



Petrochemical Industry in China

*- Growing Demand and Supply
in the Future*

by

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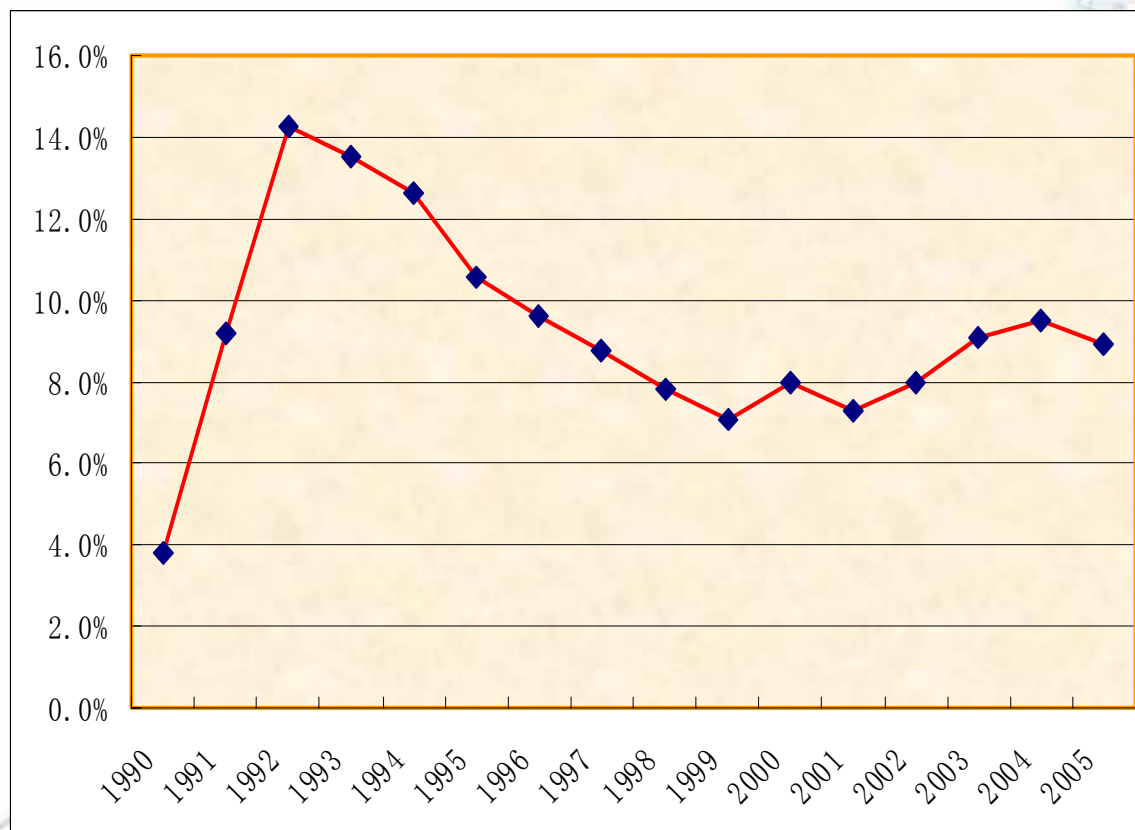
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- **Chemical Industry Review**
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China's GDP Growth

Year	Growth Rate (%)
1990	3.8%
1991	9.2%
1992	14.2%
1993	13.5%
1994	12.6%
1995	10.5%
1996	9.6%
1997	8.8%
1998	7.8%
1999	7.1%
2000	8.0%
2001	7.3%
2002	8.0%
2003	9.1%
2004	9.5%
2005, Q1	9.5%
2005e	9.0%

Annual Growth Rate (percent)



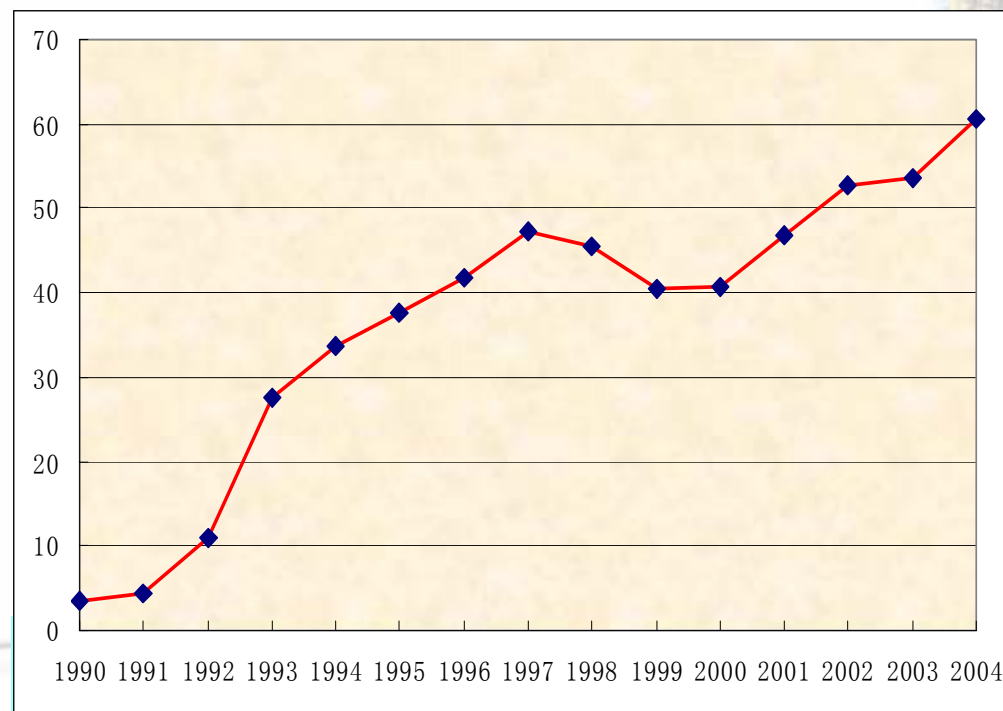
**Note: GDP in billion US\$
(constant 1990 dollars)**

Foreign Direct Investment

◆ Utilized FDI relatively stable in value

Year	FDI	Growth Rate (%)
1990	3.49	
1991	4.37	25.2%
1992	11.01	151.9%
1993	27.52	150.0%
1994	33.77	22.7%
1995	37.52	11.1%
1996	41.73	11.2%
1997	47.26	13.3%
1998	45.46	-3.8%
1999	40.4	-11.4%
2000	40.7	0.93%
2001	46.9	15.20%
2002	52.7	12.40%
2003	53.5	1.40%
2004	60.6	13.30%
2005, Q1	13.4	9.50%

FDI(Billion US\$)

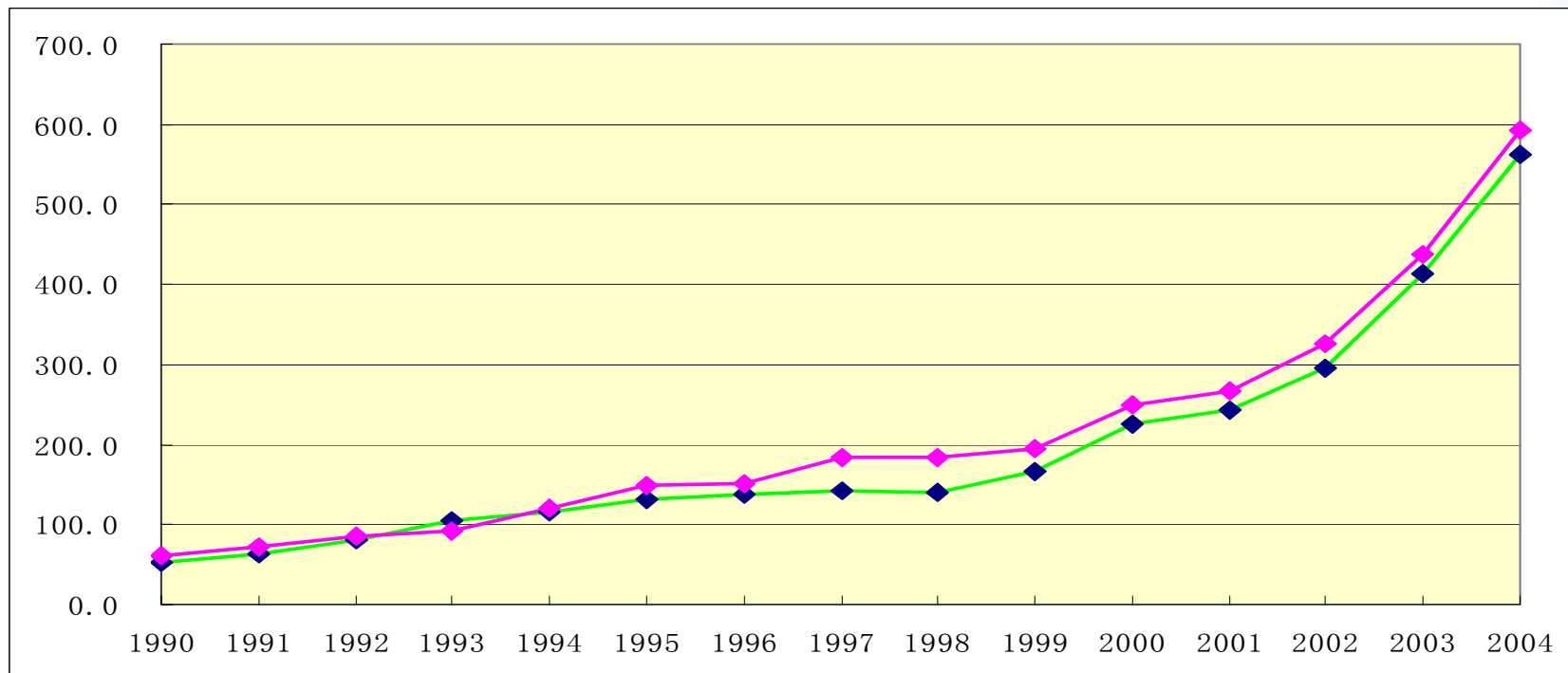


Note: Utilized FDI in billion US\$.

Import & Exports

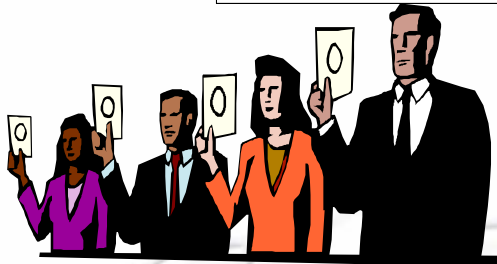
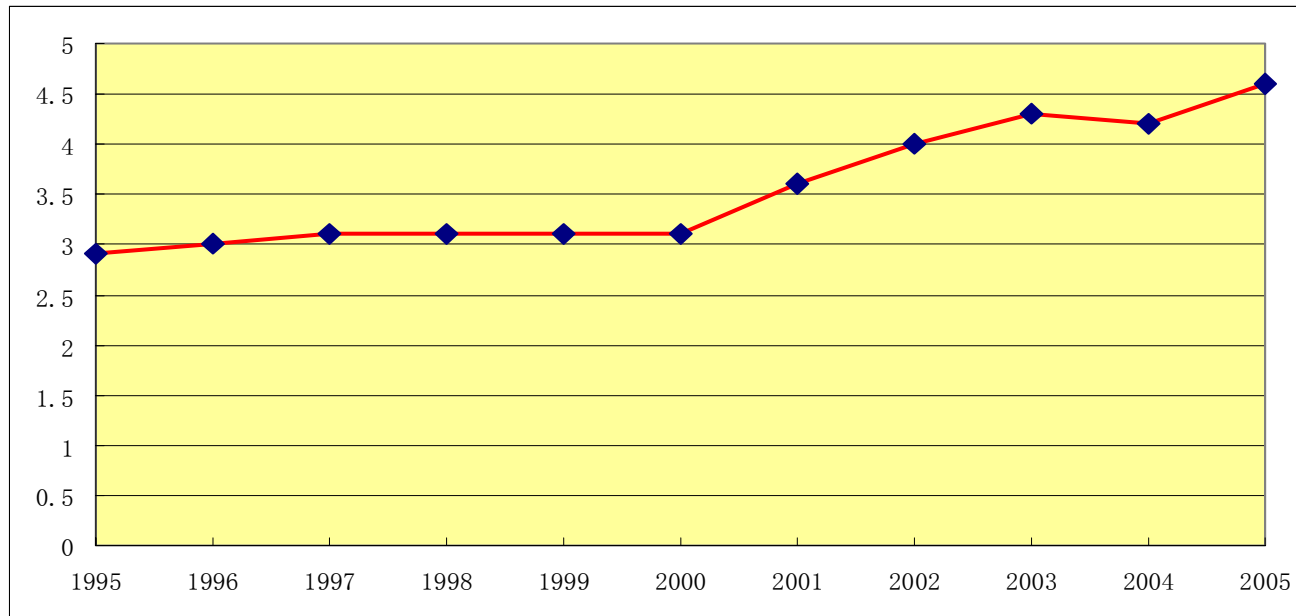
- ◆ Export Value has been larger than Import since 1994
- ◆ Total value of I & E exceeded 1,000.0 Billion US\$ for the first time in 2004, reaching 1,154.8 BillionUS\$
- ◆ Increasing rate will slow down to 15% in 2005

Import & Export (Billion US\$)



Unemployment

Registered Unemployment Rate (%)



Economic Outlook

- For long-term, China will quadruple its 2000 GDP to US\$ 4 trillion with a per capita GDP of US\$ 3,000. GDP will keep growth at 7-8%.
- For short-term, Chinese economy is facing challenges. Government has been taking actions on dealing with overheating Investment and related problems.
- The main challenges facing the Chinese economy are that aggregate investment in some industries and regions is somewhat excessive, inflationary pressures are building up and much remain to be done in the areas of employment and social security. Solutions to these problems will require China to pay even closer attention to proper macroeconomic management and to the proper handling of the relationship between reform, development and stability.
- The total value of Import and Export exceeded 1.0 trillion in 2004, ranking the third in world. However, Large value does not mean “Strong”
- China turned in “double surpluses”-in both current and capital accounts-in 2004. The pressure on RMB appreciation is going up.

Characteristics of China's Chemical Industry:

- Consists of Many Small Plants
- Developed Rapidly During Past Decade
- Net Importer of Most Chemicals
- Restructuring to Increase Competitiveness
- The development of Chemical Parks has been speeding up the development of Chemical Industry

China's Chemical Industry In 2004-----Excellent Year

- Total output reached about US\$ 298 Billion, increasing 32.3% over the previous year
- Total sales revenue, US\$ 293 Billion, increasing 32.5% over the previous year
- Total profit, US\$ 33.7 Billion, increasing 58.7% over the previous year
- Total value of I & E, US\$ 159 Billion, increasing 40.0% over the previous year

China's Chemical Industry In 2004-----Excellent Year

- The output of the following products Ranked the first in the world: Fertilizer, Ammonia, Sodium Carbonate, Sulfuric Acid, Dye Stuff, Synthetic Fibers, Rubber Shoes.
- The output of the following products Ranked the second in the world: Pesticides, Tires and Sodium Hydroxide
- The output of the following products Ranked the third in the world: Oil refining, Ethylene, Paints & Coating

China's Chemical Industry ----- Difficulties

- Industrial Structure Imbalance
- Very High Energy Consuming
- Environment Pollution
- Trade war

Supply/Demand of Petrochemicals in China

- Ethylene
- Propylene
- Polymers

Ethylene Capacity Situation:

- Capacity Grew 8.2% Per Year From 1990 to 2004
- From 2004 to 2009, Capacity Will Increase 21.9% Per Year. However, 4.2% From 2009 to 2014.
- Annual Capacity From 16 Plants Equaled 6,205 Thousand Metric Tons At 2004 Year-end
- 3 Large Joint-Venture Plants start-up this year
- 1 Large Joint-Venture Plants Has Got Approval
- 2 New Ethylene Units in Existing Producers
- 6 Are Waiting For Government Approval

During 2001 - 2004, Capacity Increase is only from the expansion of Existing Plants

(Thousands of Metric Tons/Year)

	<u>2001</u>	<u>2004</u>
SINOPEC Shanghai Petrochemical Co. Ltd	545	845
SINOPEC Maoming Petrochemical Co.	380	380
PetroChina Jilin Petrochemical Co.	530	530
SINOPEC Beijing Yanhua Petrochemical	660	710
SINOPEC Yangzi Petrochemical Co. Ltd	400	800
PetroChina Daqing Petrochemical Co.	480	600
SINOPEC Qilu Petrochemical Co. Ltd	450	720
PetroChina Lanzhou Petrochemical Co.	160	240
PetroChina Dushuanzi Petrochemical Co.	180	220
SINOPEC Tianjin Petrochemical Co	200	200
SINOPEC Guangzhou Company	150	210
Sinopec Zhongyuan Petrochemical Co. Ltd	180	180
Liaoning Huajin Chemical Group	160	160
Sinopec Beijing Dongfang Petrochemical Co. Ltd	150	150
PetroChina Fushun Petrochemical Co.	144	140
PetroChina Liaoyang Petrochemical	120	120
Total	4889	6,205

3 Joint Venture Ethylene Plants Have Been Under Construction And Will Add 2.3 Million Tons of Capacity

BASF-YPC Company Ltd.

Location: Nanjing, Jiansu

Capacity: 600,000 mtpa

Start-up: 2005

CNOOC-Shell Petrochemical Company Ltd.

Location: Huizhou, Guangdong

Capacity: 800,000 mtpa

Start-up: 2005

Shanghai Secco Petrochemical Company Ltd. (SECCO)

Location: Jinshan, Shanghai

Capacity: 900,000 mtpa

Start-up: 2005

1 Joint Venture Ethylene Plants

2 New Ethylene Units in the Existing Producers

Exxon Fujian PC

Location: Quanzhou, Fujian

Capacity: 800,000 mtpa

Start-up: 2007

PetroChina Dushanzi

PetroChemical

Location: Dushanzi, Xinjiang

Capacity: 1,000,000 mtpa

Start-up: 2008

PetroChina Fushun Petrochemical

Location: Fushun, Liaoning

Capacity: 800,000 mtpa

Start-up: 2008

6 Are Waiting for Approval

Sinopec Tianjin PC

Location: Tianjin

Capacity: 800,000 mtpa

Start-up: 2008

Sinopec Zhenhai Refining & Chemical Co. Ltd

Location: Zhenhai, Zhejiang

Capacity: 800,000-1000,000 mtpa

Start-up: 2009

Sinopec Wuhan Company

Location: Wuhan, Hubei

Capacity: 800,000 mtpa

Start-up: 2010

Dalian Shide Group, Ethylene Project

Location: Dalian, Liaoning

Capacity: 1,300,000 mtpa

Start-up: 2010

Sinopec Shanghai ChemicalPark

Ethylene Project

Location: Shanghai

Capacity: 1,000,000 mtpa

Start-up: 2010

PetroChina Chengdu Ethylene Project

Location: Chengdu, Sichuan

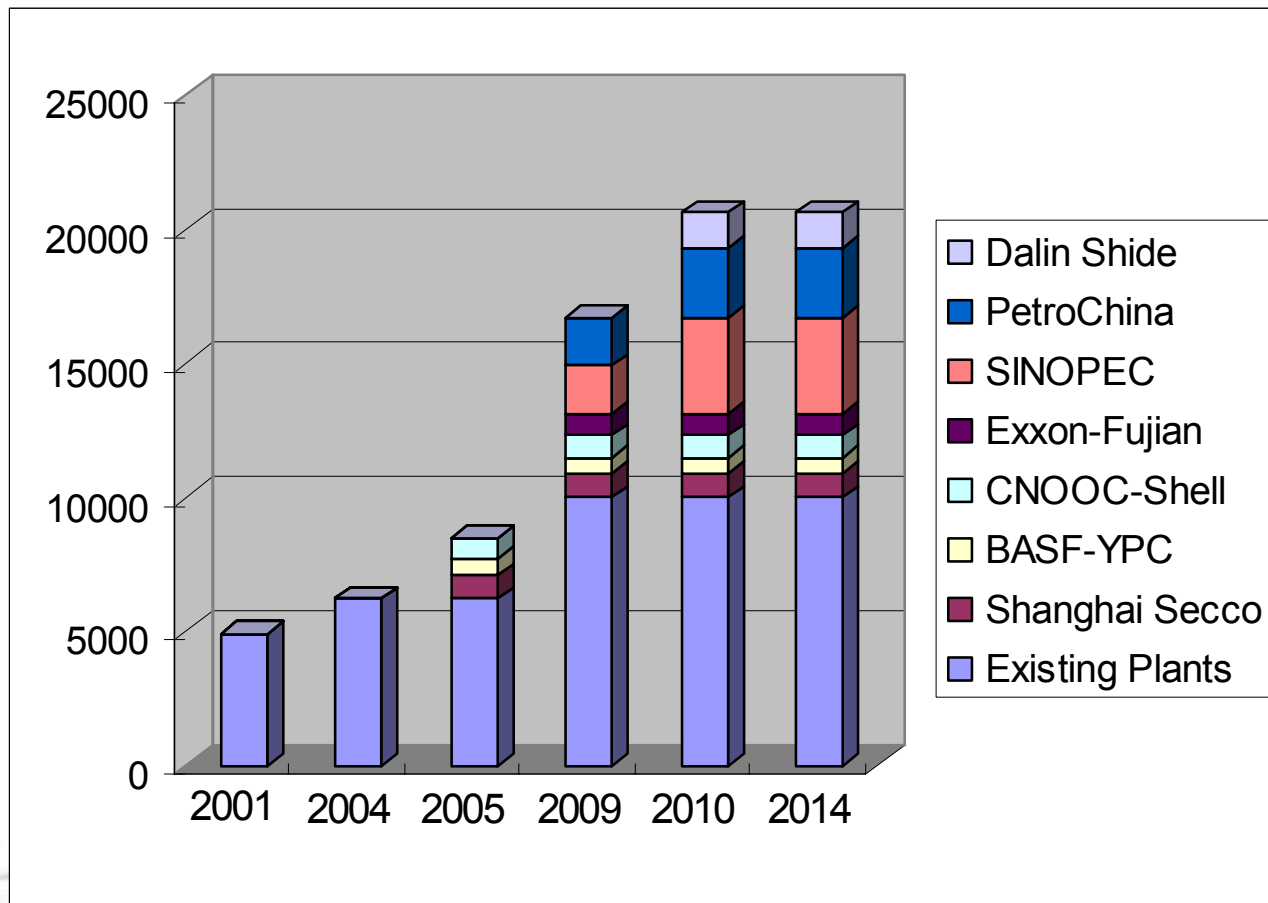
Capacity: 800,000 mtpa

Start-up: 2010

Planned Start-up Year is 2008-2010, But Might Delay!

Longer-term Increases in Capacity Dominated by New Plants

(Thousands of Metric Tons/Year)



Ethylene Supply Situation

- Production Increased at AAGR of 10.4% from 1990-2004
- Production Will Increase at AAGR of 12.7% from 2004-2014
- The Percentage of Domestic Supply of Ethylene Over Total Ethylene Equivalents Consumption is Increasing
 - **38% in 2004**
 - **63% in 2014**

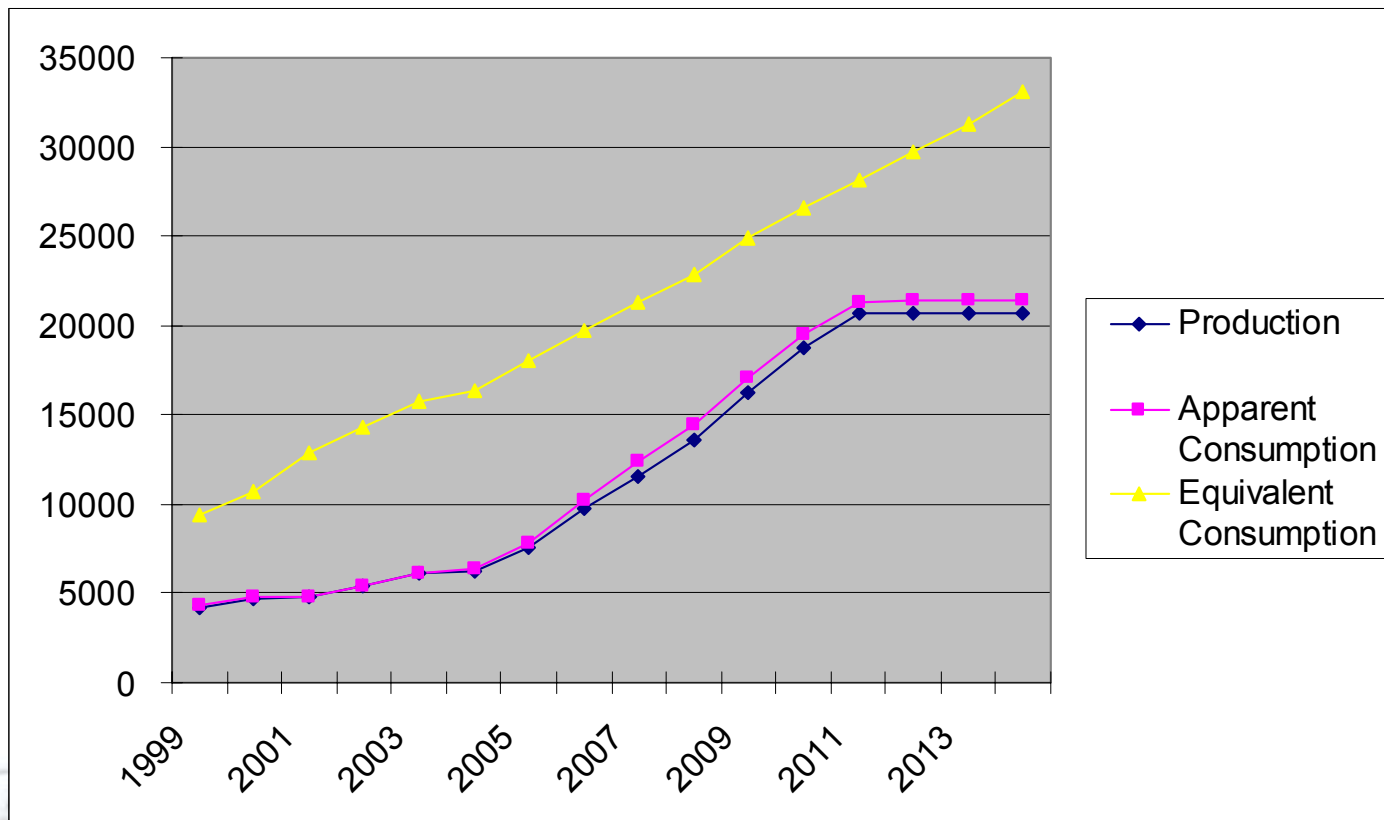
From 2004 to 2014:

Ethylene Production grows at 12.7%

Ethylene Apparent Consumption grows at 12.9%

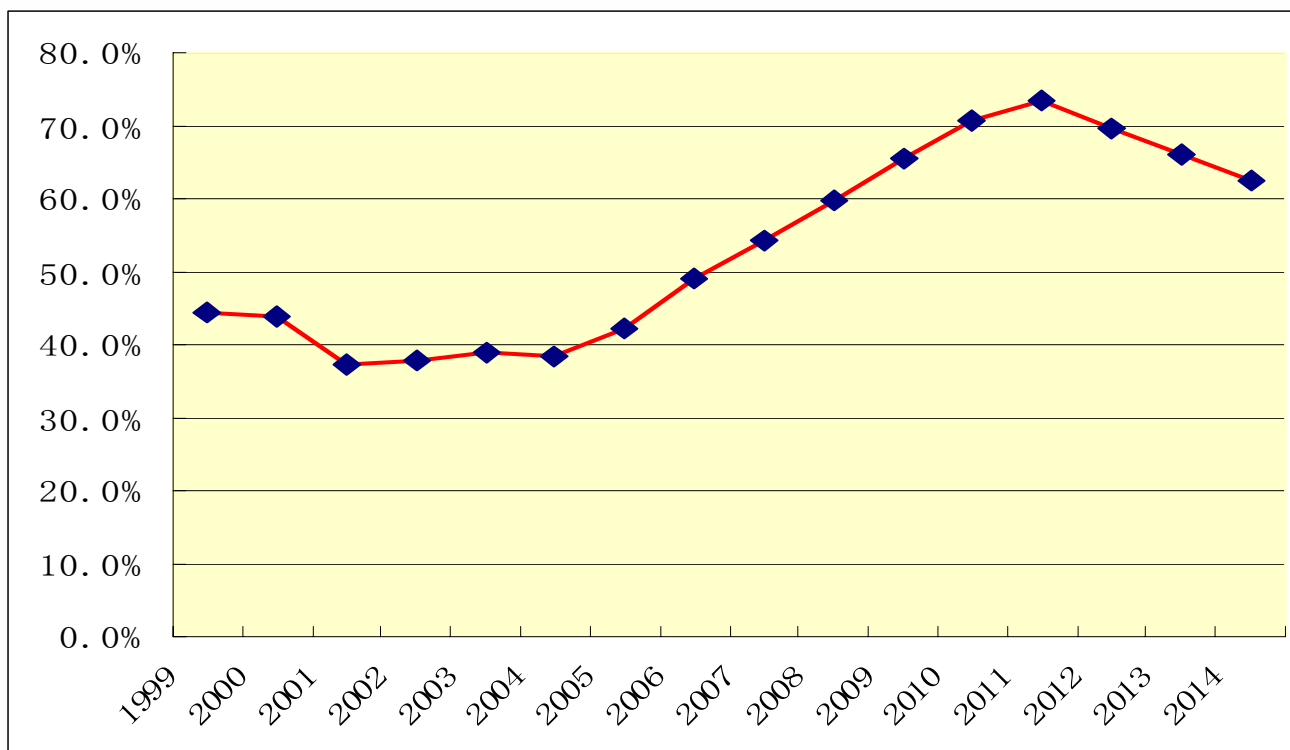
Ethylene Equivalents Demand Grows at 7.3%

(Thousands of Metric Tons)



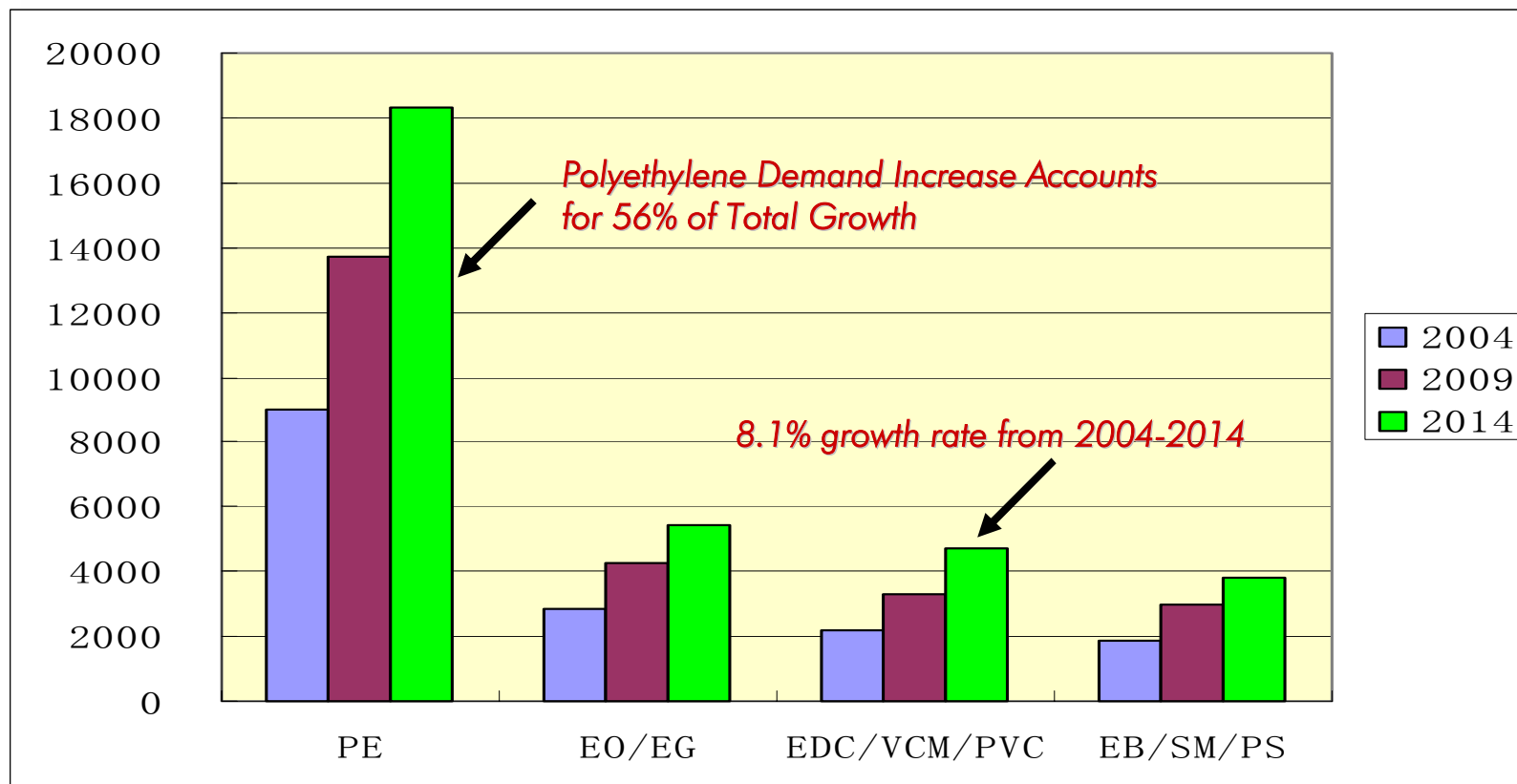
Self-supply rates (%)

(Ethylene Production over Ethylene Equivalents Demand)



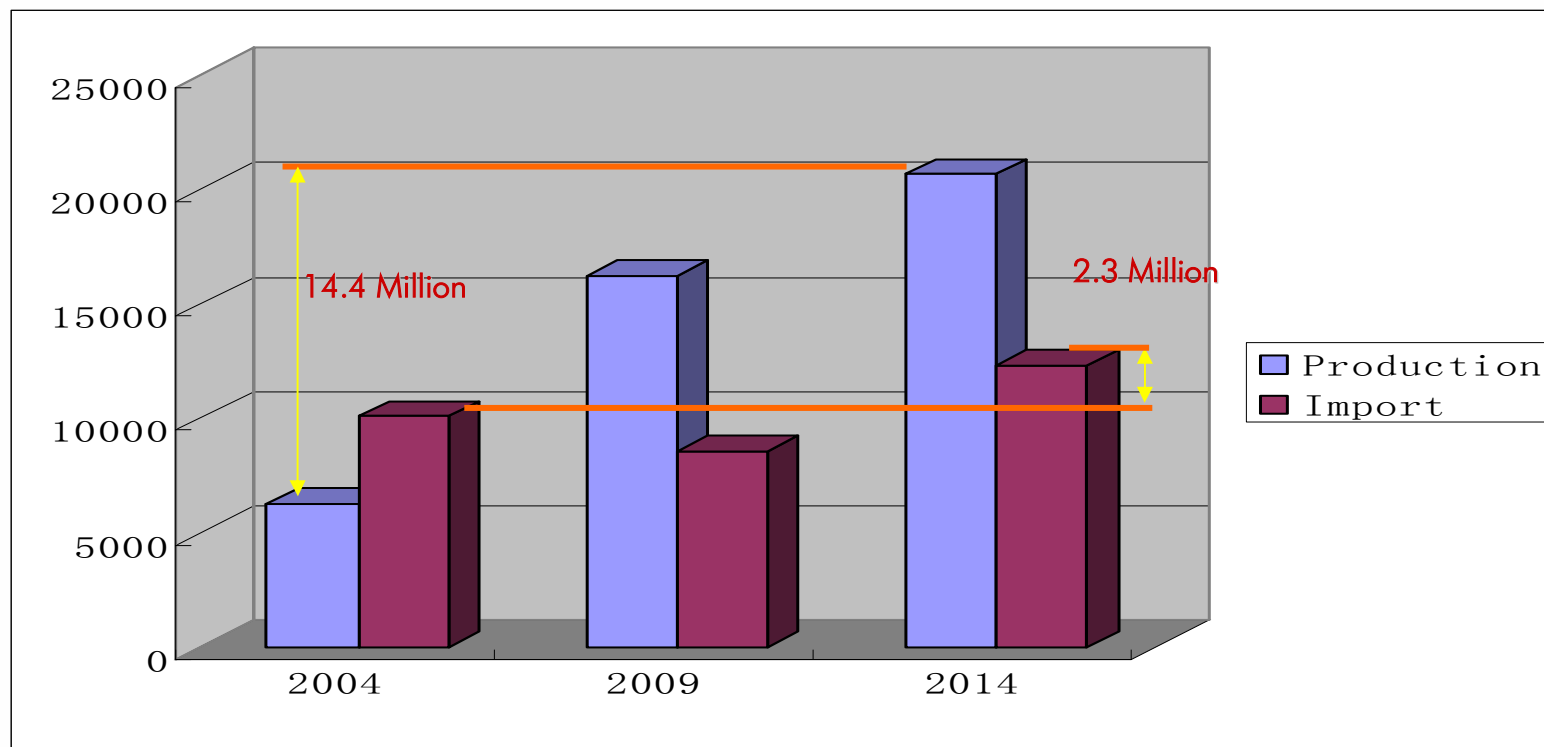
EDC/VCM/PVC is the Fastest Growing Areas in Ethylene Equivalents Requirements

(Thousands of Equivalent Metric Tons)



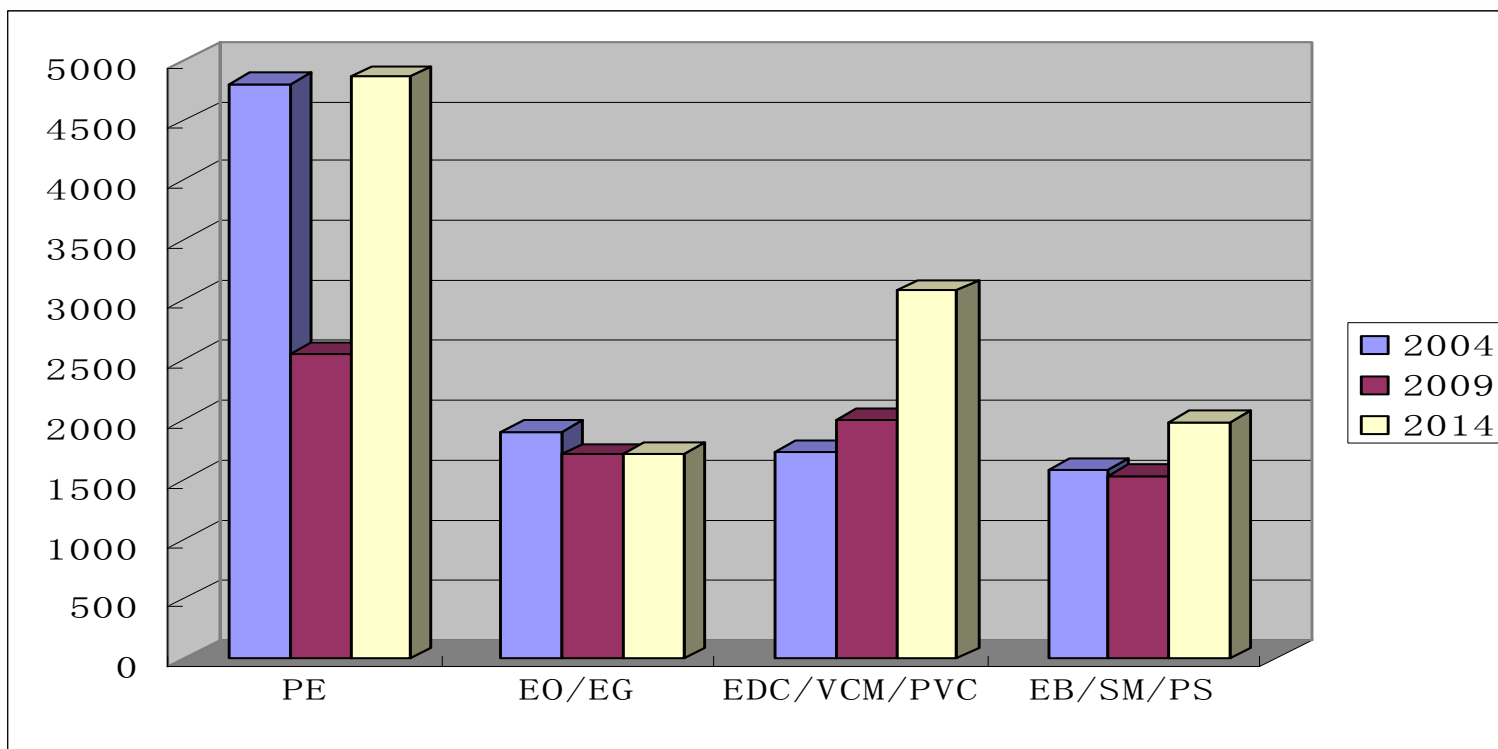
New Ethylene Capacity Has Dramatic Impact on Derivative Import Requirements

(Thousands of Equivalent Metric Tons)



Polyethylene Single Largest Derivative Imported

(Thousands of Equivalent Metric Tons)



ETHYLENE DEMAND SITUATION

- Ethylene Self-Supply Rate will increase Dramatically.
 - Future Imports Will Decrease Gradually Along With the Start-up Of New Ethylene Plants
 - Ethylene Capacity Still Insufficient to Make Derivatives
- Substantial Imports of Derivatives for Next Decade

PE

PS

PVC

PET

ABS

EG

PROPYLENE SITUATION

- Capacity Grew 14.5% Per Year from 1990 through 2004
- Market Demand for Derivatives Grew Faster than Domestic Supply
- Substantial Amount of Derivatives Imported
 - Polypropylene
 - Acrylonitrile
 - n-Butyl Alcohol
 - 2-EH Alcohol
- Imported Derivatives Account for Large Amount of Total Propylene Equivalents Consumption
 - 47% in 2004
 - 33% in 2014

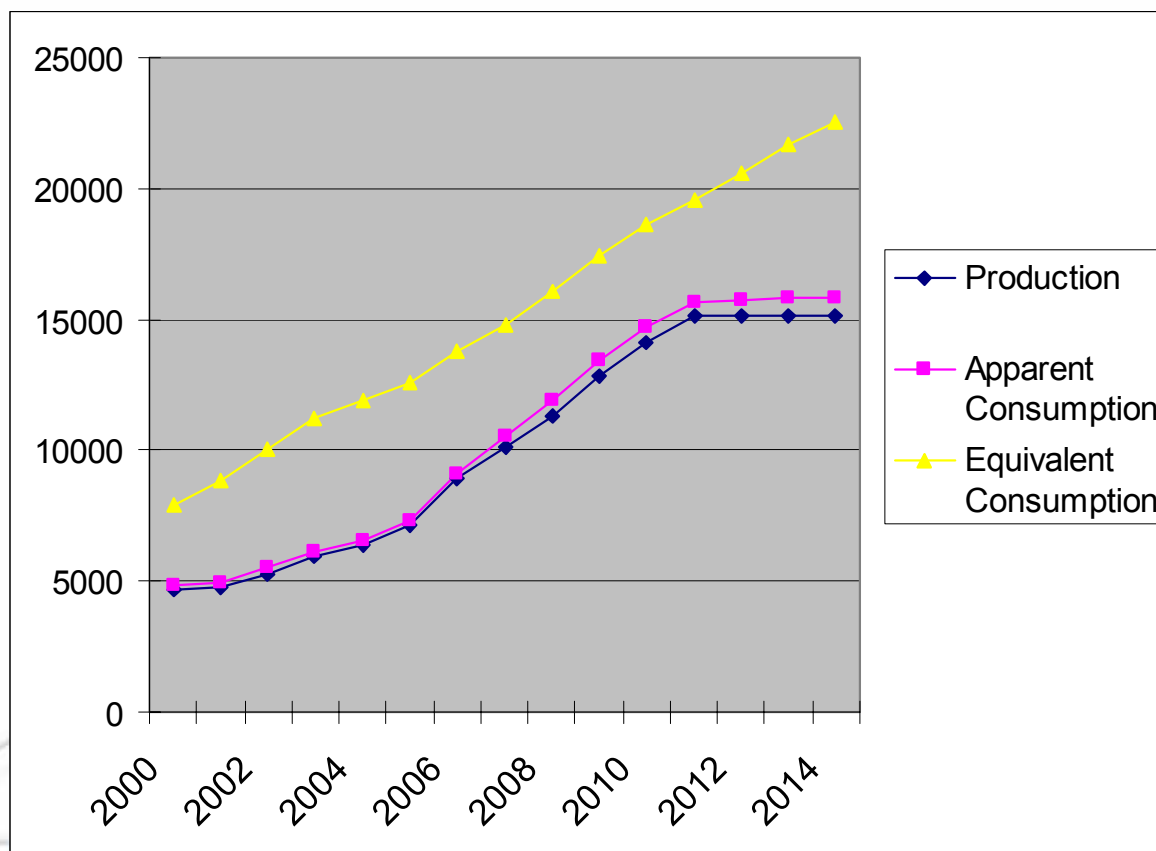
From 2004 to 2014:

Propylene Production grows at 9.1%

Propylene Apparent Consumption grows at 9.2%

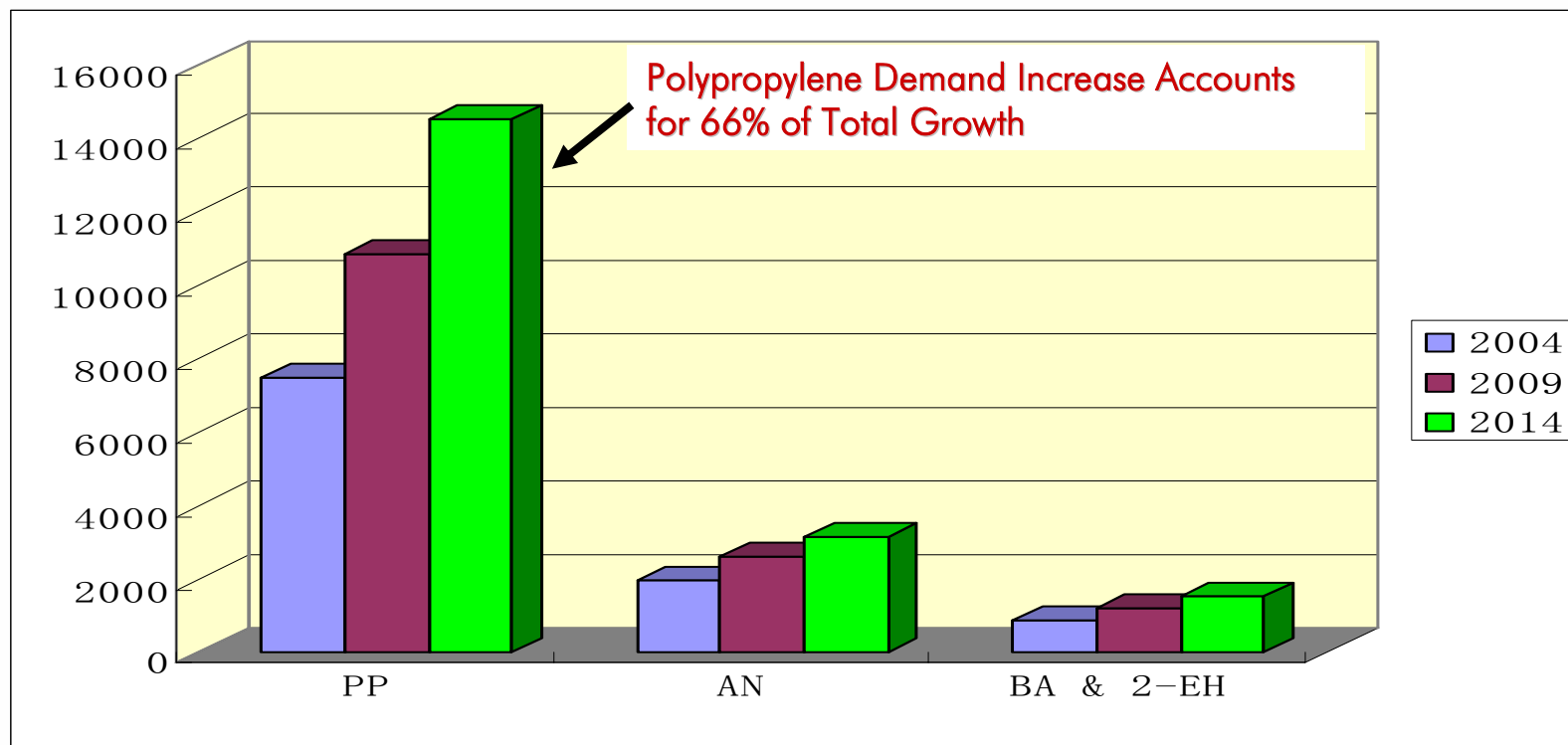
Propylene Equivalents Demand Grows at 6.6%

(Thousands of Metric Tons)



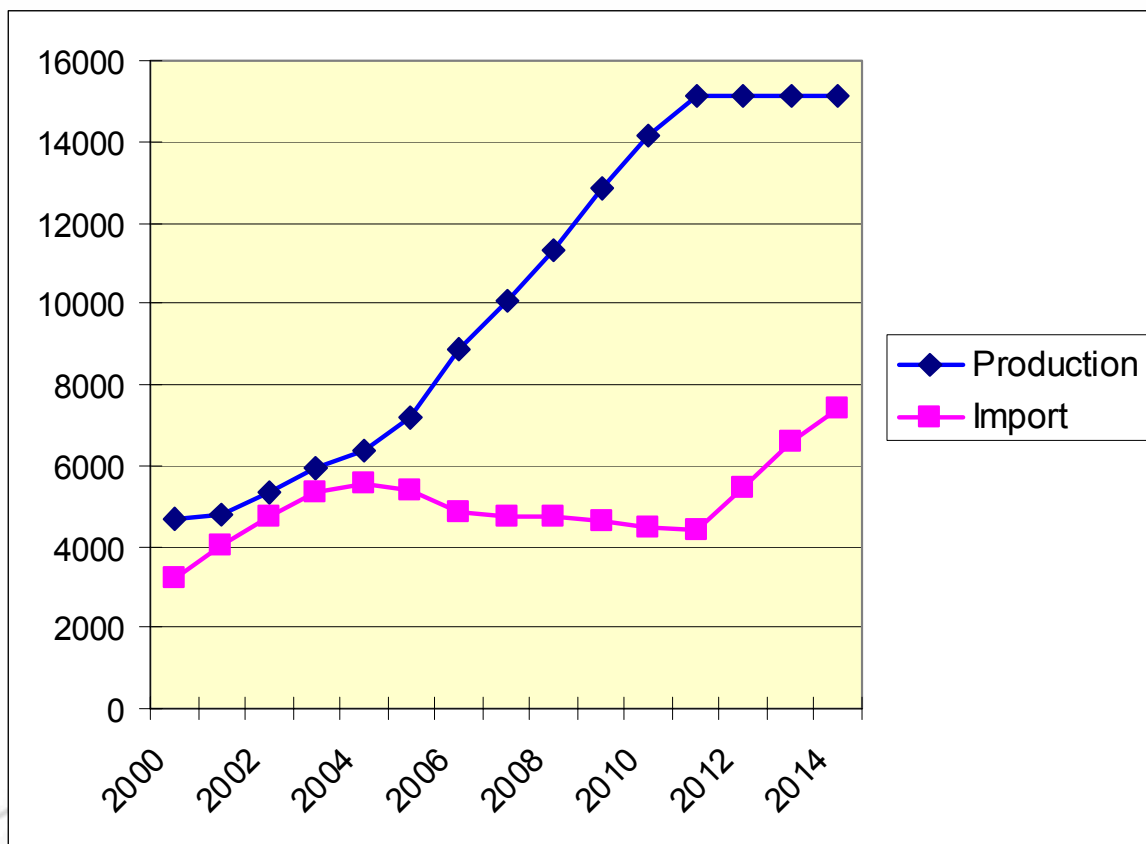
Polypropylene Demand Growth Drives Propylene Equivalents Requirements

(Thousands of Equivalent Metric Tons)



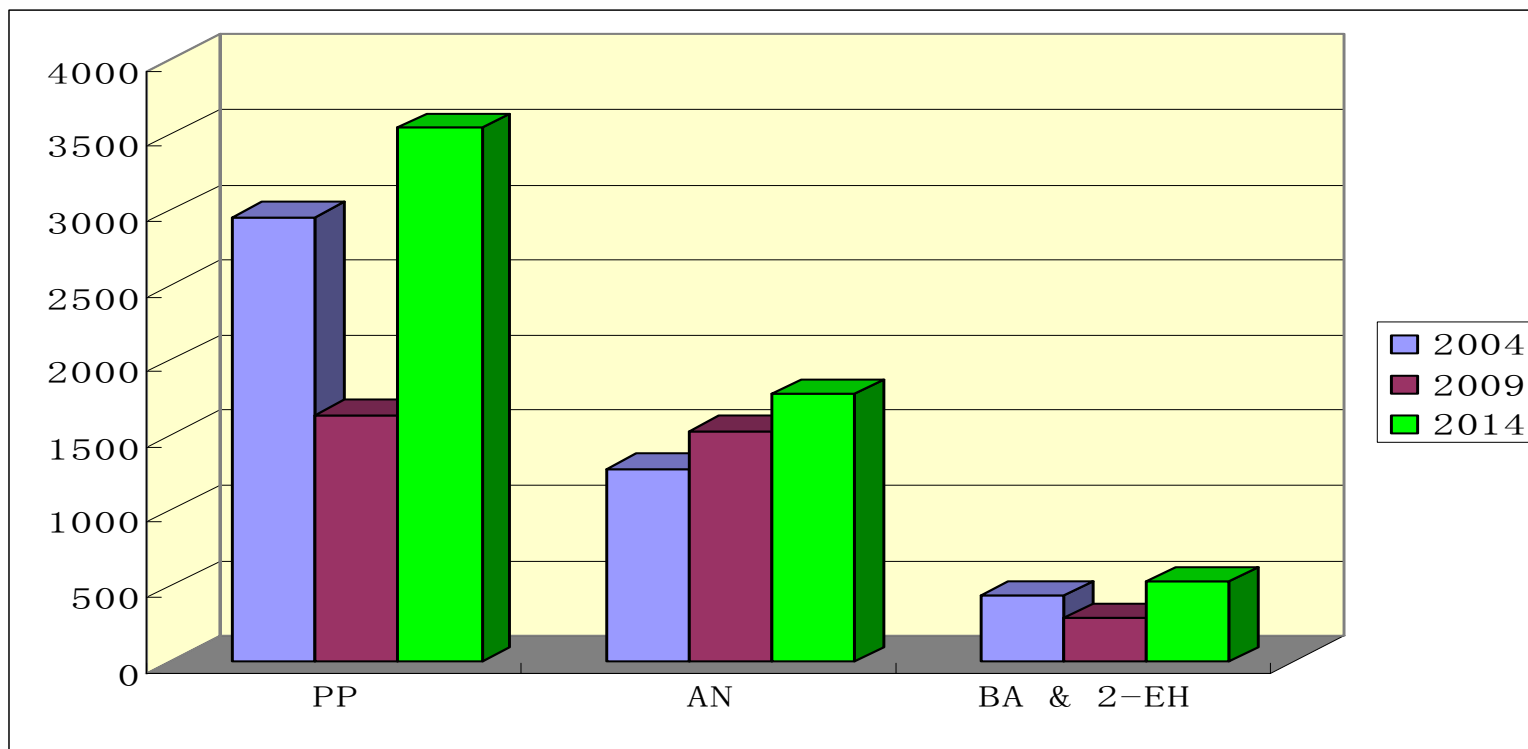
Derivatives Production Increases Limit Import Opportunities

(Thousands of Equivalent Metric Tons)



PP & AN Imports are Real Opportunity

(Thousands of Equivalent Metric Tons)

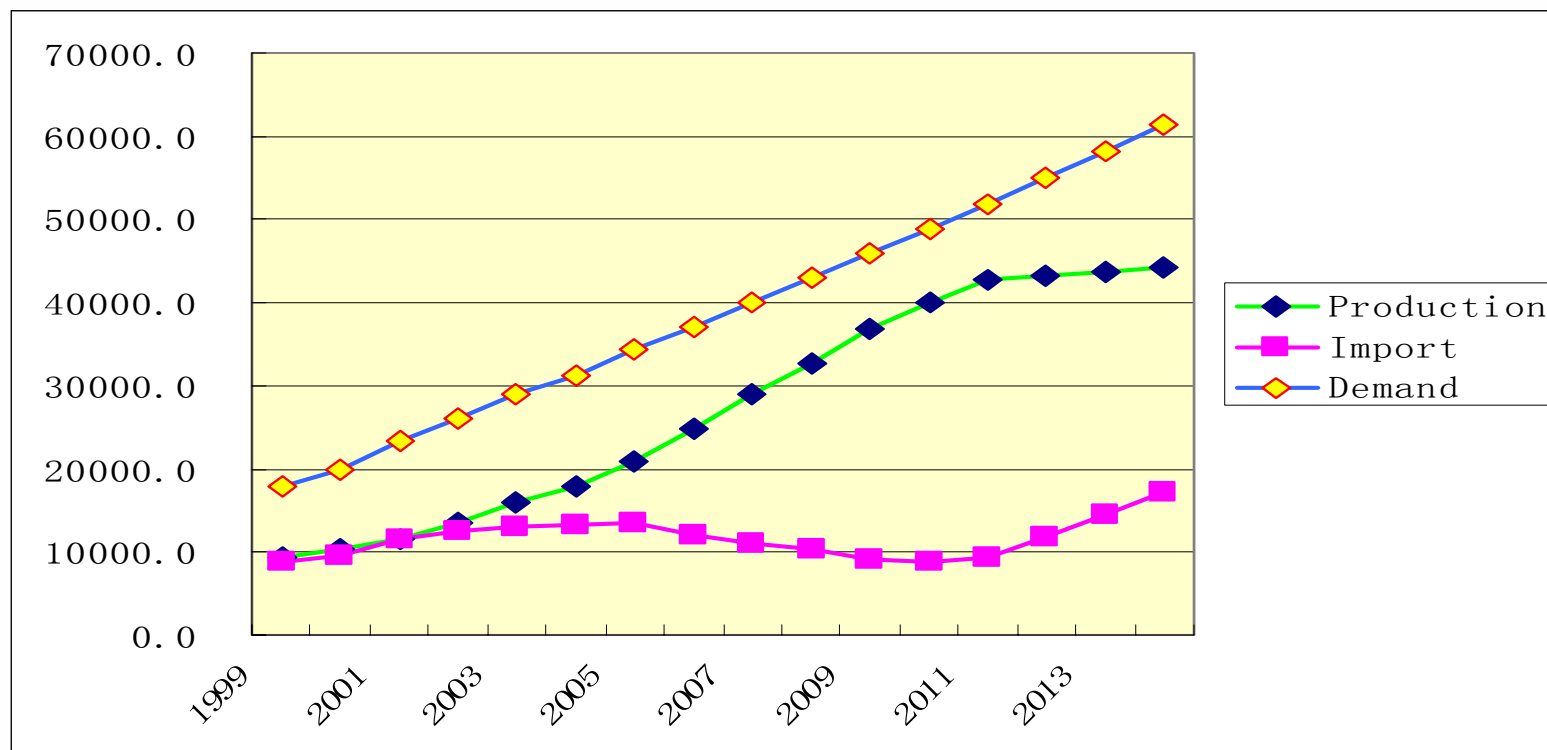


POLYMERS SITUATION

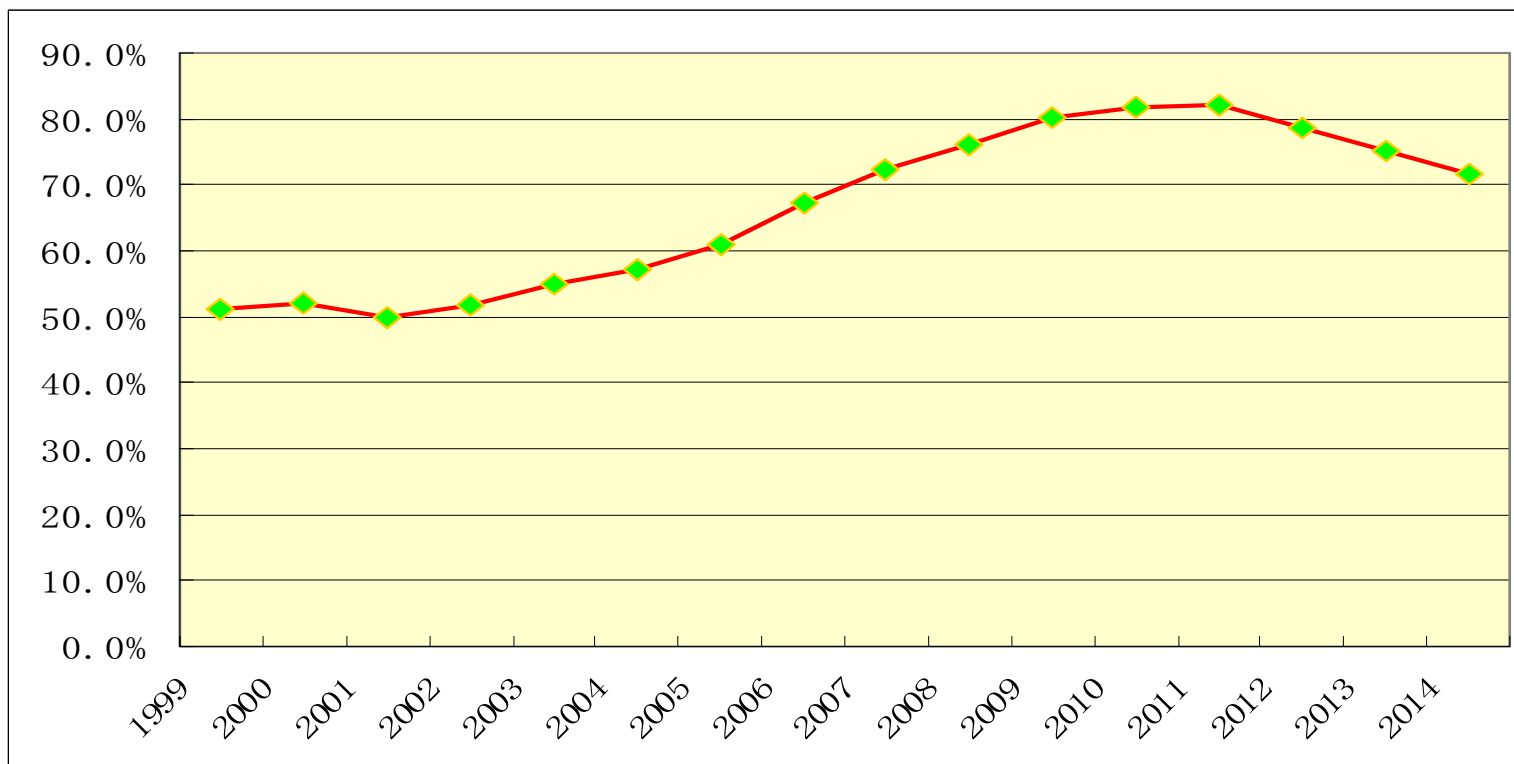
- Domestic Demand Increased Rapidly in Past Decade
 - 11.7% Growth Rate in Past Five years
 - 7.0% in Next Ten Years
- Large Volume of Imports
 - 13 Million of 5 Main Polymers in 2004
 - 17 Million in 2014

Total Five Polymers Demand Grows at 7% per Year in Next Ten Year

(Thousands of Metric Tons)

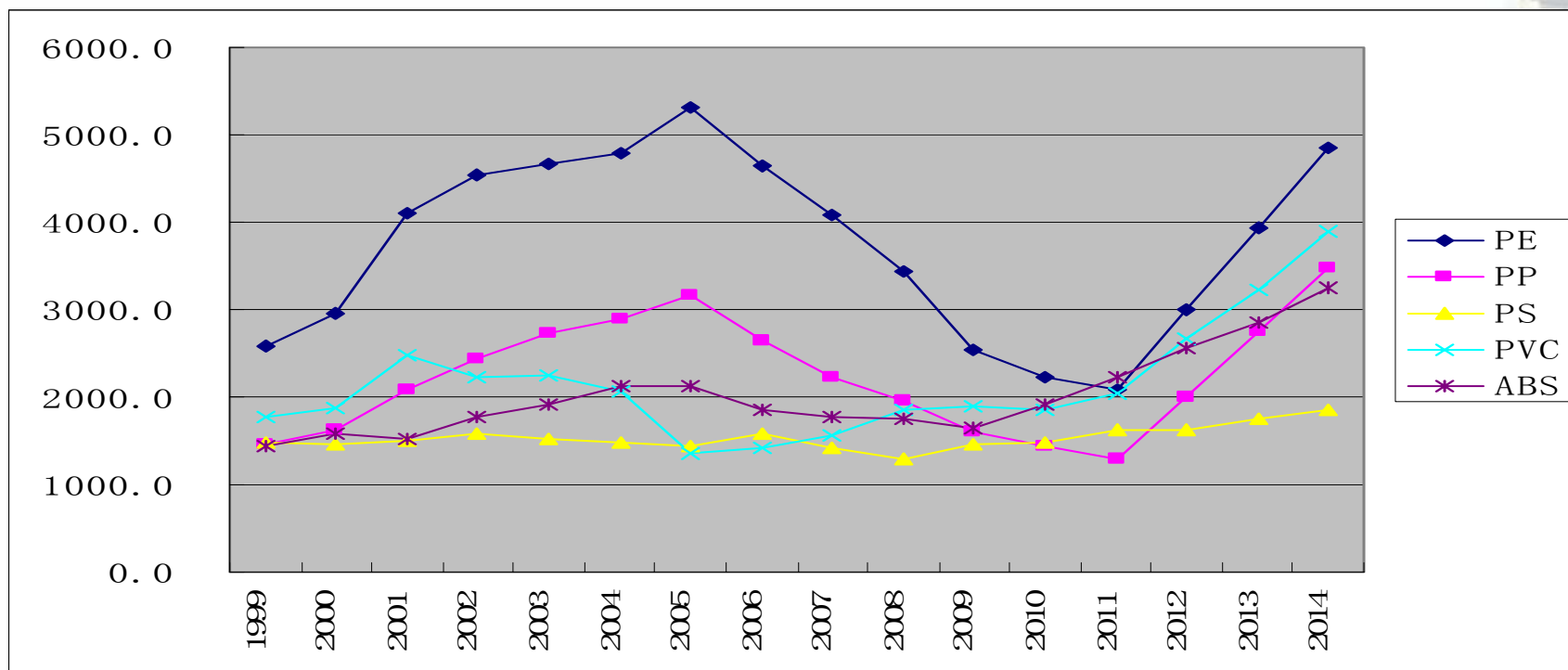


Self-Supply Rate of Five Major Polymers will reach the highest in 2011



Import Opportunities of Five Major Polymers

(Thousands of Metric Tons)



Why Methanol So Important Now?

- High Oil Price
- Technology Improvement
- Coal Reserves is Abundant

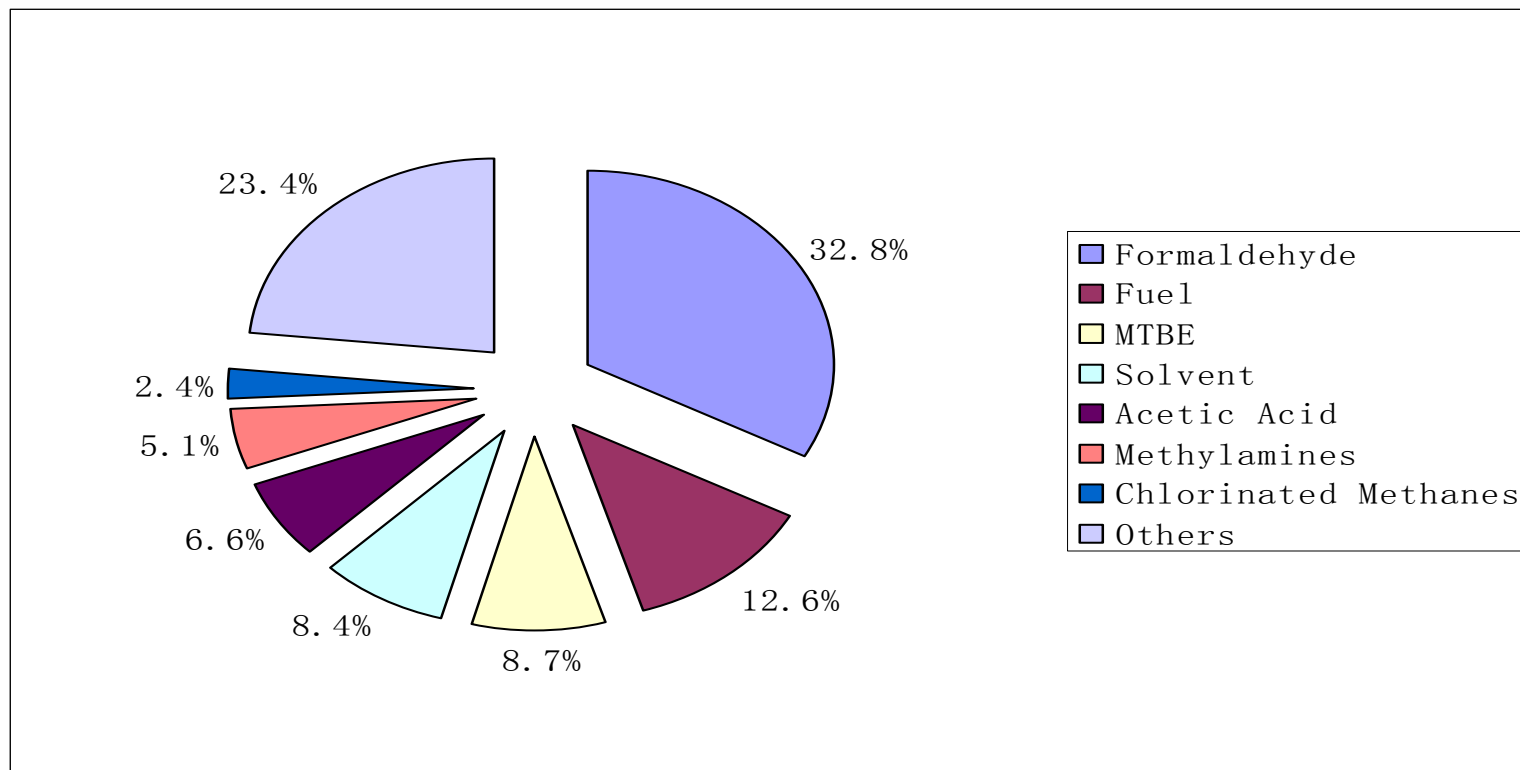
Current Situation of Methanol Producers

- More Than 100 Producers, Total Capacity 7400 Thousand Ton
- Only 8 Of Them Produced More than 100 Thousand Ton Methanol last year.
- Feedstock: Coal 58%, Natural Gas 20%, Other 22%

Current Situation of Methanol Supply

- Production In 2004, More Than 4400 Thousand Ton.
- Import 1358 Thousand Ton In 2004.
Mainly From Saudi Arabia, New Zealand...

Current Situation of Methanol Consumption



Future Methanol Projects

- Under Construction Projects: 3,810 Thousand Ton.
- Approved Projects: 1,970 Thousand Ton.
- Waiting for Approval Projects: 4,000 Thousand Ton.
- Planning Projects: 30,000 Thousand Ton.
- Total New Capacity: 39,780 Thousand Ton

Future Methanol Projects

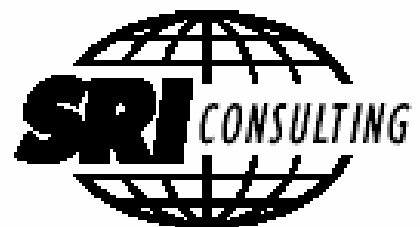
Feedstock:

- Coal: 60%
- Natural Gas: 26%
- Other: 14%

Future Consumption Trends:

- Methanol to Olefins
- Fuel
- DME

- Chinese economy is facing challenges but the prospective growth is positive.
- China's Petrochemical Industry Has Been Developing Very Fast And Will Continue to Grow.
- Huge Investment In Petrochemical Complex Would Dramatically Increase Domestic Supply for Most Petrochemicals
- But Continued Dependency on Imports for Next Decade
- **Methanol Is Becoming More Important In Chemical Industry**



Thank You !