peak polymer” not seen on horizon
- Virgin PE prices became more competitive in the downcycle impacting recycle rate growth
- Expectation is that the United Nations global plastics treaty (2024) will offer a roadmap to national governments for next improvements

Sustainability and Power of Chemistry Drive Polyethylene Industry Innovation and Investment

Key challenge: Can the cost of an innovative low carbon solution achieve acceptable return

Sustainability

Decarbonize ethylene & polyethylene production

E-furnace naphtha cracking

Use renewable and circular feedstocks

Enhance polyethylene recyclability and recycling rate

Design for Recyclability: All-PE materials to replace multi-material packaging

Enable energy transition via innovative ethylene-based polymers

Polyolefin elastomers (POE) as solar panel encapsulation

UHMWPE as lithium-ion battery separators

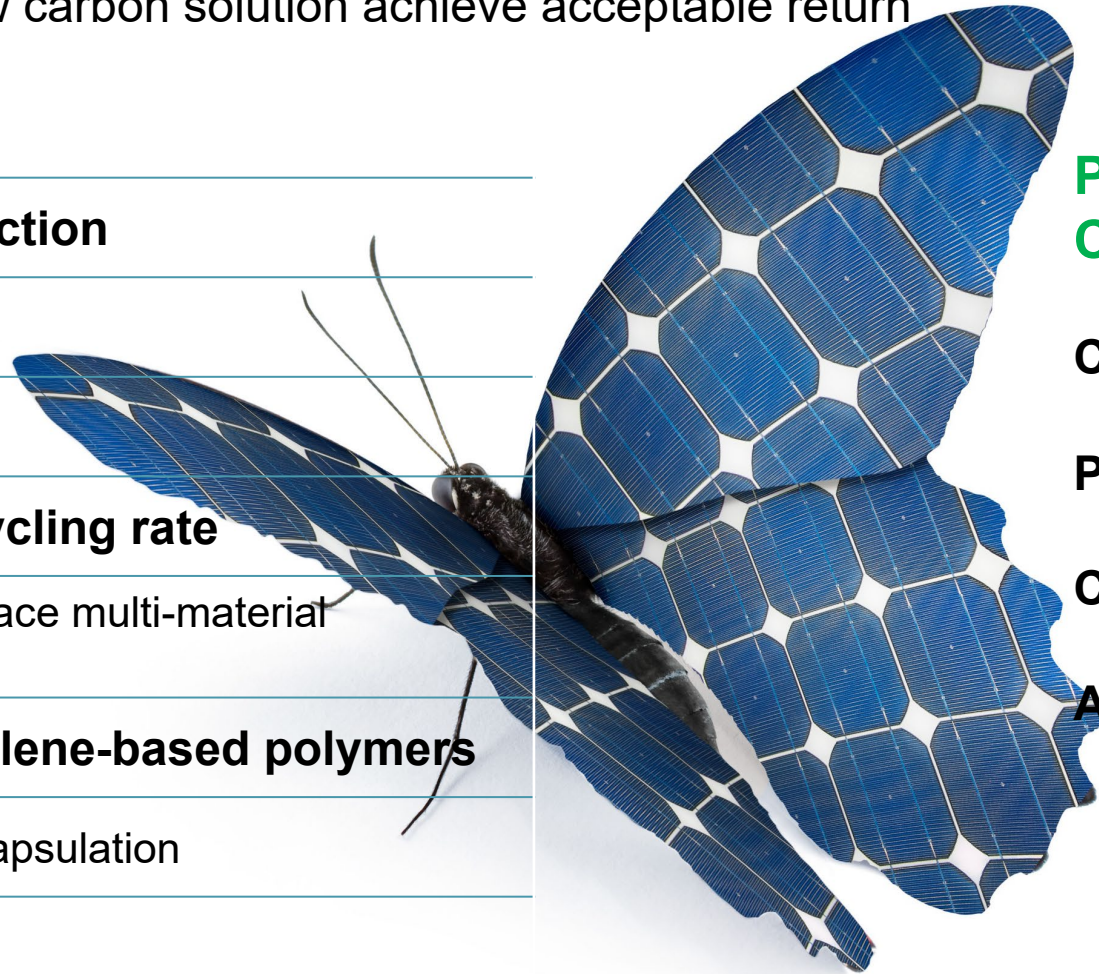
Power of
Chemistry

Catalysts

Processes

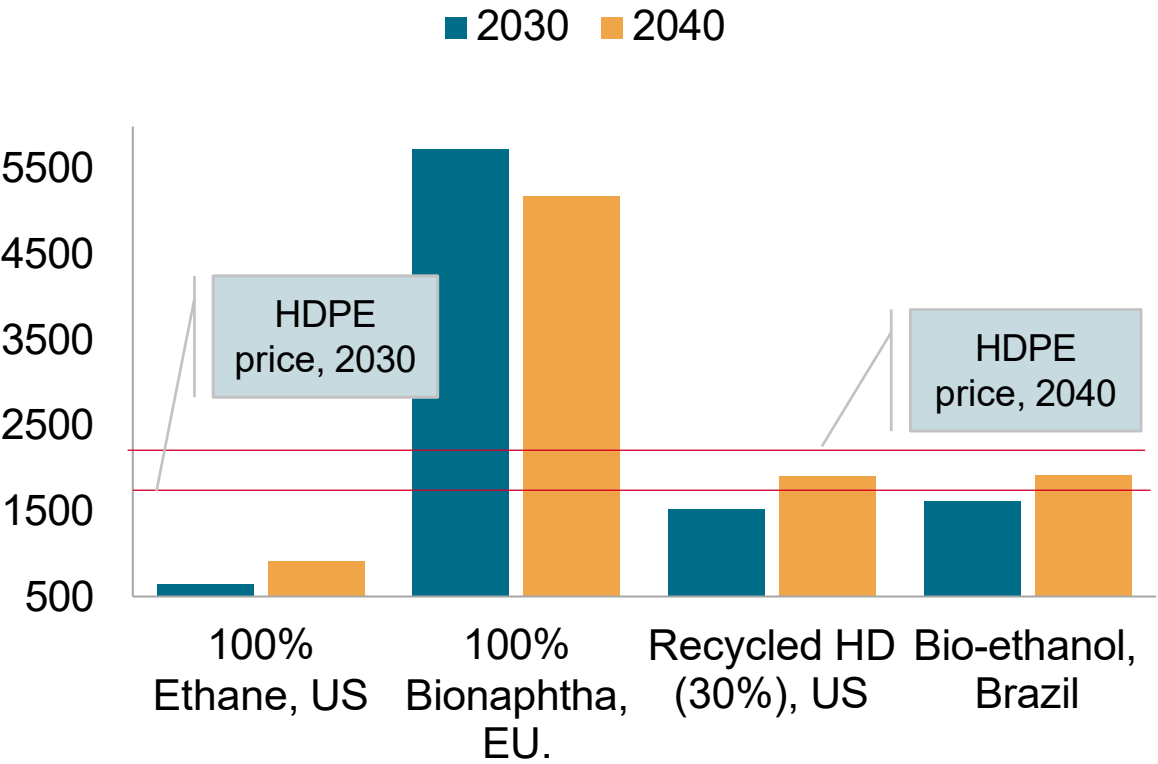
Comonomers

Applications



PE projects based on sustainable resins are estimated to have higher costs than conventional processes

HDPE cash cost of production by technology



Projects	Premium range
Hypothetical cracker (100% bionaphtha)	High
Bioethylene from ethanol (Braskem project), Brazil	Medium
Recycled HDPE (30% recycled content)	Medium

To become viable, sustainable resins-based PE projects require an additional premium to conventional product prices

Data compiled Aug. 22, 2023.
 *Ethanol was considered at market price.
 Depreciation is not considered in the cash cost calculations and ethylene is transferred at cash cost for HDPE production.
 Source: S&P Global Commodity Insights.

PE resin producers team up with converters and brand owners to launch fully recyclable mono-material packaging solutions

ExxonMobil

Braskem 

سابك
SABIC

DOW®

NOVA
Chemicals®

بروج
Borouge 

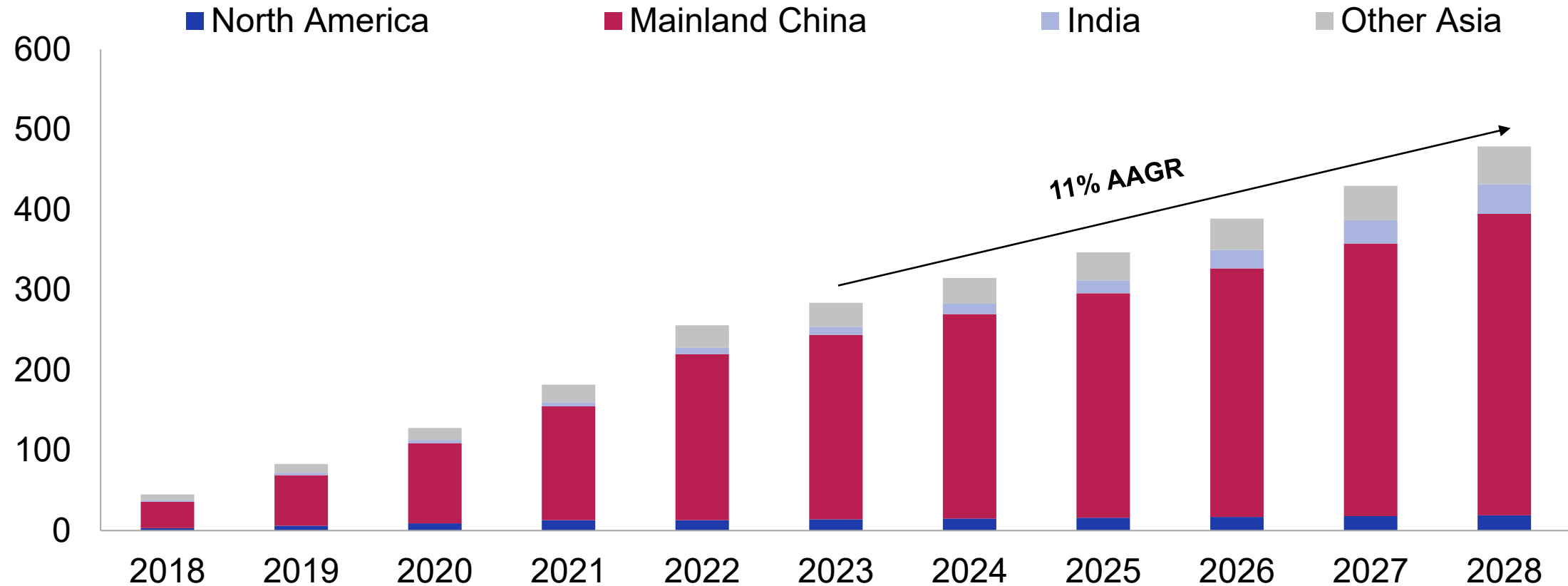
INEOS
Polyolefins

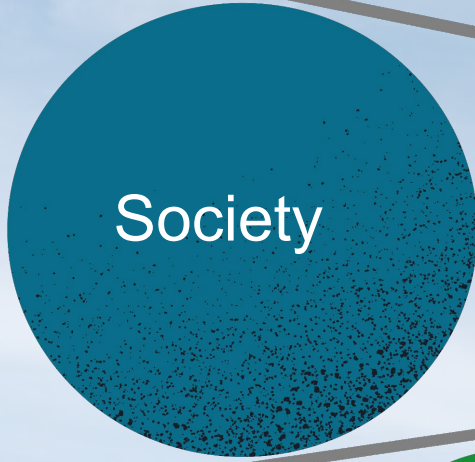
LYB LyondellBasell

 **BOREALIS**

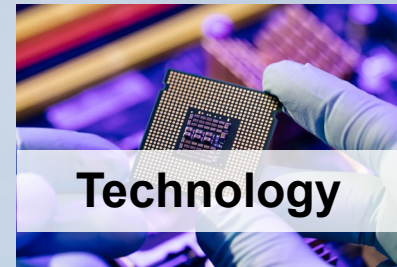
POE consumption for solar PV encapsulants growing fast, pulled by Mainland China

POE consumption for solar PV encapsulants (tmt)





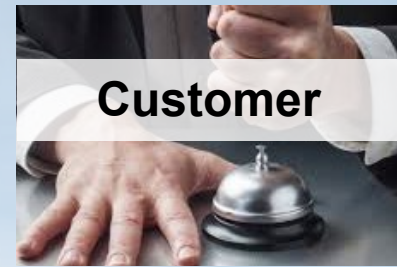
Trust the...



Technology



Market



Customer



**Informed
Regulations**

Over time, the PE industry achieves significant advances and success when these pieces work together