The Korean Oil Industry
Challenges and Opportunities

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Outline

1. Overview of Korean Oil Industry

2. Key Issues and Challenges

3. Key Opportunities

4. Conclusion

1. Overview of Korean Oil Industry

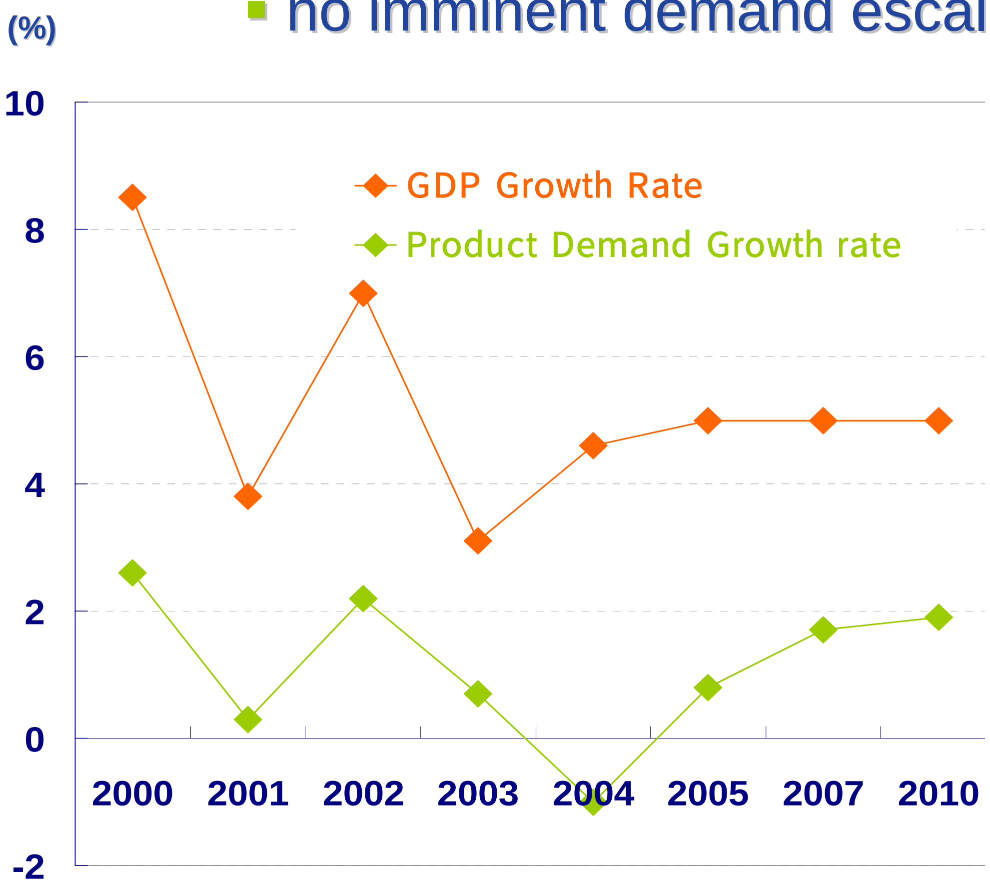
Outline of Korean Economy and Oil Industry

GDP (FY 2004)	
▪ Nominal GDP ▪ GDP per capita ▪ Growth rate	US$ 680 BN (**World's 10th largest economy**) US$ 14,162 4.6 %
Crude Oil Import	2,262 MBD (US$ 29,917 mil, **World's 5th largest importer**)
Product	
▪ Consumption ▪ Export ▪ Import	2,064 MBD (**World's 6th largest consumer**) 581 MBD (US$ 10,203 mil) 389 MBD (US$ 6,848 mil)
Refining Capacity	2,735 MBD (**World's 5th largest capacity**)
# of Service Stations 11,000	**# of Vehicles** 15 million

[MOCIE & KPA, 2005]

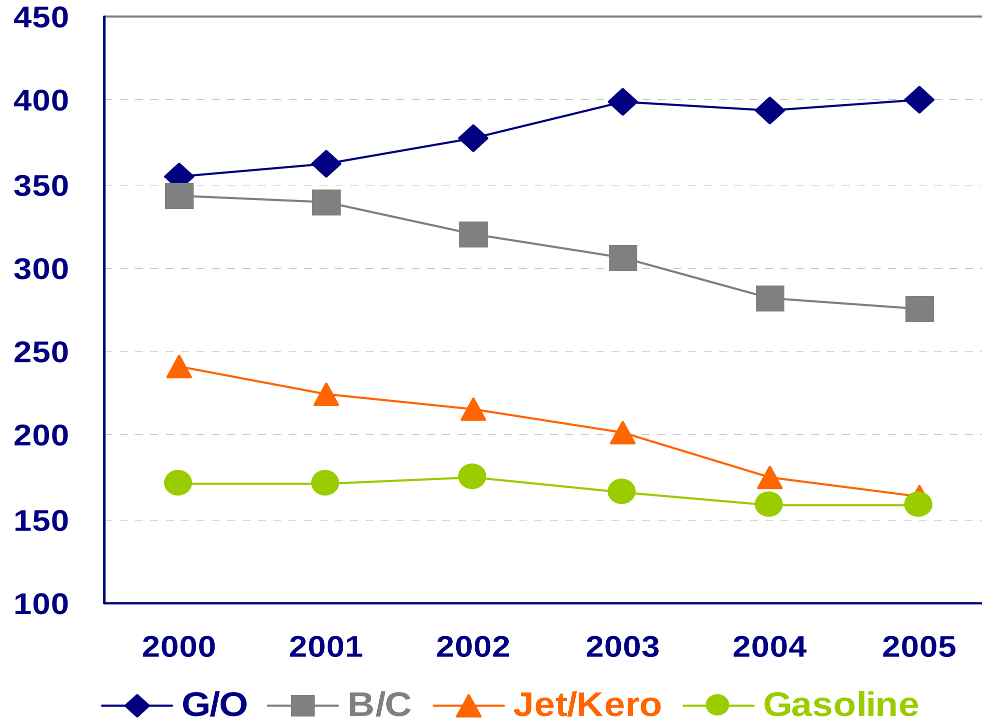
1. Overview of Korean Oil Industry — Domestic Demand vs GDP

- Korean economy grew 5+% for the last 5 years
  - demand for oil products remains the same
  - no imminent demand escalation is expected



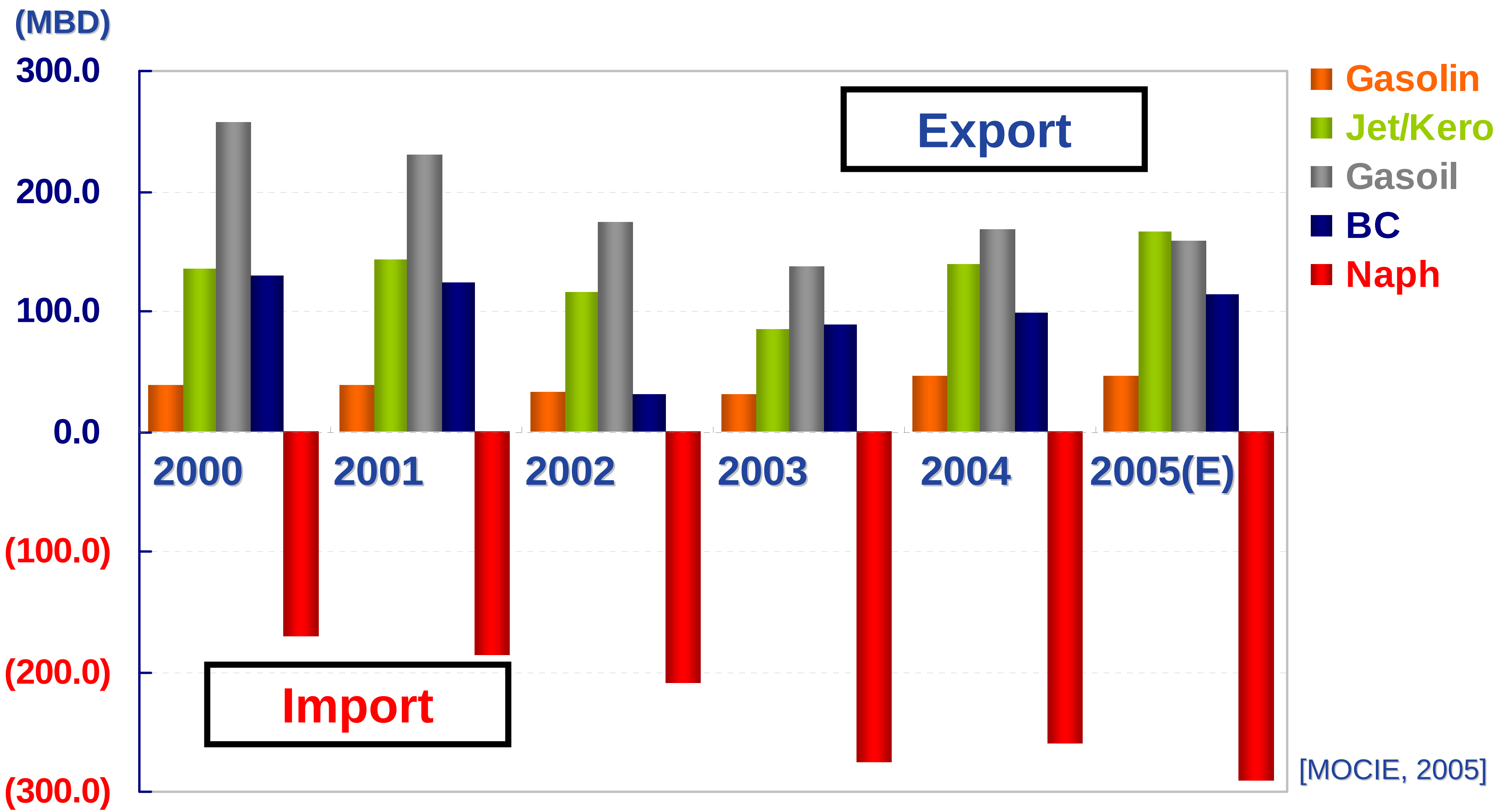
[MOCIE, FACTS-Asia/Pacific Energy Demand & Supply, Spring 2005]

Demand By Products



[Korea Petroleum Association 2005]

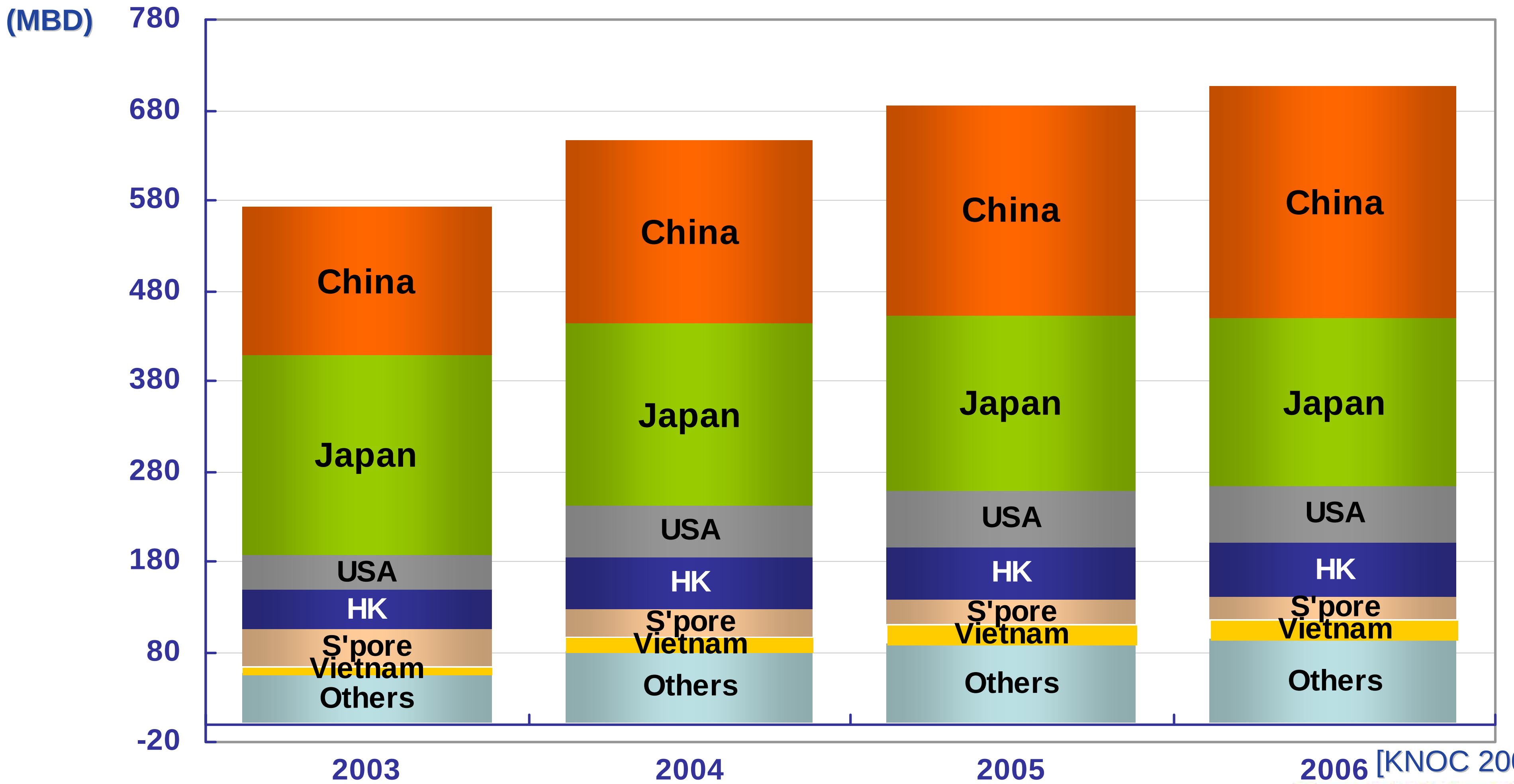
Export/Import Balance



[MOCIE, 2005]

Export by Country

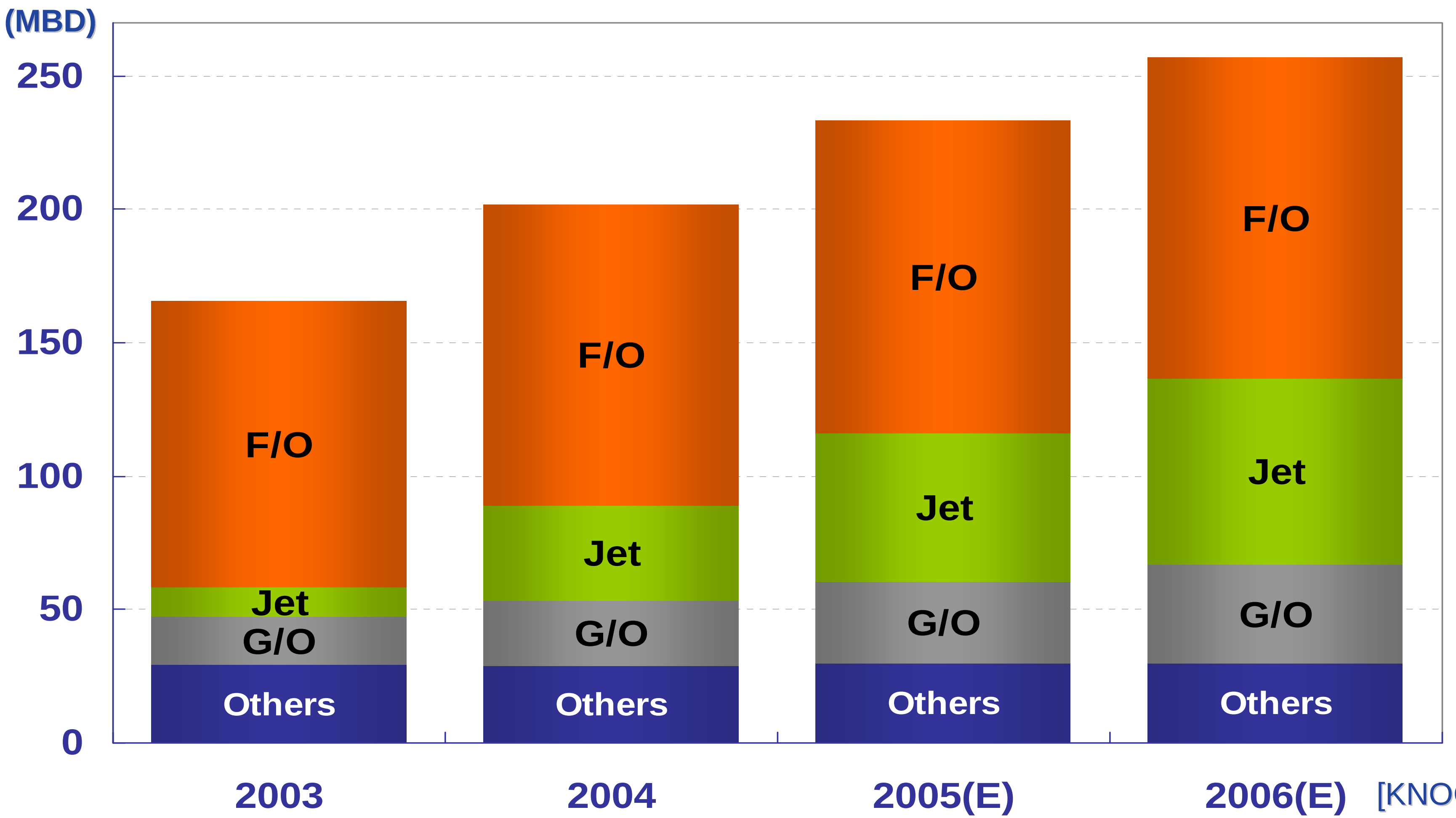
- Skyrocketed demand from China
- Japanese tighter product spec. after '04



[KNOC 2005]

1. Overview of Korean Oil Industry

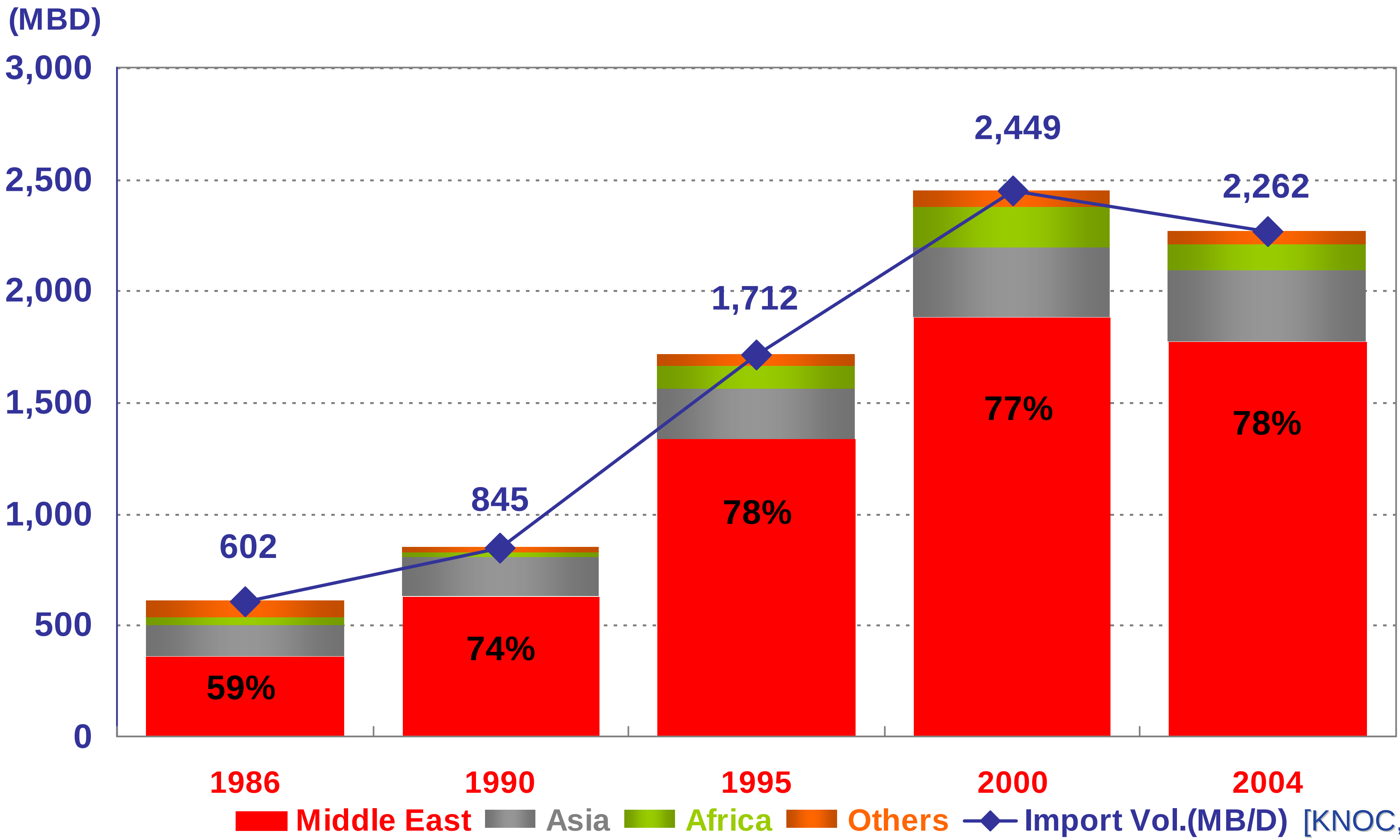
- Export volume to China surged by 22.0% year on year to 202 MBD last year



[KNOC 2005]

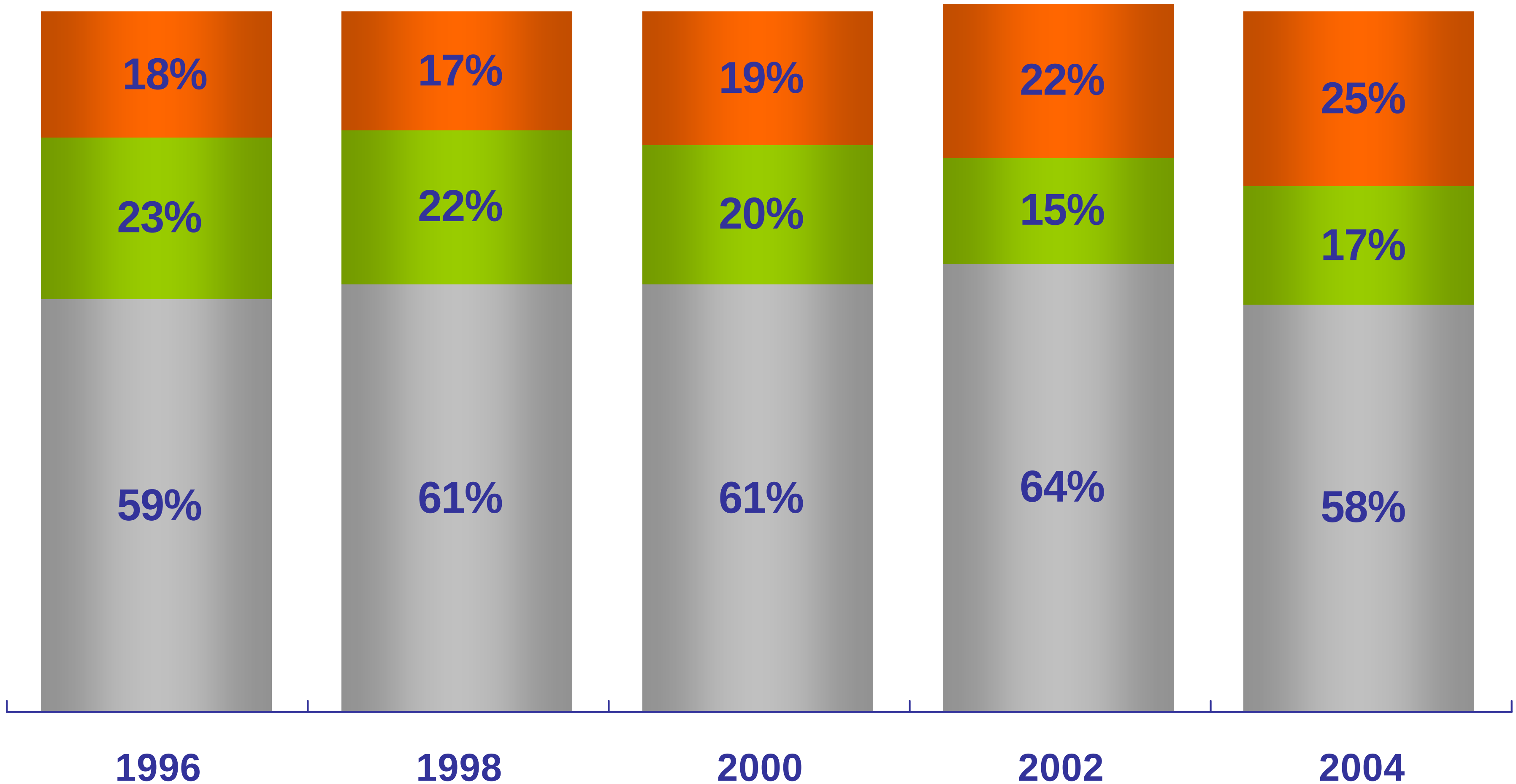
1. Overview of Korean Oil Industry — Crude import by Region

- Dependence on Middle East crude remains high at over 75%



[KNOC, 2005]

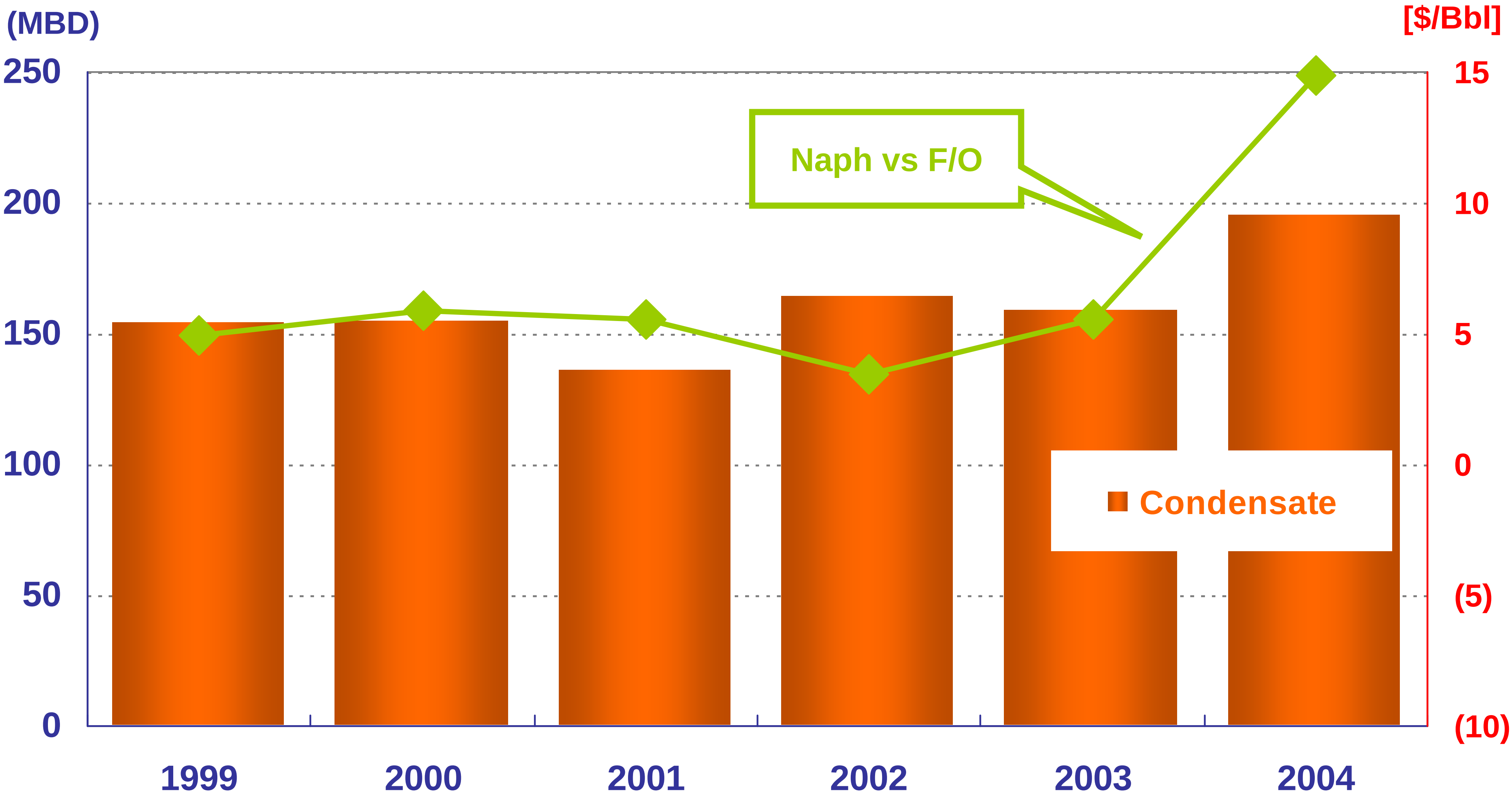
Crude Import by Grade



Heavy: API 30 under Middle: API 30~33 Light: API 33 & above

[KNOC, 2005]

Crude Import-Condensate



[KNOC, 2005]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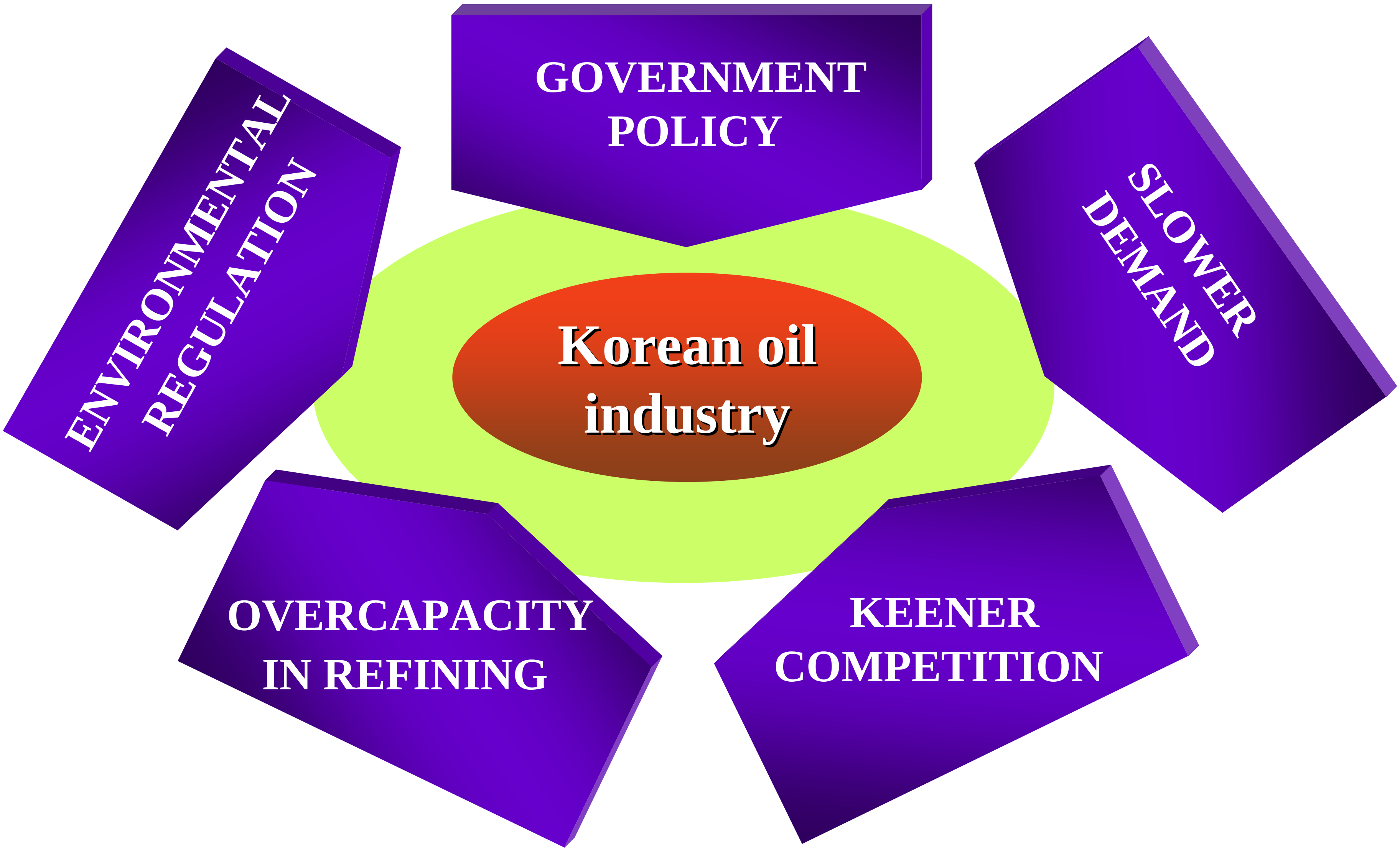
2. Key Issues & Challenges



Government Policies/ Slower Demand

Government Policies

- Policy of Accelerating open-market and FTA
- Macro/Micro basic plan for new & renewable energy

Slower Demand

- Saturated domestic market
- Demand growth centering on light oil and transportation (especially diesel)
- Tax Scheme on products (100:85:50)

2. Key Issues & Challenges

Keener Competition

- Severe competition among refiners
- Overly established Channel-11,000
- Demand shift to renewable and substitute energy

Environmental Regulation

- Kyoto protocol will come into effect
- Tougher environmental regulations on petroleum product
- Introduction of Alternative Motor fuel; CNG, Bio-diesel, Hybrid-car

2. Key Issues and Challenges   Correspondence to Climate Change

- **Careful preparation for Kyoto protocol and New Agreement of 6 countries (Australia, China, India, Japan, South Korea, USA)**

●**Opportunity for New Business**

- R&D for Clean Energy development

ex) Landfill Gas, Bio Fuel, Wind power, Fuel Cell etc.

- Development of CO_2 treatment technology

●**Improvement Efficiency of Existing Business**

- Installation of the high-energy efficiency devices

- Reshuffle the energy for CO_2 reduction

2. Key Issues and Challenges New Environment Regulation Method

- **Changes of Environmental regulation method for sustainable development**

● Introducing the Voluntary Agreement

- Site Assessment and Soil Remediation (Dec. 2003)

→ protect the additional contamination through quick/efficient remediation

- Emission reduction of Chemicals (named as 30/50 Program, Dec. 2004))

→ reduce the emission 30% by 2007, 50% by 2009 compared with 2001

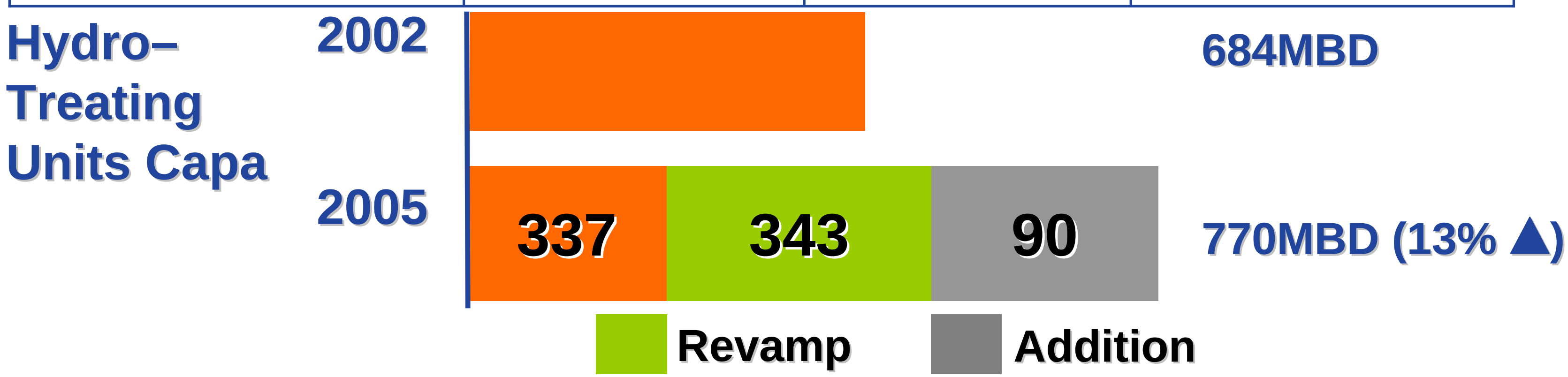
- Green Procurement System (mandatory to the public institution, Sept. 2005)

→ competitiveness of eco-friendly product will be increased

● Regulation on total amount from July 2007 in Metropolitan

- Addition or upgrading of desulphurisation units
  Switch to ultra- low sulfur motor fuels from January '06

Item	2002	2006	2010(?)
Gasoline	130 <	50<	10<
Diesel	430 <	30 <	10<



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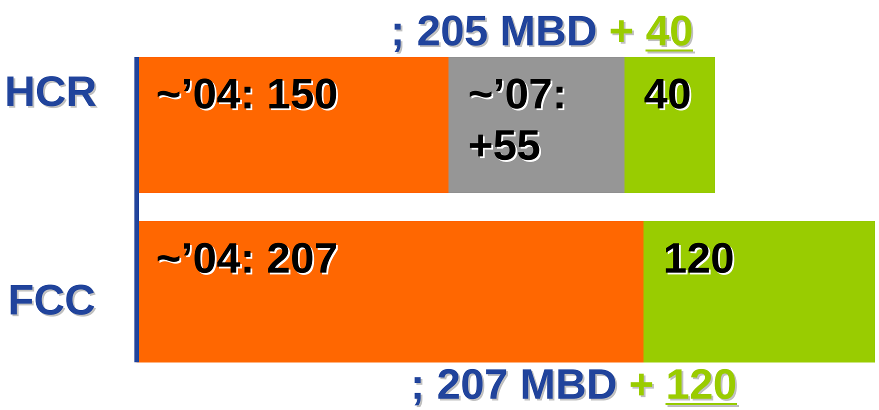
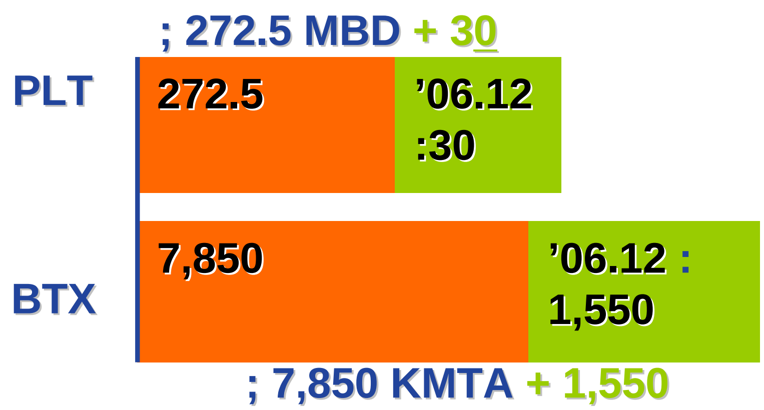
Refiner	CDU capacity (MBD)	Actual Production in 2004 (MBD)	utilization rate (%)
HDO	390	283	72.56
SK	840	720	85.71
GS	650	618	95.08
S-Oil	580	538	92.76
ICO	275	102	37.09
Sum	2,735	2,261	82.67

※ ICO under court receivership

Future Upgrading and BTX Expansion

- Korean refiners are focusing on upgrading their facilities to **increase** the yield of lighter products and also expanding BTX units to **diversify** its business territory and **maximize** profitability





	Upgrading		BTX Expansion	
Item	HCR	FCC	PLT	BTX
Capacity	245	327	303 MBD	9,400 KMTA

4. Conclusion

■ Create New Opportunities

▶ Invest on facilities upgrading to exploit the gap between light/heavy product/crude

▶ Invest on BTX for Integration into Petrochemical downstream

▶ Further develop the growing Chinese market

■ Manage

▶ Internal Industry Competition and preserve operational excellence

▶ Optimize operations with neighboring refineries for mutual advantage

■ Diversify and Stabilize crude oil import sources

▶ Sustain oil exploration & development projects

▶ Beef up cooperative relationship with oil-producing countries

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