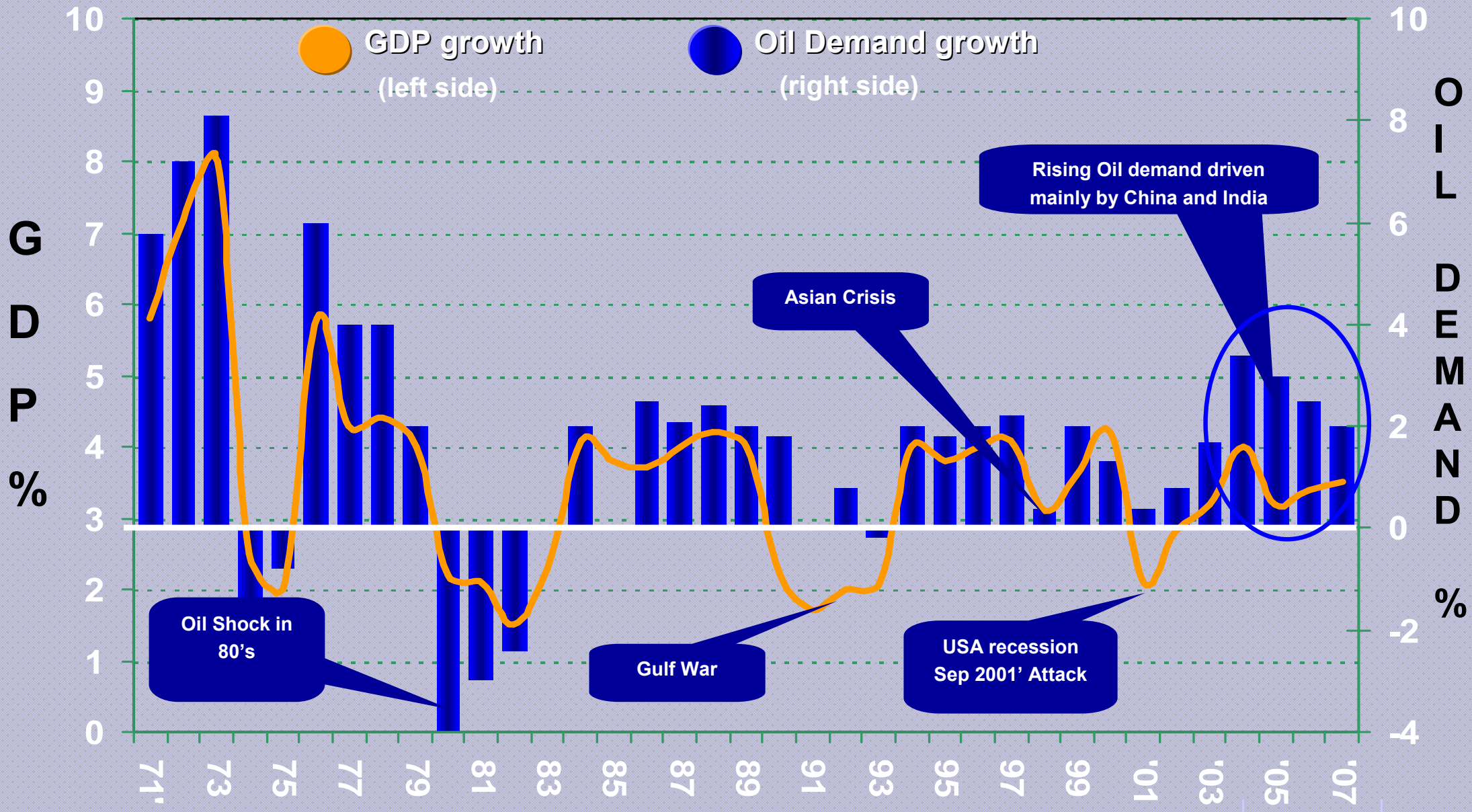




# **Polyester Raw Material Outlook**

End of Tightness in Sight

# GDP Growth Spurs Oil demand



↗ World Economic recovery spurs Oil Demand to 80.76 MBD

↗ China alone accounts for 33% of World Oil demand Growth

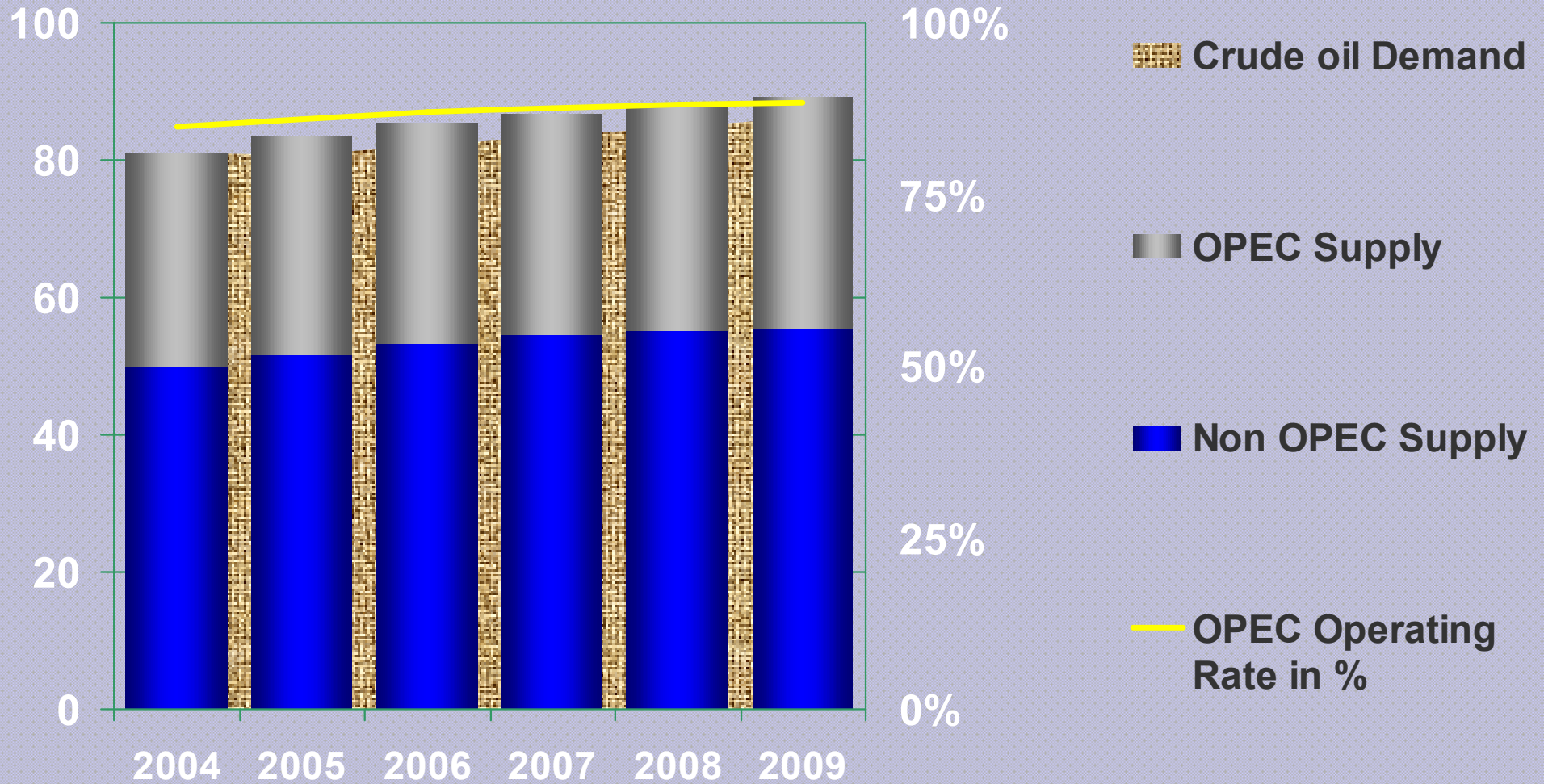
Projection



# Oil Supply – Demand Outlook

Million Barrel  
per Day

Operating rate in  
%



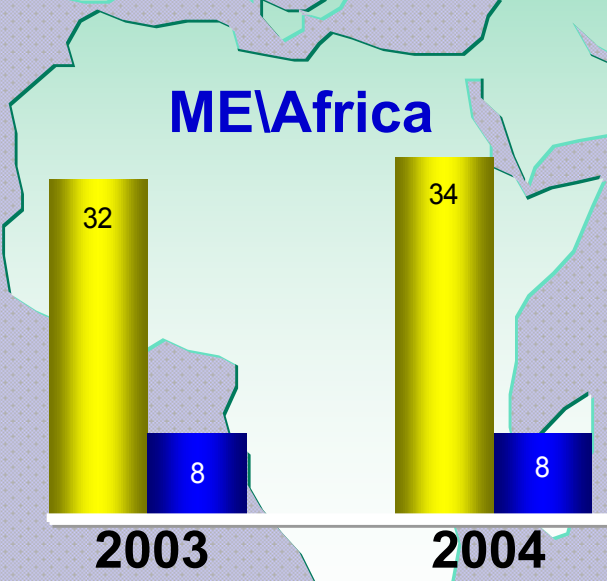
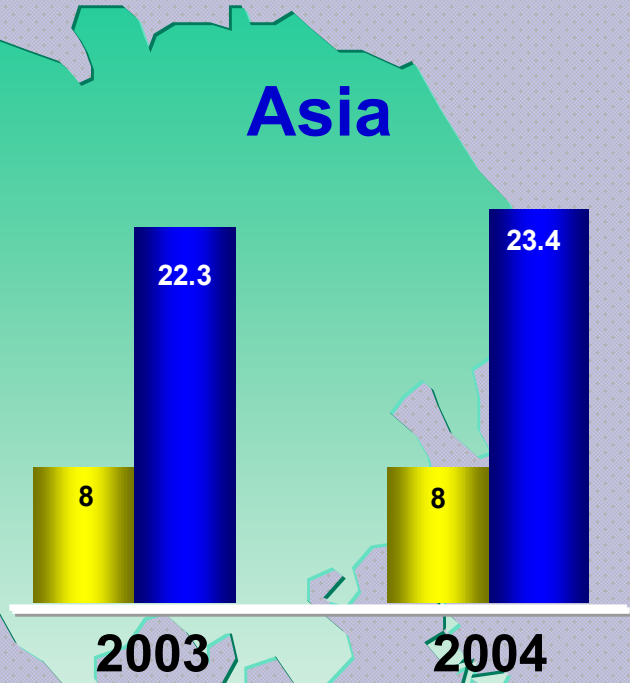
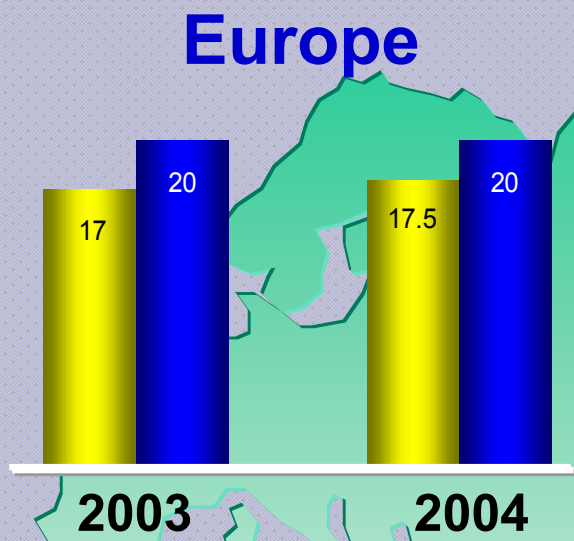
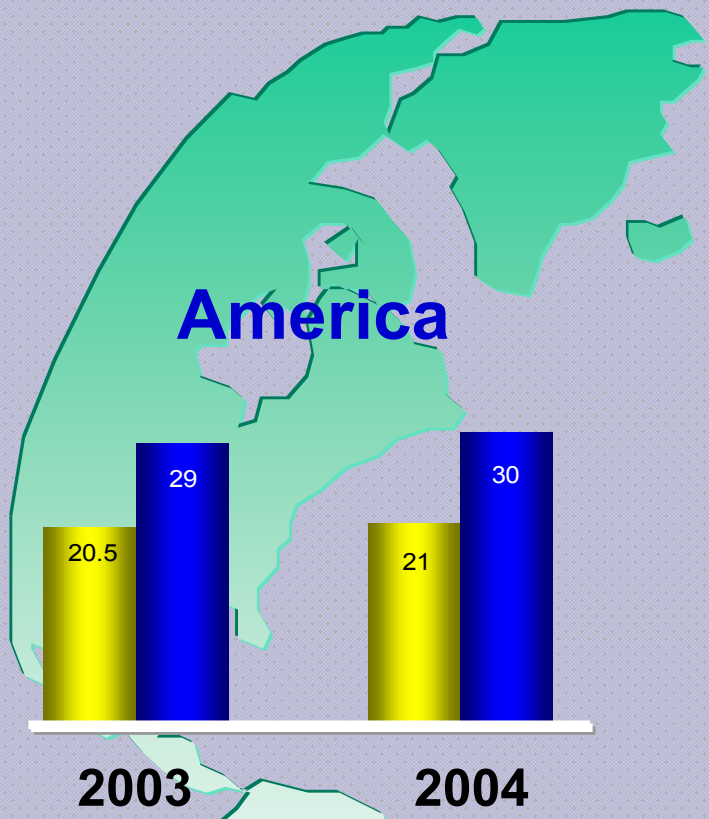
↪ OPEC has 75% of proven oil reserves of the world

↪ World's oil consumption grew by 3.4% while China's grew by 15.8%



# Oil Demand Supply 2003 & 2004

Million Barrels per Day



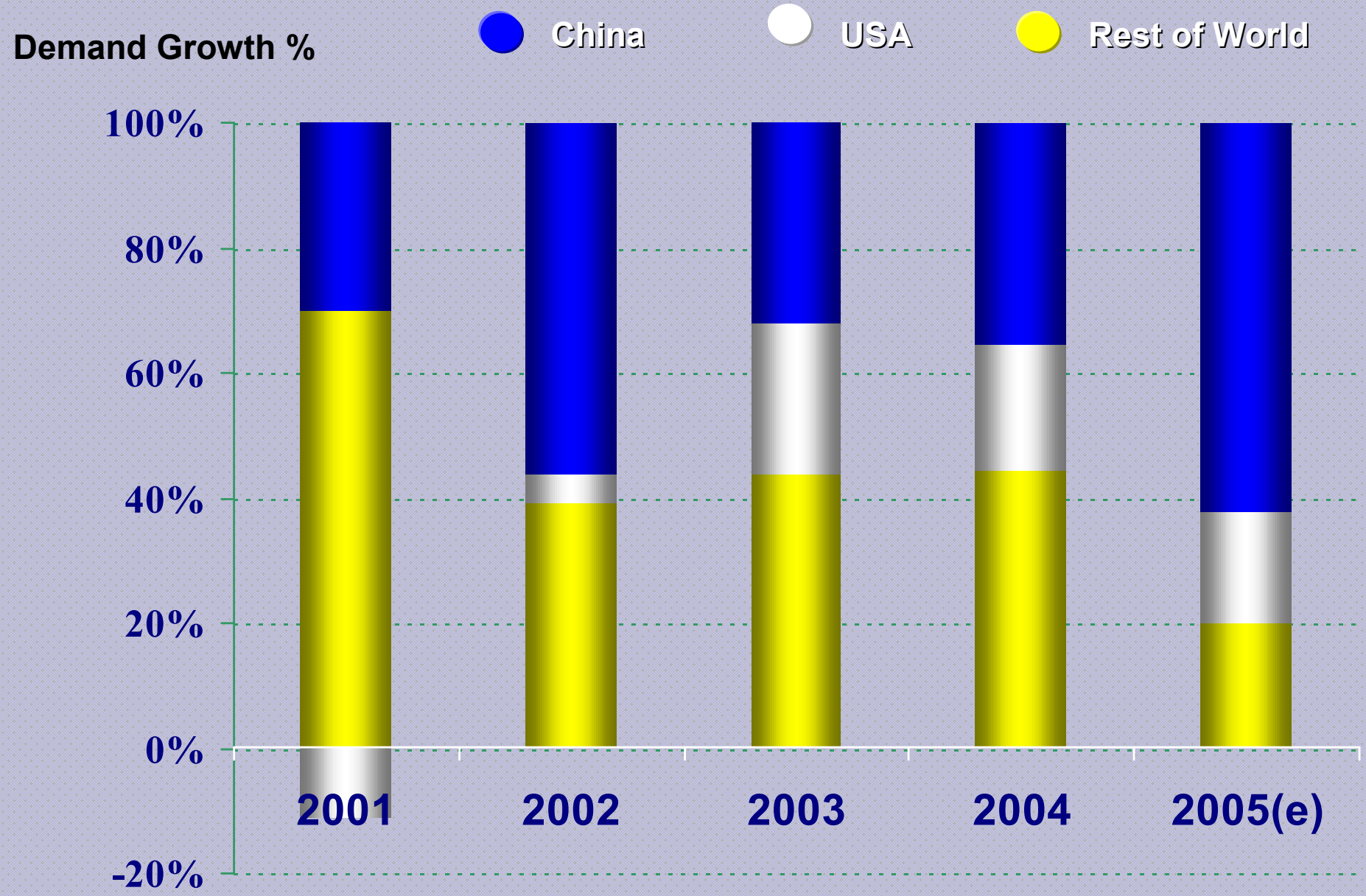
Production  
 Consumption

	China	India
Oil Consumption	7 MB/D	3 MB/D
% Oil Growth	16%	5.5%
% GDP Growth	8.4%	5.3%

↪ ME high levels of reserves do not necessarily imply high levels of production  
 ↪ Rising appetite of Asia spurs oil prices



# Contribution to Global Oil Demand Growth



- ↪ China's growing demand growth spurs oil prices in Asia
- ↪ USA Demand growth is diminishing

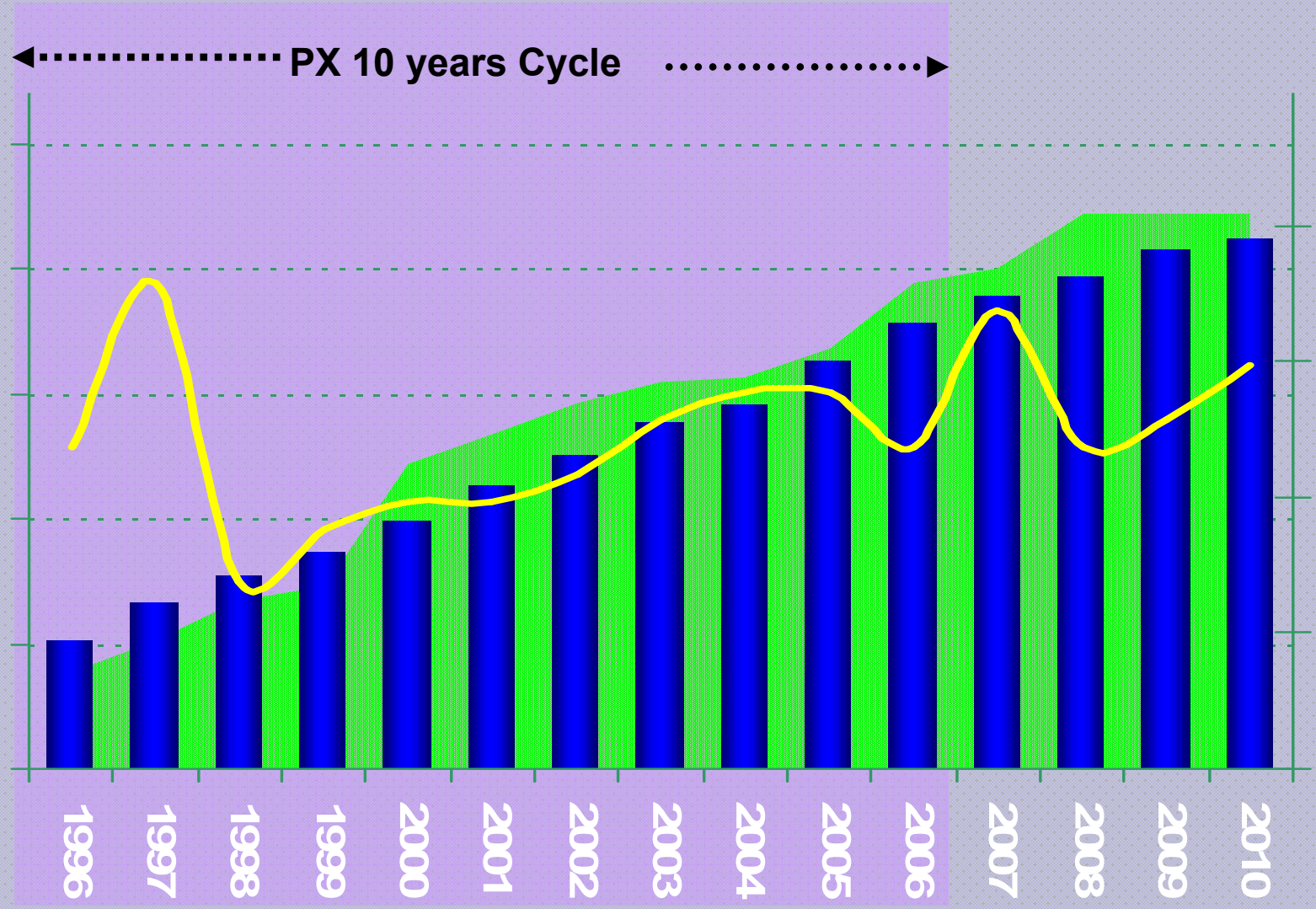


# Asia PX Outlook

● Capacity      ● Demand      ● Operating rate

Million MT

Operating rate  
in %



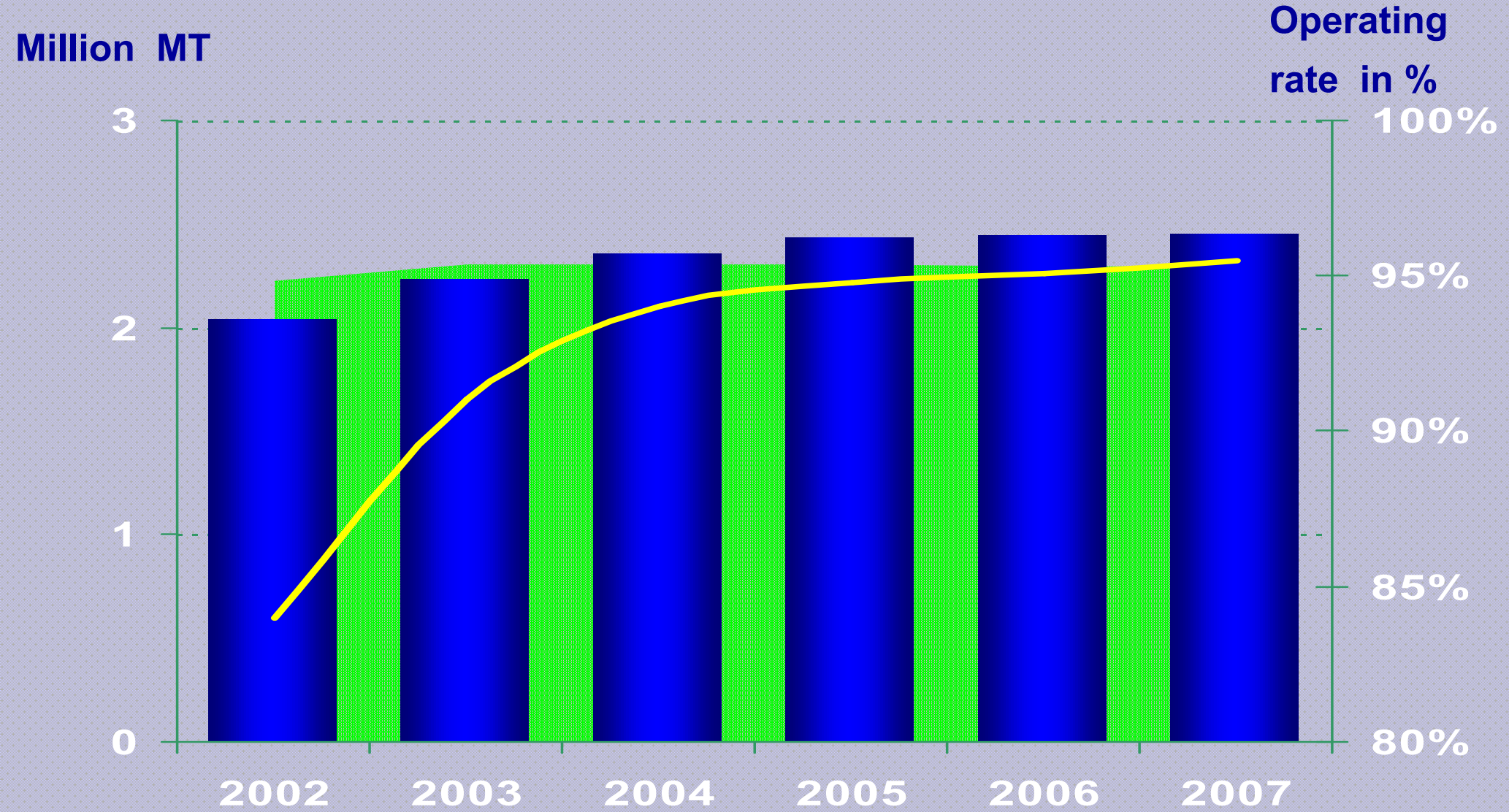
↘ PX demand is strong in Asia

↘ China starts to build new capacities

# West Europe PX Outlook



● Capacity      ● Demand      ● Operating rate

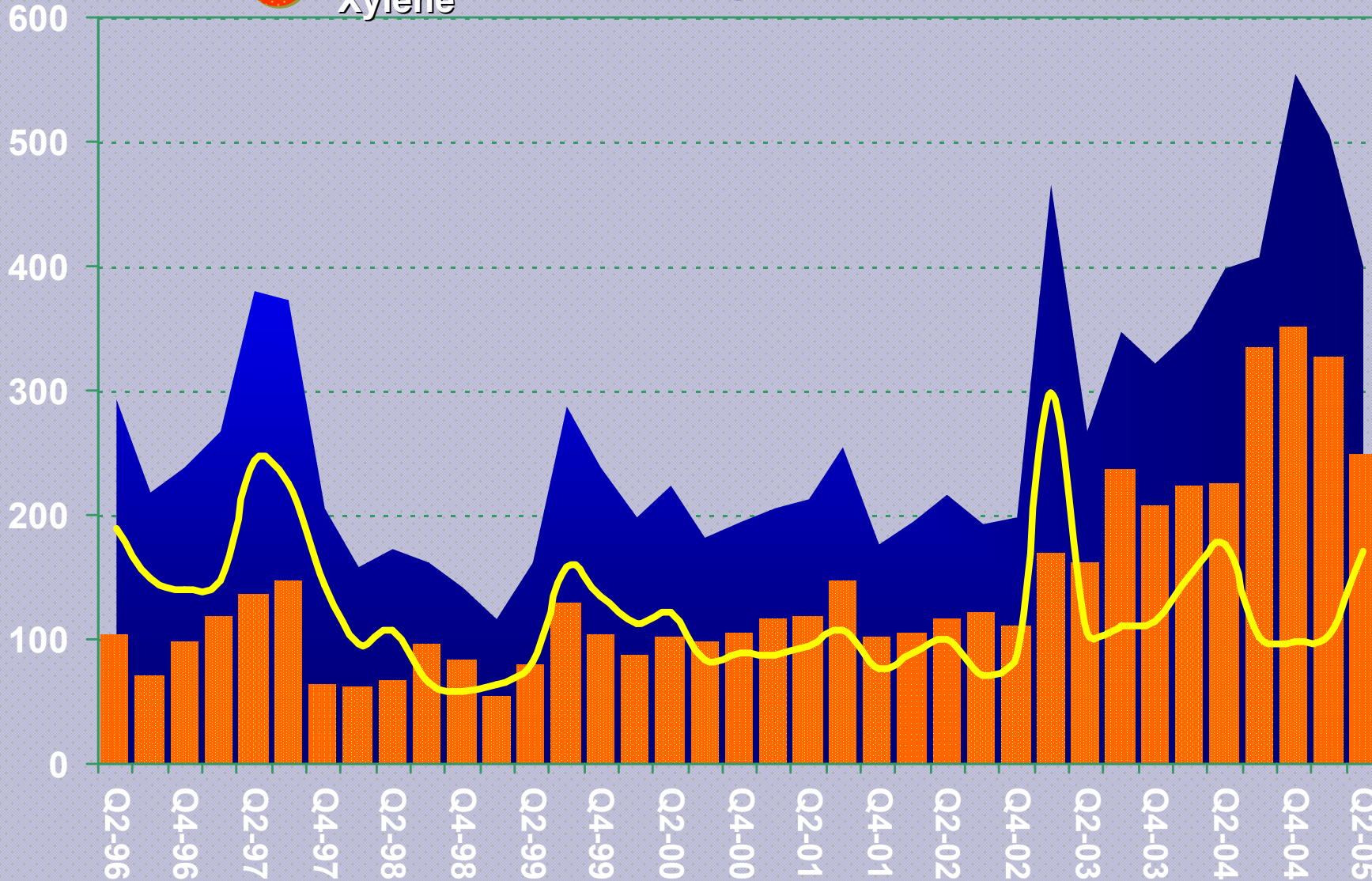


↪ PX demand exceeds capacity



# Mixed Xylene & PX - Historical Spread

\$ per Mt

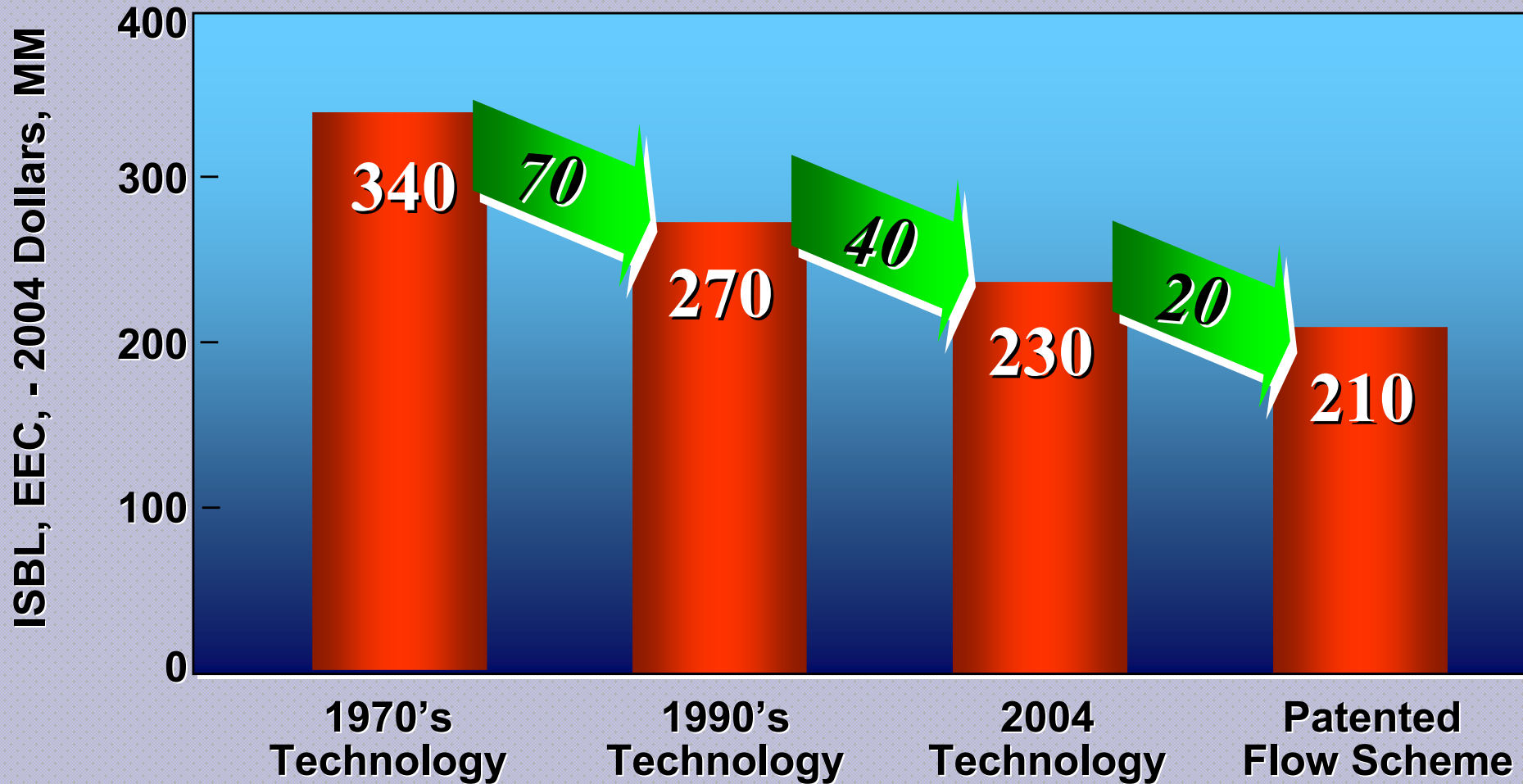


↗ Demand tightness improves margins

Prices in Spot FOB value. MX and PX are Asia base. Naphtha is AG FOB

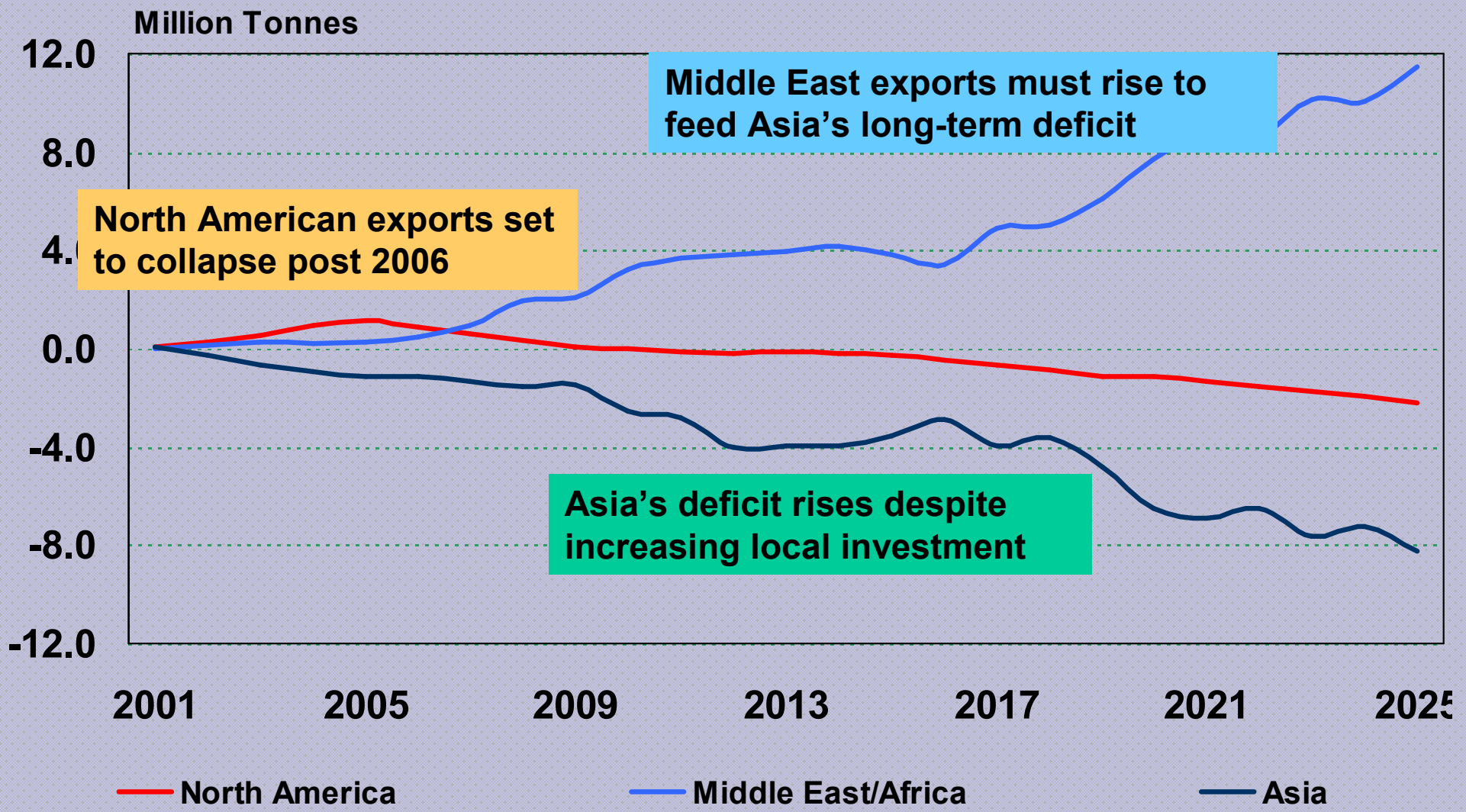
# Advancements in Capital Cost Reduction

## 400 KMTA p-Xylene Aromatics Complex



Source: UOP

# PX Regional Trade Balances



Source PCI



# **PTA Outlook**

**Moving into Surplus**

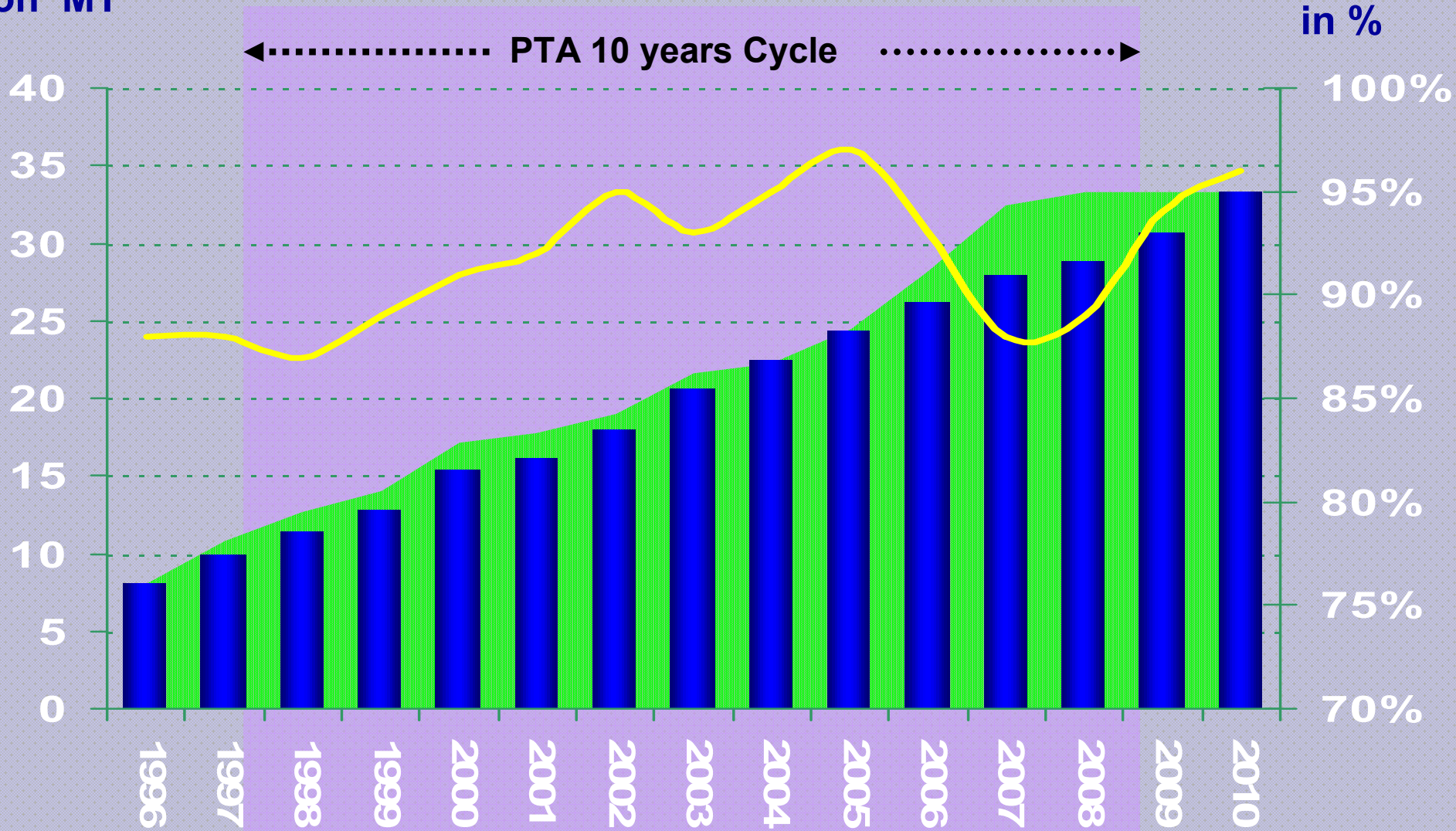


# Asia PTA outlook

● Capacity      ● Demand      ● Operating rate

Million MT

Operating rate  
in %



↘ Surging Demand and lagging capacity gave healthy margins in 2004 and 2005

↘ Asia's PTA demand grew by 22.5% in 97 – 04 and likely for 04 – 10 is 9.0%



# Europe PTA Outlook



Capacity



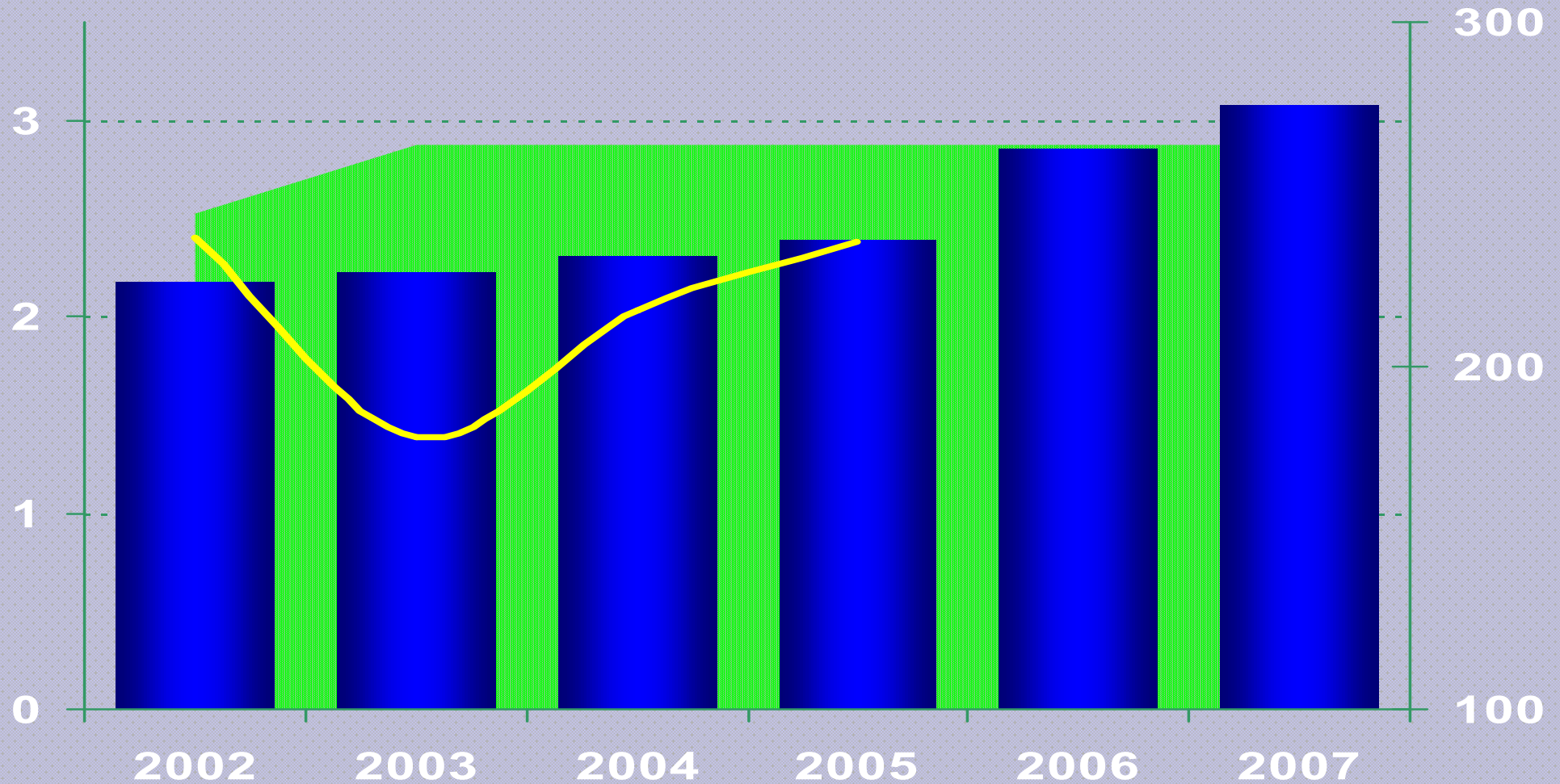
Demand



Actual PTA Delta  
(PTA over PX)

PTA Delta  
Euro/Mt

Million MT

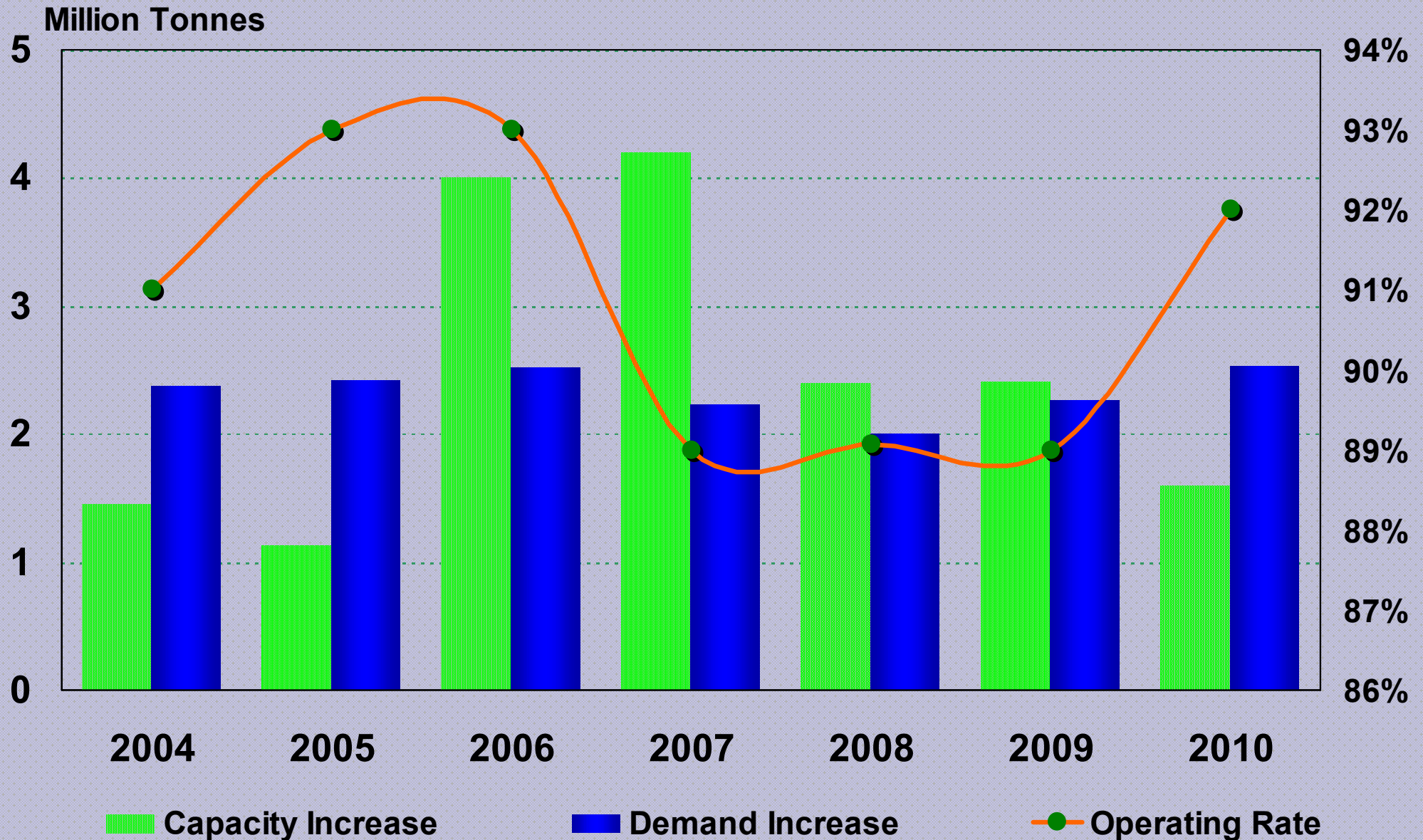


↪ PTA is balanced till 2006

↪ PTA supply is likely to move to deficit from 2006



# World PTA Supply & Demand

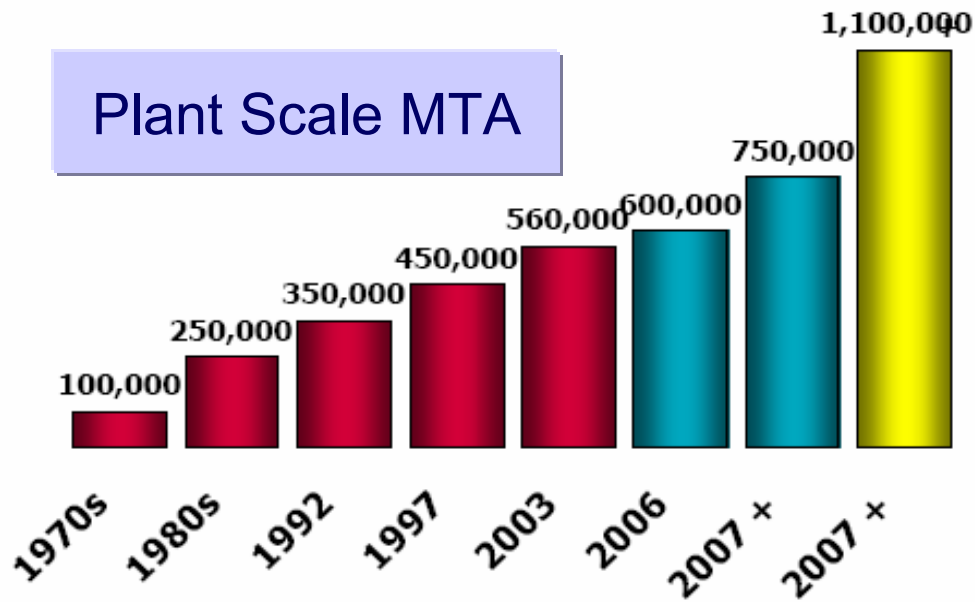


↪ Capacity increases outpace demand in the next four years

# Plant Scale and Capital Productivity

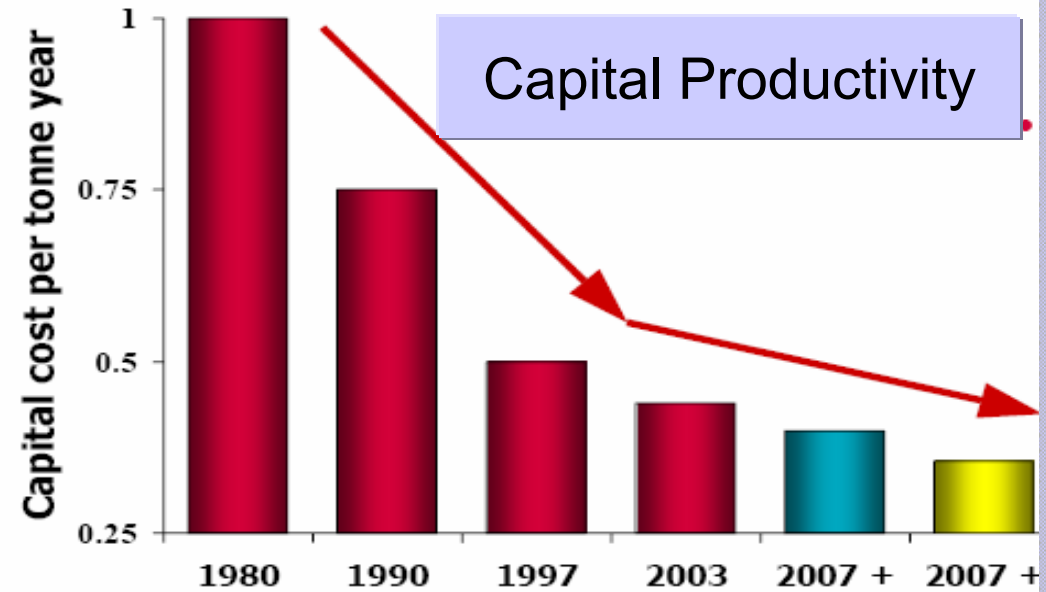


Plant Scale MTA



Evolutions of plant scale has led to reduction in Capital cost

Source: INVISTA



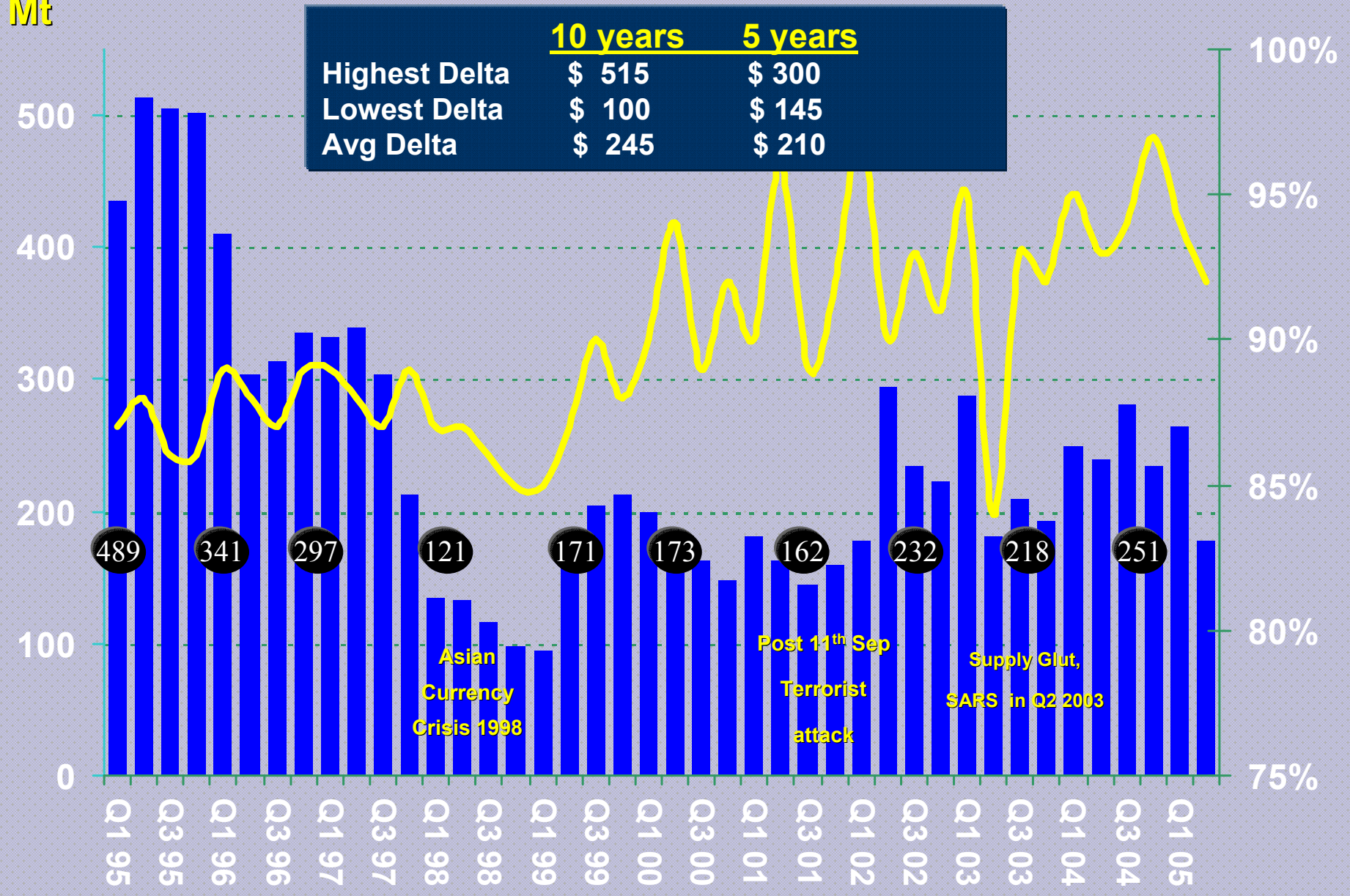
# Historical Asia PTA Delta : 10 Yrs



■ Qtr. Delta      ● Yr. Delta      — Op. Rate

Op. rate %

Delta \$ / Mt



	10 years	5 years
Highest Delta	\$ 515	\$ 300
Lowest Delta	\$ 100	\$ 145
Avg Delta	\$ 245	\$ 210

Delta = PX ACP CFR cost over PTA Spot CFR S.E.A Price



# MEG Outlook

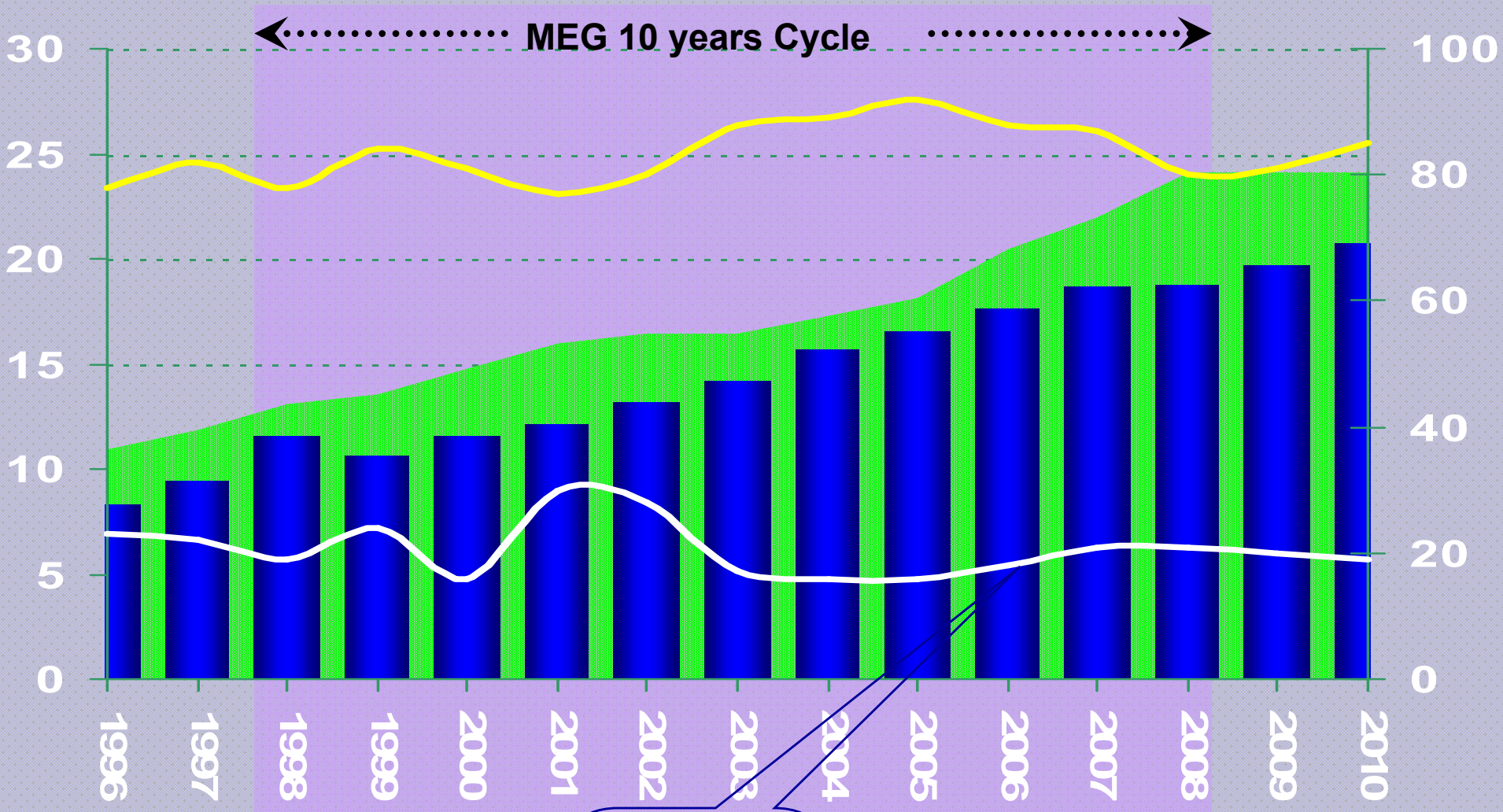


# Global MEG Outlook

● Capacity    ● Demand    ● Op. Rate

Op rate in % &  
Inventory Days

Million MT



↪ Demand growth 97-04 – 10.8% P.a

Inventory Bottoms out by 2005 end

↪ Demand growth 04-10 – 6.5% P.a

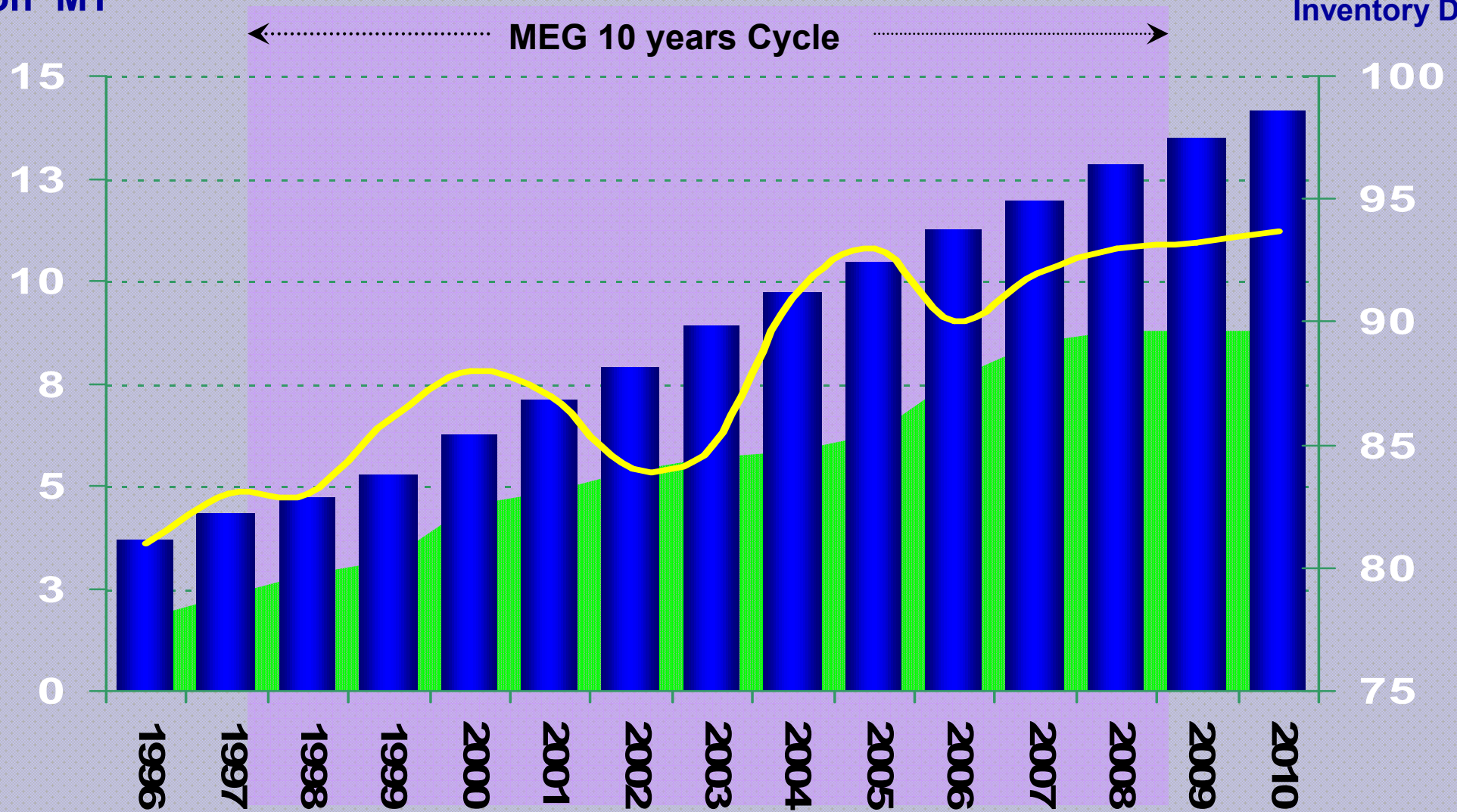


# Asia MEG Outlook

● Capacity      ● Demand      ● Op. Rate

Op rate in % &  
Inventory Days

Million MT



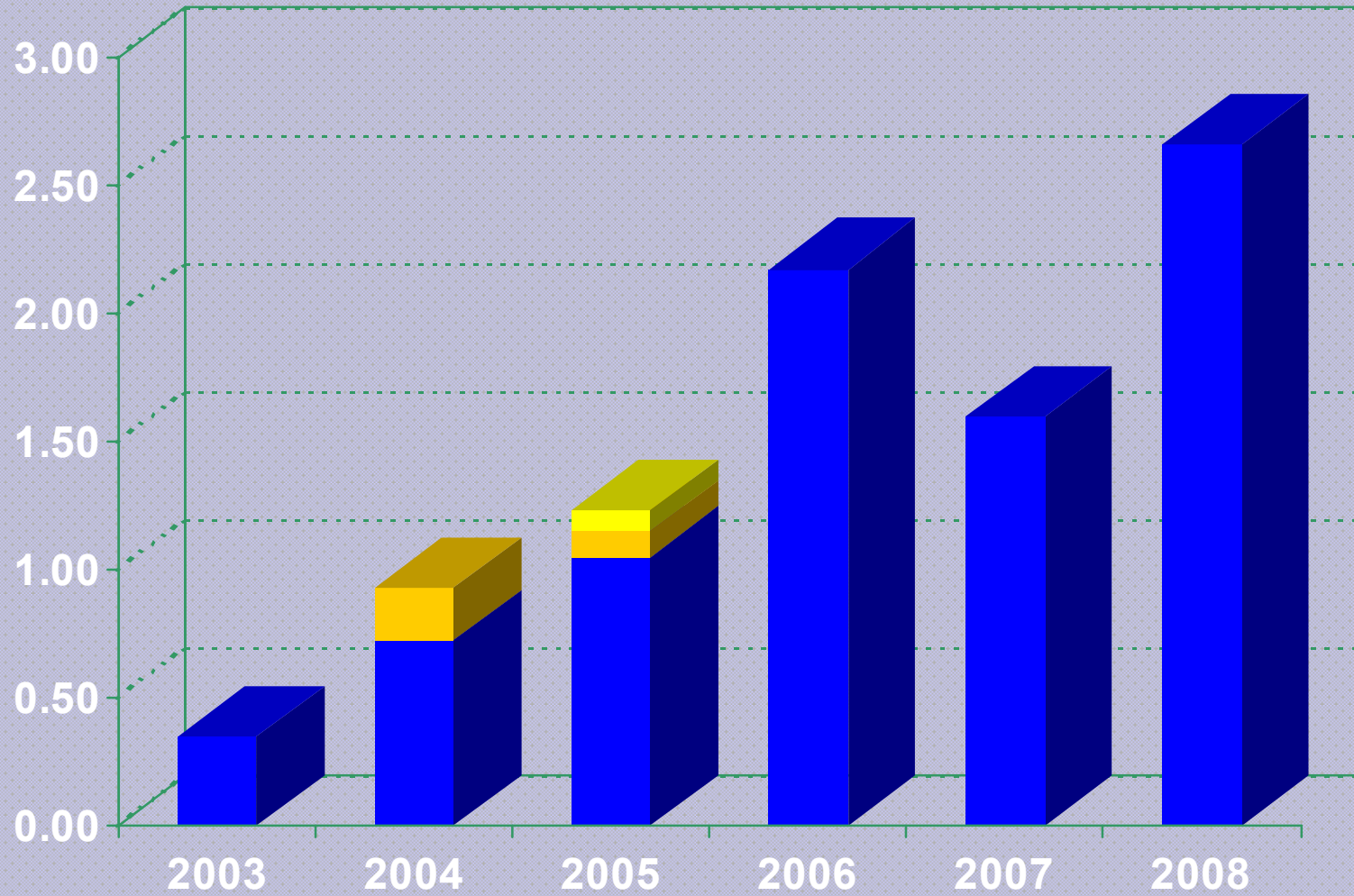
↘ Demand in 97 – 04 grew by 20.5% p.a and expected growth in 04 – 10 is 8.3% p.a



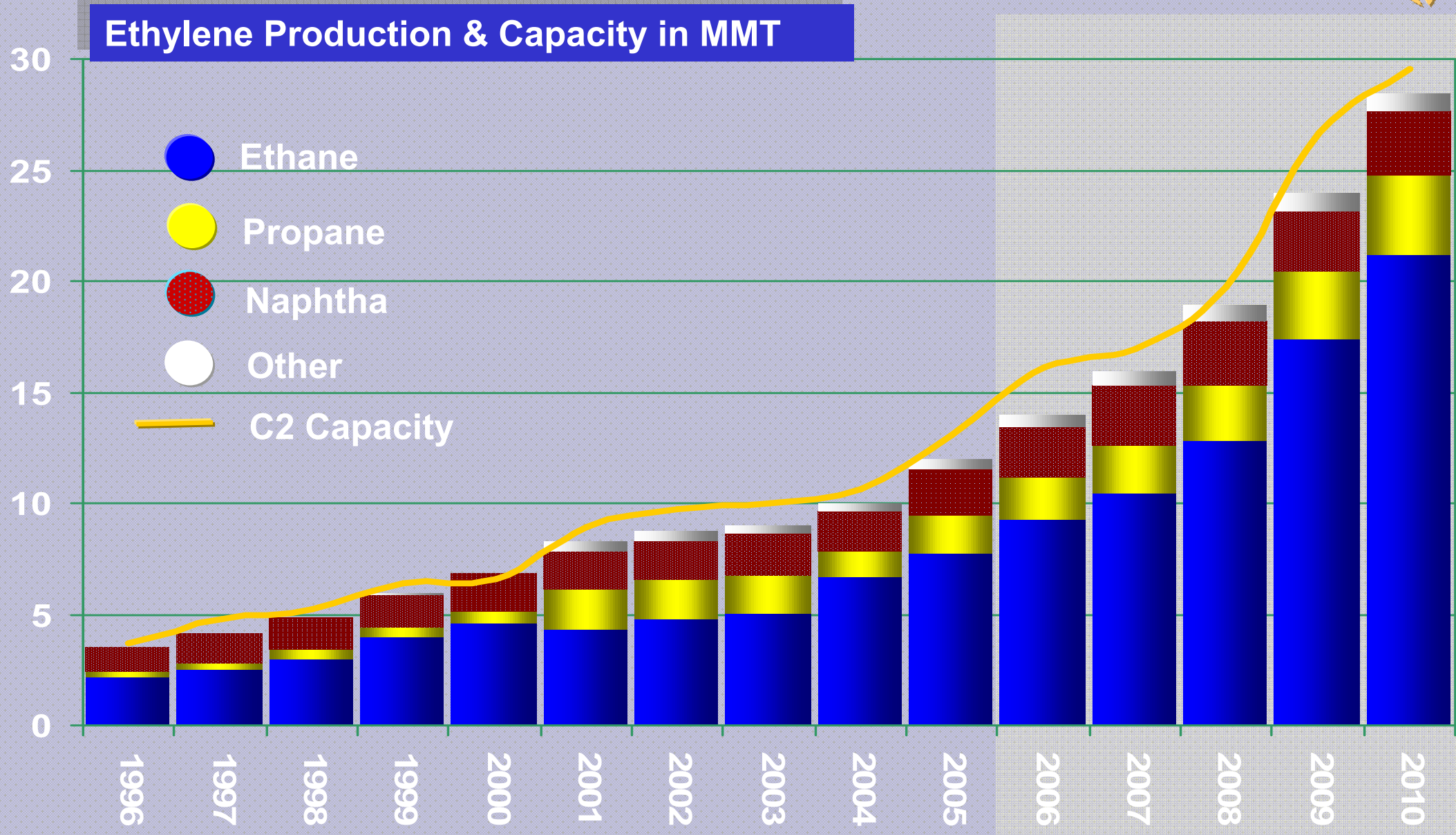
# MEG new expansions

● Confirmed    ● DBN    ● Restart

Million MT



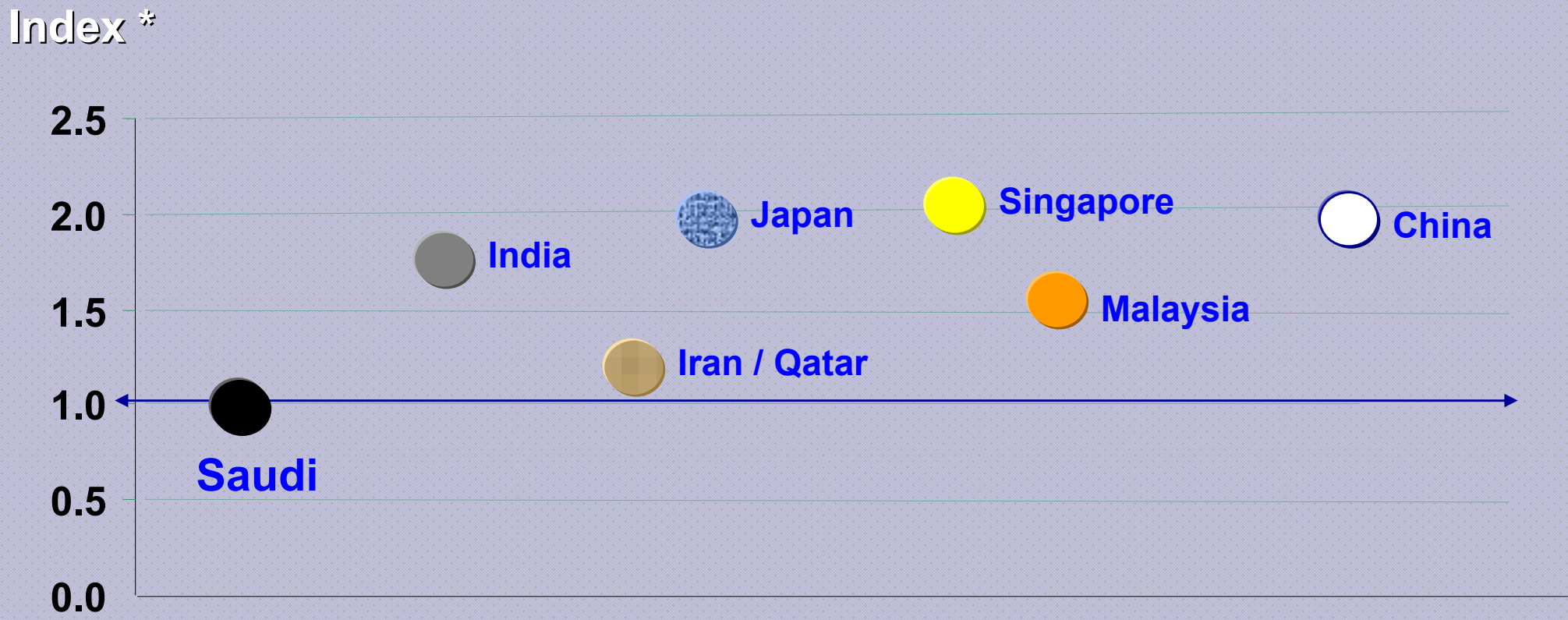
# M.E : Gas based Feedstock Dominates



➤ M. E will be cost competitive in MEG specially Iran - a major use of Ethane in region

➤ Ethane feedstock is growing at 18% over 15 years period

# MEG Cash Cost of Production : 2004



\* Index based on Saudi

↪ Middle East will maintain a strong Cost Competitive position



# Capacity Constraint

Supply Situation starts to Ease out

# Global Outlook : Polyester Chain 2005



**Polyester  
Incremental  
Production  
3.0 MMT**

**PTA Demand  
Increase  
2.58 MMT**

**PX Demand  
Increase  
1.73 MMT**

**MEG Demand  
Increase  
1.05 MMT**

**Global  
Capacity  
Addition  
5.4 MMT**

## Supply

Effective 1.7 MMT  
Capacity 2.6 MMT  
U/ R 95%

## Supply

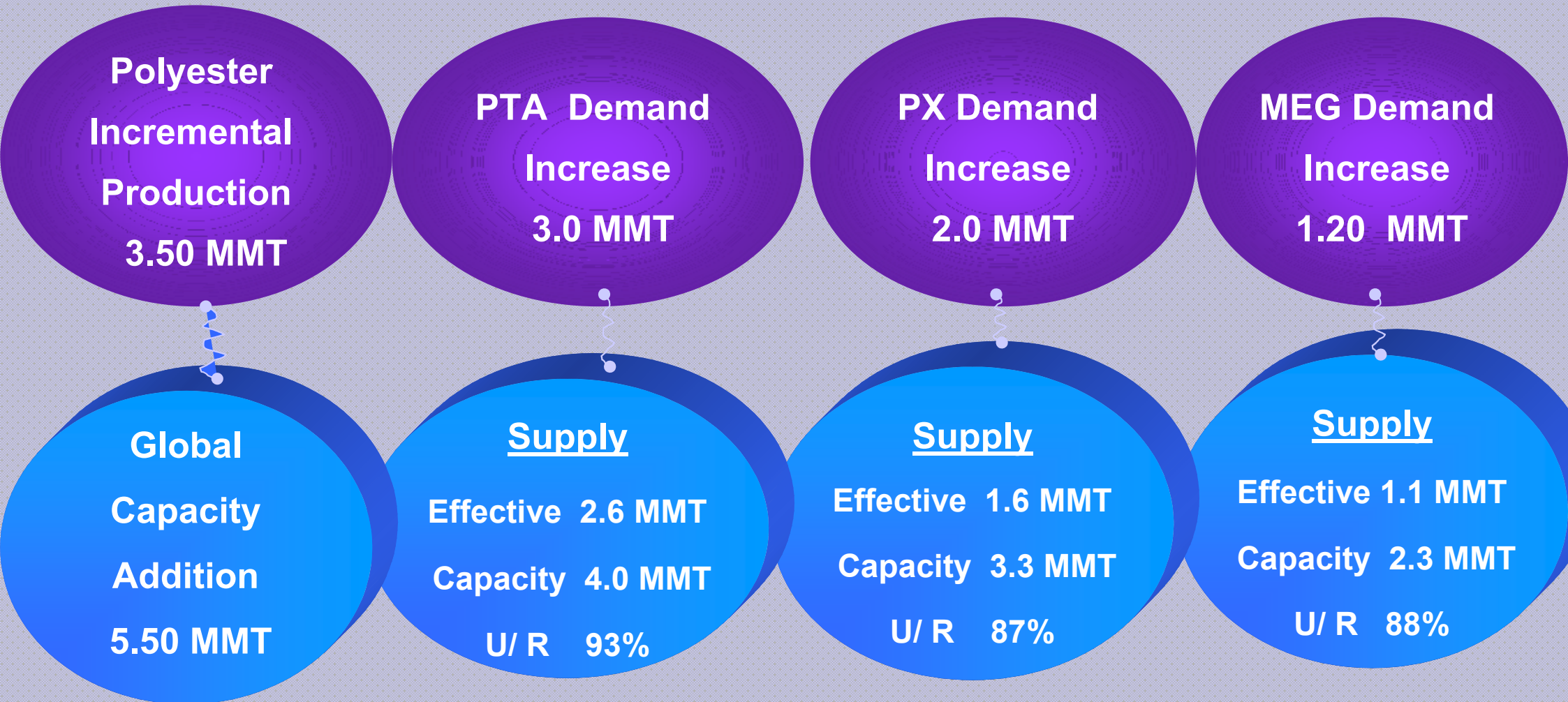
Effective 0.7 MMT  
Capacity 1.6 MMT  
U/ R 91%

## Supply

Effective 0.5 MMT  
Capacity 0.9 MMT  
U/ R 92%

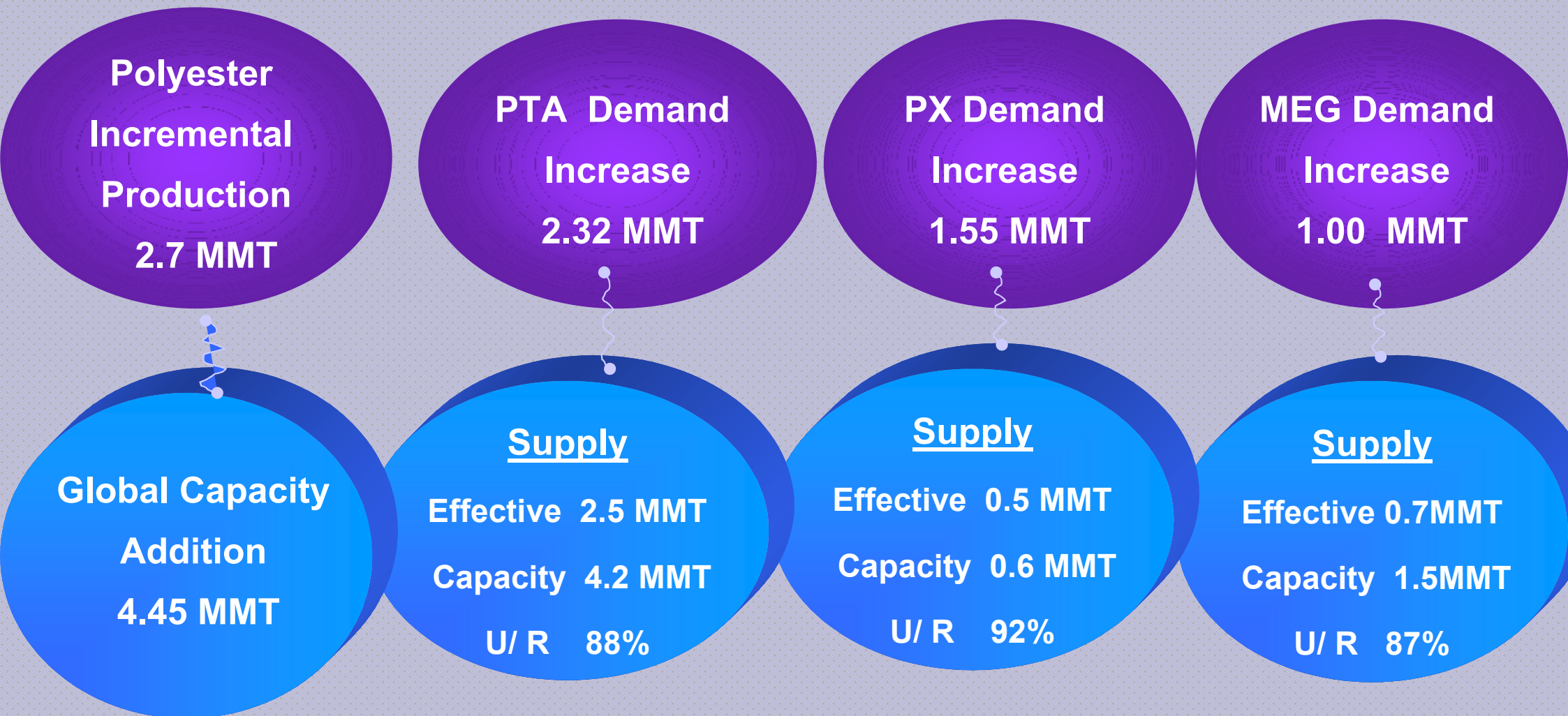
↘ **All Raw materials are tight and operating at high rates**

# Global Outlook : Polyester Chain 2006



Raw Material supply eases out

# Global Outlook : Polyester Chain 2007

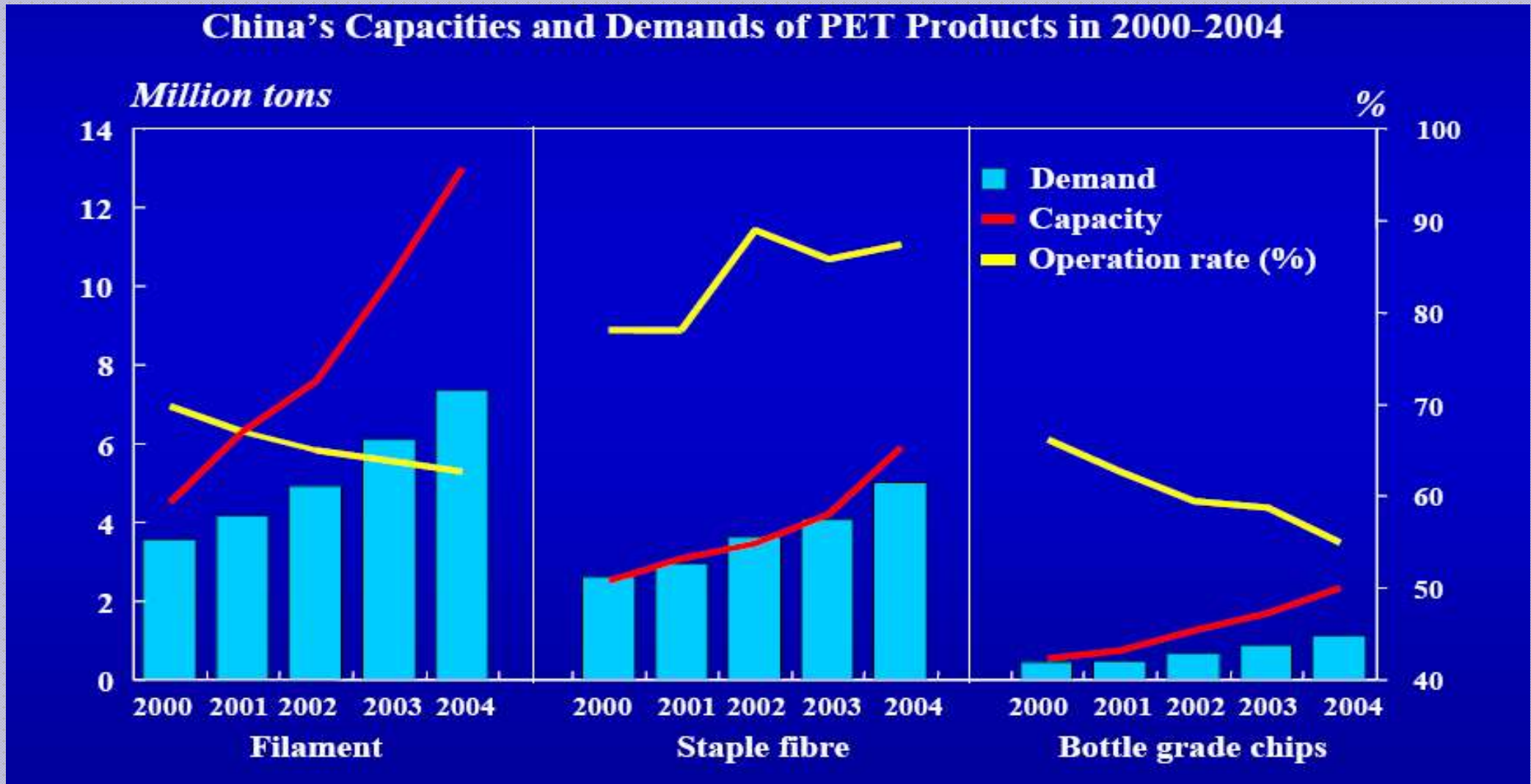


↪ PX may not be adequate will spur Op. rate



# China Imbalances

- Imbalance between upstream and downstream
  - Capacity expansion of each polyester product beyond demand

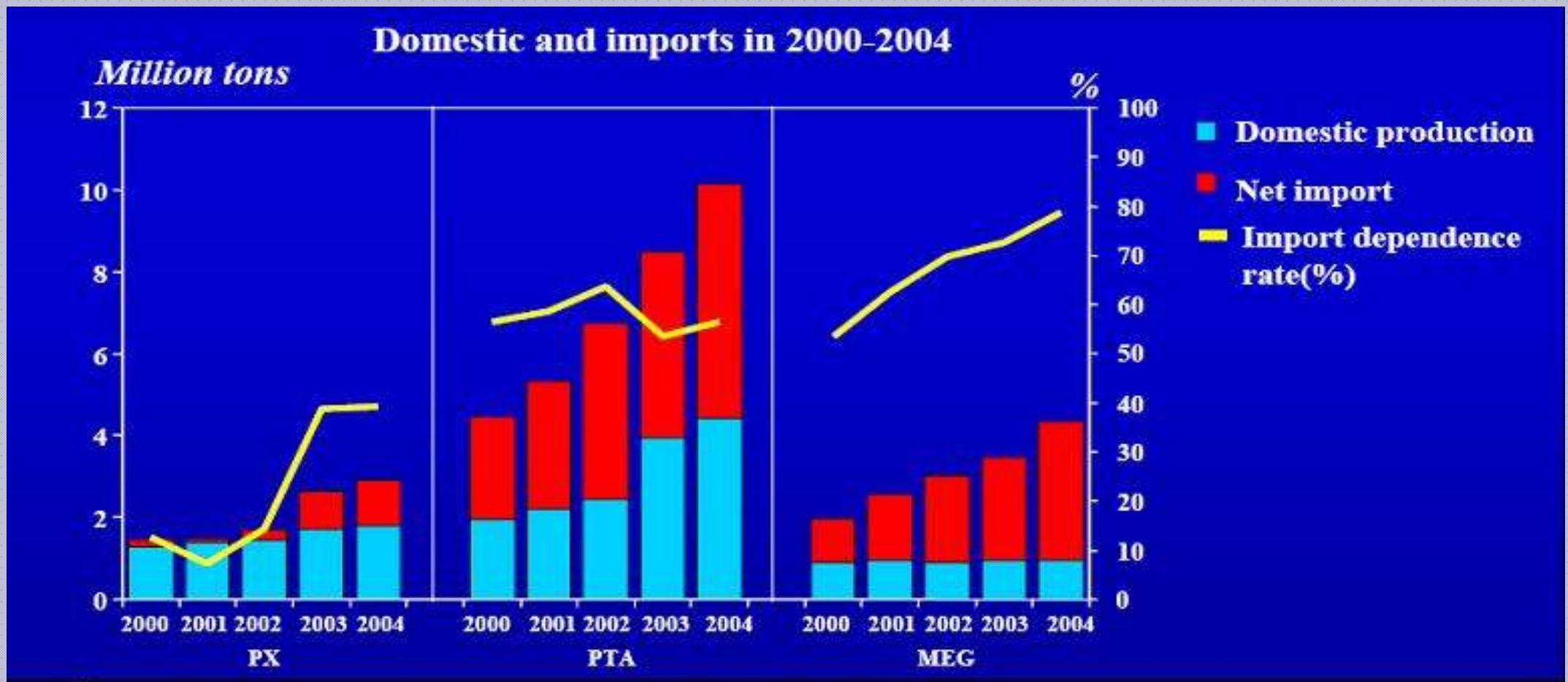




# China Imbalances

- **Imbalance between upstream and downstream**

- In 2000-2004, PX, PTA and MEG capacities in China grew by 14.4%, 22% and 5.9% respectively, while PET up by 29%;
- Feedstock imports up continuously, with higher dependence



# Asia Polyester Value Chain



Oil Price (BRENT)

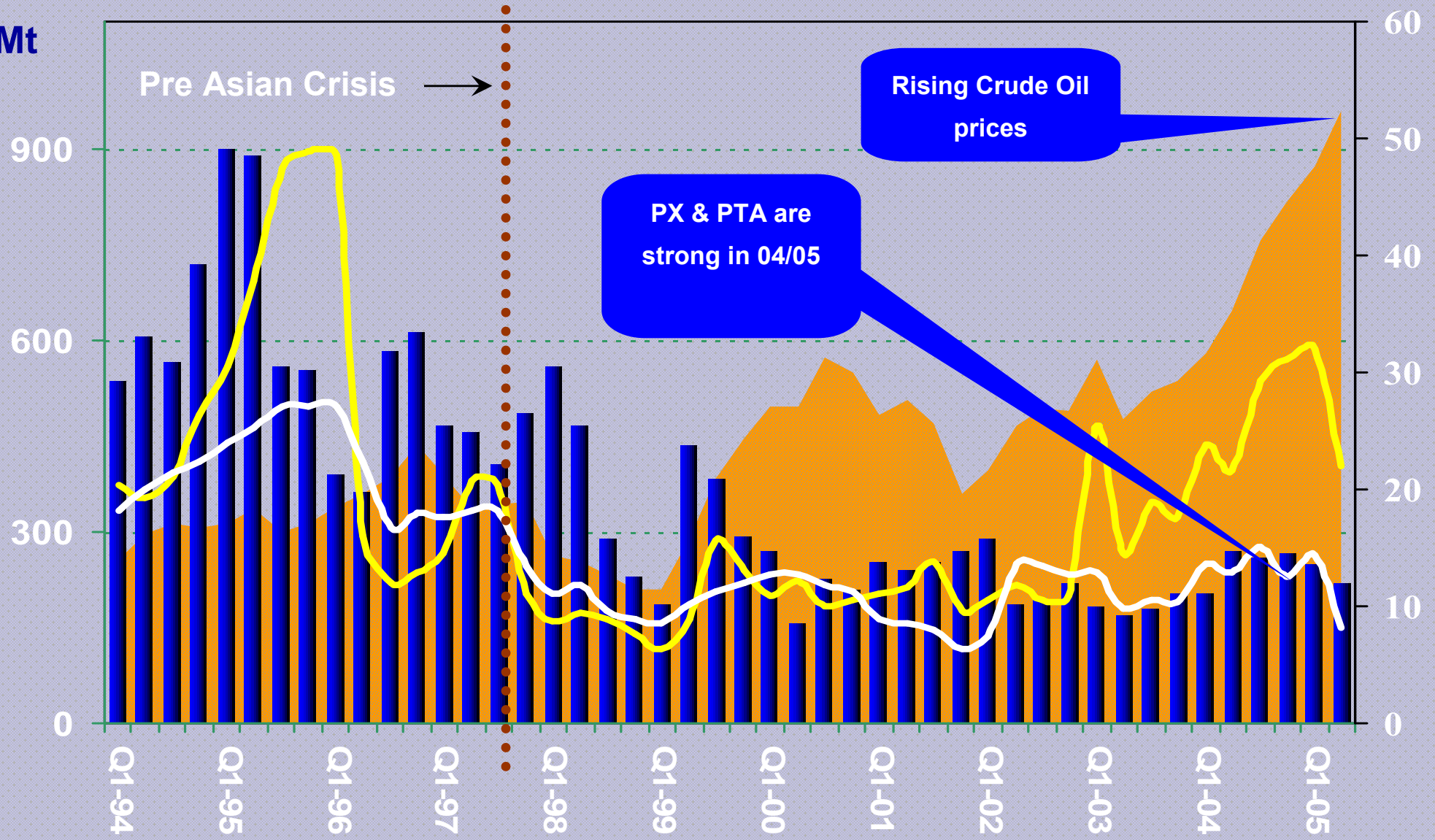
POY Delta

PX Margin over Naphtha

PTA Delta

\$ per Barrel

\$ per Mt



↪ Increase in Oil prices, capacity surplus erode polyester margins

Margin is difference between price and RM cost  
 POY 230 Dn, PTA/POY CFR Delta, PX – NX spread FOB



# Conclusions

- High Crude prices will remain – Will it affect growth ?
- Overcapacity in Polyesters will hurt margins
- **PX**
  - Tight supply in 2005 eases out from 2006 till 2008
  - Middle East is becoming a large source of supply – will cater to Asia's deficit
  - Despite capacity addition China will continue to import till 2010
- **PTA**
  - PTA starts softening from 2006 and remains soft till 2008 end
  - New foreign PTA investments in China is doubtful
  - China continues to import 3 – 6 Mn Mt every year till 2010
- **MEG**
  - MEG prices and margins starts declining from latter half of 2006
  - Middle East is set to be a dominant player catering to Asia & Europe
  - MEG investment are at a high will result in over capacity and low margins