North American Resin Markets Trends

Joel Morales, Director Polyolefins North America
Western Plastics Association
January 7, 2014

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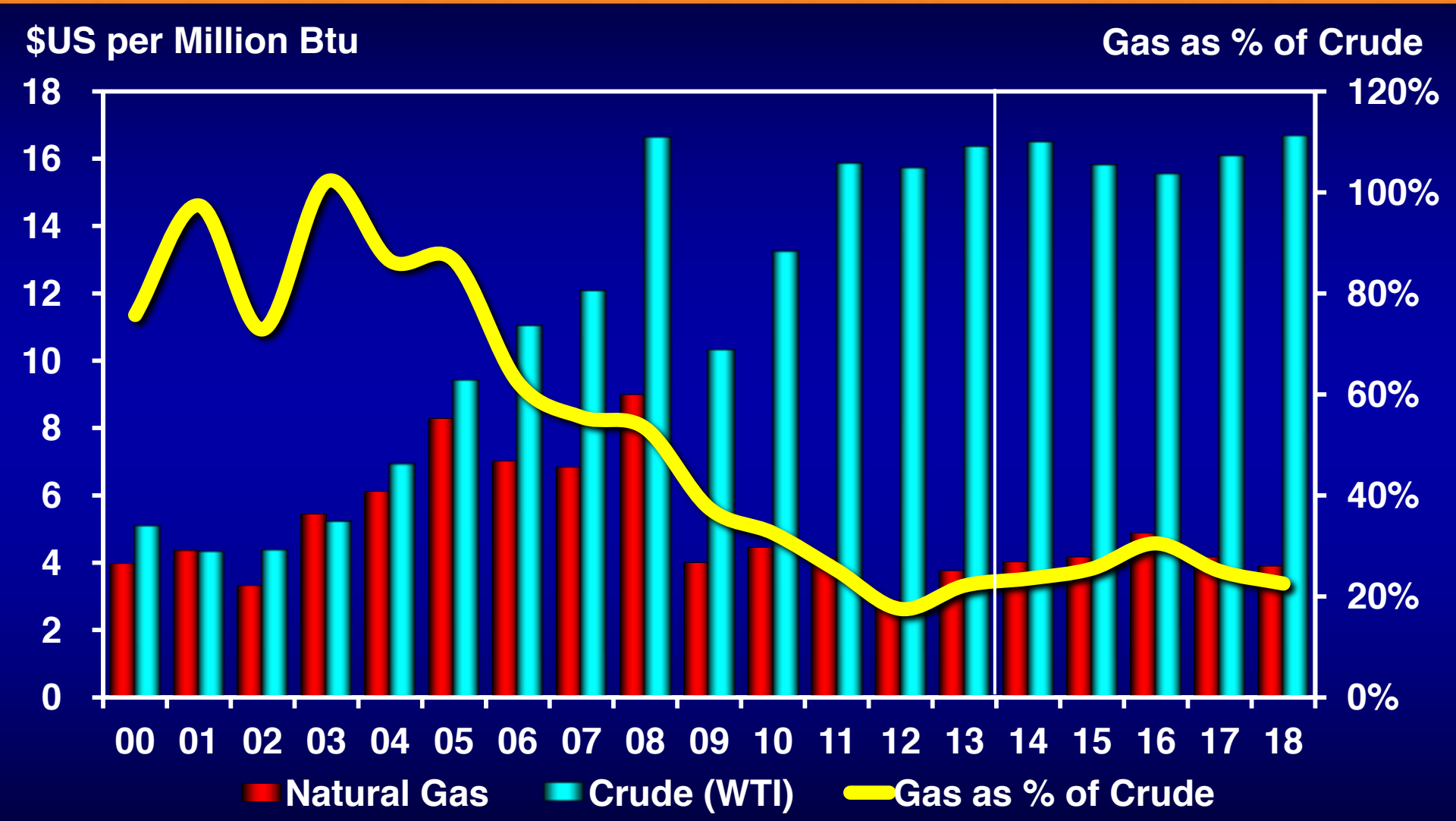
Energy & Economy

North America Energy Price Trends



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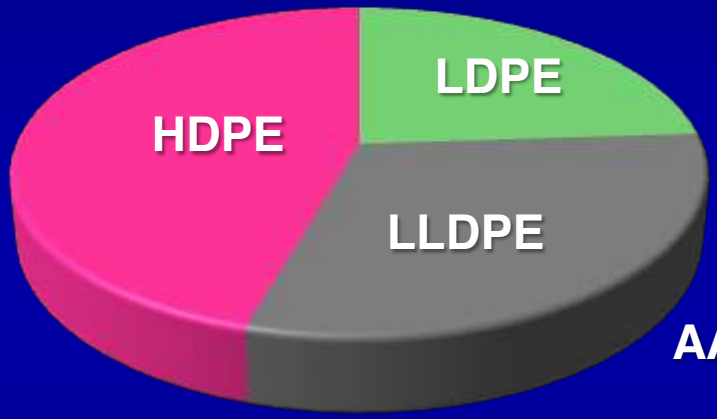
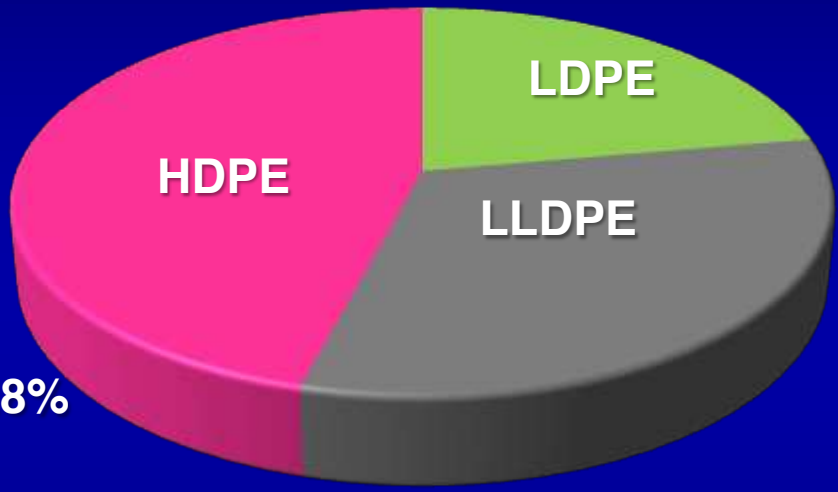
Polyethylene Update

Polyethylene: Global Demand Growing

2013 Global Demand



2018 Global Demand



AAGR 13-18 = 4.8%

Growth Forecast = 1.3 x GDP of 3.6%

Total Global Demand = 81.5 Million Metric Tons

Total Global Demand = 102.9 Million Metric Tons

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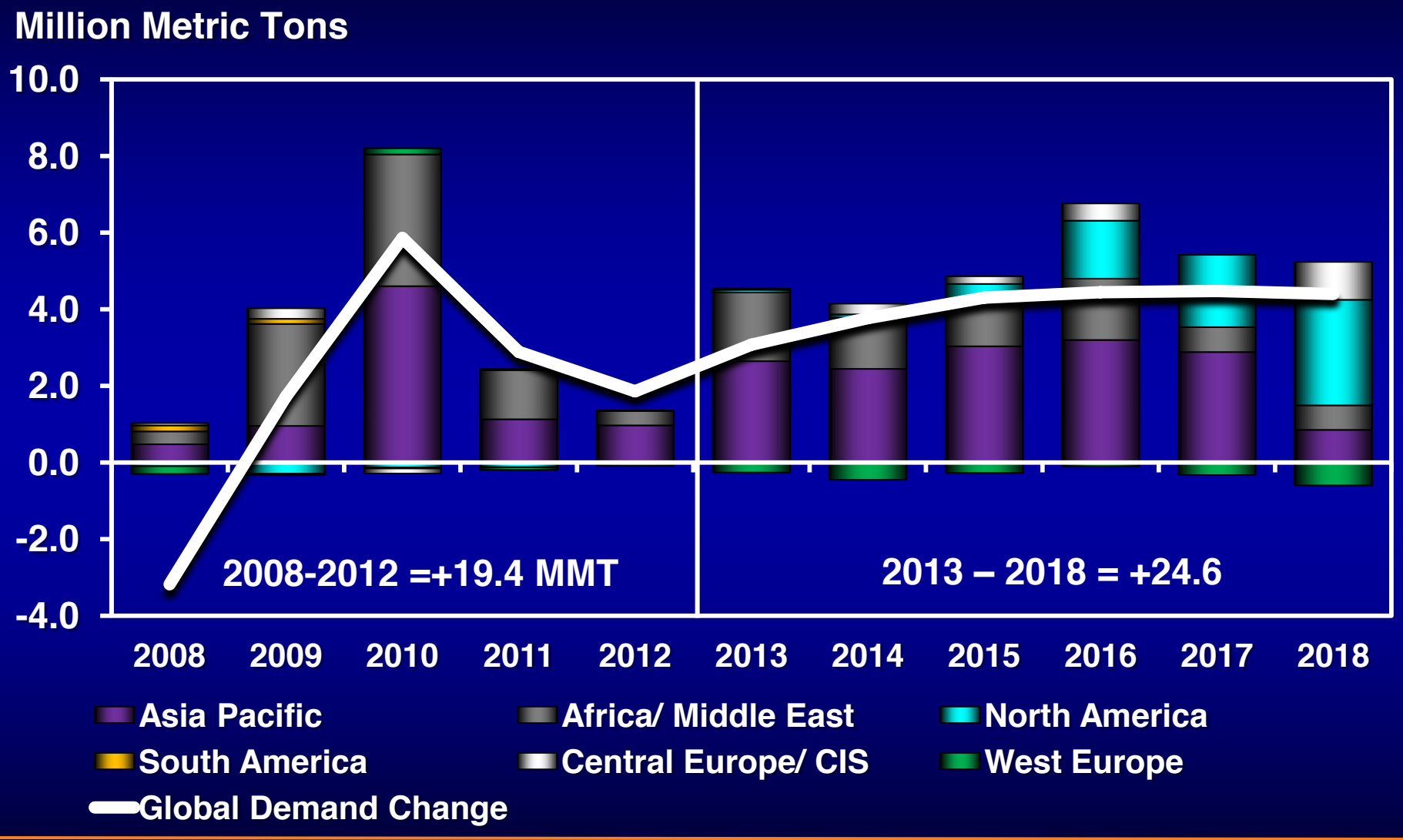
Polyethylene Capacity Changes



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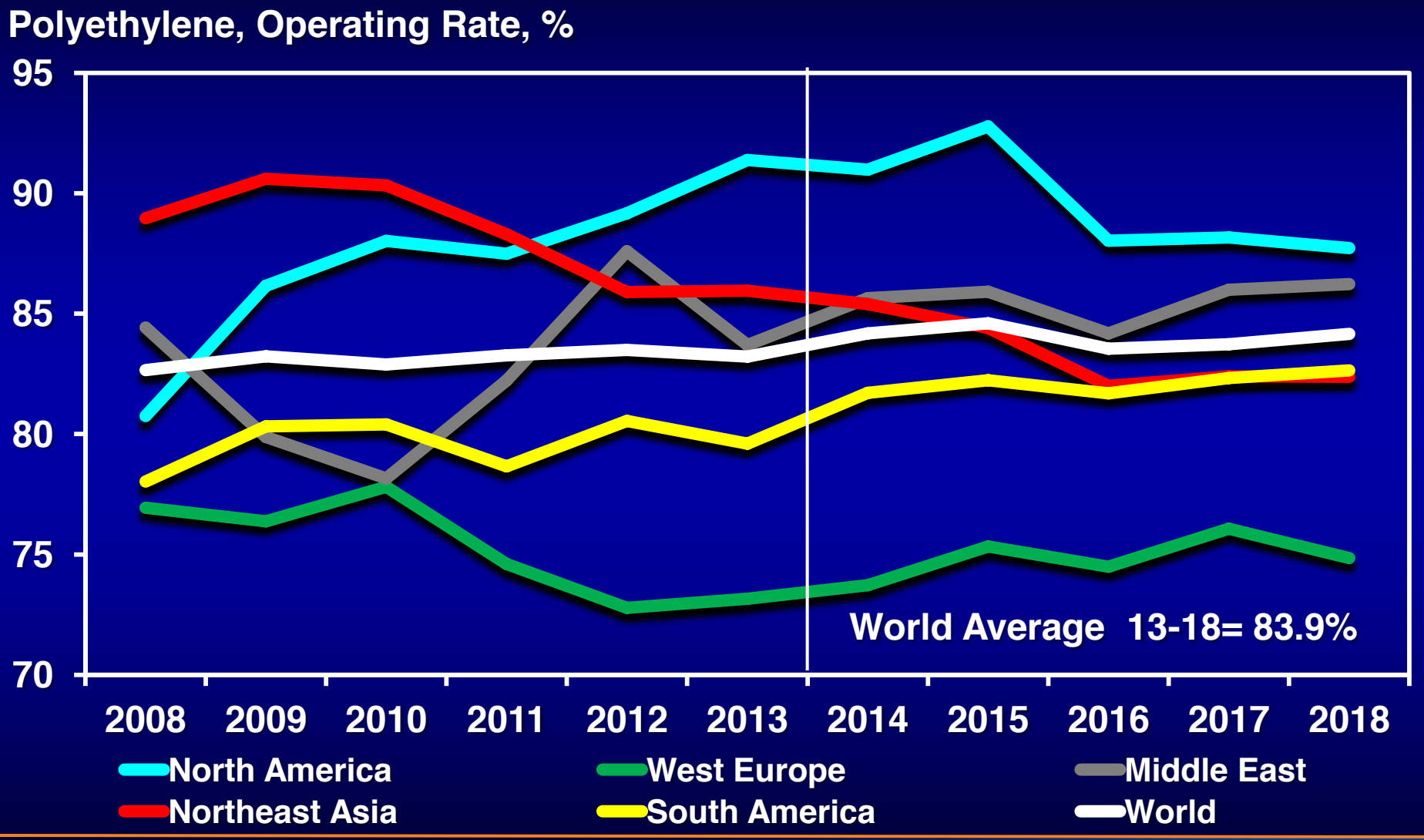
Global Operating Rates – Regional Advantages



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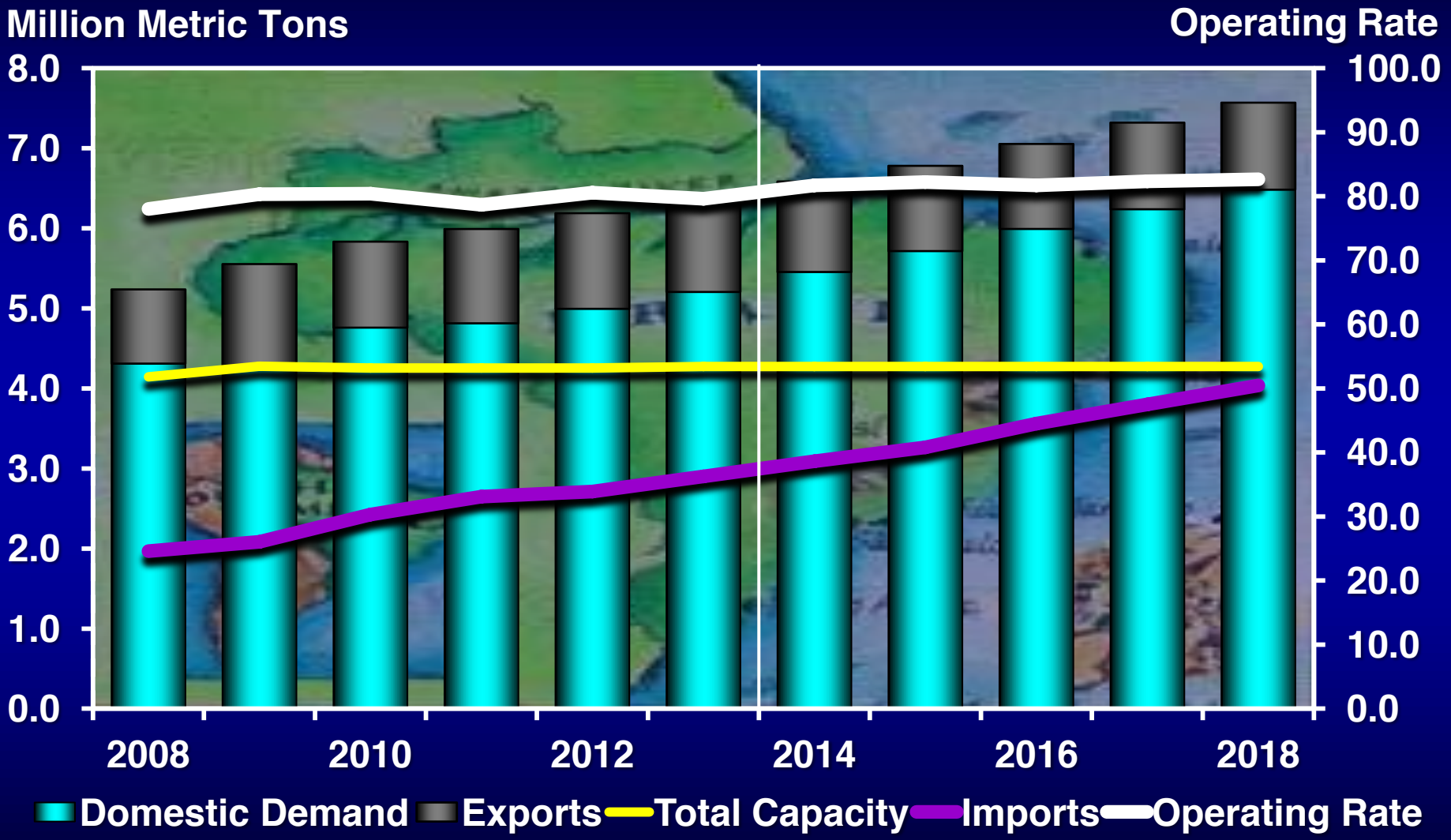
South America: Imports Increasingly Important



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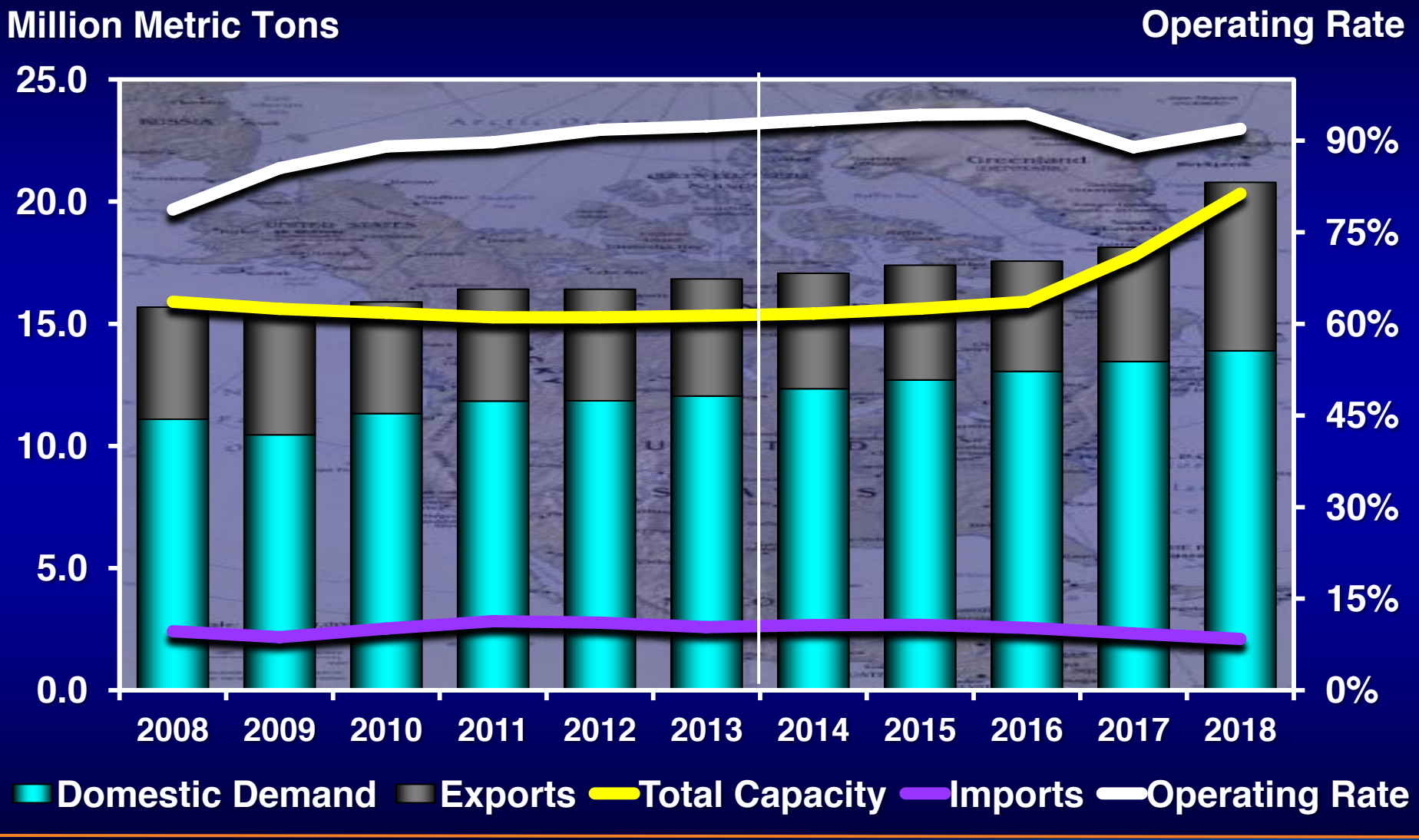
North America Capacity Expanding



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Shale Drives North America PE Projects

North America - New Polyethylene Projects							
Company	Location	Country	LDPE	LLDPE	HDPE	Resin Type TBA	Startup
2012-2013							
Equistar	LaPorte, TX	United States		23 (4)			Q4 2012
Equistar	Morris, IL	United States		45 (4)			Q4 2012
2014							
Equistar	Bay City	United States			100 (6)		Q2 2014
2015-2016							
Ineos Sasol	Deer Park, TX	United States			475 (7)		Q2-Q3 2015
Braskem Idesa	Nachital	Mexico	300 (2)		750 (6,7)		Q3-Q4 2015
Nova	Joffre	Canada		450 (4)			Q4 2015
Equistar *	Corpus Christi, TX	United States				500 (3)	2016
Dow	Freeport, TX	United States	400 (2)	650 (5)			Q4 2016
2017							
ExxonMobil	Mont Belvieu, TX	United States		650 (4)	710 (4)		Q2 2017
Formosa	Point Comfort, TX	United States	300 (2)				Q3 2017
CPChem	Sweeny, TX	United States		500 (5)	500 (7)		Q3 2017
2018-2019							
Sasol	Lake Charles, LA	United States	420 (2)	450 (4)			Q3 2018
Nova*	Sarnia	Canada		430 (3)			Q3 2018
Shell*	Marcellus	United States		500 (3)	1000 (4,7)		Q3 2019
Ascent (Braskem)*	Marcellus	United States				1500 (3)	2019
Totals, 000's MT			**1420**	**3698**	**3535**	**2000**	**10,653**

*Reported projects not fully verified or approved and not included in IHS capacity database.
**Processes: (1) Autoclave, (2) Tubular, (3) TBA, (4) Gas Phase, (5) Other, (6) Ziegler, (7) PF Loop

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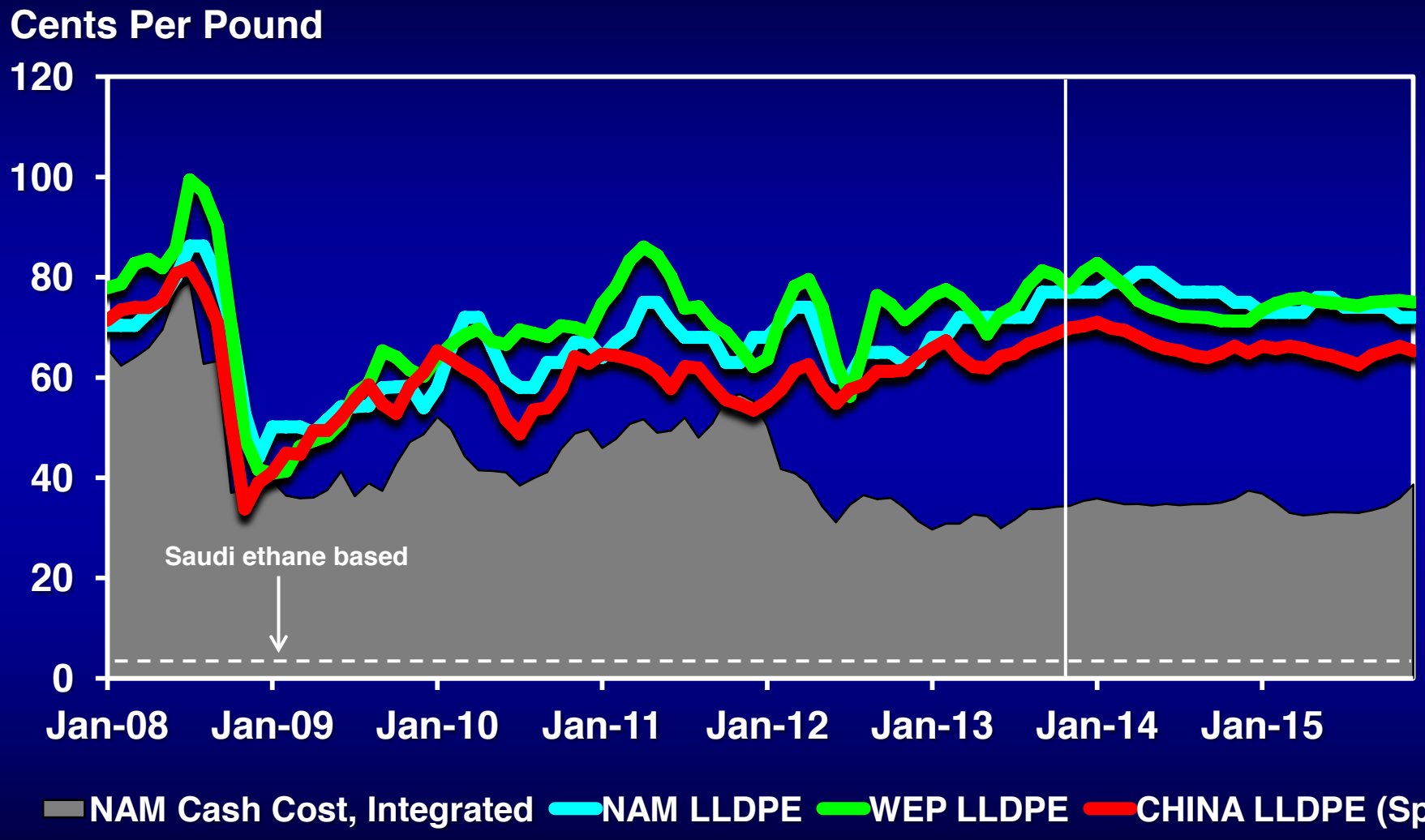
Economics by Region: Price Forecast



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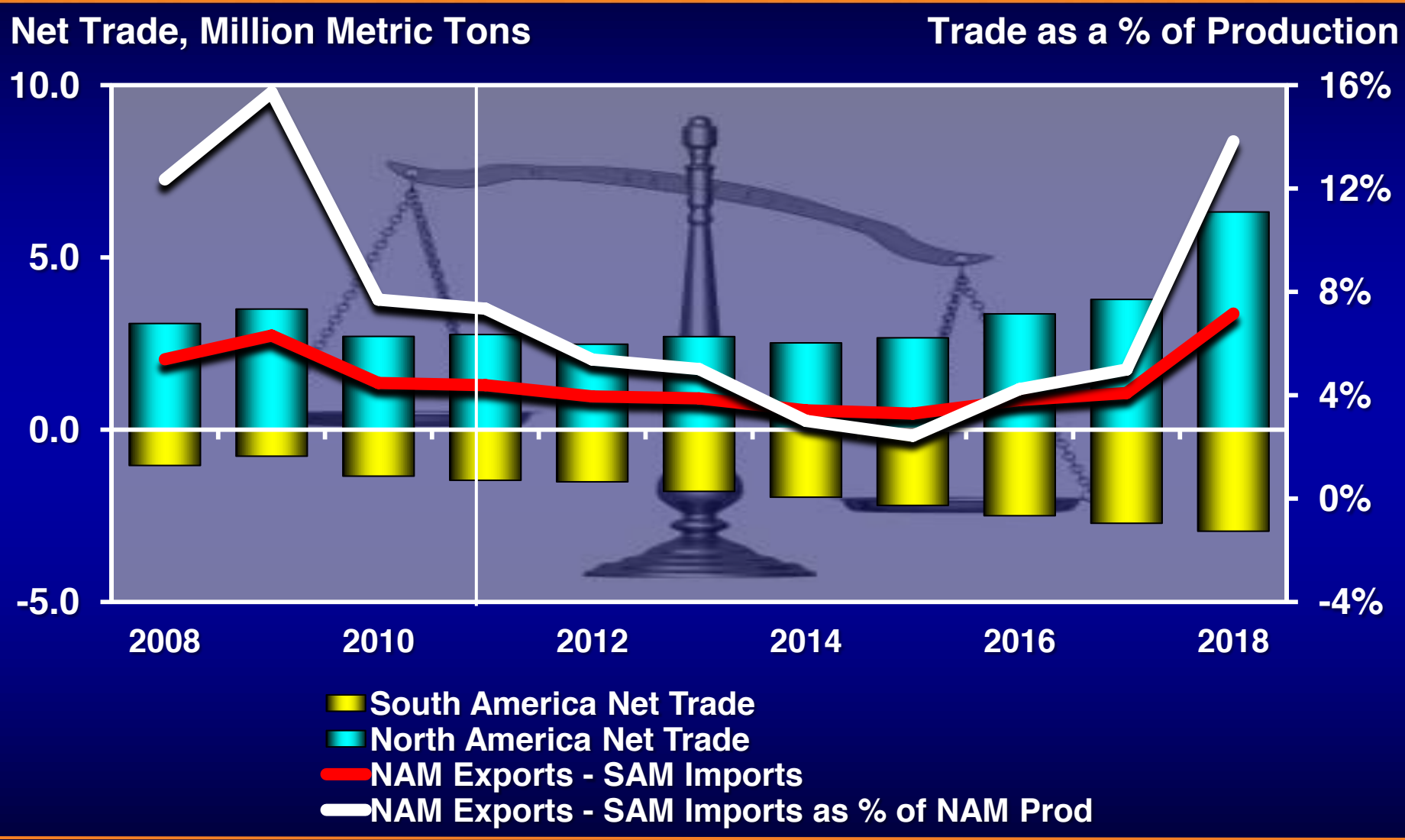
All PE - America's Trade Balance



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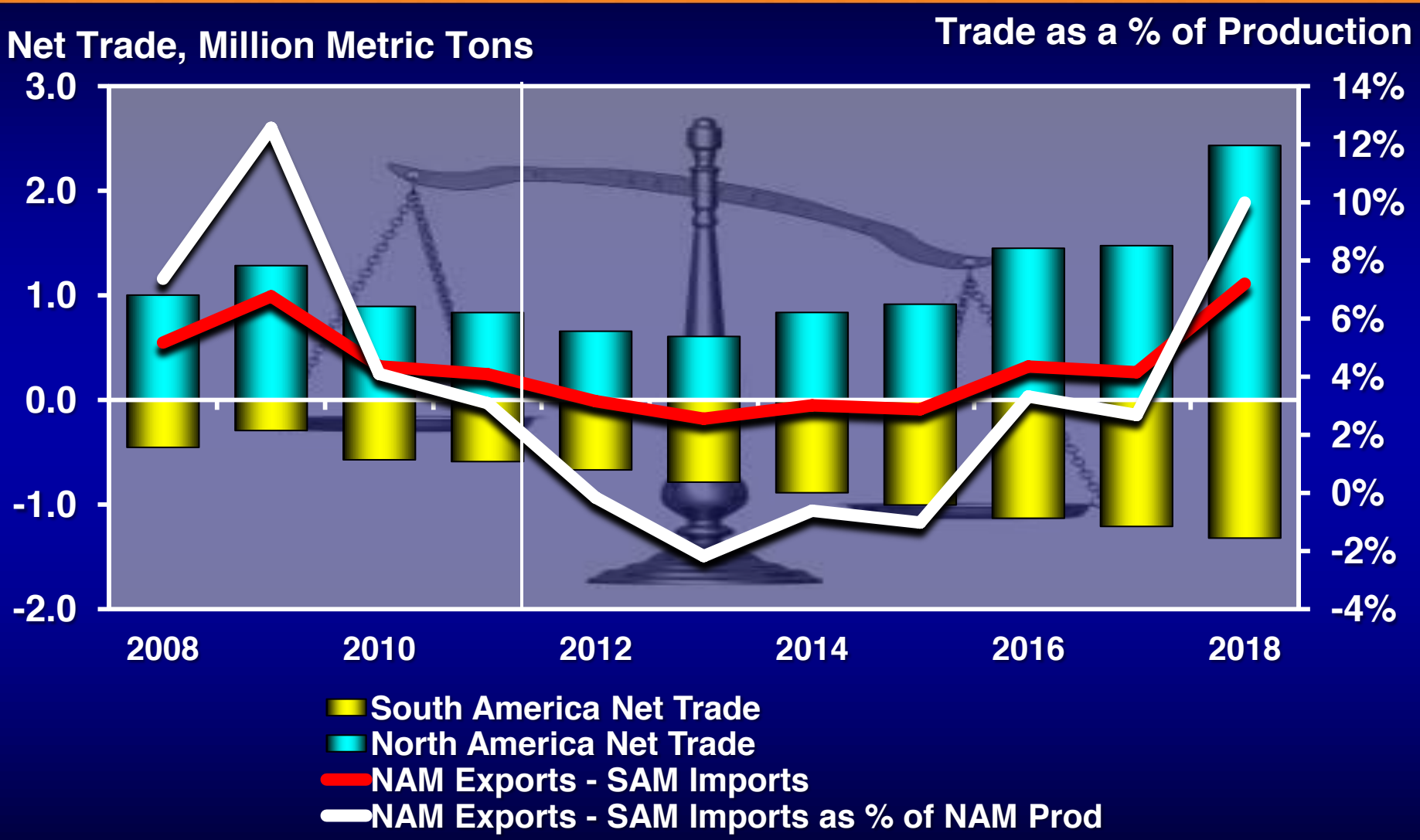
HDPE America's Trade Balance



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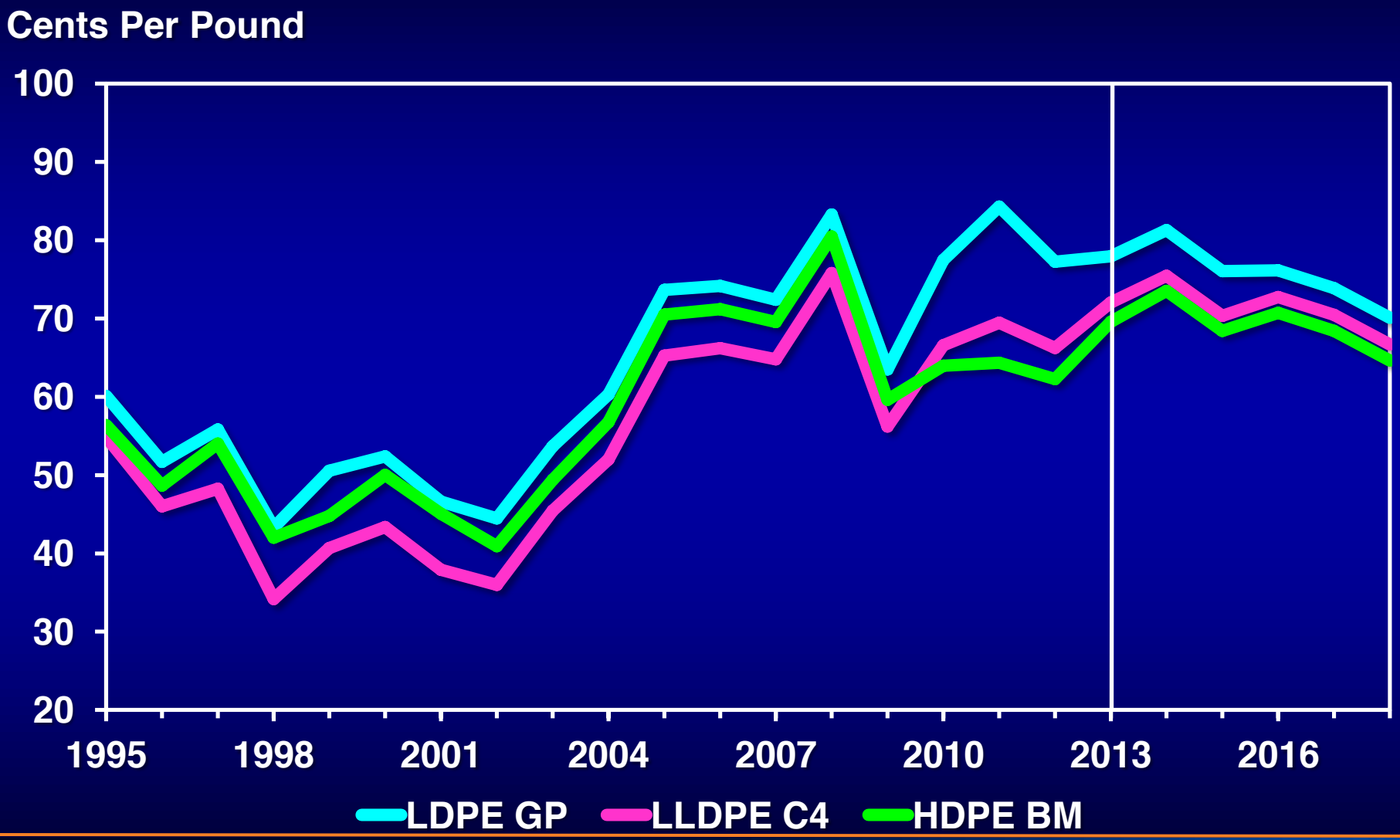
North America PE Contract Discounted Prices



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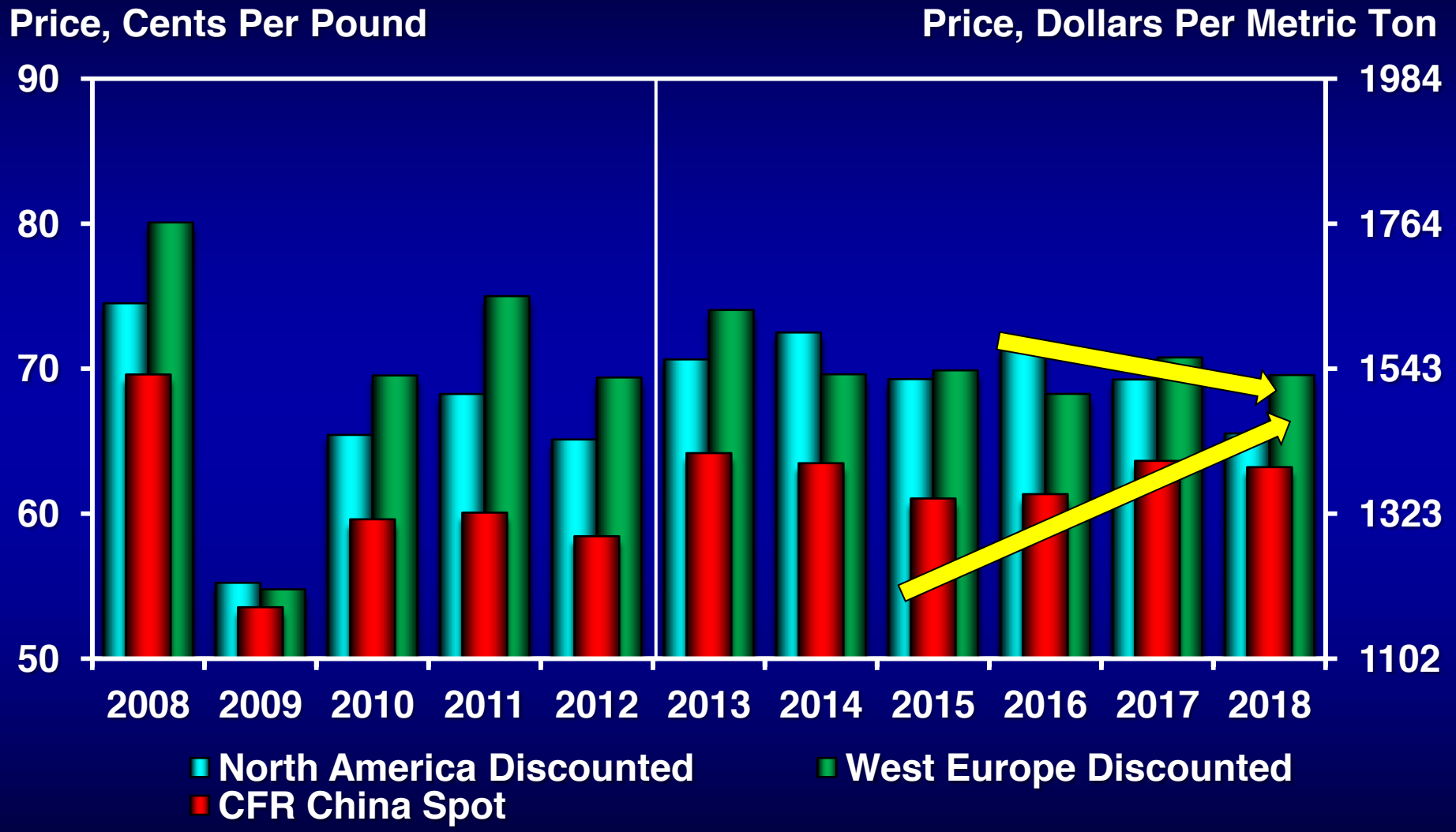
Polyethylene: Global Price Equilibrate



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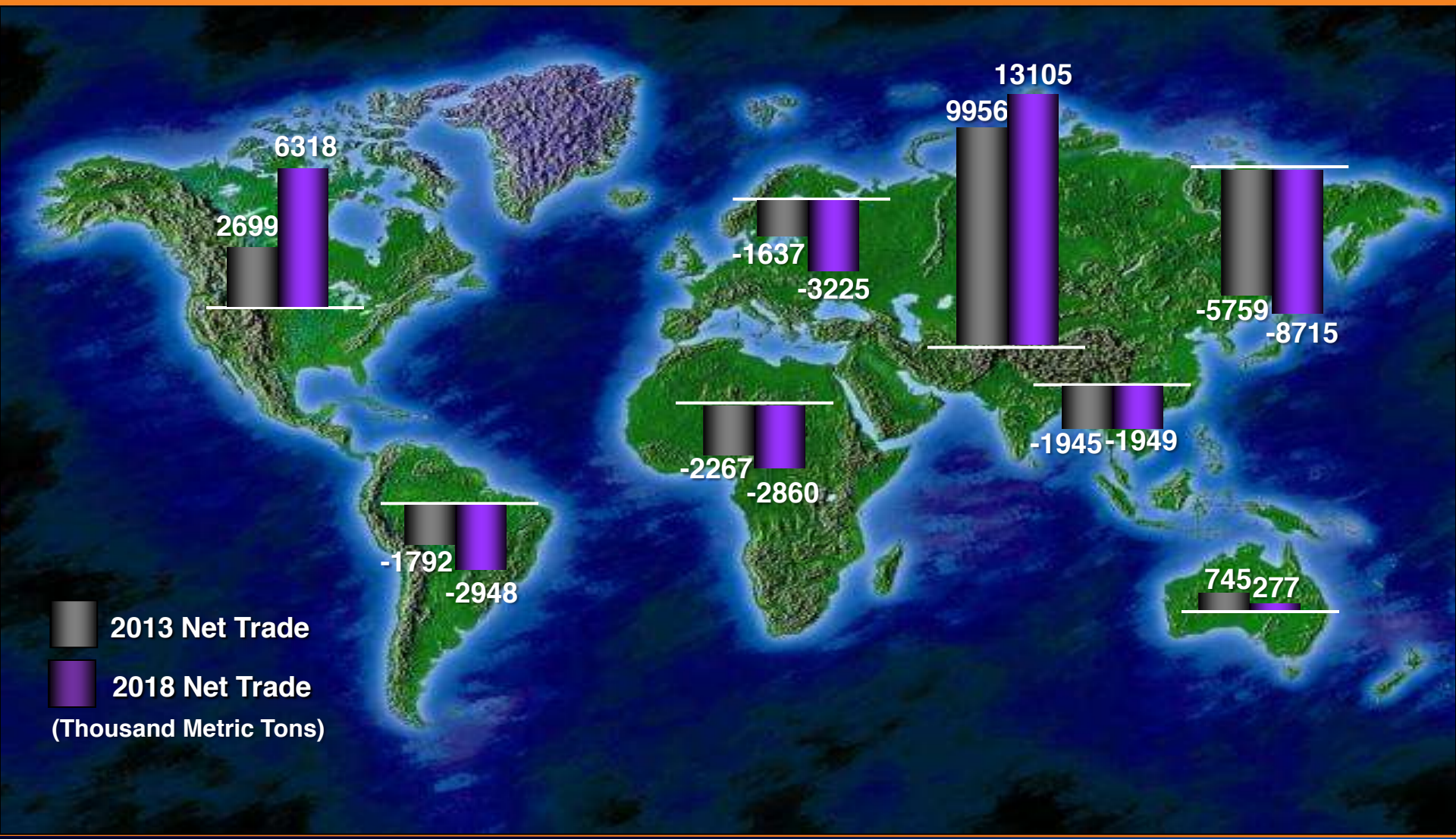
Polyethylene Net Trade Flows



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PE Summary

- **Two low cost producing regions emerge** (N. Am, MDE) - compete for global market share.
- **China also adds** low cost capacity – domestic focus
- **N. American domestic demand accelerates**: driven by increased low cost production, competitive market dynamics, and increased exports of finished goods
- **Increased capacity / competition** drives PE prices toward global parity
- **N. American integrated margins** decline as: new capacity starts, feedstock prices rise, and competition increases.
- **"Commoditization"** of higher margin resins develops as producers add capacity

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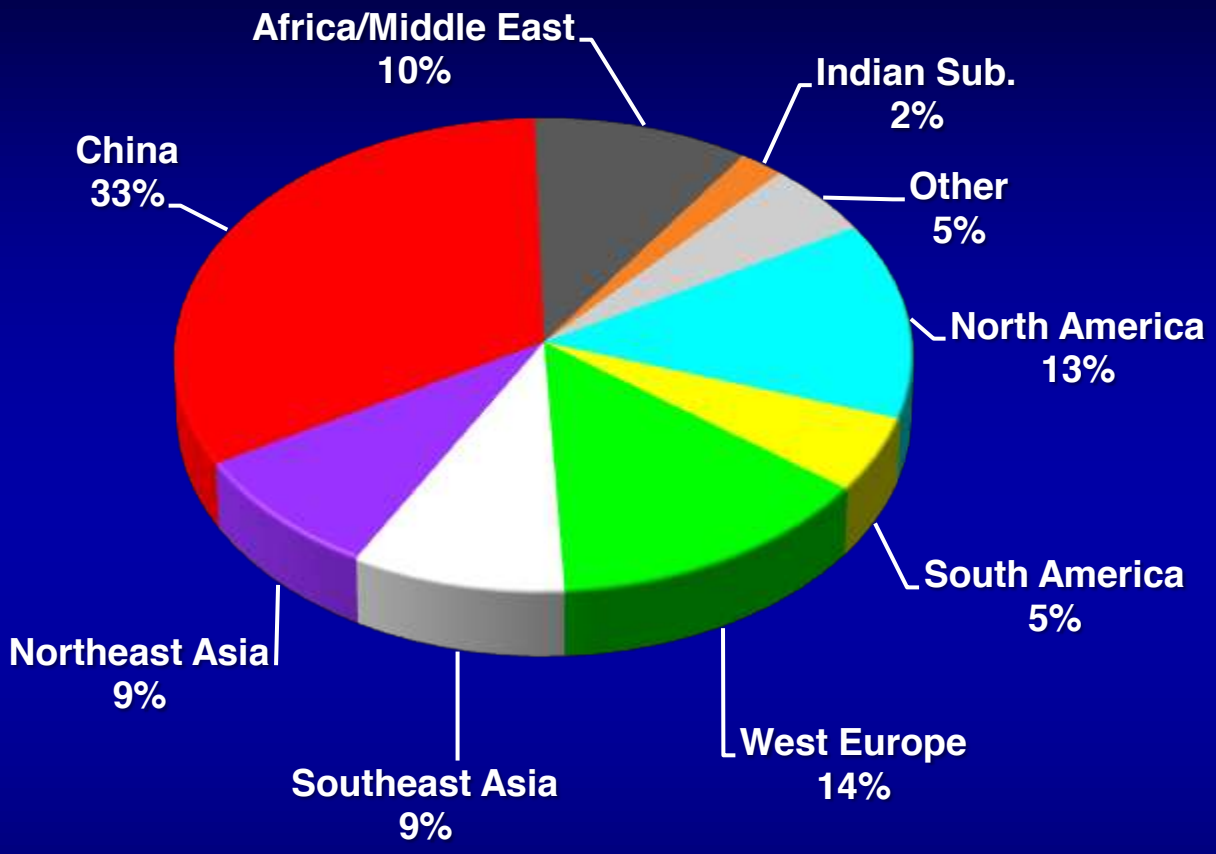
Polypropylene Update

Global Polypropylene Demand Today



2013-2018 AAGR

Global = 5.0%
West Europe = 1.4%
North America = 2.3%
South America = 5.1%
Northeast Asia = 6.0%
Southeast Asia = 5.6%
China = 6.9%
Africa/MDE= 5.3%

2013 Total Global Demand = 56.0 Million Metric Tons
2018 Total Global Demand = 71.6 Million Metric Tons

Demand Growth 2013-2018 = 28%

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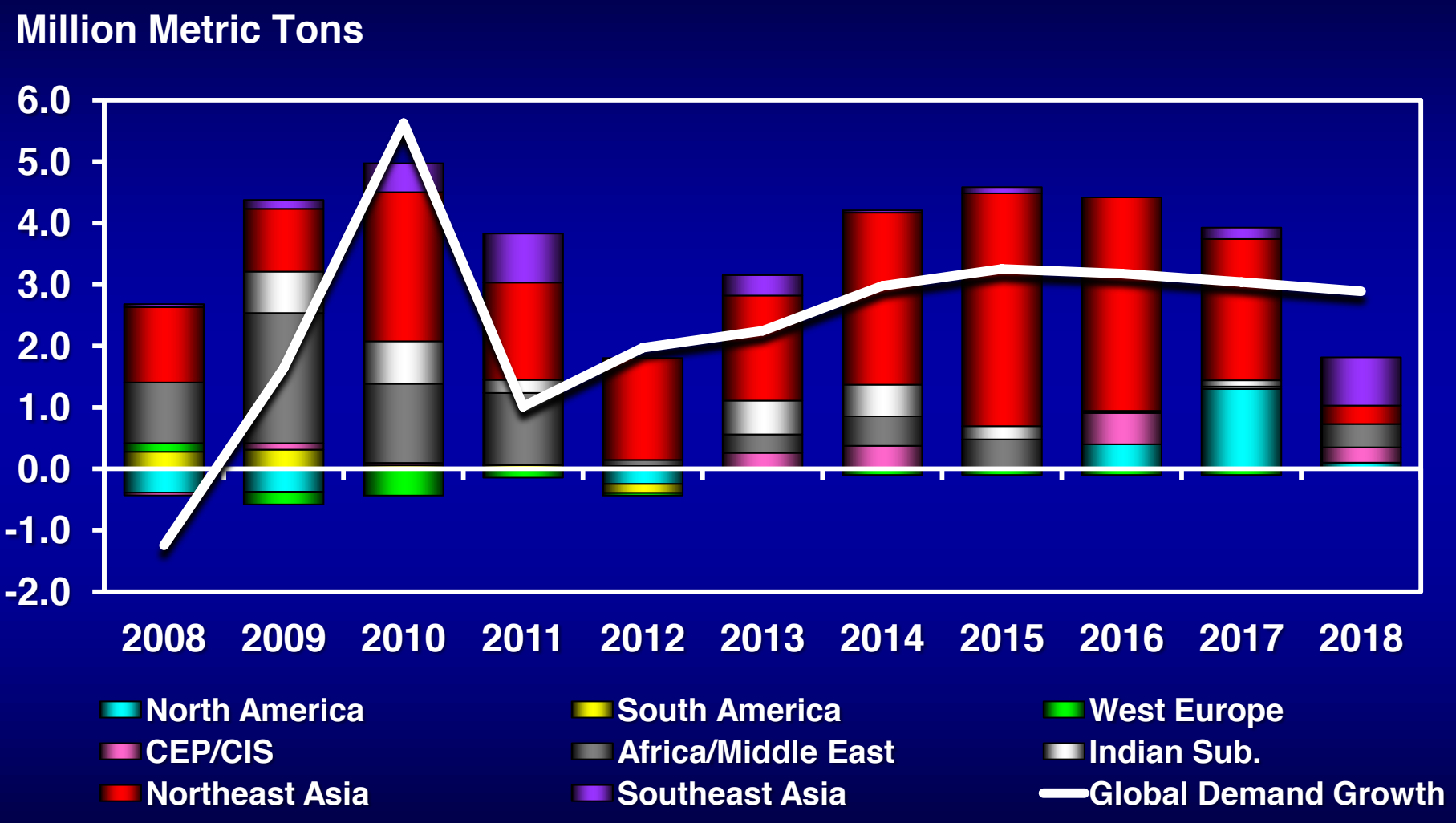
PP Capacity Builds in Middle East and China Leads to Over-Capacity



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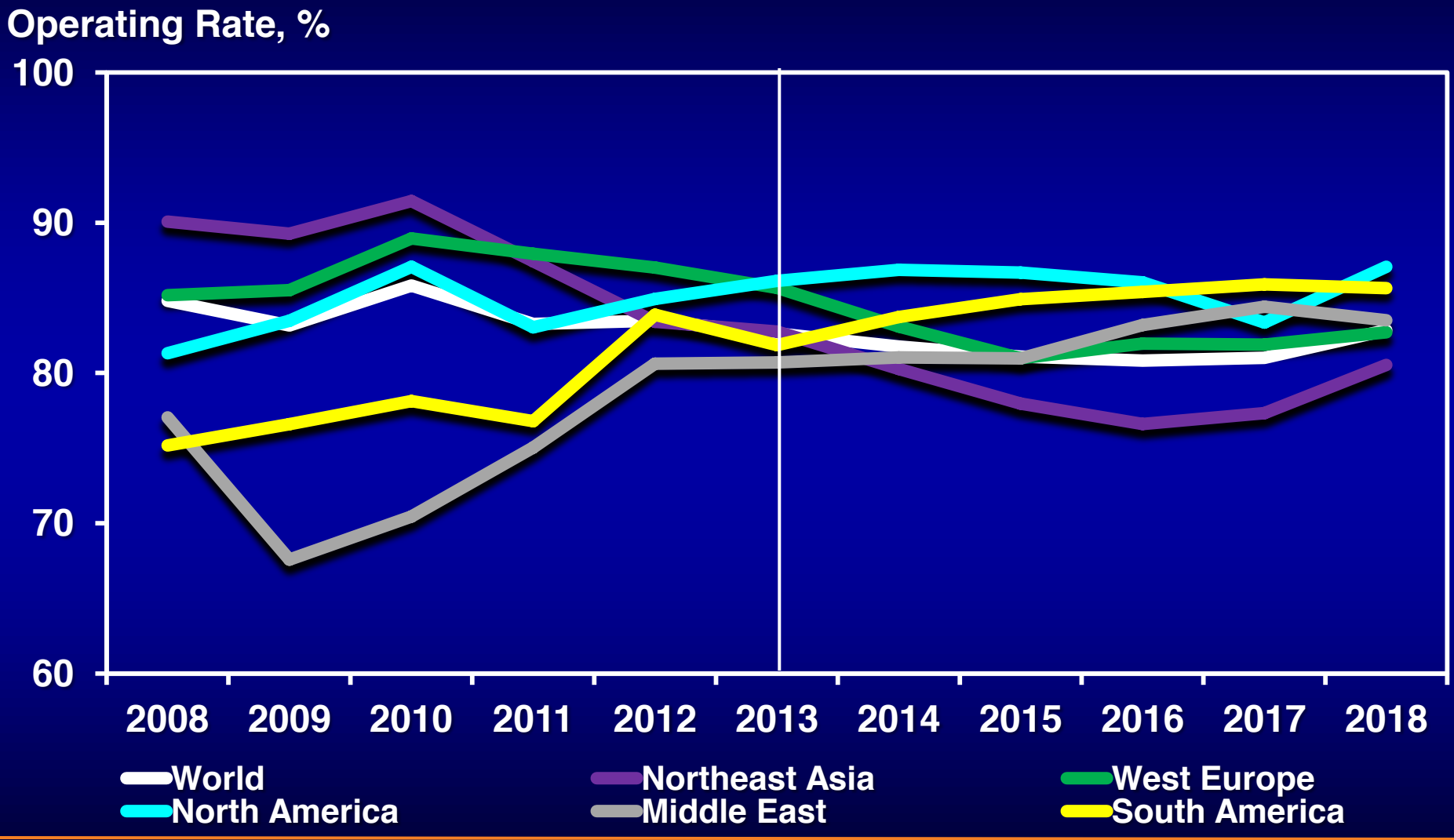
Global Polypropylene Operating Rates



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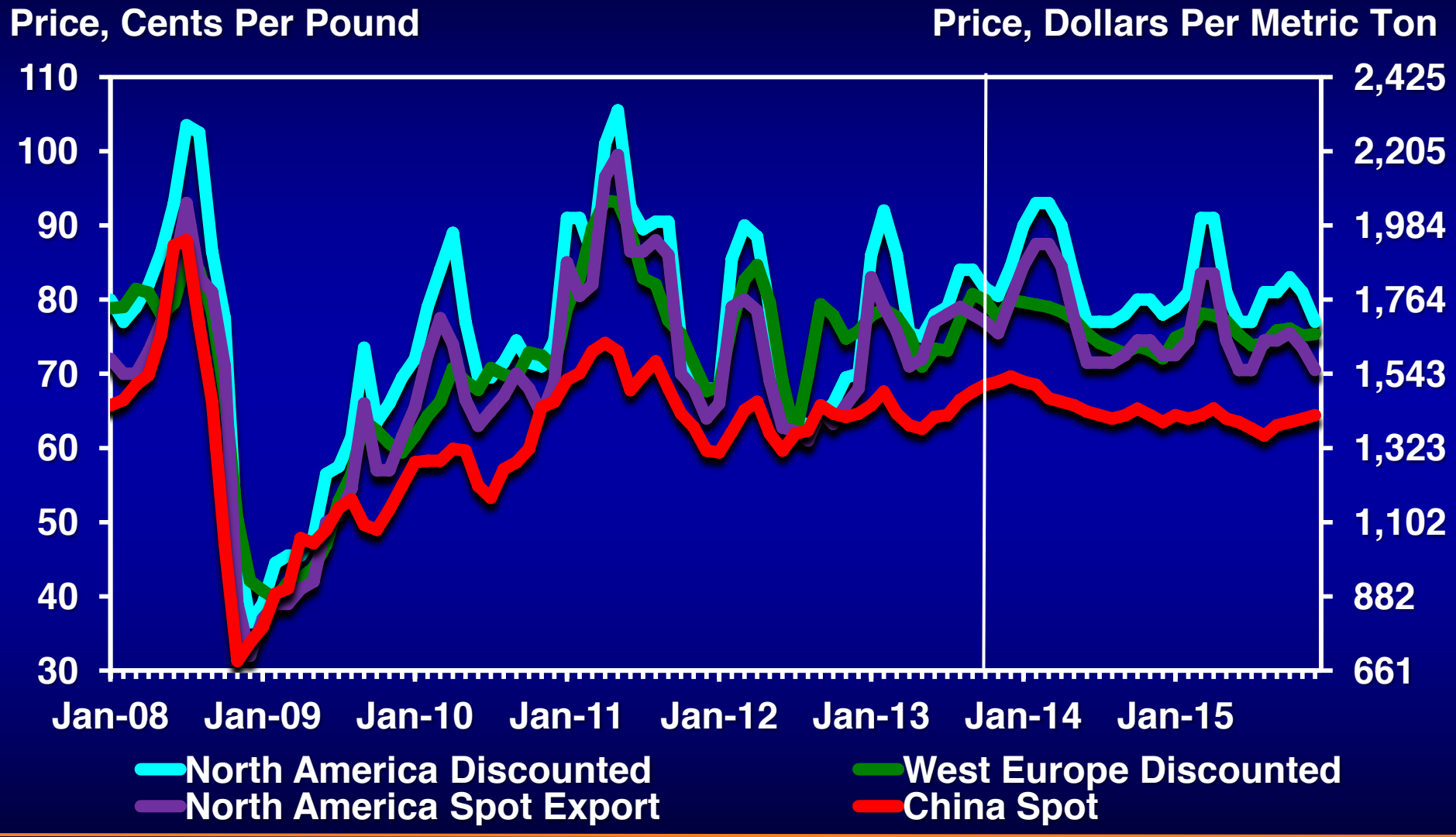
Oversupply Explains Why Asia Lowest Price



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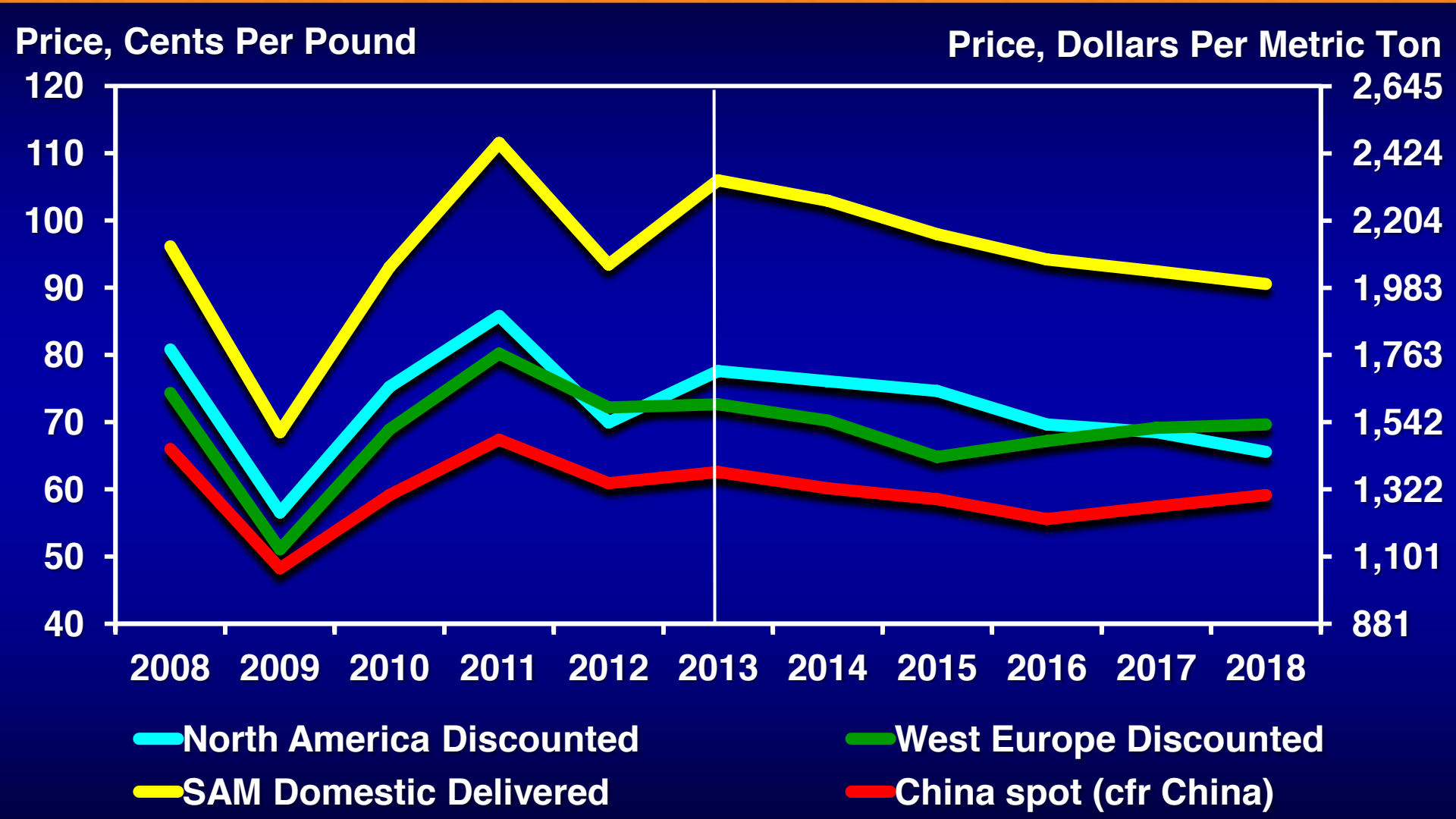
Regional Polypropylene Prices



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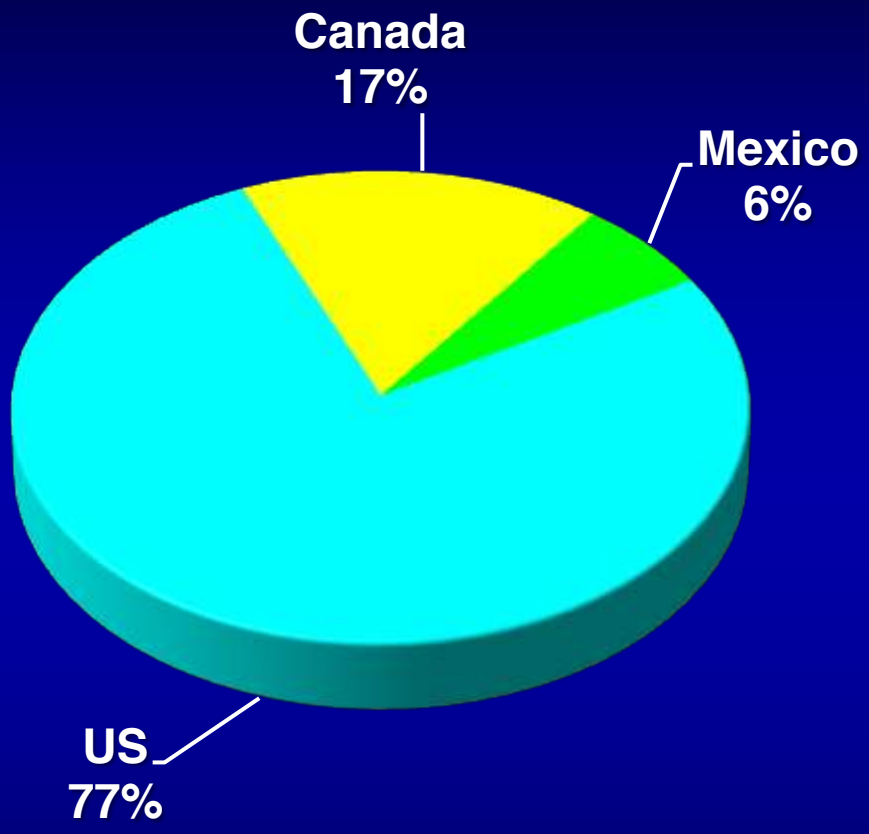
North America Polypropylene Demand Today



2013-2018 AAGR
North America = 2.3%
United States = 2.1%
Mexico = 3.1%
Canada = 2.3%

2013 Total Demand = 8.9 Million Metric Tons
2018 Total Demand = 10.6 Million Metric Tons

Demand Growth
2013-2018 = 19%

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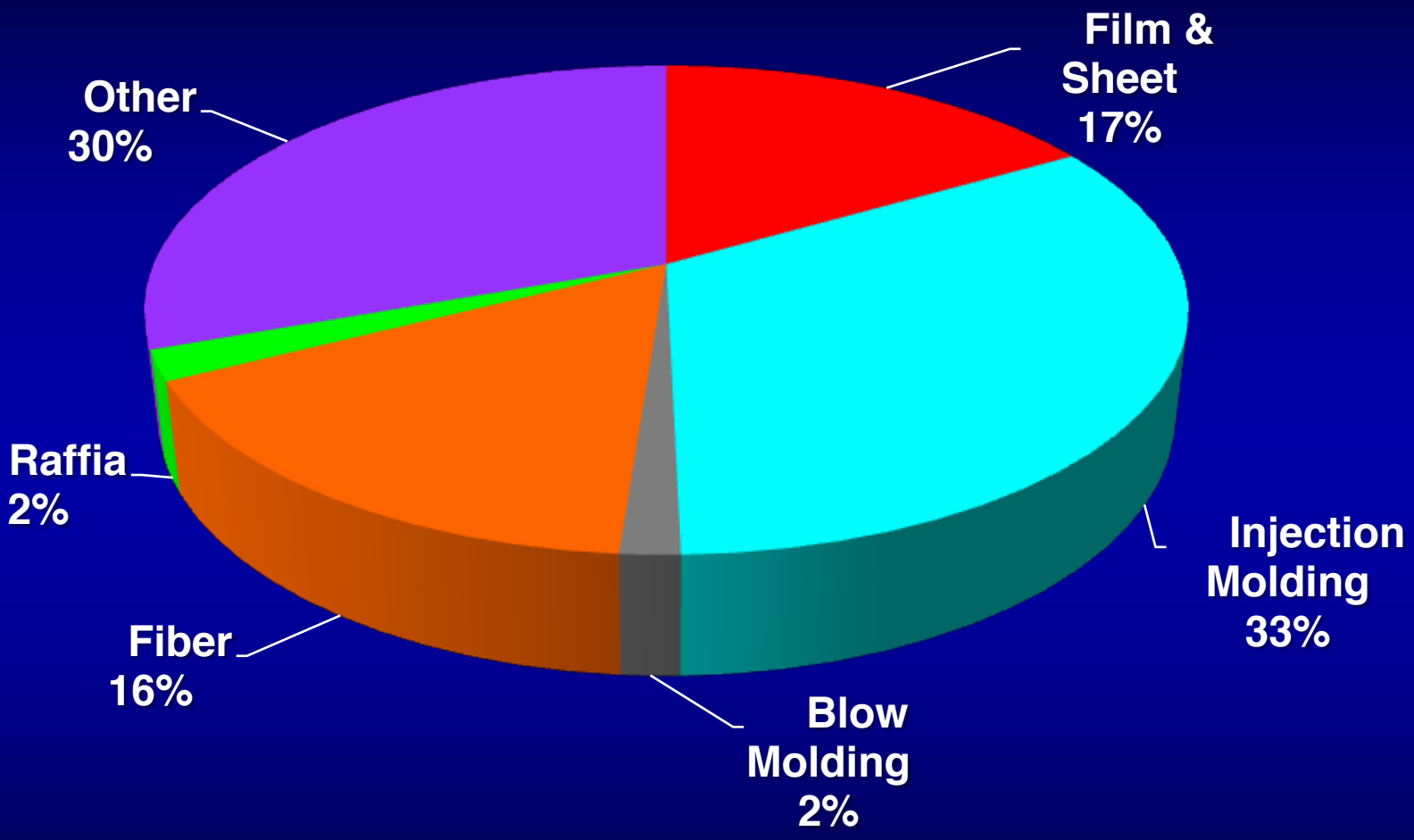
North America Polypropylene Demand by End Use



2013 Total Demand = 8.6 Million Metric Tons

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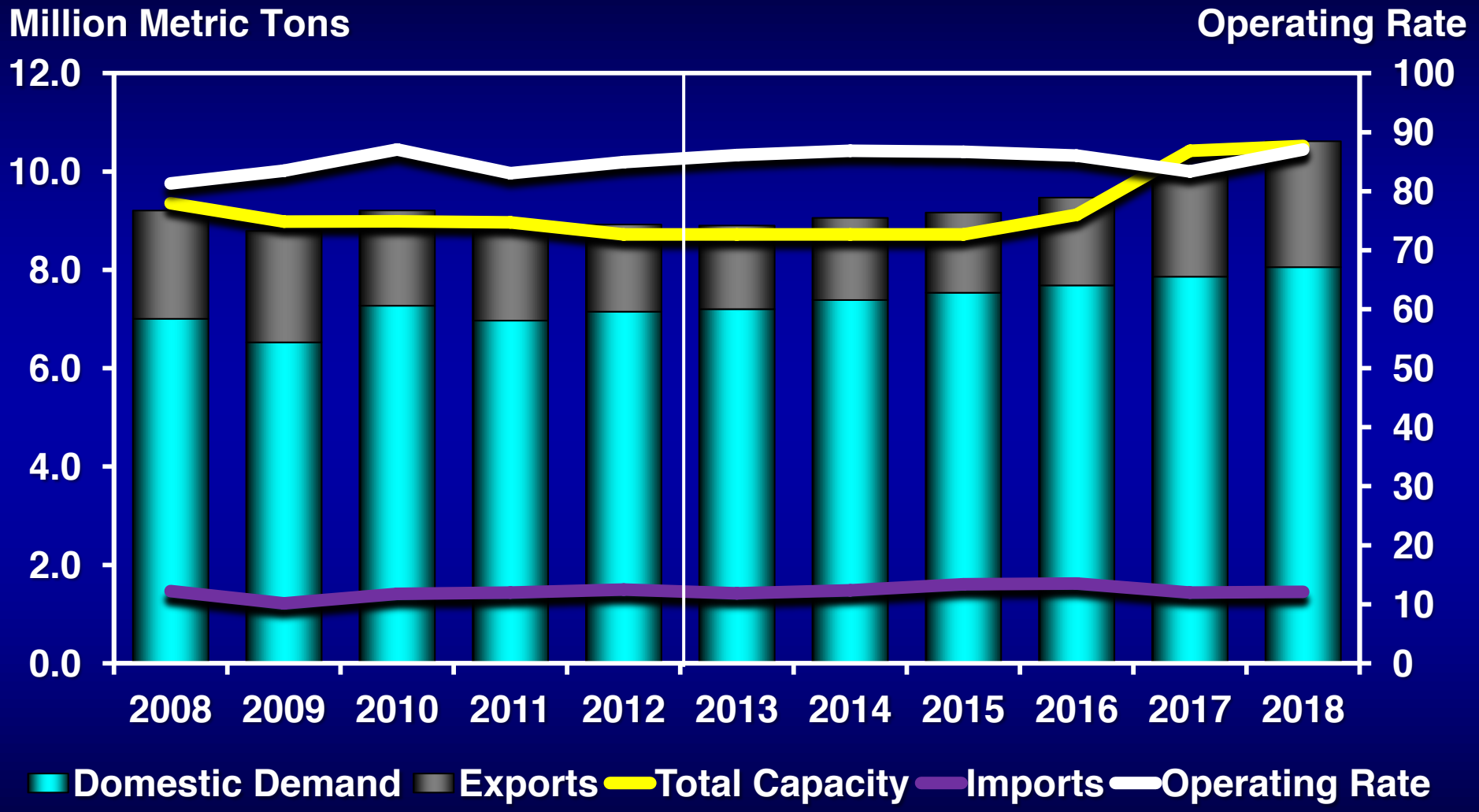
PP North America Supply and Demand Forecast



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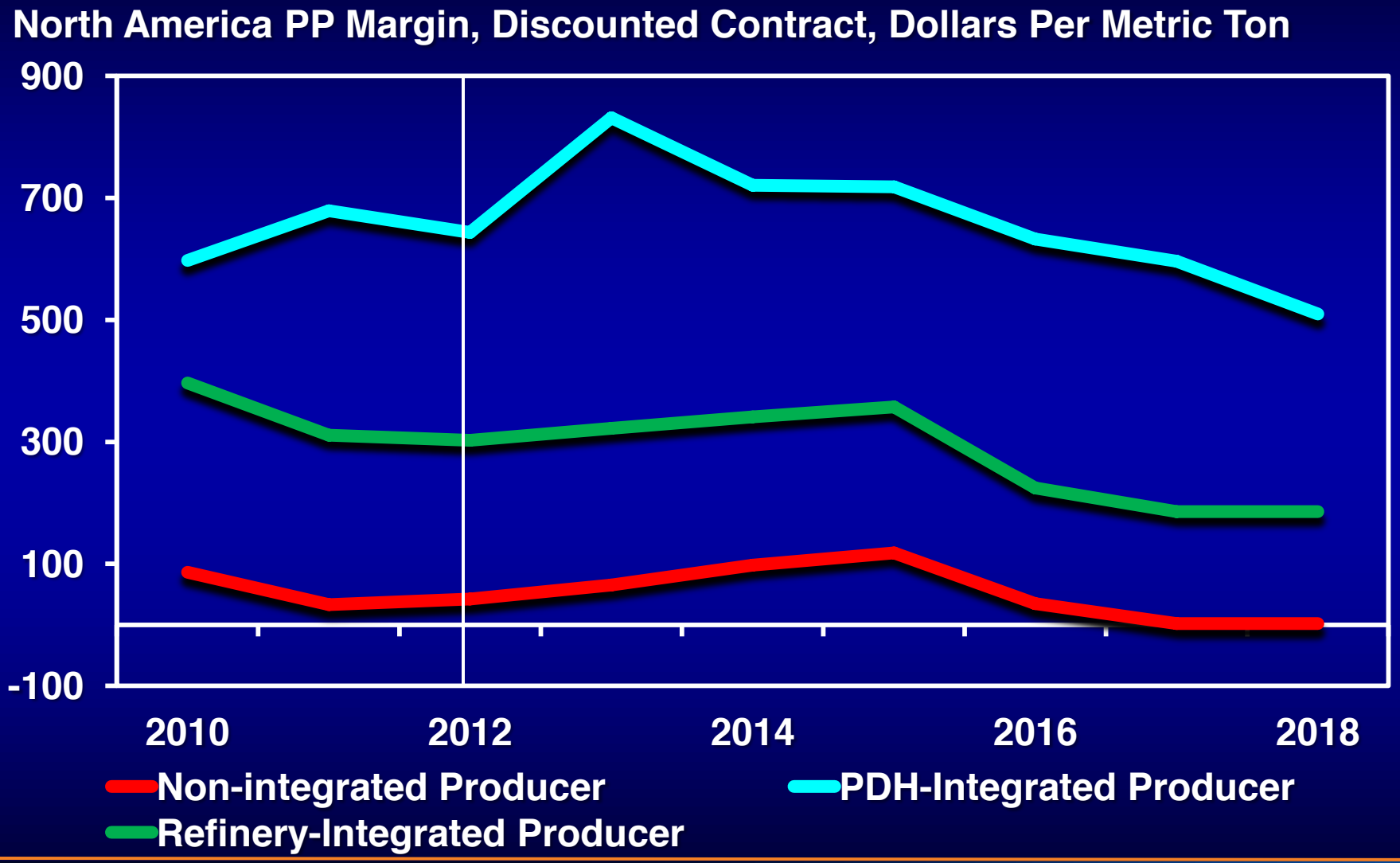
North American Integrated Producers To Benefit The Most



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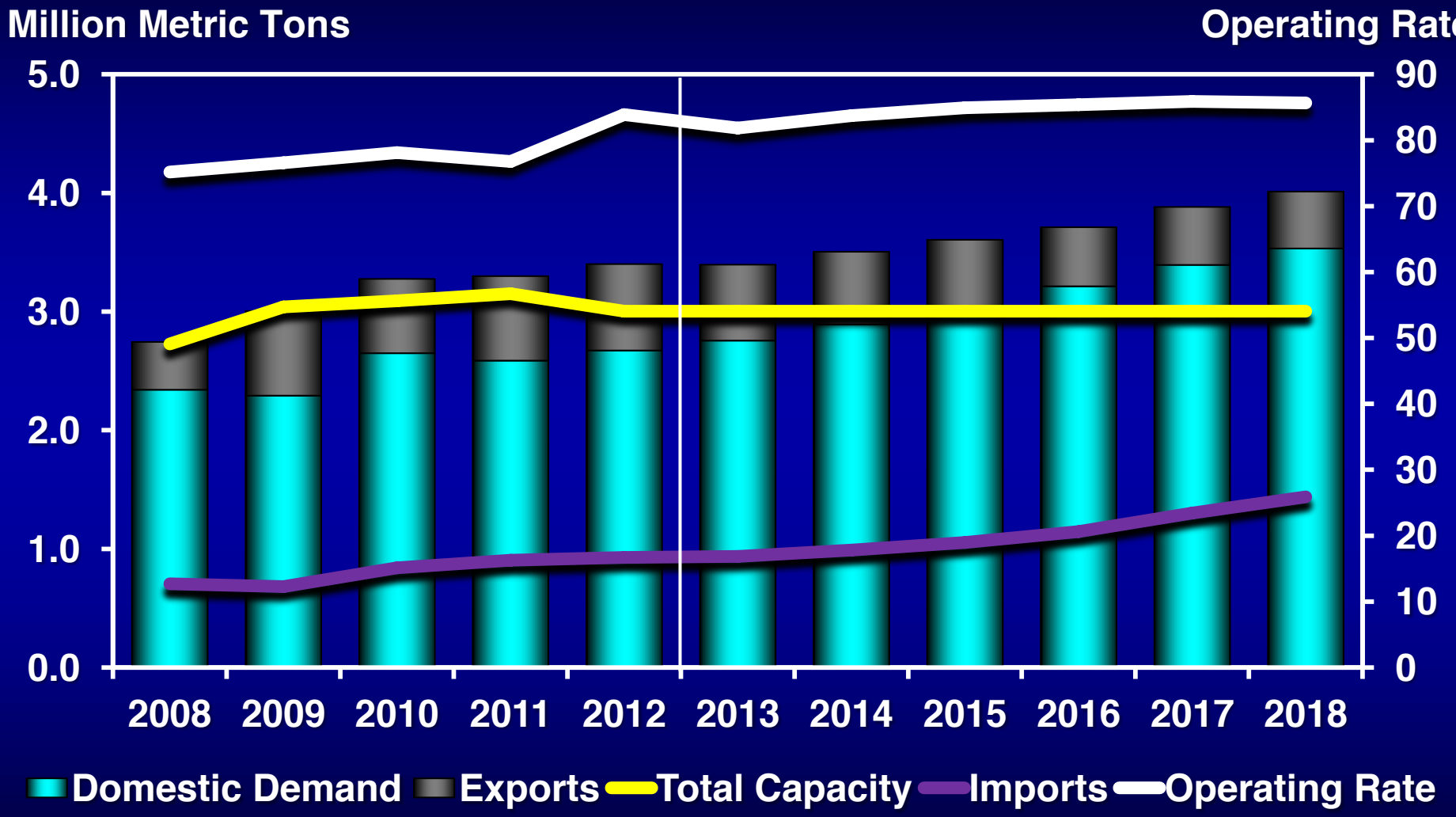
South America PP Supply and Demand Forecast



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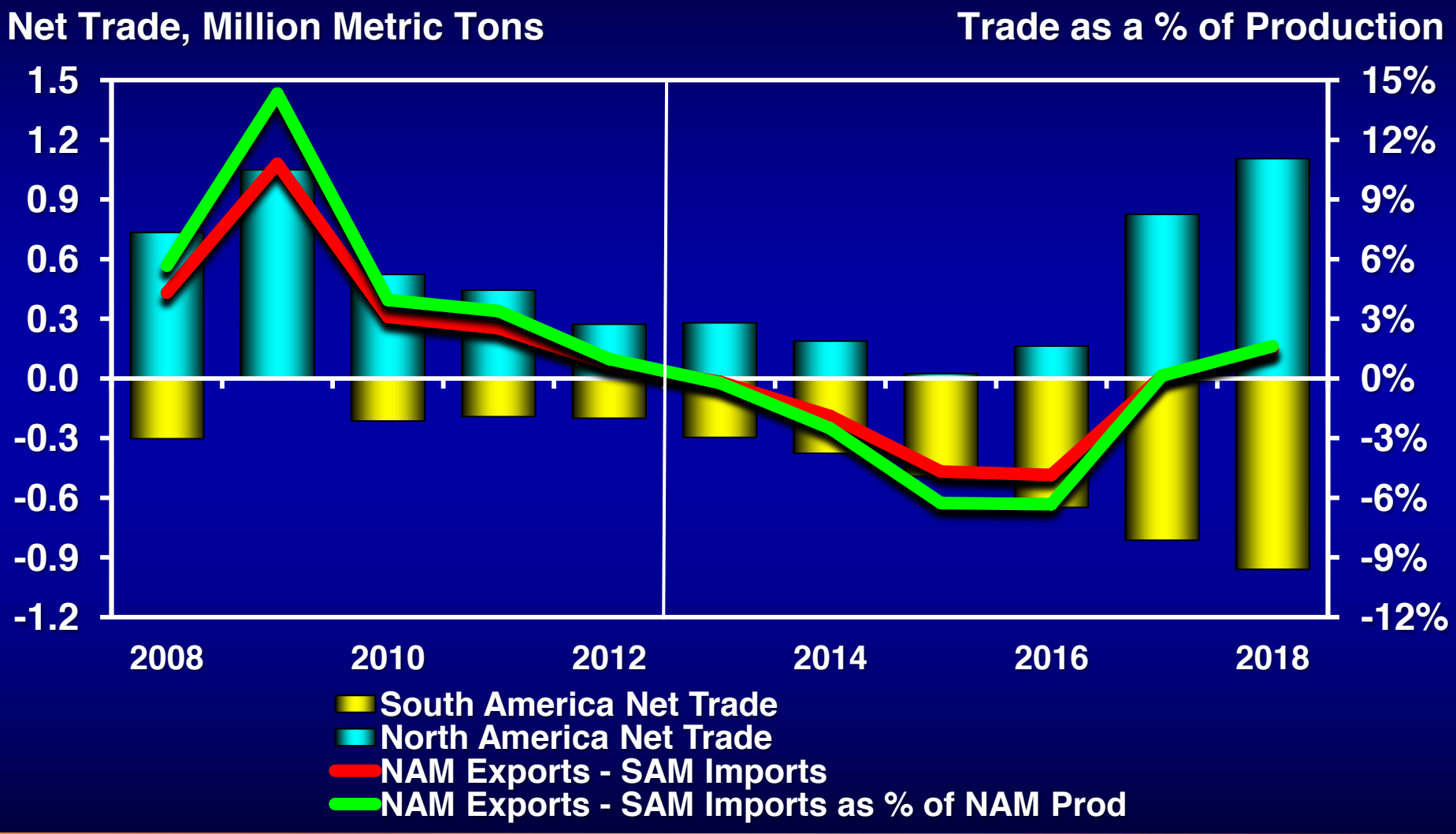
Polypropylene: Americas Trade Balance



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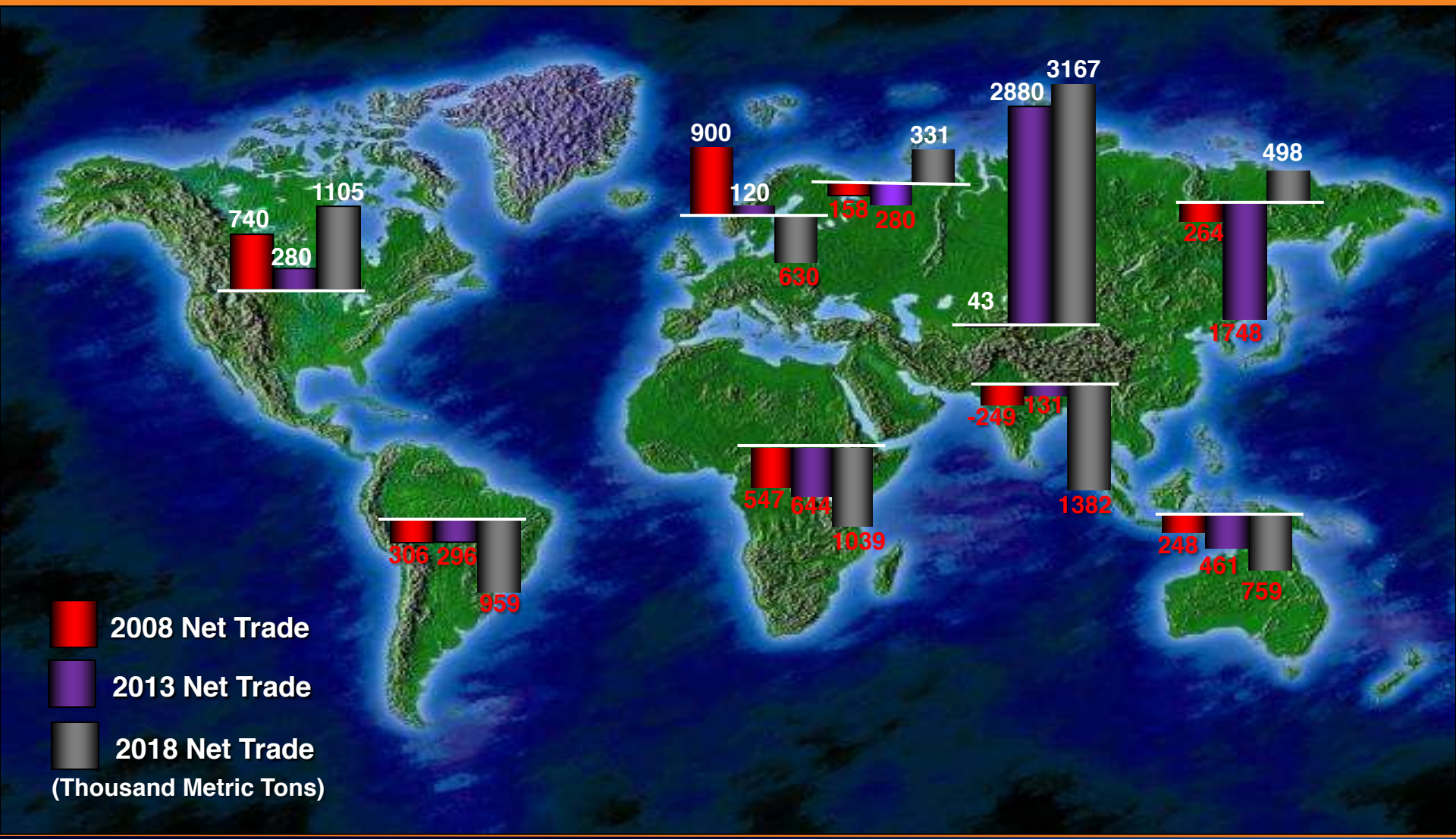
Significant Shift for PP Global Trade



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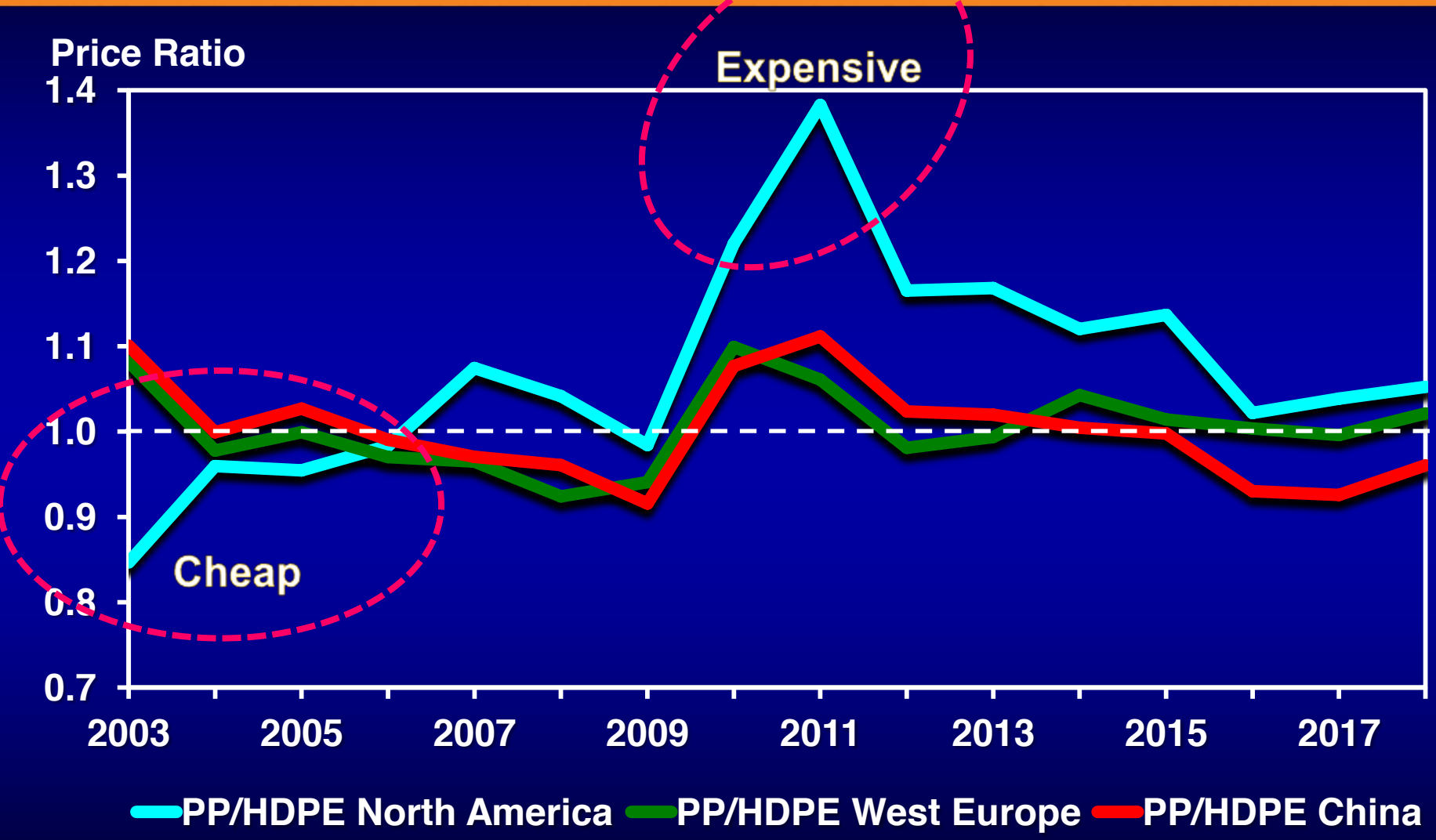
How has Polypropylene compared versus other materials?

Global Polypropylene Competiveness (PP/HDPE Ratio) vs. HDPE Improving



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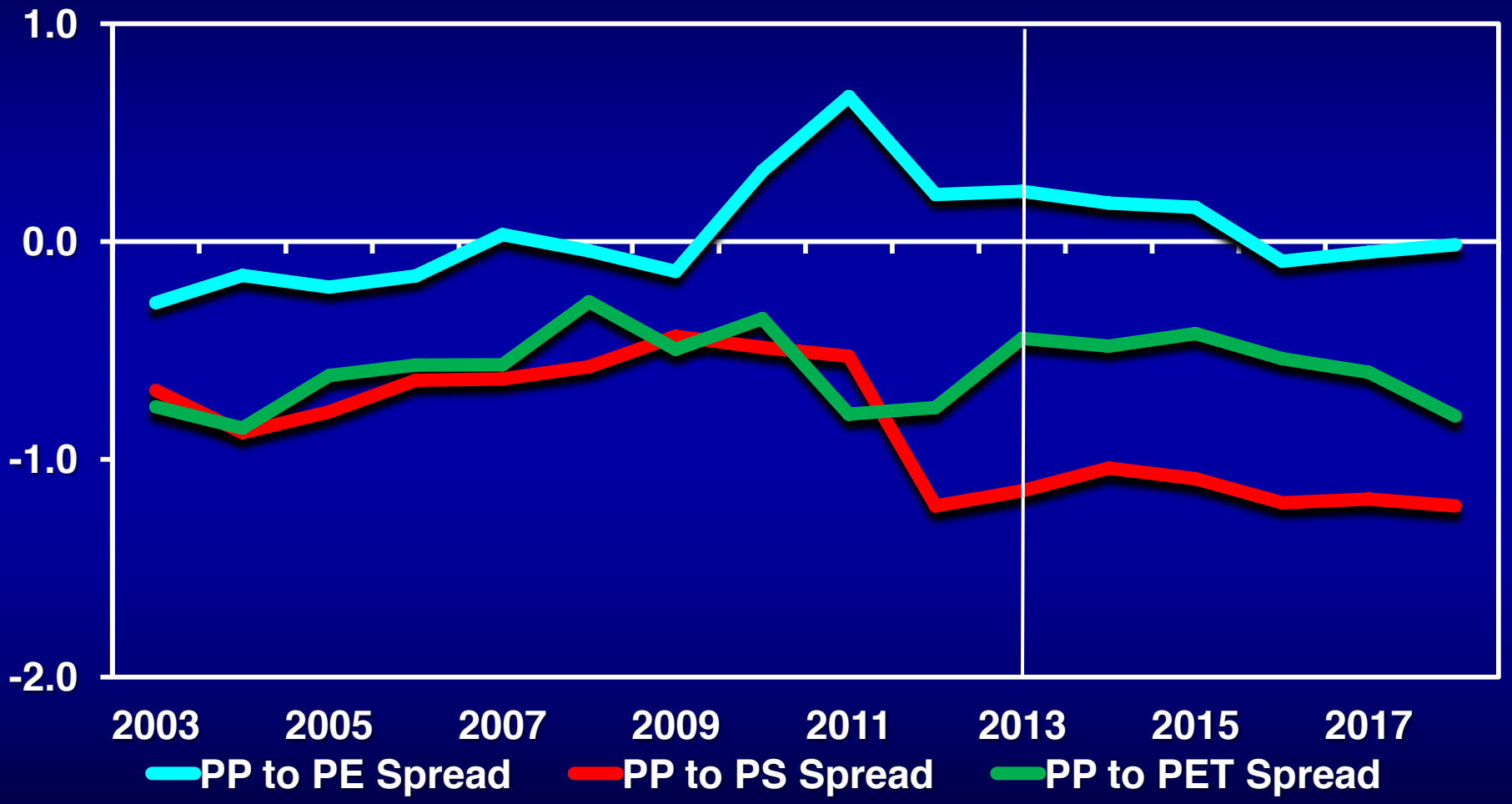
North American Material PP Spreads (cents/cubic inch)



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Polypropylene: Key Takeaways

- North American PP margins forecasted to expand and improve with likely peak in the 2016/2017 time period
- Cost to remain competitive with HDPE
  - While positioned favorably to PS and neutral to PET
- PDH based PP in North America to be advantaged
  - New PP capacity will continue to drive off propane based economics
- Next 5 Years brings significant shifts in trade
  - China becomes more self sufficient
  - Middle East Redirects Exports
  - New capacity in North America increases export position post 2017
  - Europe transitions to new import position

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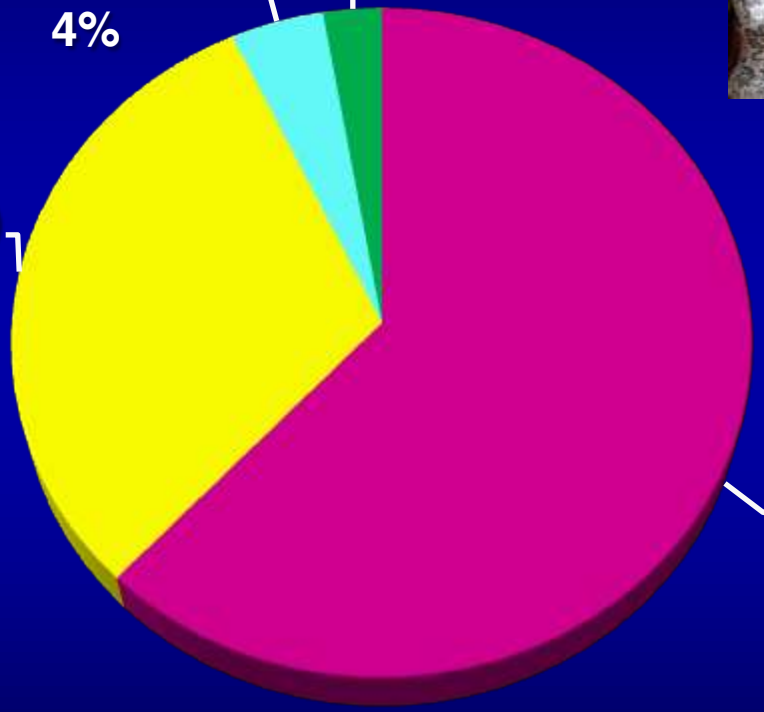
PET Update

Polyethylene Terephthalate End Uses



2012 Total Demand = 55.6 Million Metric Tons

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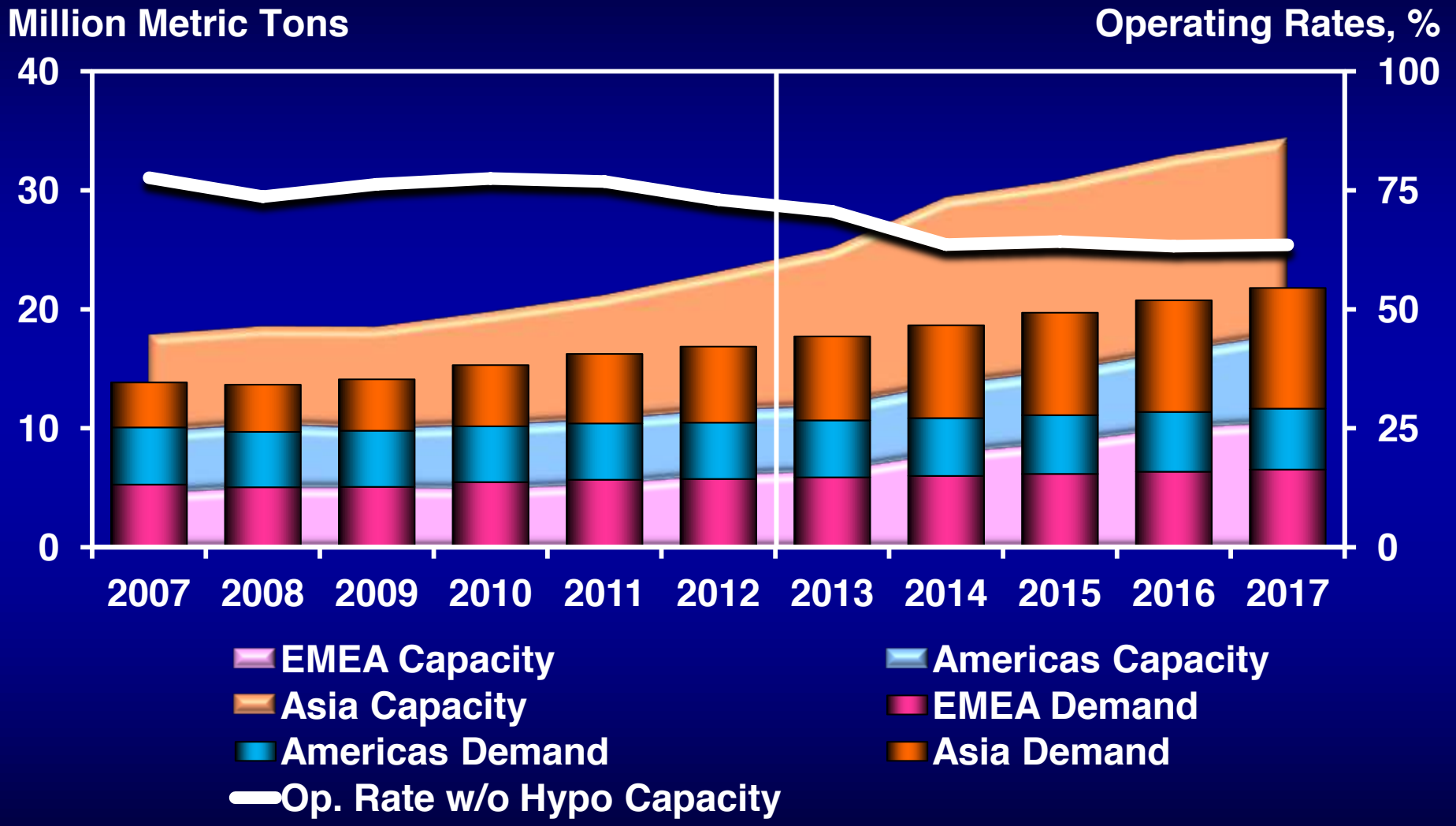
World PET Capacity Versus Demand



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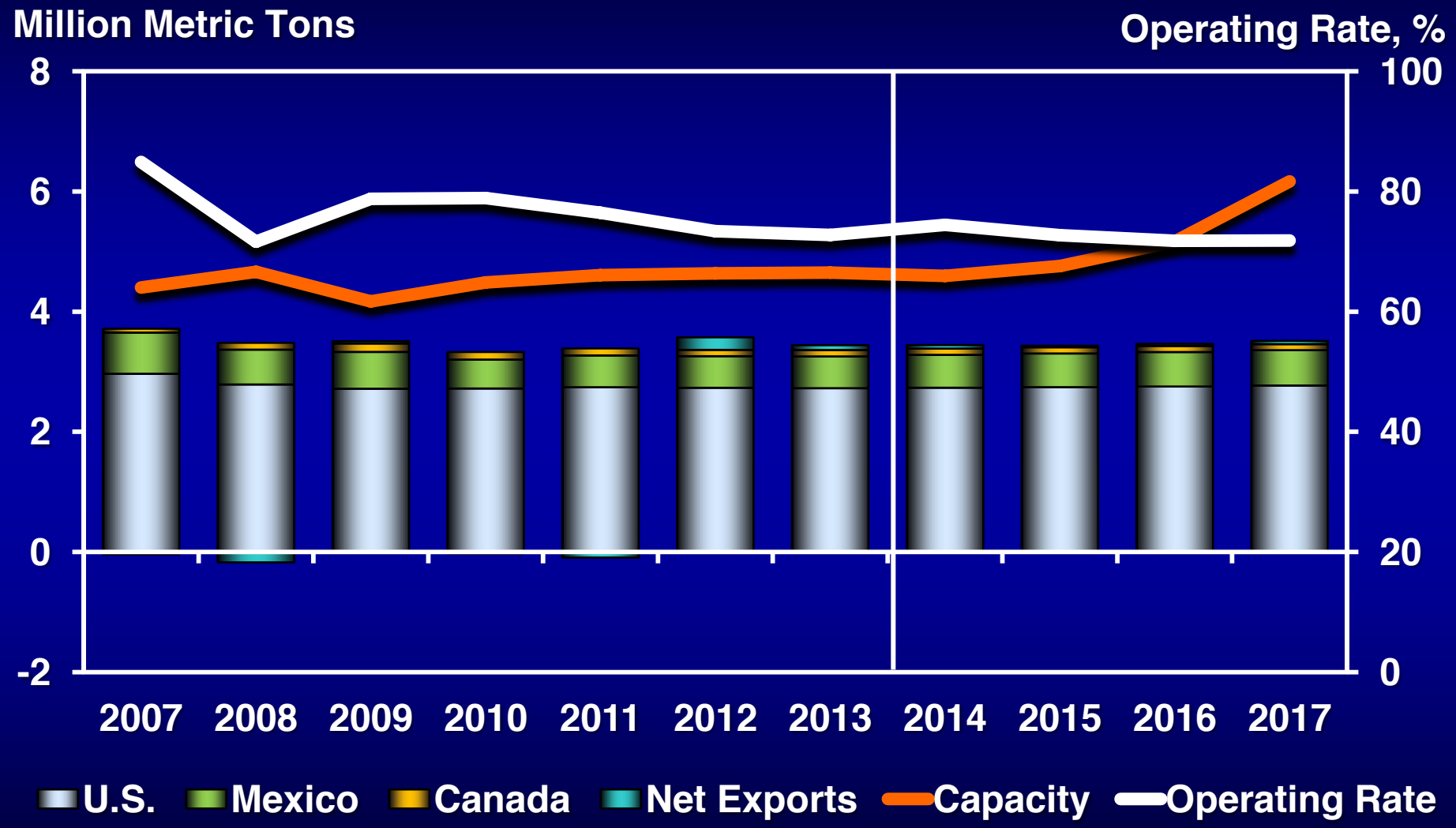
North America PET Demand



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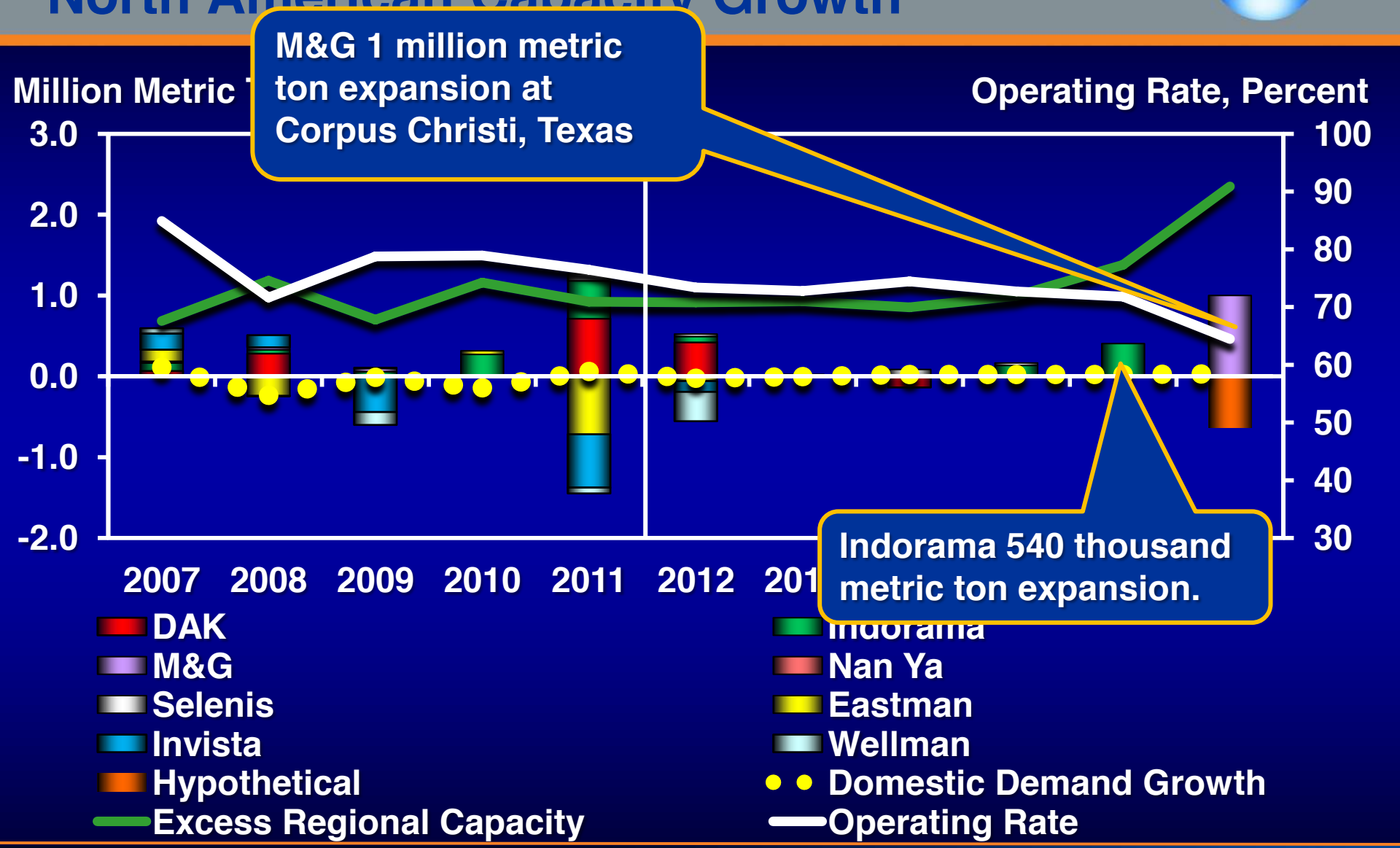
North American Capacity Growth



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Conclusions - PET

- Global PET markets will continue to be vastly oversupplied.
- North America is embarking on even further capacity expansion which will change the economic dynamic.

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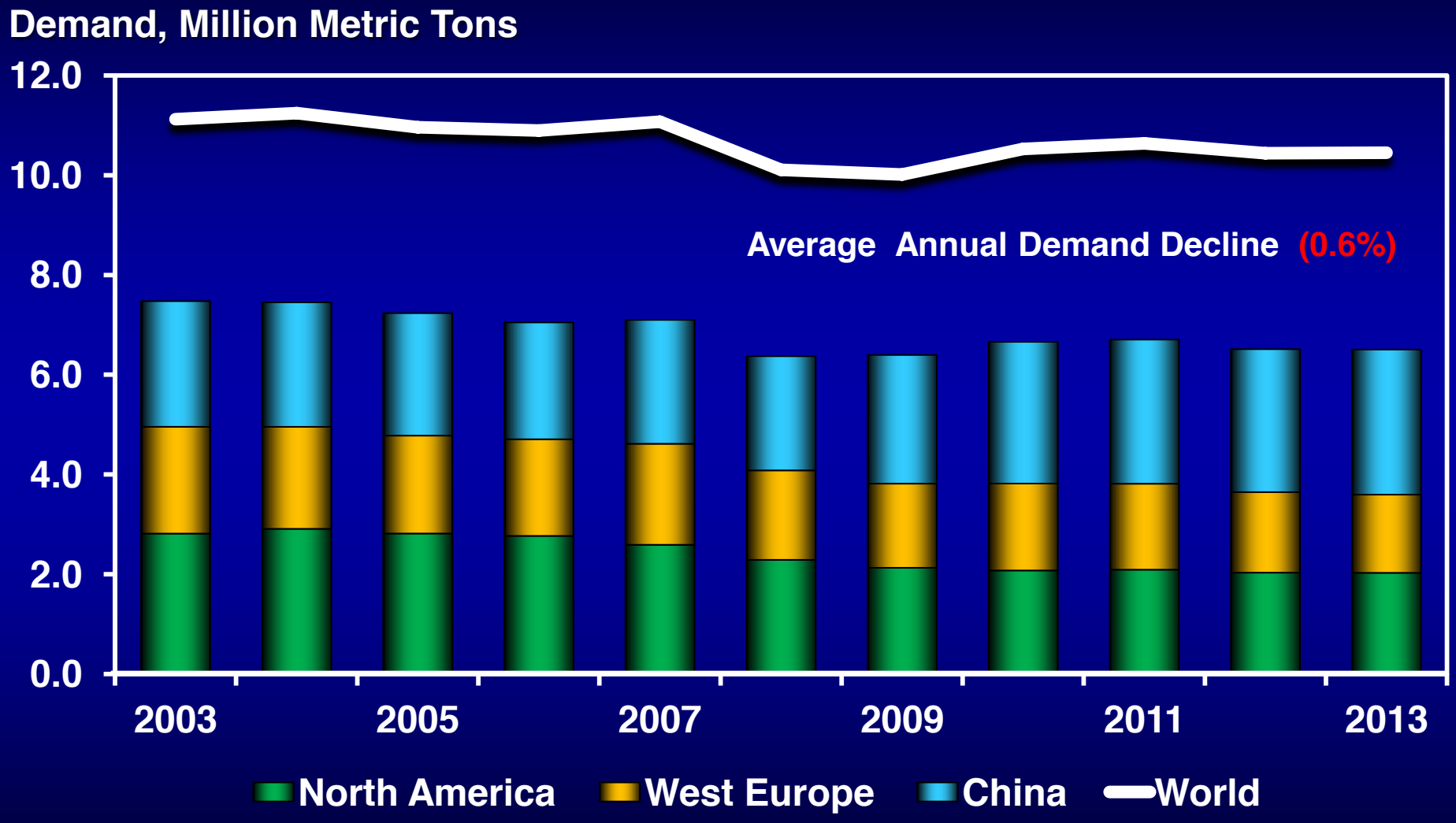
Polystyrene Update

Polystyrene – Demand Decline in Developed Regions



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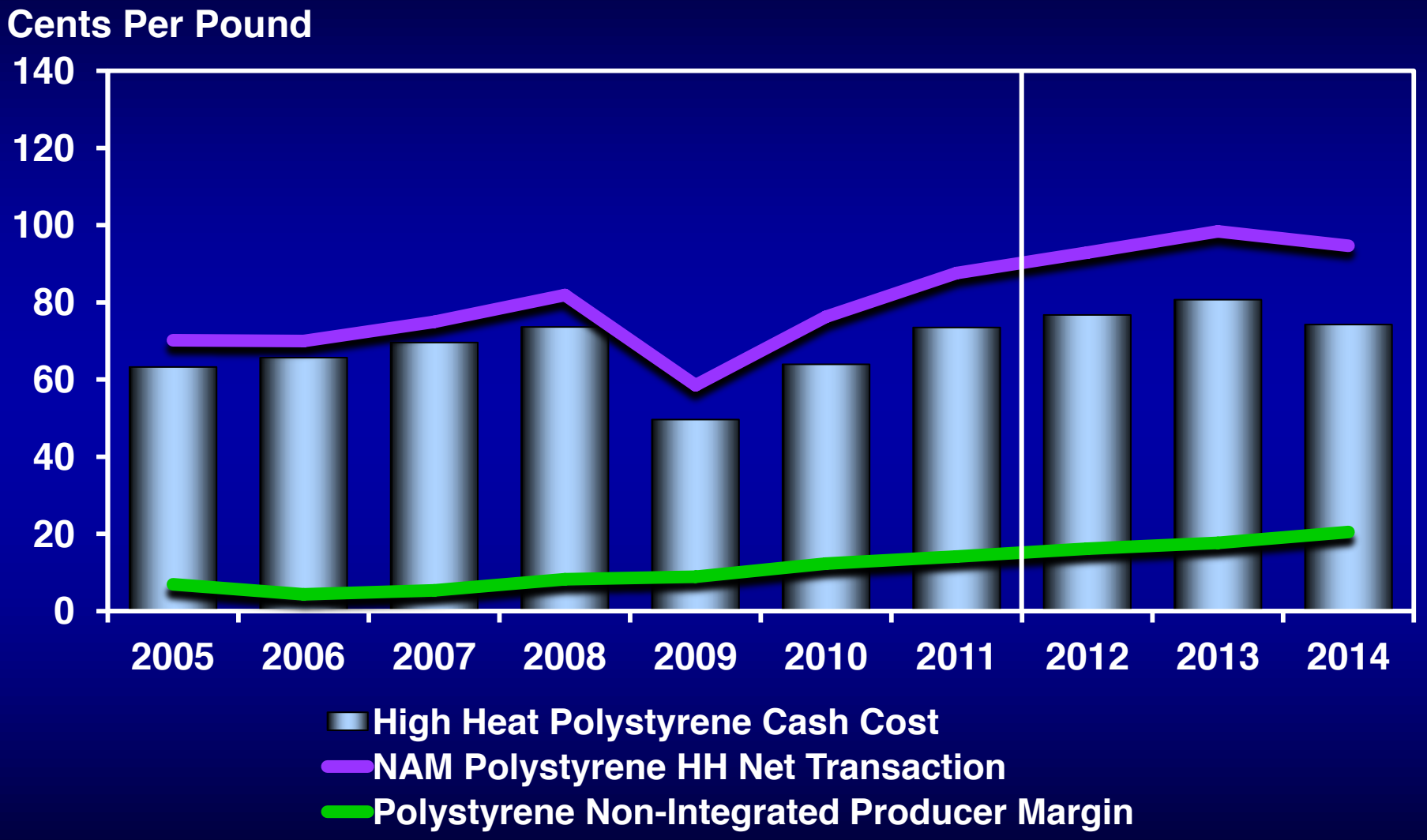
North American
High Heat Polystyrene Cash Cost & Margin



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Polystyrene Market Summary

- **Pricing Outlook – High**
  - No shale gas benefits - Benzene/ Styrene prices to remain high
  - NAM PS prices at highest level seen to date driven by benzene.
  - Despite margin improvement, PS reinvestment economics still not there
- **Demand Outlook – Weak**
  - Below GDP growth globally for PS in the next five years
  - Future demand growth from Electronics and Consumer segment.
  - Packaging market remains weak – threat from substitution and environmental pressures (New York ban)

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Resin Markets Summary

- Conditions very favorable today for PE producers
- Conditions improving for PP and PS producers
- PET producers look to continue to struggle
- Converters to benefit post 2015 time frame with more competitive pricing for PE and PP on a global basis
- Converter North American PE and PP demand expected to see bump as a result
- Tough sledding for converters with PS but PET prices should be competitive with ceiling set by Asian imports.

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Thank you and upcoming in March

World Petrochemical Conference
March 25 – 28th

Houston, Texas Hilton Americas

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