



EMERGING INVESTMENT OPPORTUNITIES IN SECONDARY & TERTIARY PETROCHEMICAL INDUSTRIES

By

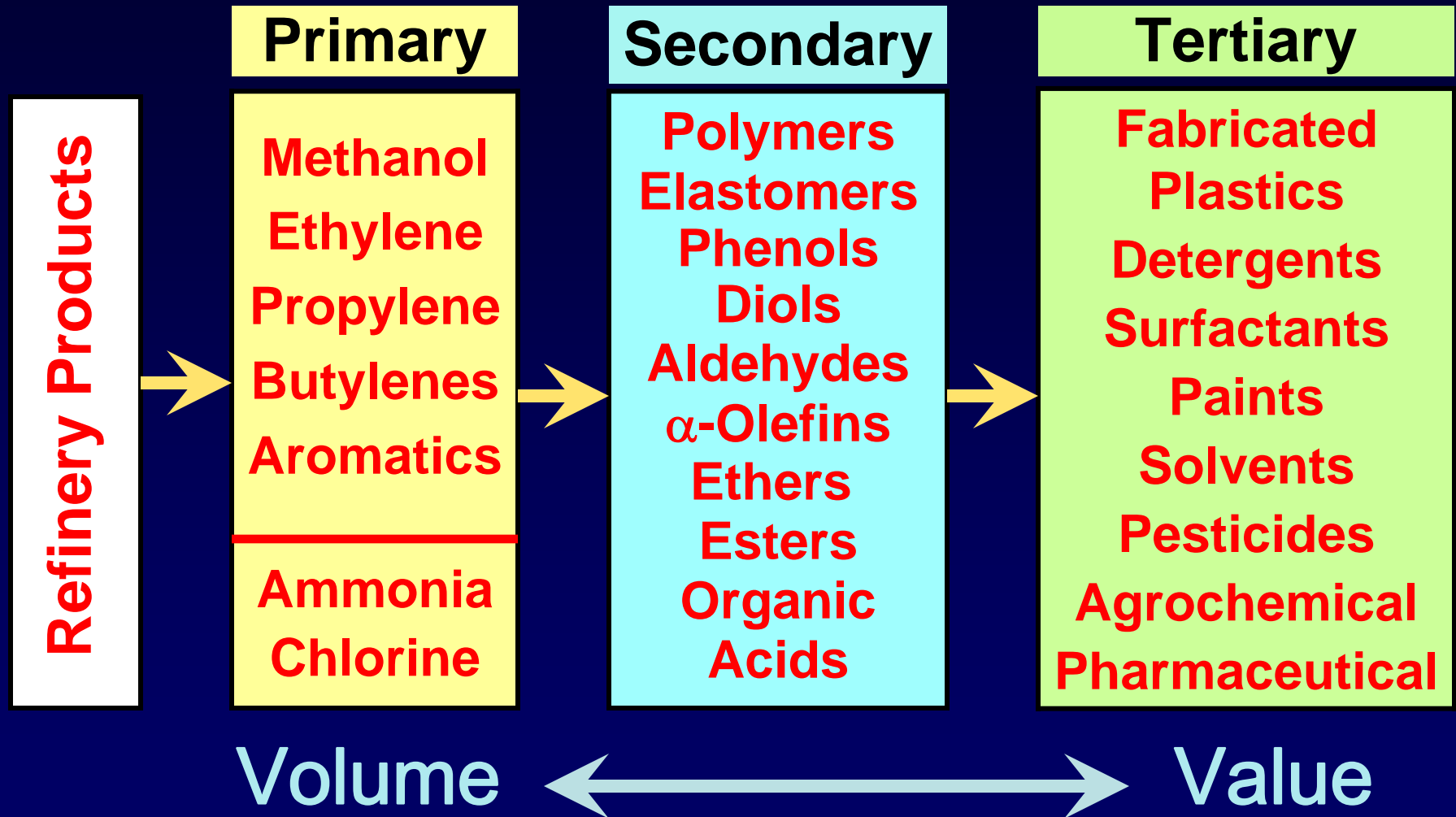
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Jeddah Chamber of Commerce & Industry
October 13, 2004*

Agenda

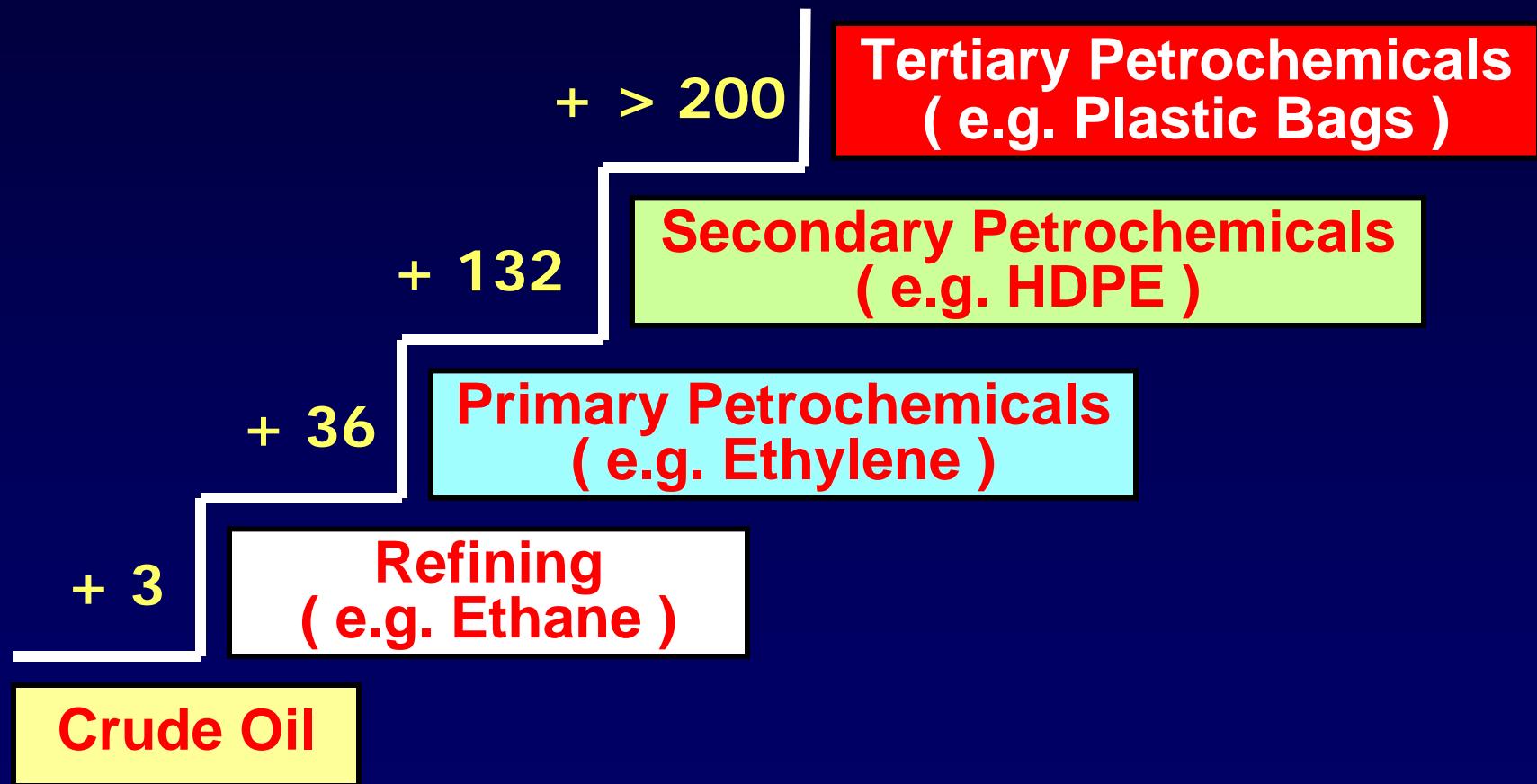
- **The Petrochemical Industry Chain**
- **Overview of the KSA Industry**
 - **Evolution of the Industry**
 - **Industry Status**
- **Emerging Tertiary Opportunities**
 - **Emerging Investment Opportunities**
 - **Export Opportunities – Processed Plastic Products**
- **Concluding Remarks**

The Petrochemical Industry Chain



The Petrochemical Industry Chain

Value Added Across the Production Chain
(US \$ / Barrel)



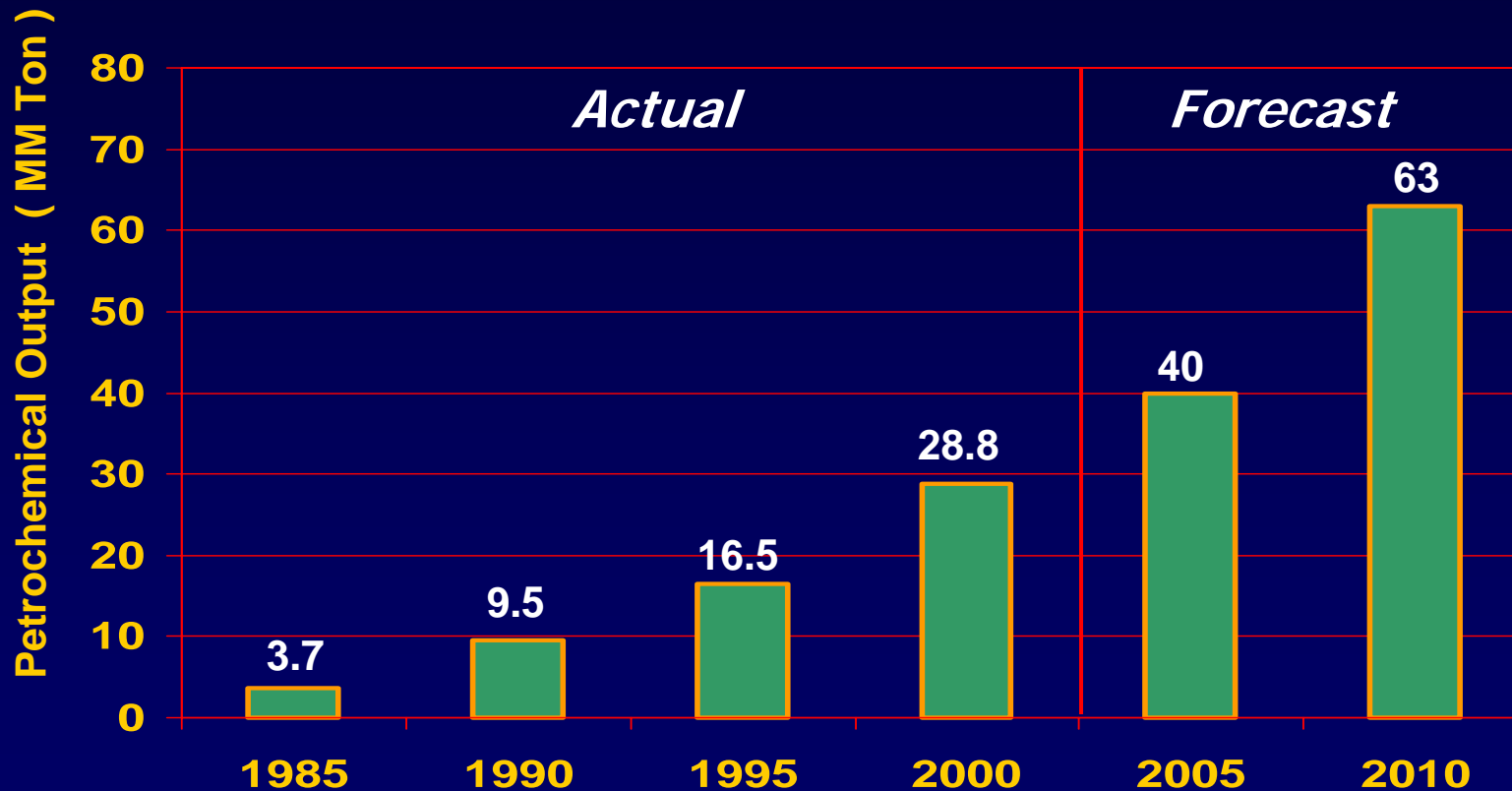
Evolution of the Industry

- **Early Petrochemical Production in KSA**
 - Start-up of AR-RAZI Methanol Plant - 1983
- **At Present :**
 - SABIC is Ranked 11th Largest Petrochemical Producer in the World
 - Petrochemicals Exports Valued SR 39 Billion Ranking 3rd after Crude Oil & Refined Petroleum Products
 - 14 Petrochemical Complexes, over 70 % of which are JV with Global Players
 - Employs over 17000, 80% are Saudi Nationals

Evolution of the Industry

Consistent & Exponential Growth Pattern

Petrochemicals Output (Years 1985 – 2010)



Evolution of the Industry

Key Milestones of the Growth Phases



PHASE I (pre 1983)

- **SABIC, MGS, Royal Commission Formed**
- **Ethane Prices Set at \$ 0.50 / MM Btu**

PHASE II (1984-2000)

- **Massive Investment Drive**
- **MGS Expanded**
- **Ethane Price revised to \$ 0.75 / MMBtu**
- **Propane & Condensate Cracking Started**
- **Start-up of 1st Basic Petrochemical Project based on 100 % Private Ownership**

PHASE III (2001-2010)

- **Massive Investment & Capacity Addition**
- **Larger Role for the Private Sector**
- **Diversification into Tertiary Products**
- **A Shift to Refinery Integration**
- **Globalized Production**

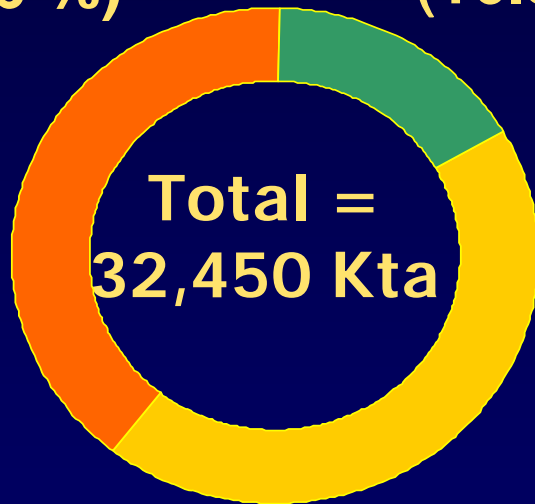
Industry Status

Petrochemicals Products Slate

2003

Intermediates
(39.6 %)

Fertilizers
(16.5 %)

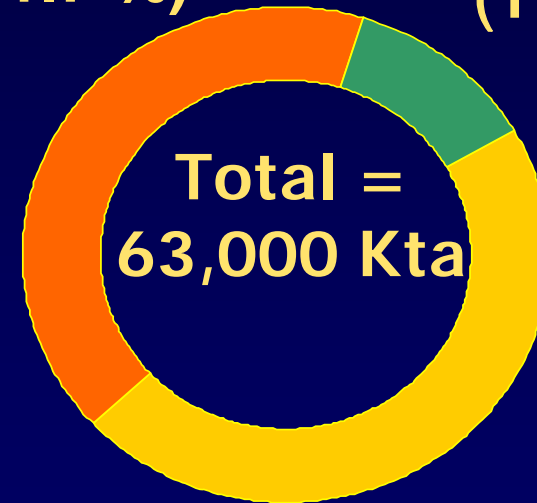


Basic Petrochemicals
(43.9 %)

2010

Intermediates
(41.7 %)

Fertilizers
(11.9 %)

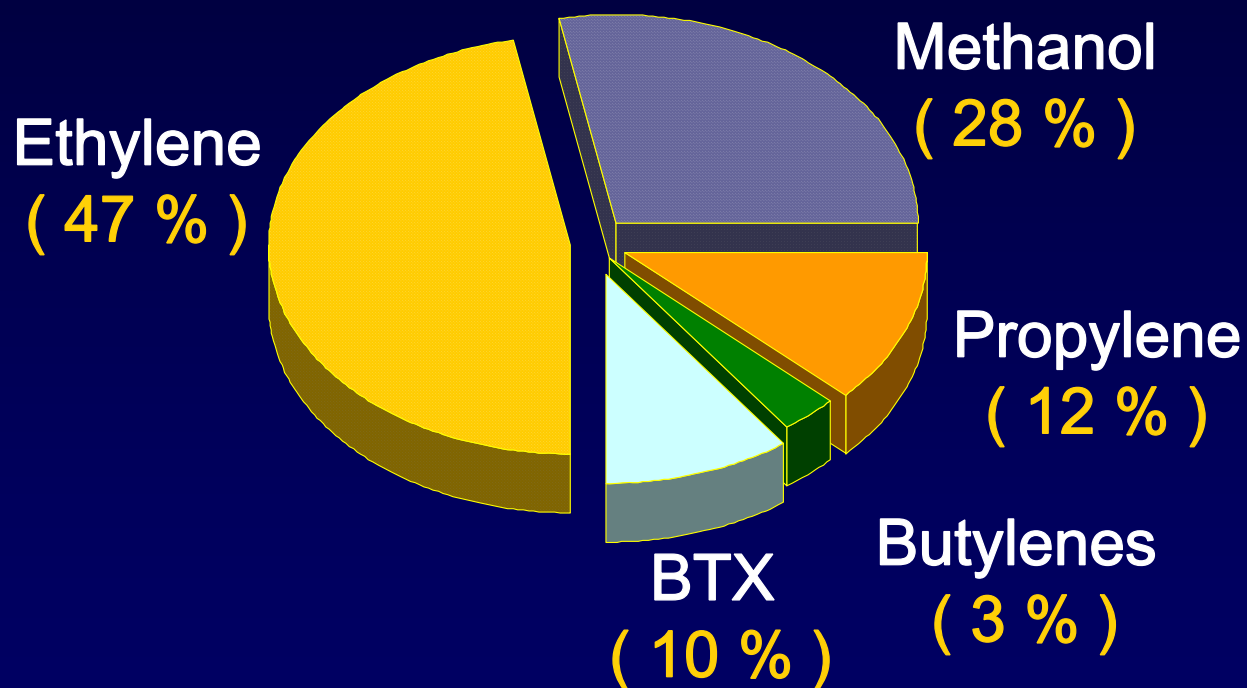


Basic Petrochemicals
(46.4 %)

Industry Status

The Gas-based Nature of the Industry Influences its Products Portfolio

The Products Mix of Basic Petrochemicals - 2003

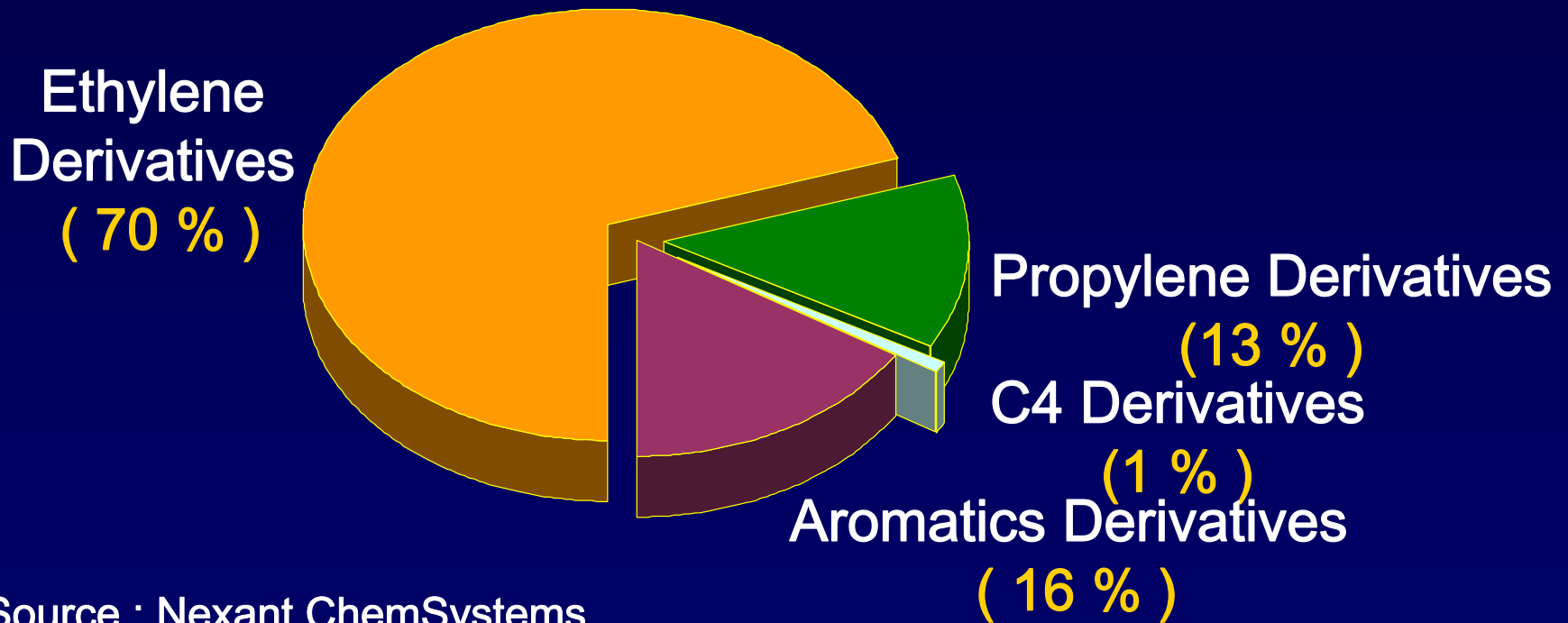


Heavy reliance on Ethylene has partly limited the type of downstream industries developed to date

Industry Status

Type of Feedstock determine the downstream derivative projects

Derivatives Capacities Based on Cracking Yields - 2003



Source : Nexant ChemSystems

Industry Status

Critical Success Factors for the Primary & Secondary Petrochemical Industry

	KSA	Asia	Europe	USGC
Feedstock	✓✓✓	-	✓	✓
Plant Scale	✓✓✓	-	✓	✓✓
Integration	✓✓	-	✓	✓✓
Market	-	✓✓✓	✓✓	✓✓✓

Saudi Arabia Posses the Key Advantages of Low Feedstock Cost & Plant Scale

Emerging Opportunities

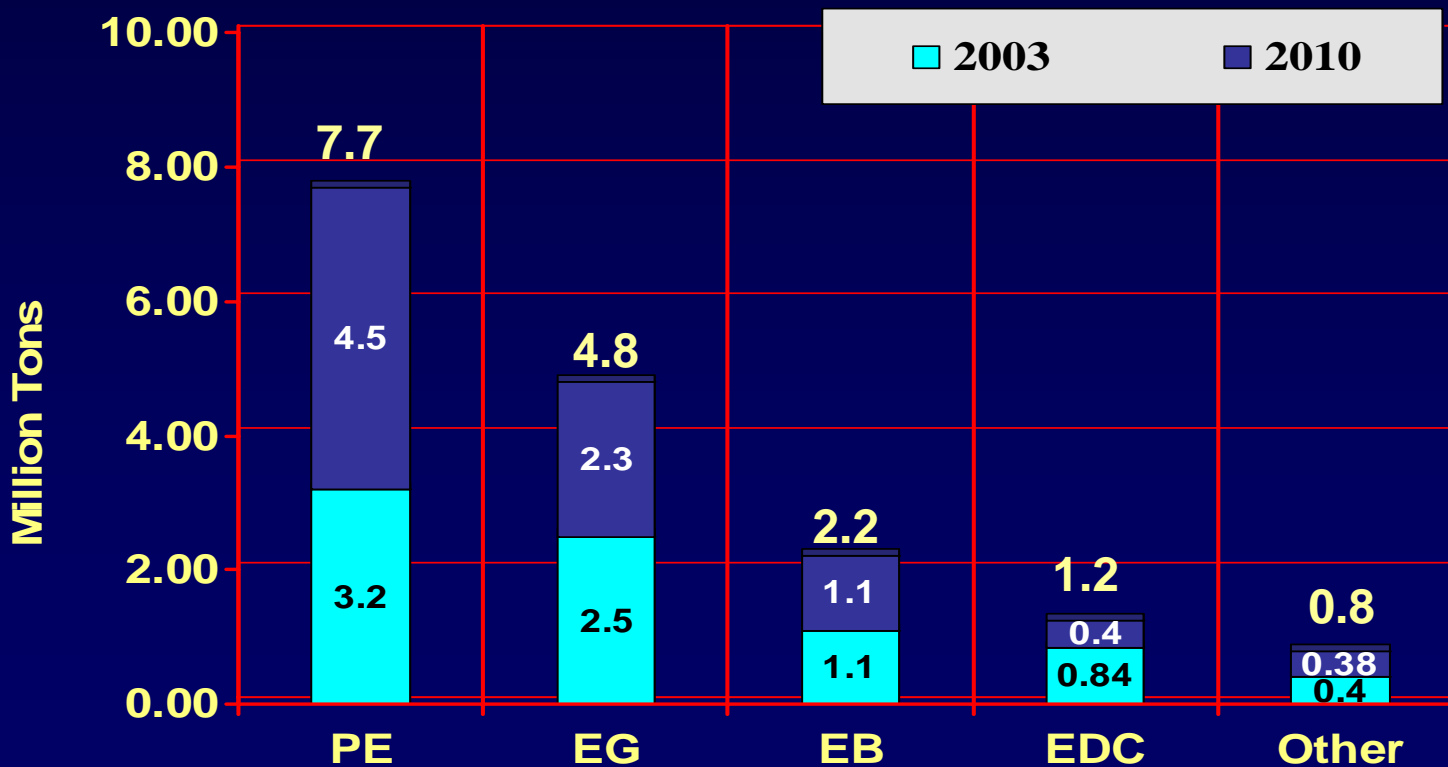
The Next Wave of Basic Petrochemicals Projects 2003 – 2010

Project	Capacity (ktpa)	Share of Capacity (%)
Methanol		
Sipchem, NPIC	2,000	14.2
Ethylene		
Sabic (Yanpet, Sharq, United), S. Chevron, S. Aramco, SAHRA, PMD	7,750	54.8
Propylene		
SPC, NPPC, Alujain, Sabic, PMD, S. Aramco / Sunitomo,	3,190	22.5
Benzene Derivatives (Styrene)		
Saudi Chevron, Sabic	1,200	8.5
Sub-total	14,140	100 %

Emerging Opportunities

Driver for Primary Petrochemicals Capacity Growth is Captive Demand

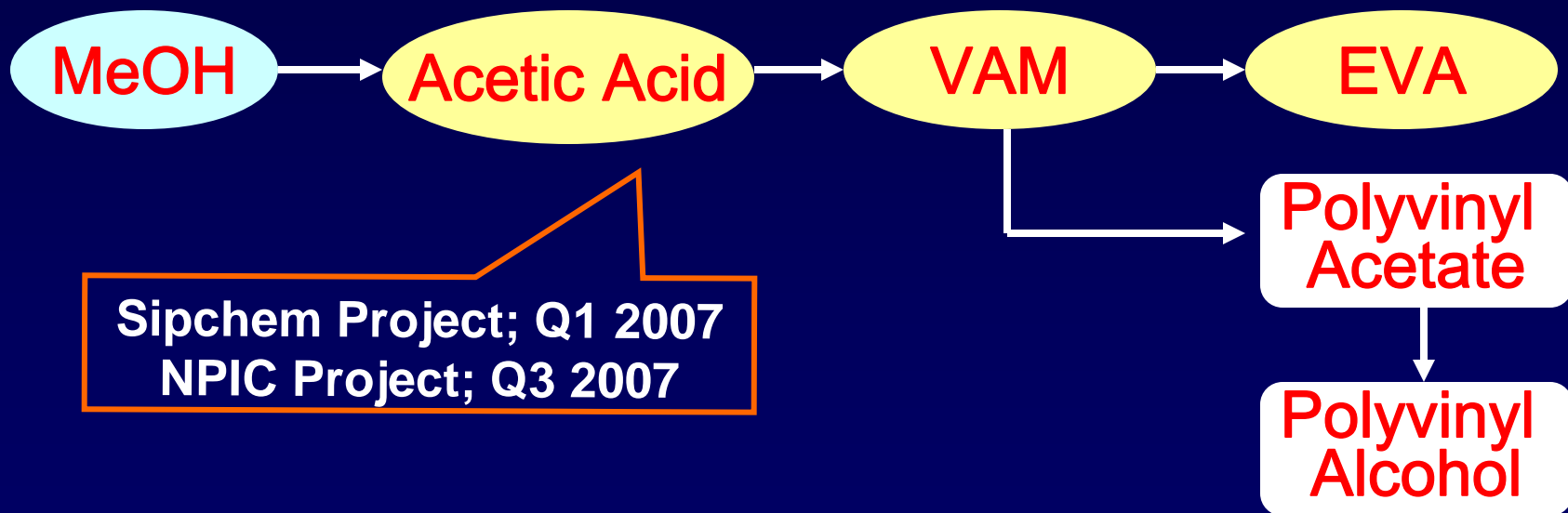
Captive Demand is the Driver for Ethylene Capacity Growth



Emerging Tertiary Opportunities

New Secondary Products will Stimulate a Multitude of New Downstream Derivatives

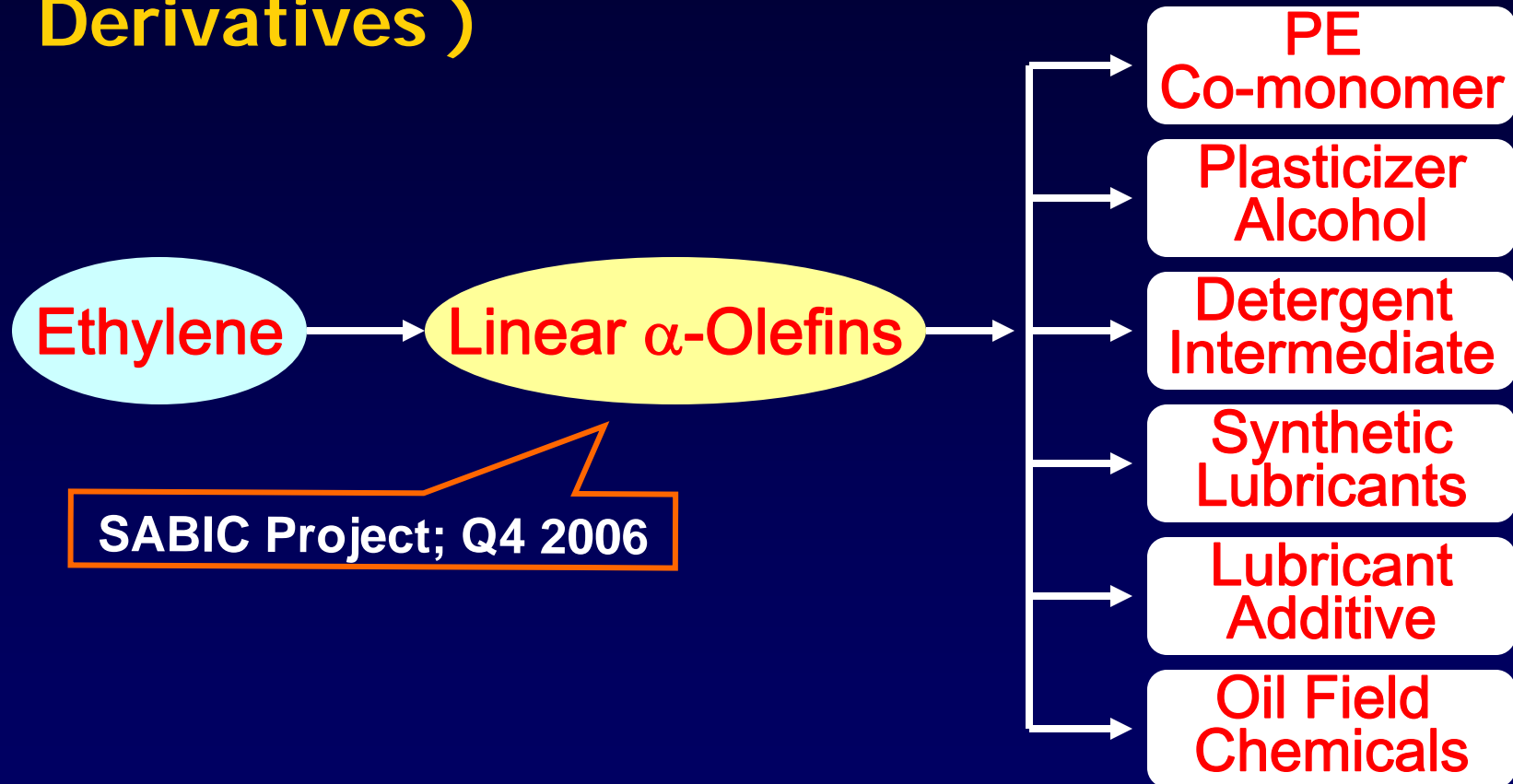
- **New Products in the C1 Chain (Methanol Derivatives)**



Feedstock **Derivative** **End-use Application**

Emerging Tertiary Opportunities

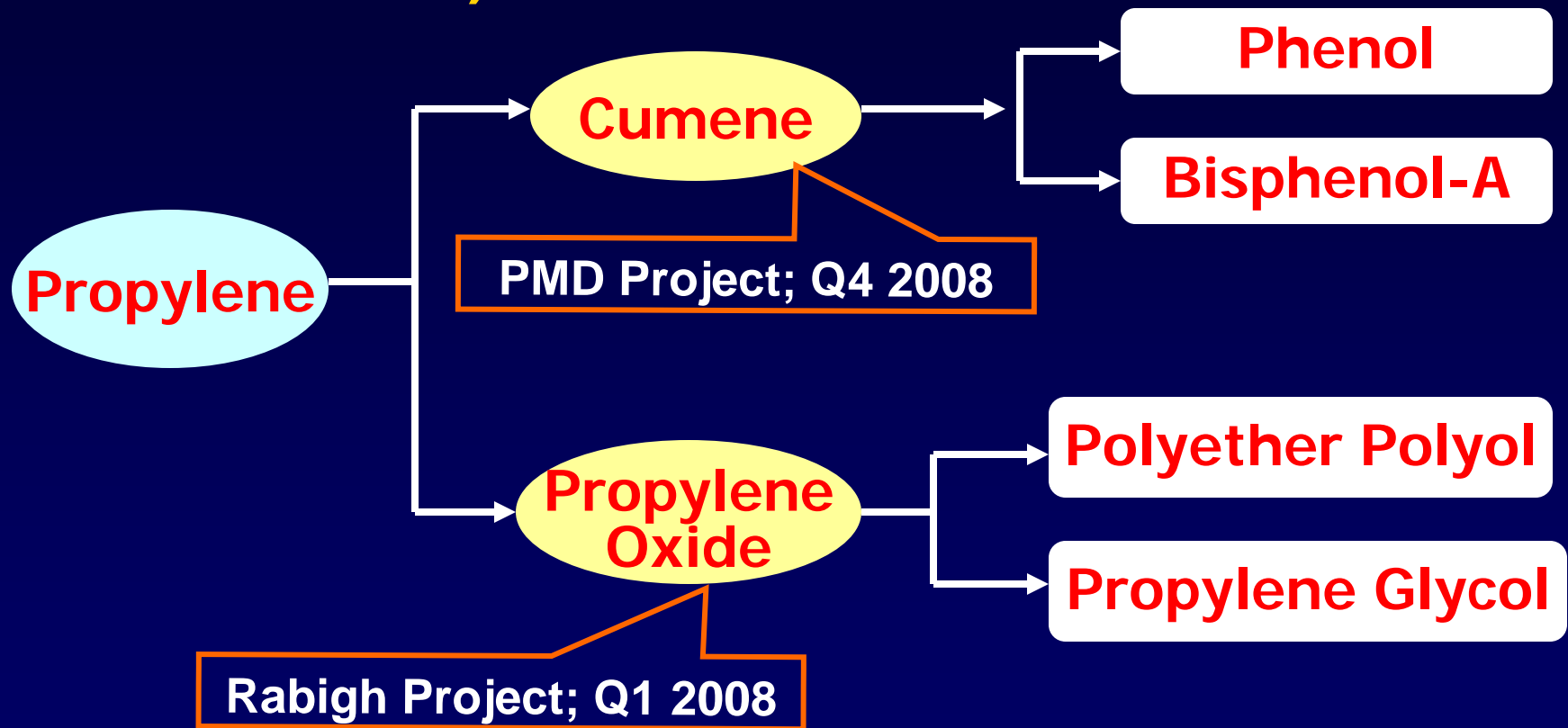
- New Products in the C2 Chain (Ethylene Derivatives)



 Feedstock  Derivative  End-use Application

Emerging Tertiary Opportunities

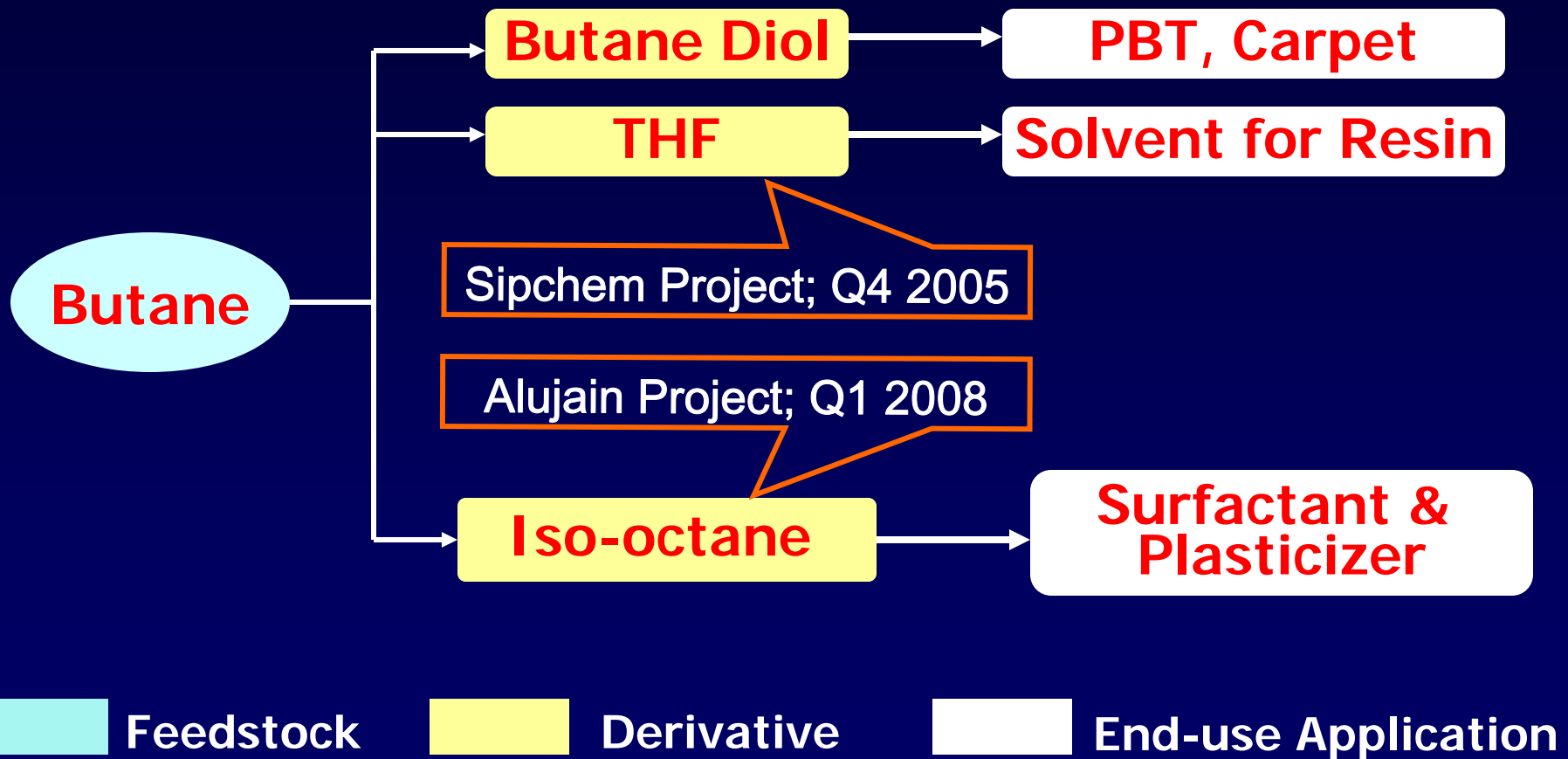
- **New Products in the C3 Chain (Propylene Derivatives)**



Feedstock **Derivative** **End-use Application**

Emerging Tertiary Opportunities

- New Products in the C4 Chain (Butanes Derivatives)



Emerging Tertiary Opportunities

Export Opportunities : Plastic Products

Plastic Conversion Industry : A Proxy for the Tertiary Petrochemical Industry

☞ A total of 470 Conversion Plants - 2003

Capacity (Ktpa)	Demand (Ktpa)	Utilization Rate (%)
1,650	1,130	68

☞ Market Profile – 2003

	Tonnage	Share of Total (%)
Export	91,000	8
Import	385,000	26

Emerging Tertiary Opportunities

Export Opportunities : Plastic Products

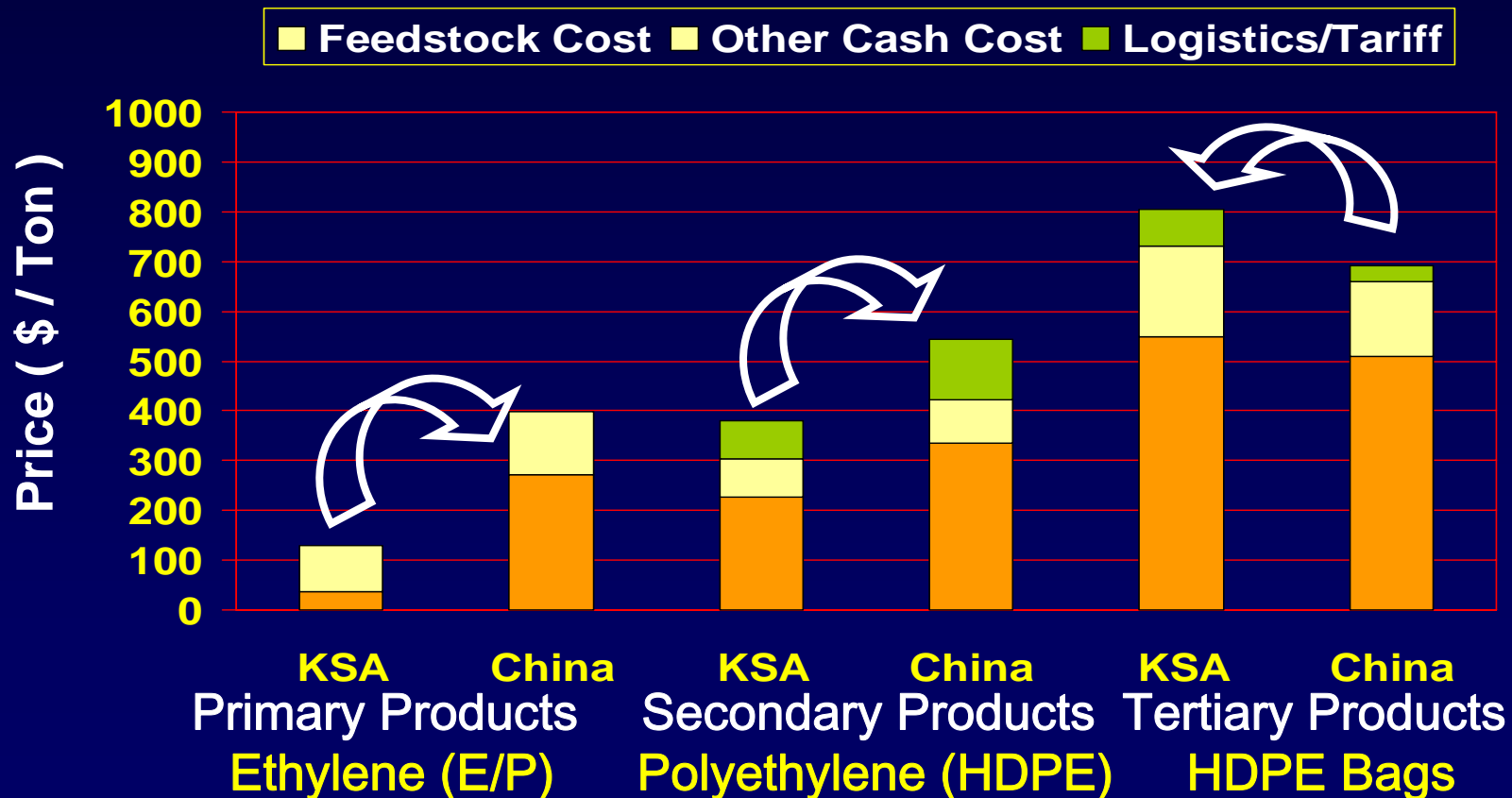
The Obvious Questions are :

- **Why Imports represent 26 % of the Total Saudi Consumption of Plastic Products ... while the Unutilized Local Conversion Capacity is 32 % plus ?**
- ❖ *High Imports Volume is attributed to Price Competition from Low-Cost Imports*
- **Why the Export represent a Modest Share of the Total Output ?**
- ❖ *Modest Exports is related to the Dilution of the Feedstock Cost Advantage*

Emerging Tertiary Opportunities

Export Opportunities : Plastic Products

Dilution of Feedstock Cost Advantage along the Production Chain



Emerging Tertiary Opportunities

Export Opportunities : Plastic Products

- **Capturing Opportunities in Export Markets will heavily depend on : Raw Material Prices .**
- **Penetrating Export Markets require :**
 - **Flexible Pricing Mechanism for Export-oriented Plastic Products**
 - **Marketing Alliances**
- **Plastic Converters should consider utilizing their Free Capacities for Export Sales at or close to Cash Cost Prices .**

Concluding Remarks

The Petrochemical Industry in Saudi Arabia is Set to Embark Upon an Investment Wave of Unprecedented Scale Driven by :

- ① The Availability of Raw Material Driven by an Advantaged Feedstock Position**
- ② The Increasing Diversity of Raw Material, due to a Shift to Heavier Cracker Feedstock, & Refinery Integration (e.g. Rabigh Project)**
- ③ Access to Leading-edge Production Technologies (e.g. Acetic Acid, LAO)**
- ④ Larger Involvement of Private Investments (e.g. NPIC, SAHRA, S. Chevron, SIPC, Alujain)**

Concluding Remarks

This will result in :

- ① A Multitude of Investment Opportunities in the Tertiary Industries in the Kingdom**
- ② Creating a Significant Number of Direct & In-direct Job Opportunities in the Kingdom**
- ③ A Sizable Increase in Petrochemicals Exports which will add significantly to GDP**
- ④ Increasing the the Saudi Share of Global Petrochemical Output from 7 % in 2003 to 12 % by the Year 2010**

The future prospects of the Petrochemical Industry in the Kingdom is “ *Bright* ” ... as long as it maintains its : “ *Cost Leader Position* ”

**Thank You For
Your Attention**