



The Global Petrochemical Industry Landscape

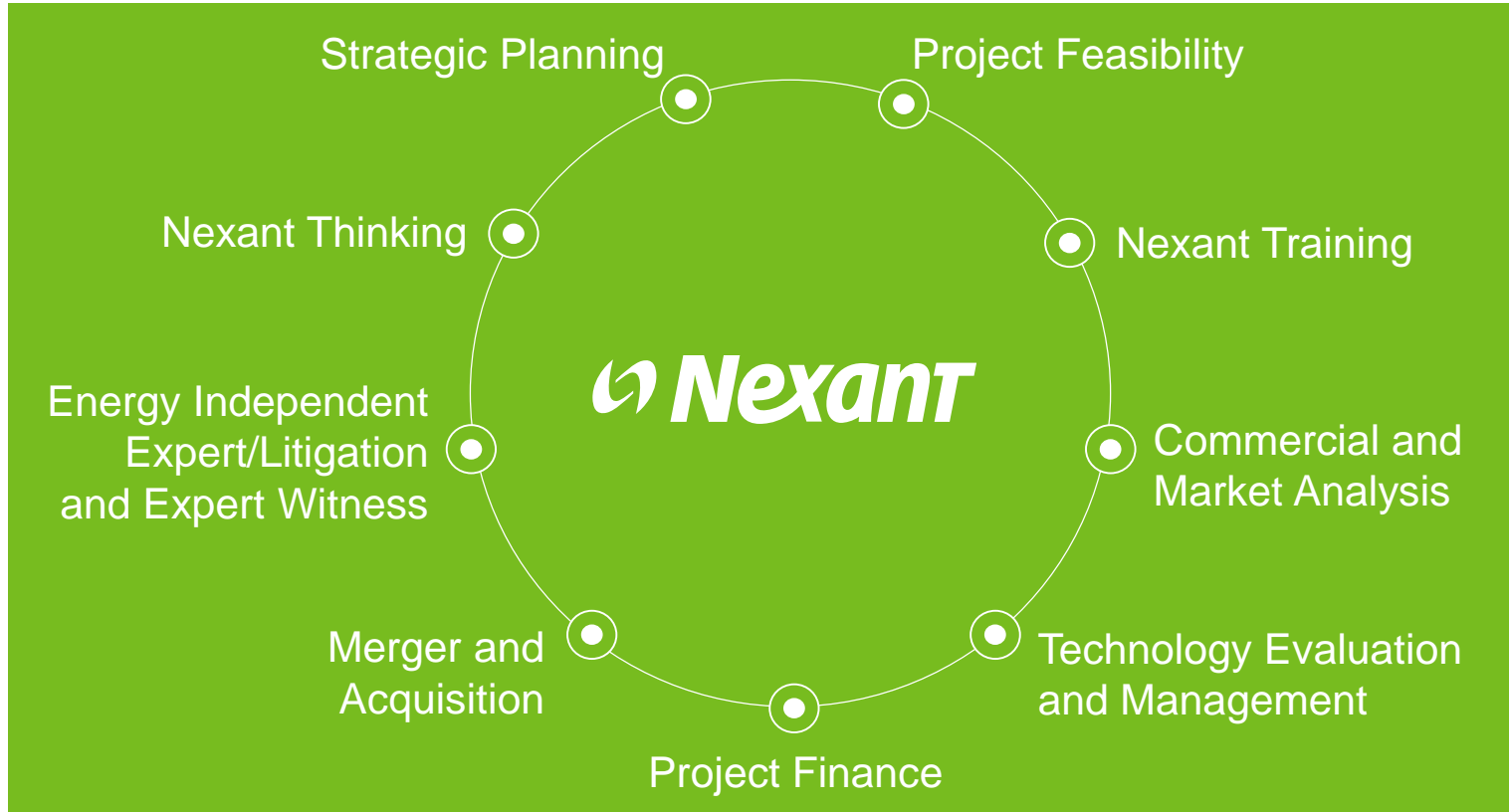
Leaders of Tomorrow

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Nexant Energy & Chemicals Advisory

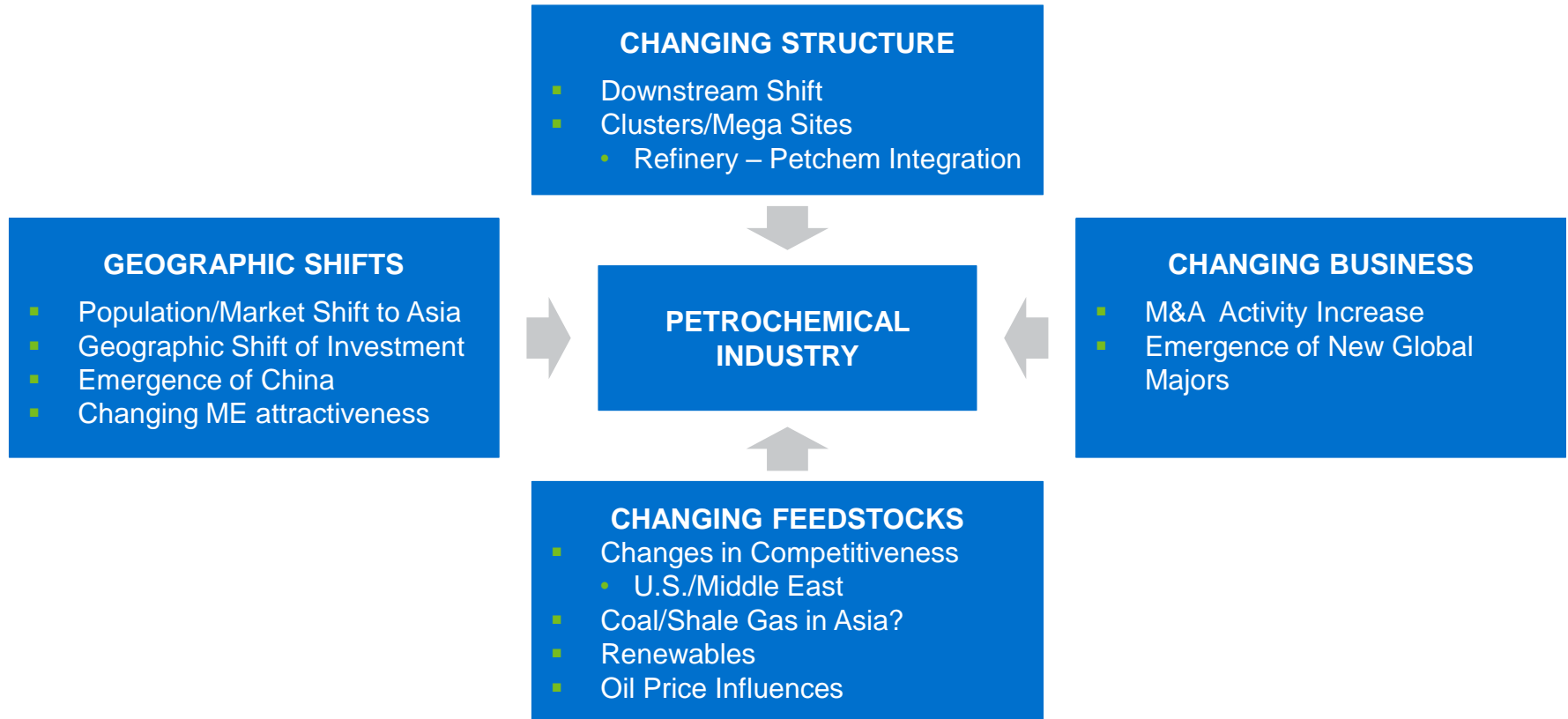


The industry has experienced huge change over the last 20 years or so as Asian and Middle Eastern producers increasingly dominate

- Significant crude oil price volatility
- Three major petrochemical margin fly-ups
- Size of industry tripled
- Massive new capacity additions
- China's share of petrochemical consumption has grown from 3 percent to nearly 20 percent
- Feedstock driven shift to the Middle East
- Emergence of private equity
- Significant portfolio restructuring by many of the original players
- Commoditisation of many specialties and "grades"
- Diversification of feedstock base: shale gas, coal, renewables



Change is the only constant



That Change is Continuing Today!

China slowdown:

- Knock on effect throughout Asia and further afield

Drop in Oil price:

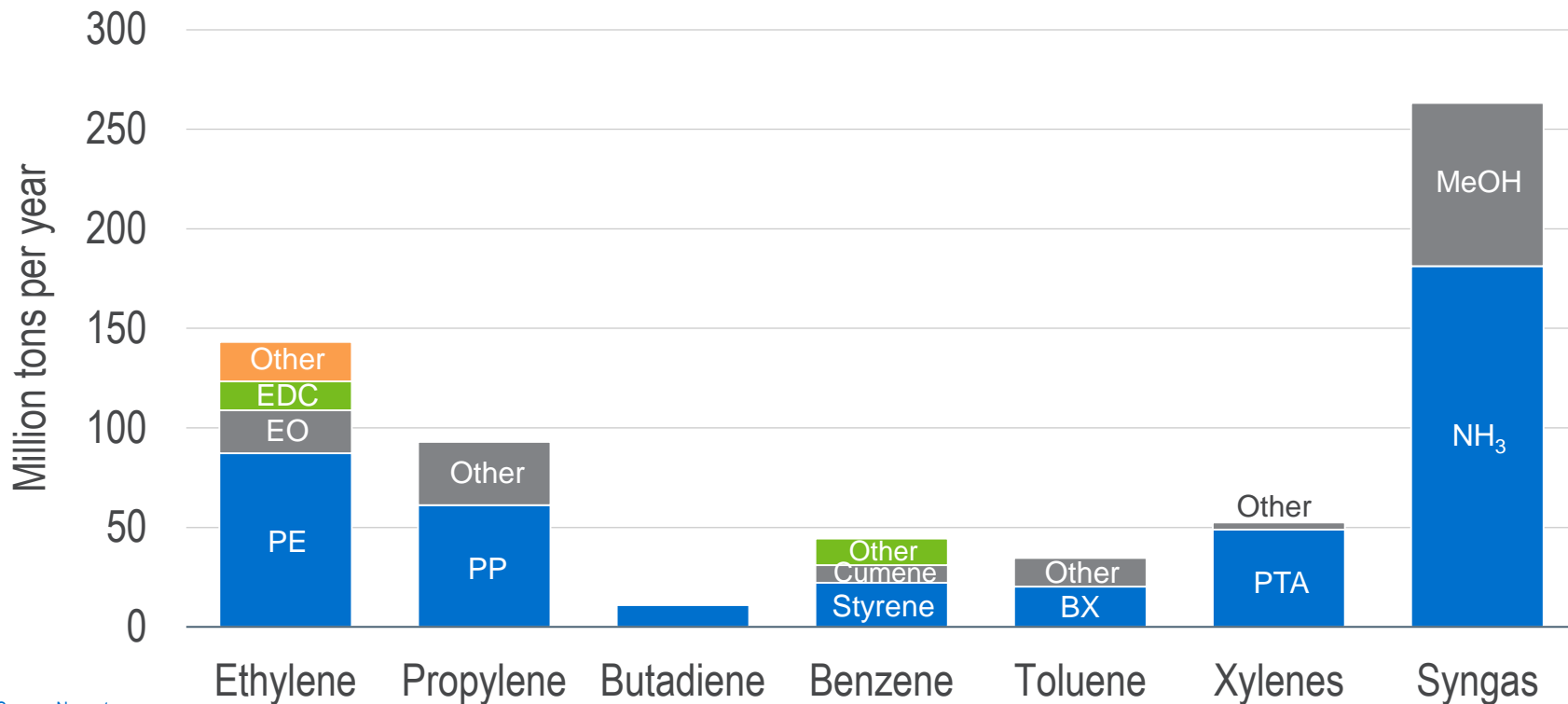
- Impact on petrochemicals
- Increased competition with shale oil/gas

Changing Geopolitical landscape:

- Limited opportunities to increase supply from advantaged gas
- More emphasis on heavier feedstock slates/refinery integration; implications for by-products
- Other regions compete without cheap feedstock so business must look to different sources of competitive advantage
- Greater integration and downstream investments
- Potential emergence of Iran as a major player

What are the effects of these changes on your business?

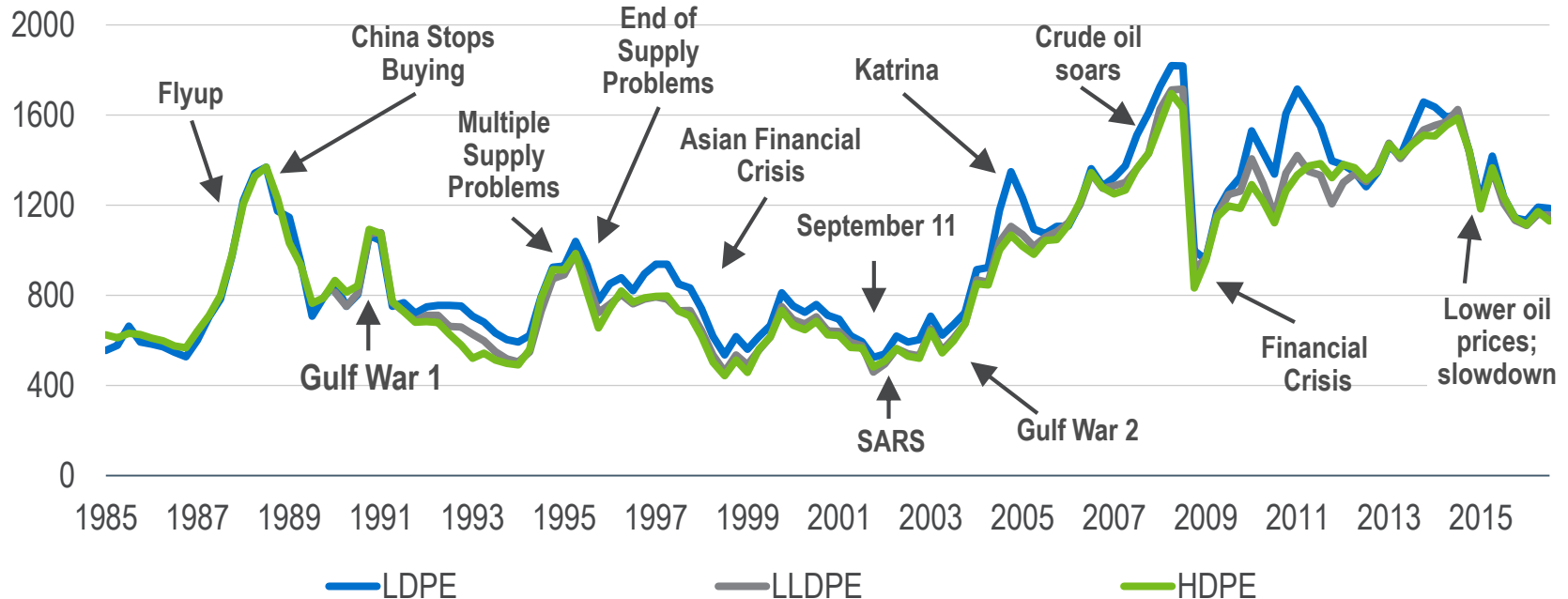
The seven basic building blocks – relative sizes of the main derivatives, 2015



Source: Nexant

Global events and China impact polyethylene prices

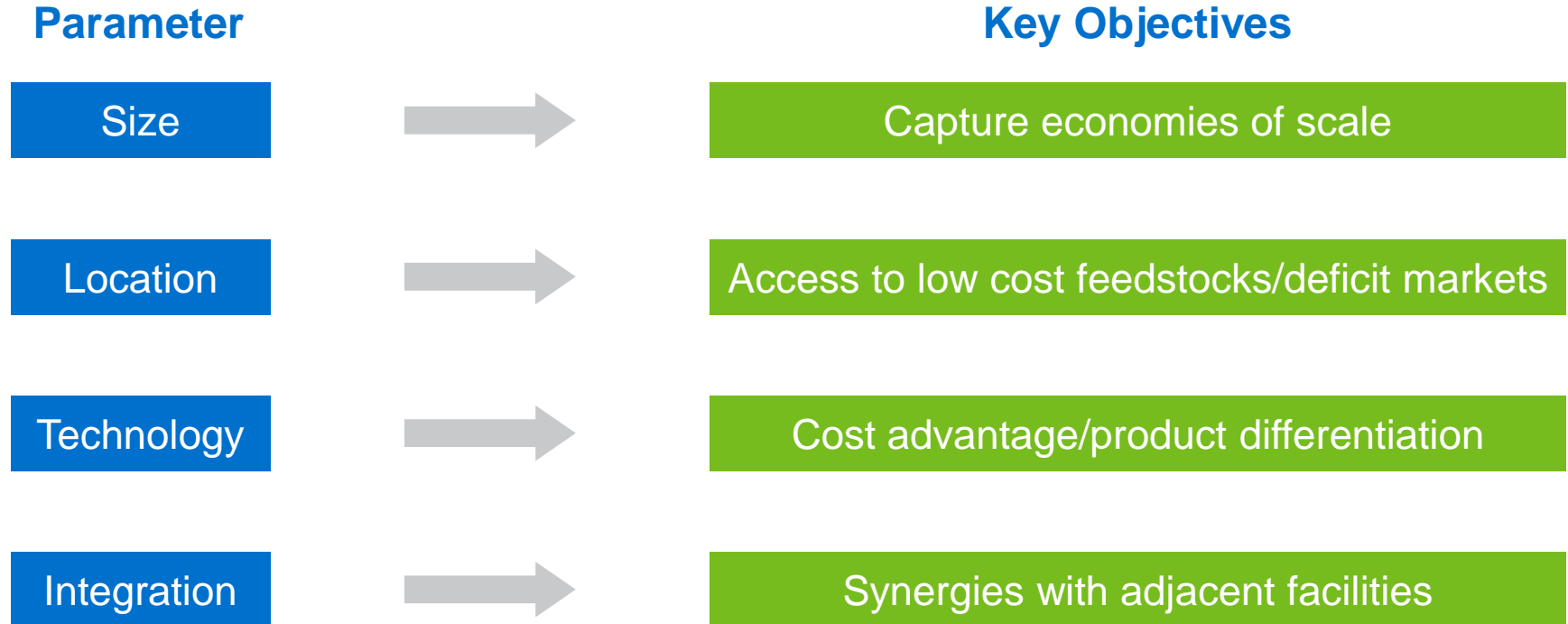
Asian PE Prices, (dollars/ton)



- Planned Outages – Turnarounds
- Unplanned Outages – Explosions, Hurricanes, etc.

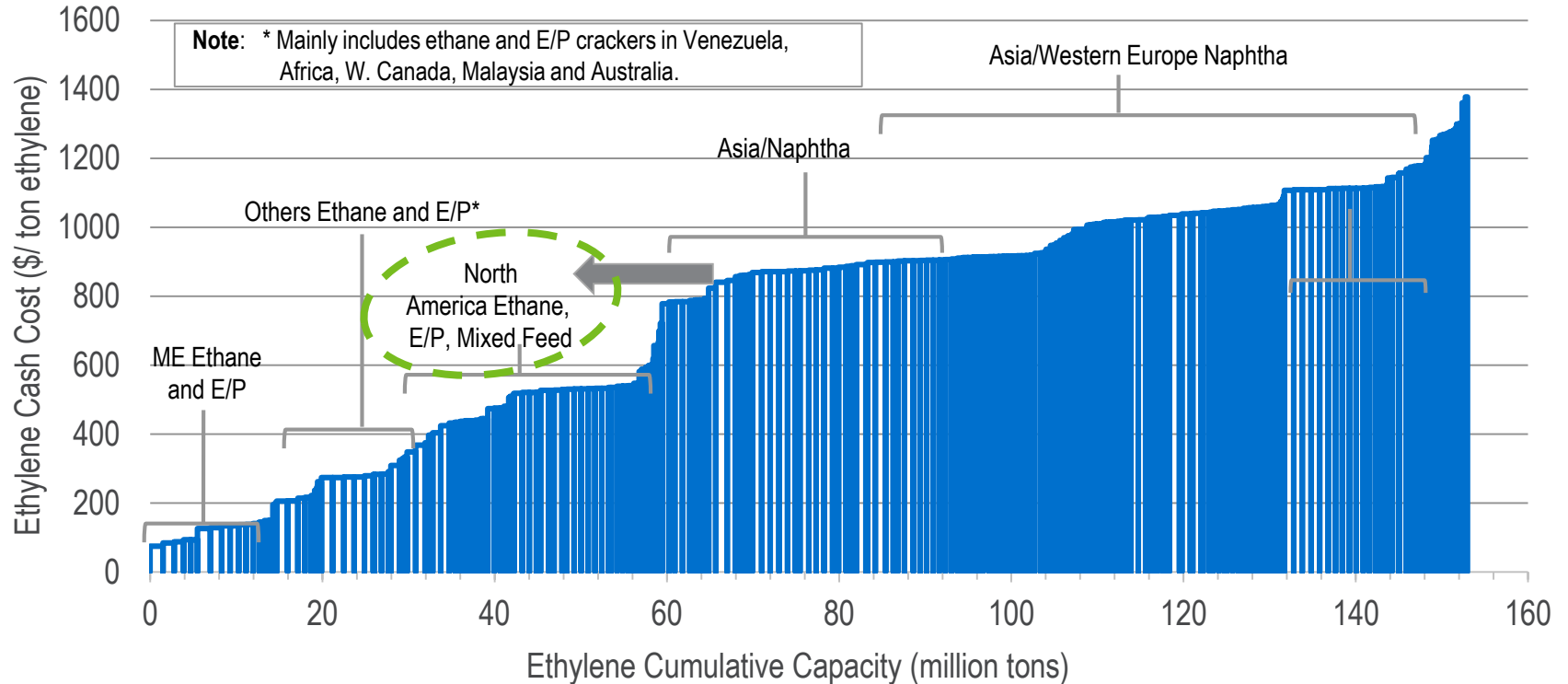
Source: Nexant

Commodity chemicals competitiveness criteria



The shale gas effect has resulted in a structural change in global ethylene competitiveness. Middle East has strong advantage; limited by reduced new low cost feedstocks

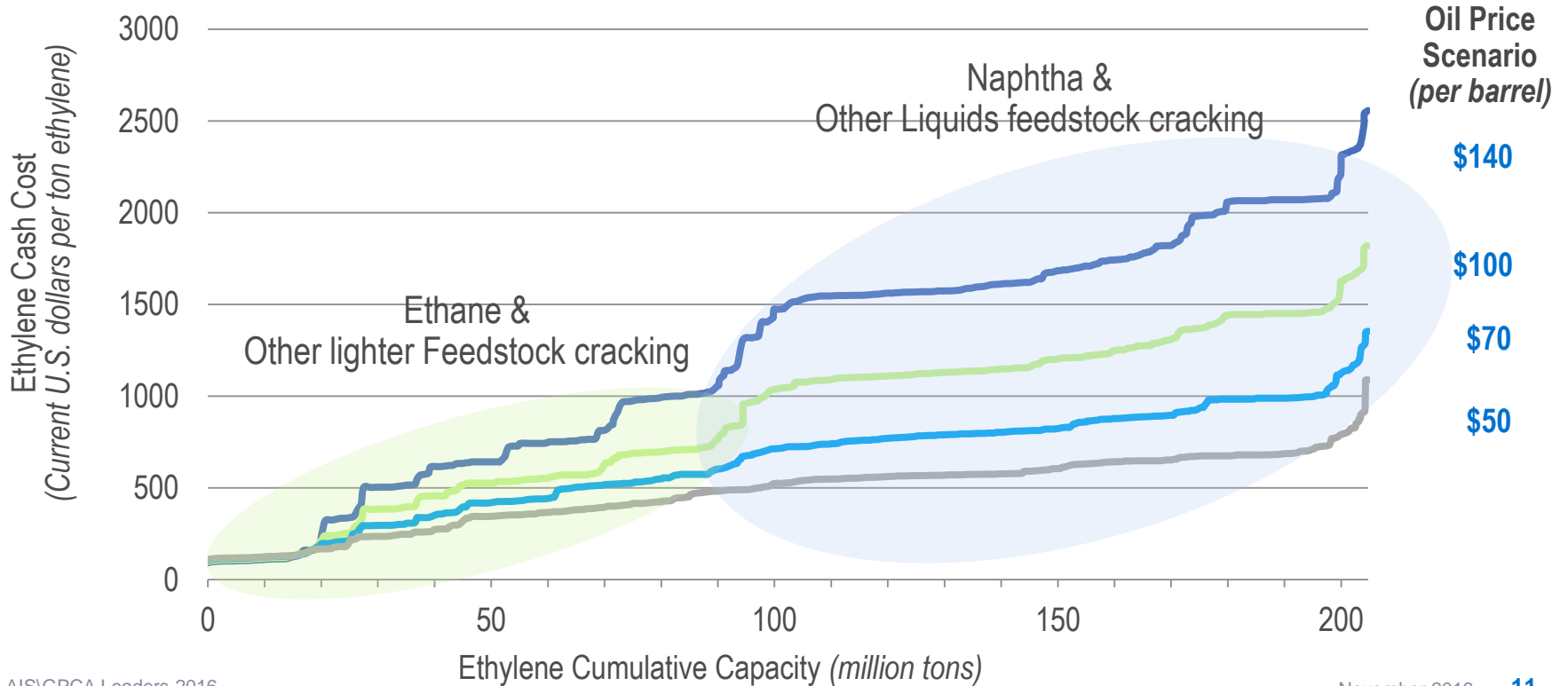
Global Ethylene Cost Curve, 2014



Lower oil pricing resulting in a significant improvement in naphtha cracking competitiveness



Global ethylene production cost curves at different crude oil scenarios (future)



Regional petrochemicals trends – Changing dynamics but familiar themes

U.S.

- Lighter feedstocks
- Export markets
- Capital costs
- Product differentiation

- Heavier feedstocks
- Export markets
- Integration
- Product differentiation

China

- Diversified feedstocks
- Economic growth
- Environmental issues
- Product differentiation

What can we expect to see in the Middle East over the next decade?

Some industry consolidation in bulk petrochemicals markets. The sector is expected to be dominated by only relatively few companies longer-term. Continued cyclicity

Middle East petrochemical base is set to be broadened further. Product diversification will be supported by foreign technology partners and utilisation of heavier feedstocks

Significant M&A activity to continue:

- Oil & gas rich players in the Middle East likely to acquire further businesses in other geographies

Significant feedstock changes:

- Limited opportunities to increase supply from advantaged gas
- More emphasis on heavier feedstock slates/refinery integration; implications for by-products
- Other regions compete without cheap feedstock so business must look to different sources of competitive advantage
- Greater integration and downstream investments

Significantly higher domestic demand for products



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