Biofuels Polices in Asia: Trade effects on World Agricultural and Biofuels Trade

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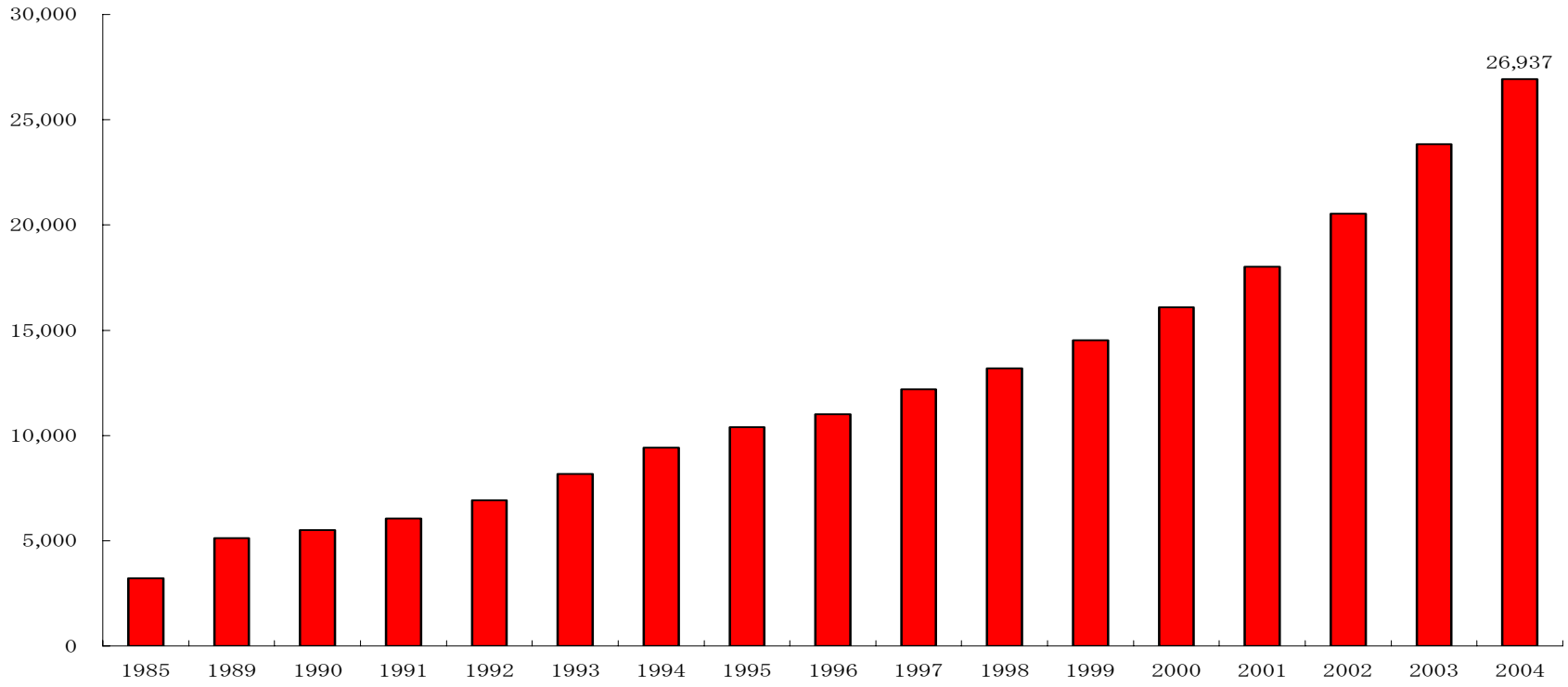
Ⅰ. Chinese bio-ethanol Program

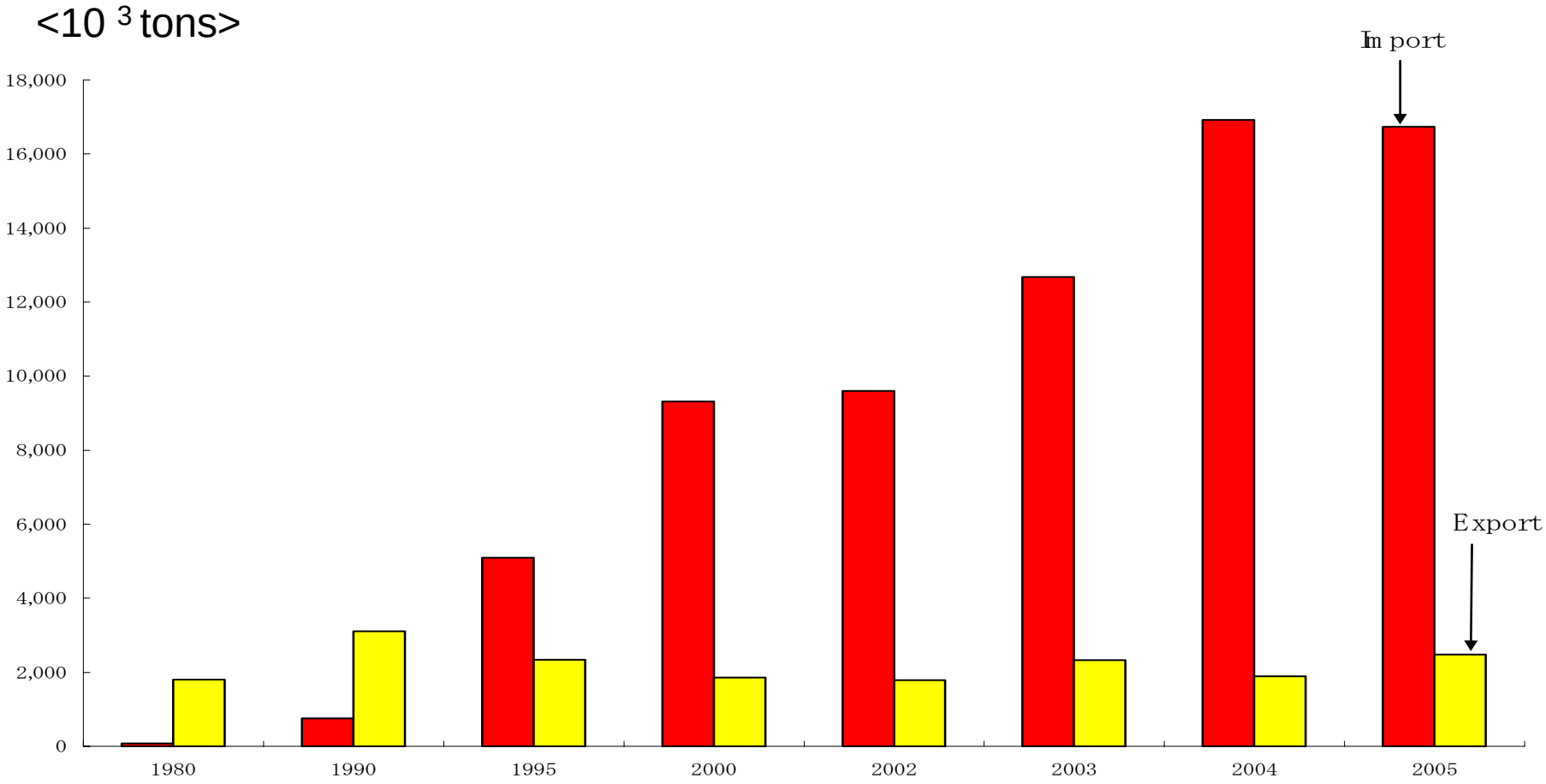
- The number of automobile in china is increasing

<10 ^{3} Cars>



Source: China Statistical Yearbook 2005

- Chinese petroleum consumption is increasing and its import of crude oil and oil products are rising too



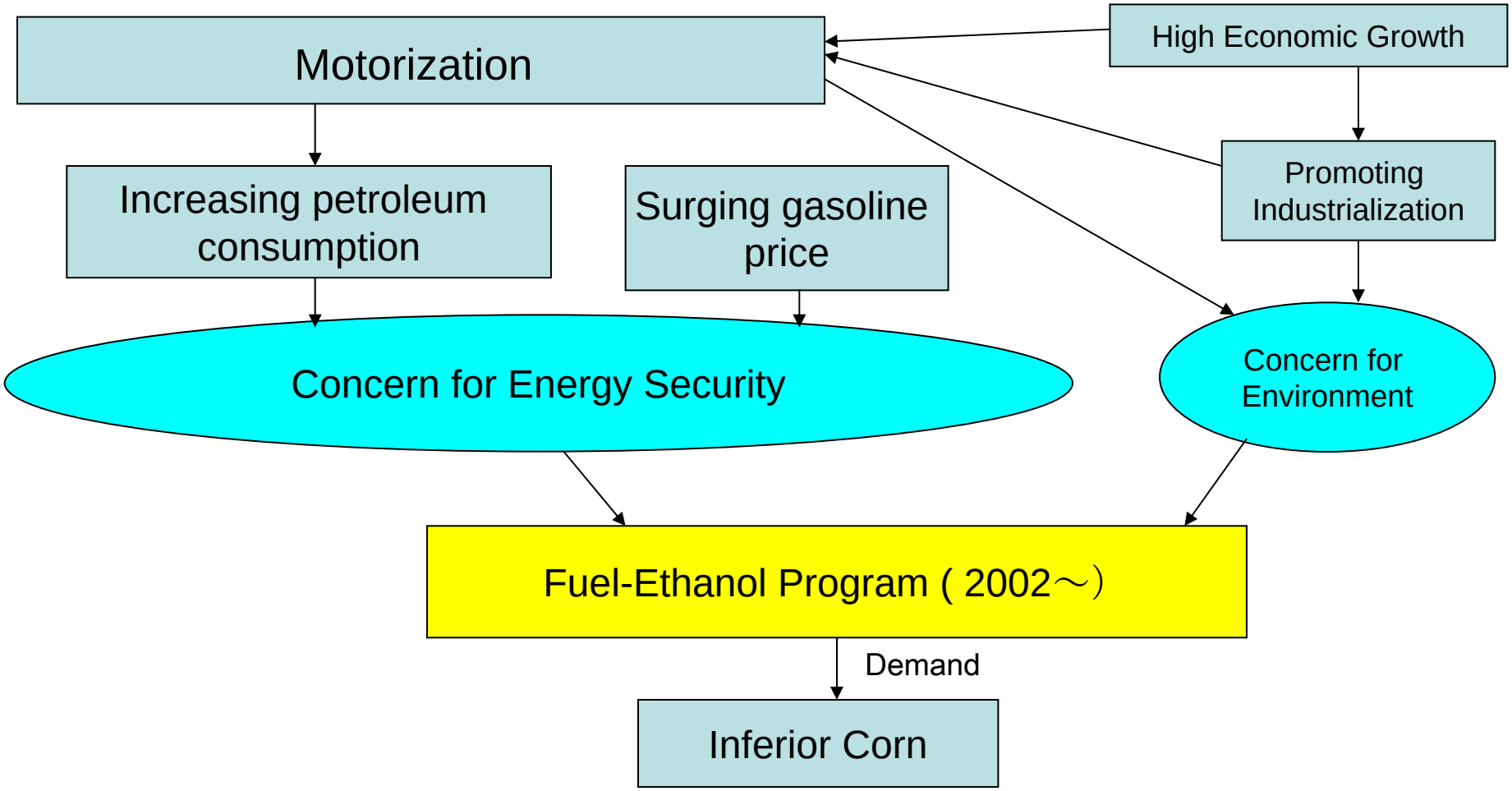
Source: China Statistical Yearbook 2005

・The increase in petroleum consumption is causing serious air pollution problems

・In order to deal with energy security and the air pollution problem, the Chinese government is strongly promoting the National Fuel-ethanol program

・In June 2002, the government started to make the use of fuel-ethanol blended gasoline mandatory

- Chinese Fuel-Ethanol Program



The Chinese Fuel-Ethanol Program

・In 2004, the government introduced the compulsory use of a 10% ethanol blended in gasoline (E10) in provinces of Helongjiang, Jilin, Liaoning, Henan, and Anhui

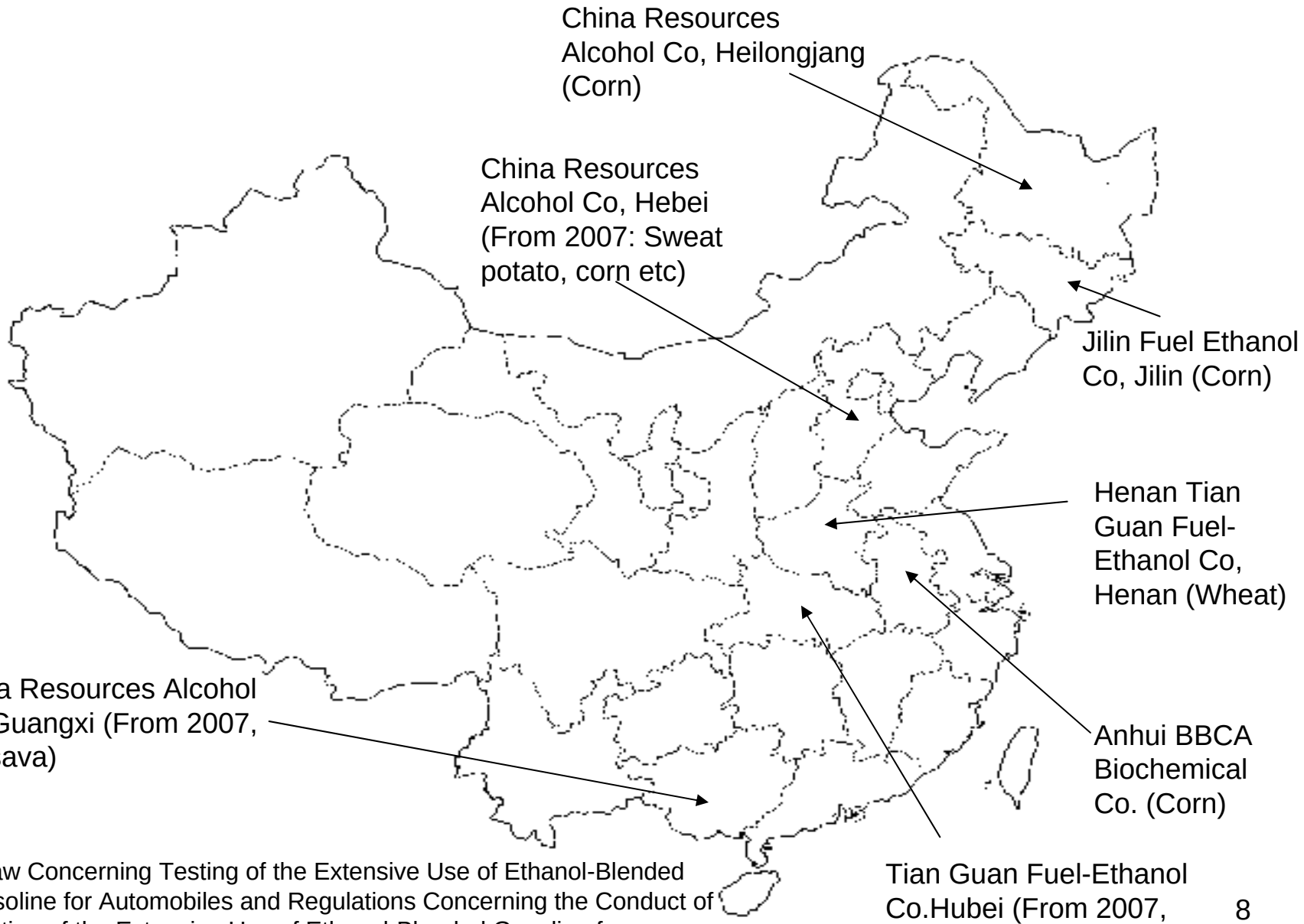
・The government expands the E10 program to 27 cities in the provinces of Shandong, Jiangsu, Hebei, and Hubei in 2006

- Current and Future Fuel-Ethanol Production (1)

Province	Company Name	Raw materials	2005 production (MT/Year)	2007 production capacity (MT/Year)	Supply location	Supply volume (MT/Year)
Heilongjiang	China Resources Alcohol Co.	Corn	100,000	100,000	Heilongjiang	100,000
Jilin	Jilin Fuel Ethanol Co.	Corn	300,000	600,000	Jilin	100,000
					Liaoning	200,000
Henan	Henan Tian Guan Fuel-Ethanol Co.	Wheat	200,000	200,000	Henan	86,842
					Hubei (9 cities) Hebei (4 cities)	113,158
Anhui	Anhui BBCA Biochemical Co.	Corn	320,000	320,000	Anhui	100,000
					Shandong (7 cities) Jiangsu (5 cities)	220,000
Guangxi	China Resources Alcohol Co.	Cassava	0	110,000	Guangxi	110,000
Hebei	China Resources Alcohol Co.	Sweet potato, corn etc	0	230,000	Hebei	230,000
Hubei	Tian Guan Fuel-Ethanol Co.	Grains	0	100,000	Hubei	100,000
Total			920,000	1,660,000		

Source: Law Concerning Testing of the Extensive Use of Ethanol-Blended Gasoline for Automobiles and Regulations Concerning the Conduct of Testing of the Extensive Use of Ethanol-Blended Gasoline for Automobiles (2006)

- Fuel-Ethanol Production Sites



Source: Law Concerning Testing of the Extensive Use of Ethanol-Blended Gasoline for Automobiles and Regulations Concerning the Conduct of Testing of the Extensive Use of Ethanol-Blended Gasoline for Automobiles (2006)

Corn is the major source of fuel-ethanol in China

1) Corn

- 80 % of fuel-ethanol is made from corn in China
- Ethanol facilities in Heilongjiang, Jilin, and Anhui use corn

2) Wheat

- Wheat is used in Henan

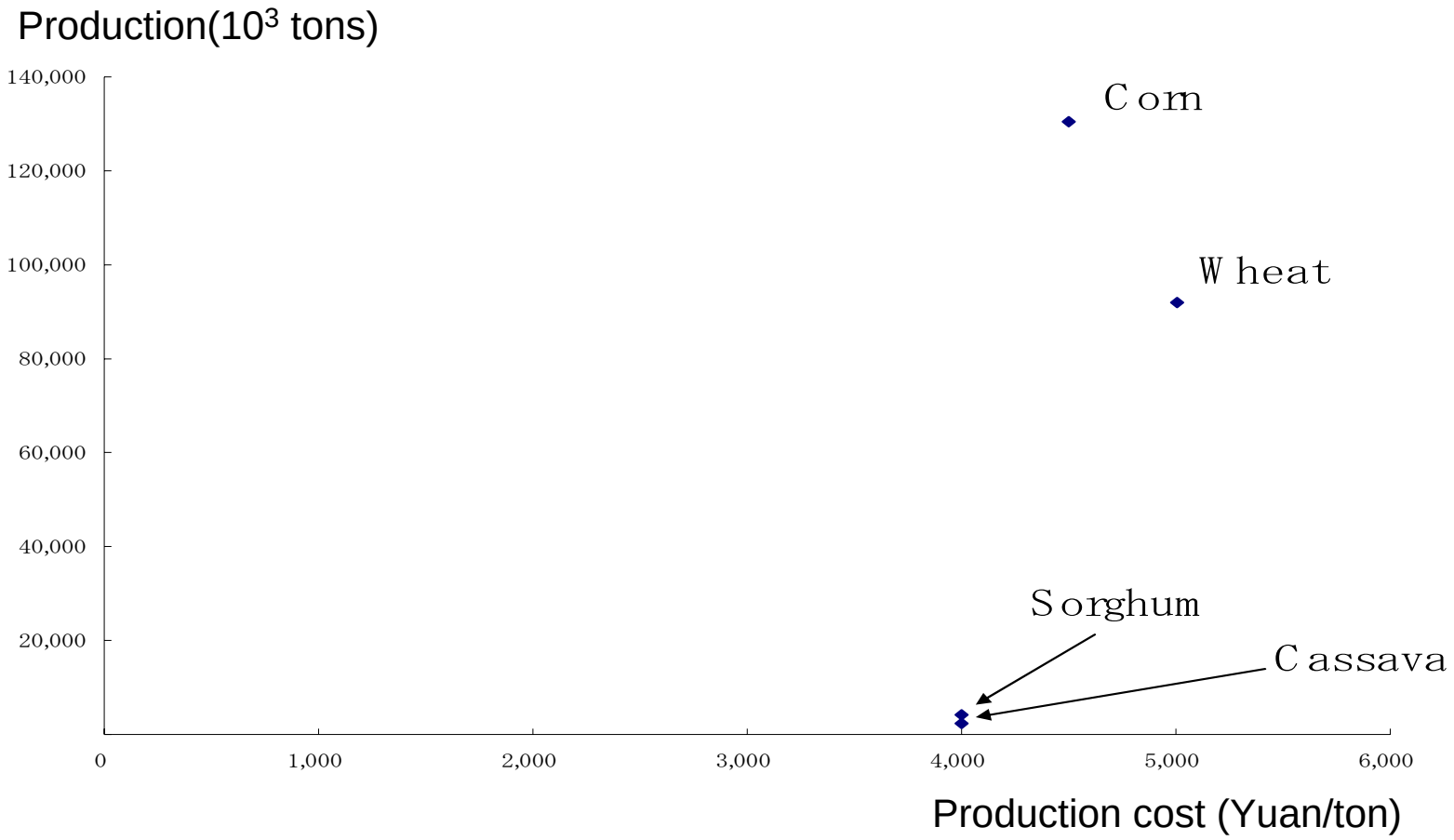
3) Cassava

- The Guagxi Zhuang autonomous region plans to build a fuel-ethanol plant
- The plant is scheduled to begin operations in October of 2007 at a production capacity of 110,000 MT

4) Others

- Potato, sorghum, rice, sugar, and lignocellulose are on experimental stage for fuel-ethanol production

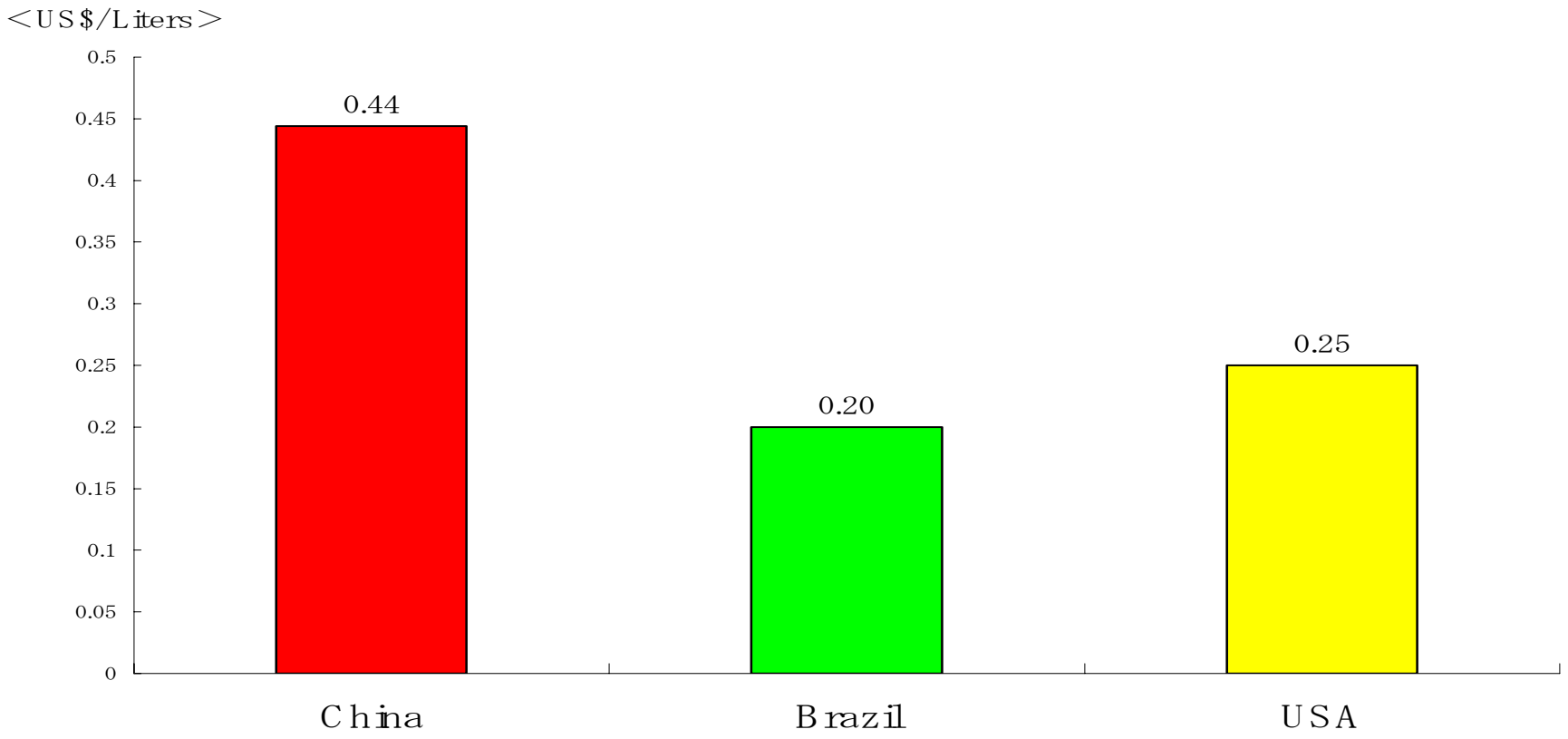
- Chinese fuel-ethanol production cost and agricultural production



Note: Production data is derived from FAS, USDA, PS&D (2006)

Production cost is derived from the Chinese National Development and Reform Commission

Chinese ethanol production cost is higher than other producers



Note: Chinese production cost is derived from the Chinese National Development and Reform Commission.
Brazilian cost is derived from Sao Paulo Sugarcane Agroindustry (2005)
The US cost is derived from USDA (2006)

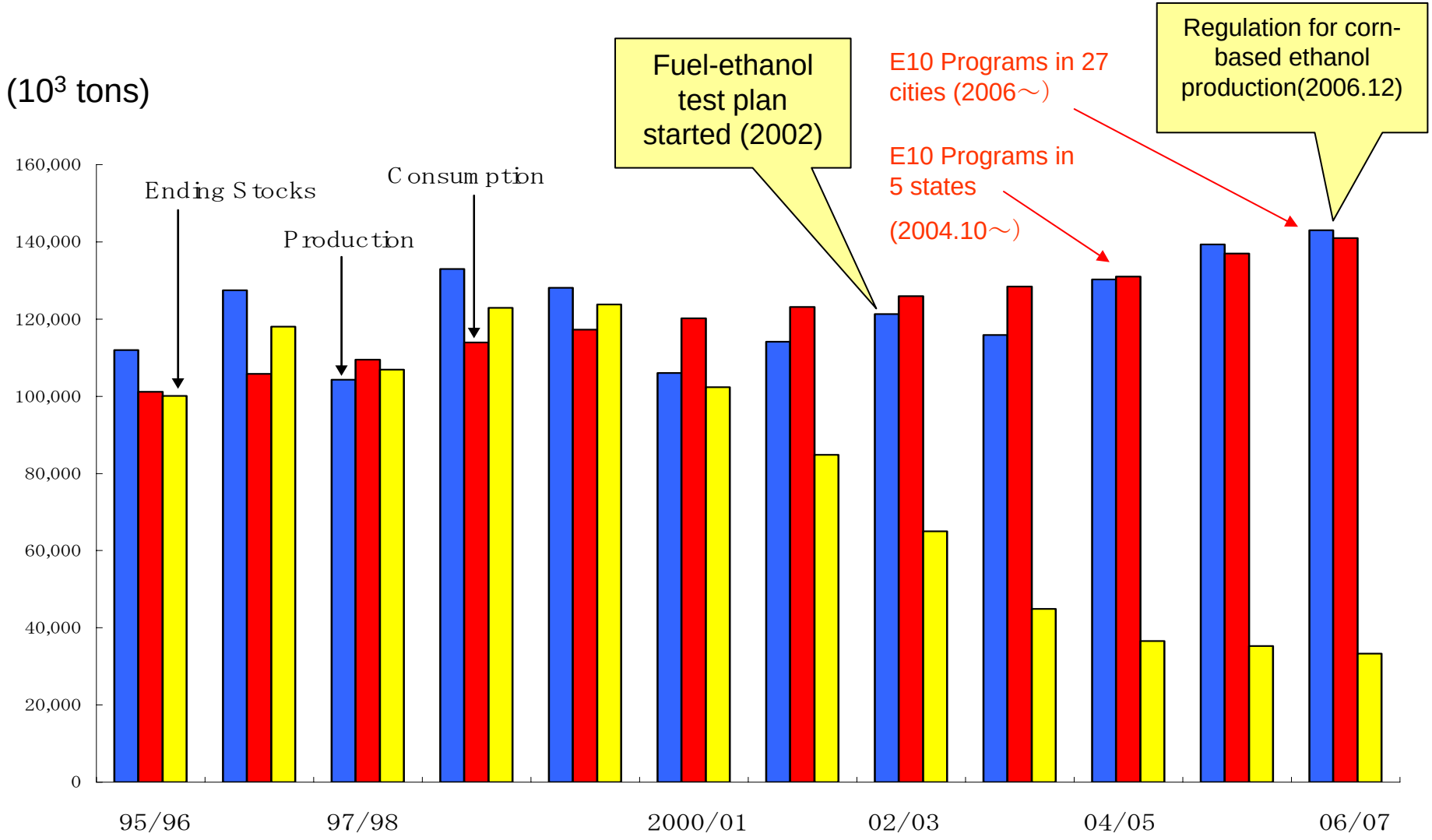
Corn use for Fuel-Ethanol production

- Although Chinese central government ordered to use inferior corn for fuel-ethanol production, facilities in Heilongjiang and Jilin use normal corn

- If China continues to expand corn-based fuel-ethanol production, corn utilization ratio for ethanol will increase

- Chinese central government stated to regulate corn-based fuel-ethanol production (Statement from National Development and Reform Commission in 21/12/2006)

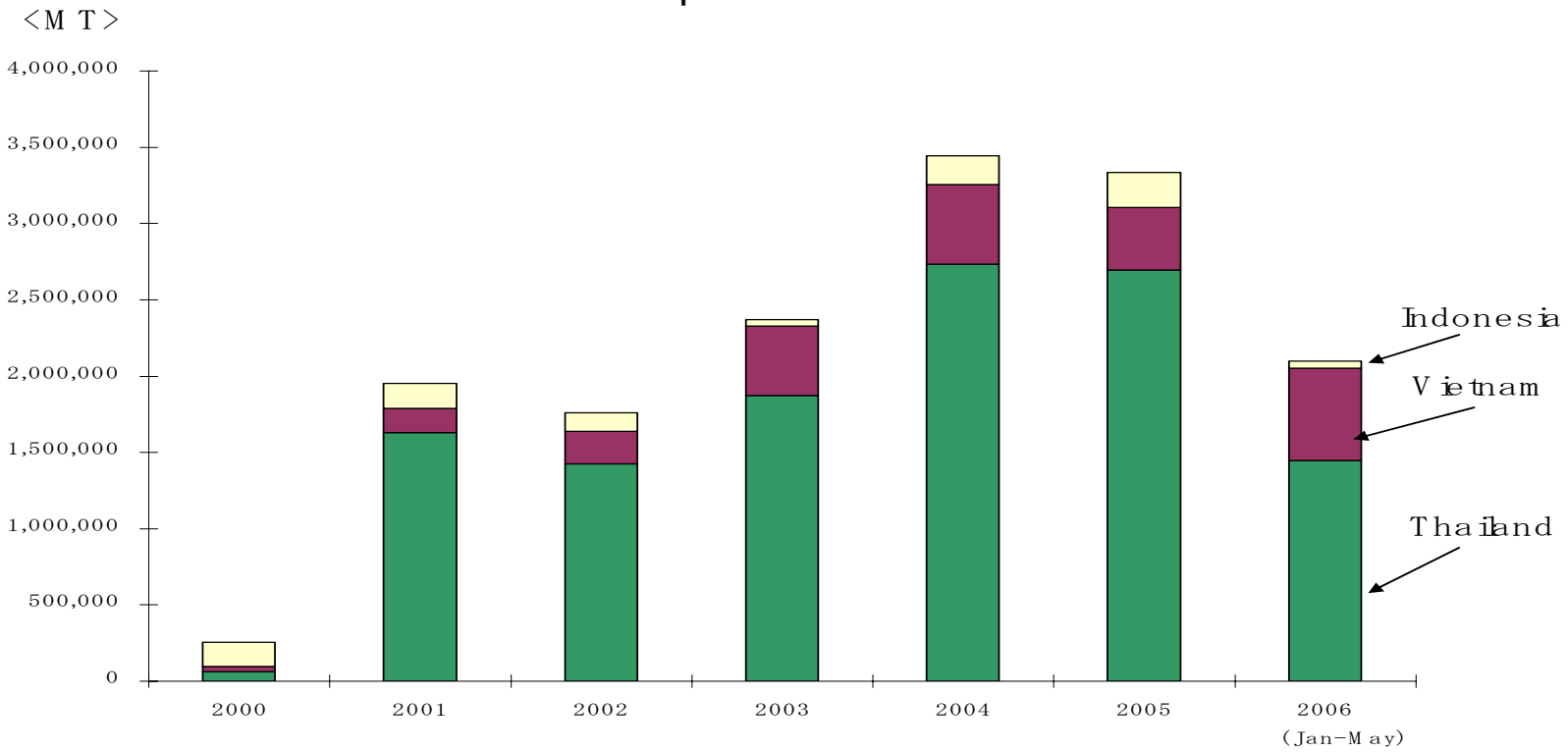
- Chinese corn production, consumption and ending stocks



Source: FAS, USDA, “PS&D”(2007).

・If China expands ethanol production from cassava, China will have to rely on imported cassava

○ Chinese cassava imports



Source: USDA, Grain Report, China, Peoples Republic of Bio-fuels An Alternative Future for Agriculture, CH6049 (2006).

Summary (Chinese Bio-Ethanol Program)

- 80% of fuel-ethanol was made from corn in China in 2005

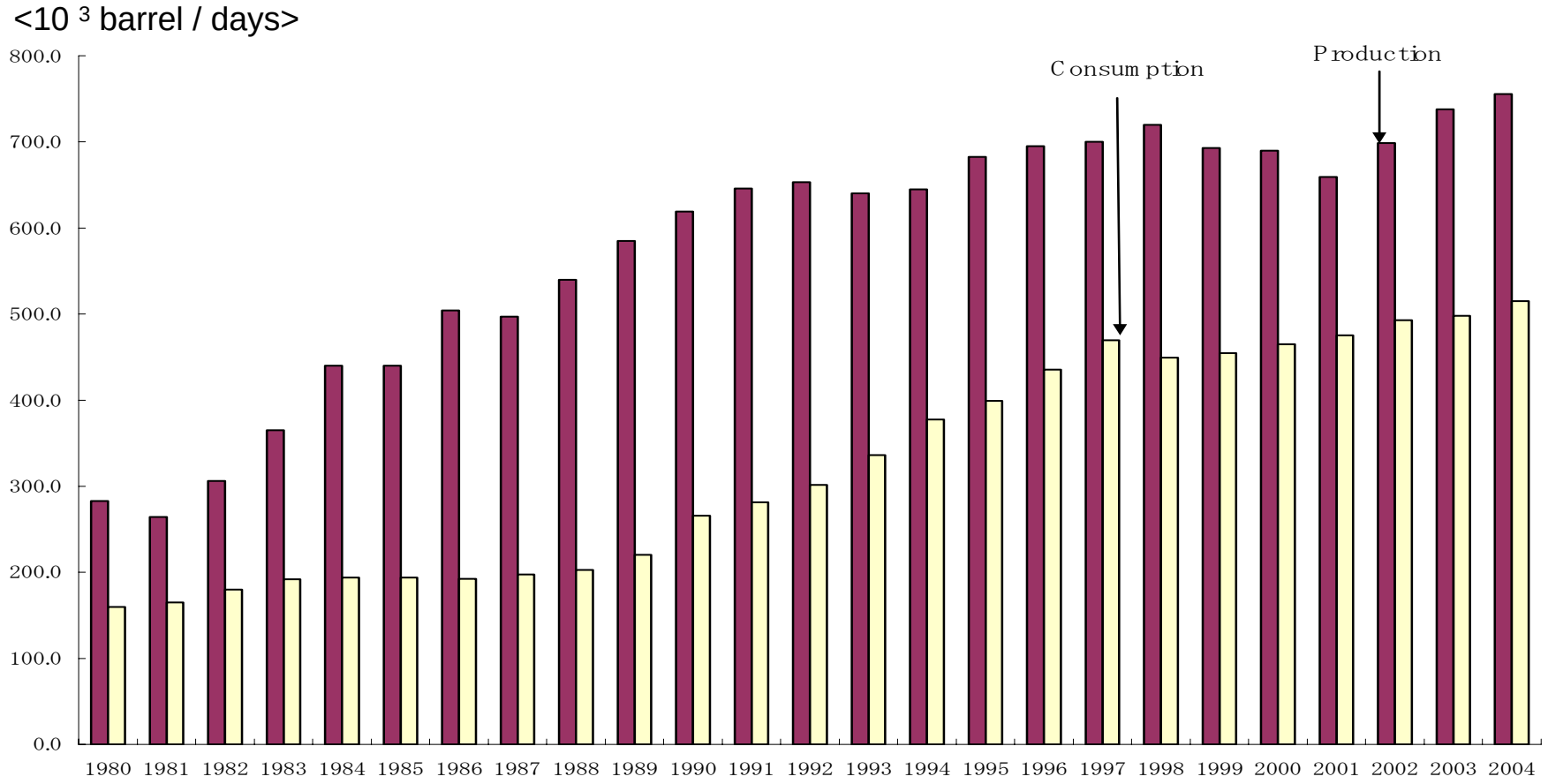
- Chinese central government wants to regulate corn-based ethanol production

- Chinese government wants to diversify the sources of fuel-ethanol production, especially to cassava

- Technological innovation is required for developing cassava-based fuel-ethanol production

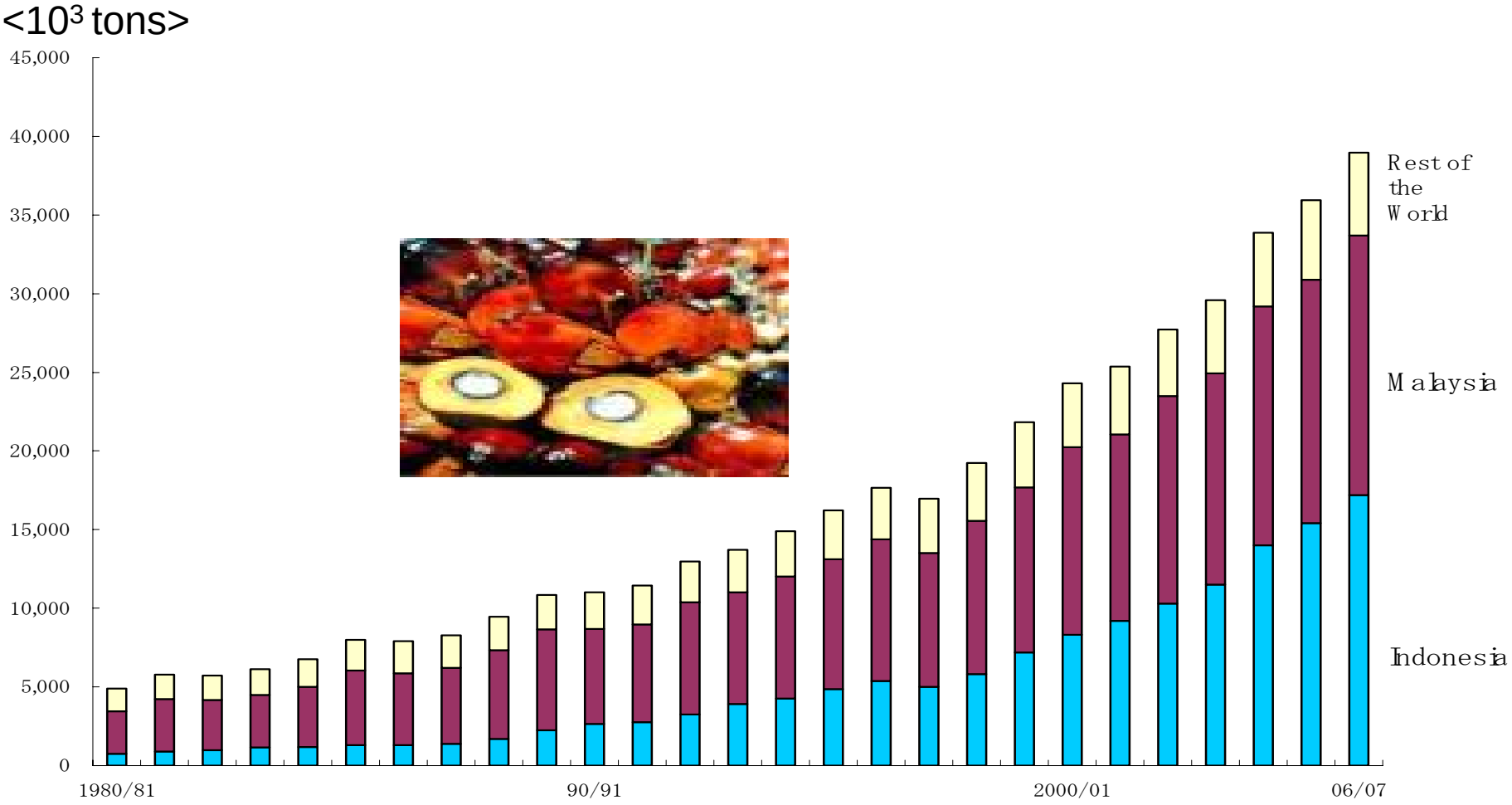
Ⅱ. Malaysian Biodiesel Program

- Malaysian petroleum consumption has increased rapidly since 1990



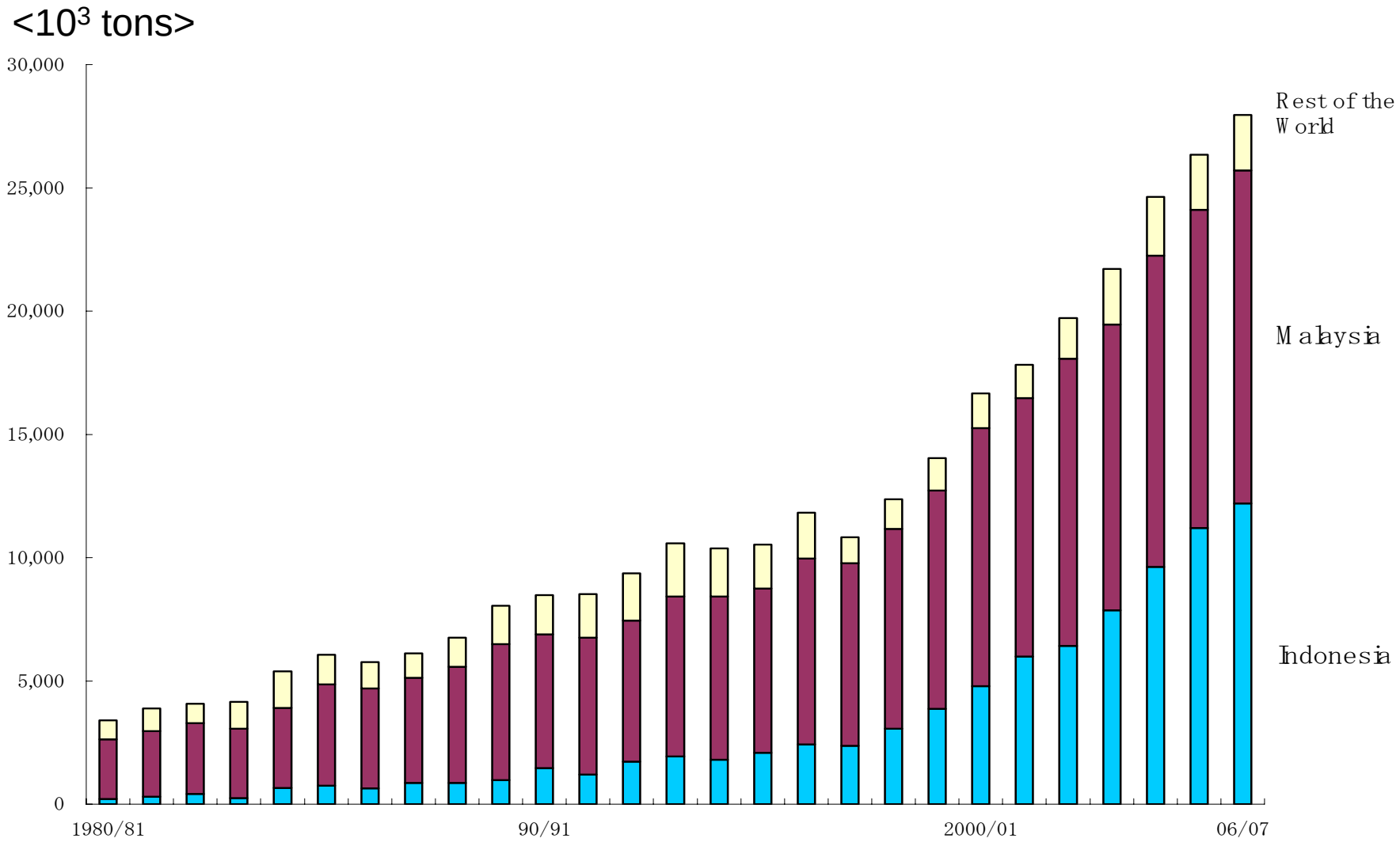
Source: OPEC, “OPEC 2005” (2006)

Malaysia is the second largest producer of palm oil



Source: FAS, USDA, “PS&D”. (2007)

Malaysia is the world largest exporter of palm oil



Source : FAS, USDA, PS&D(2007)

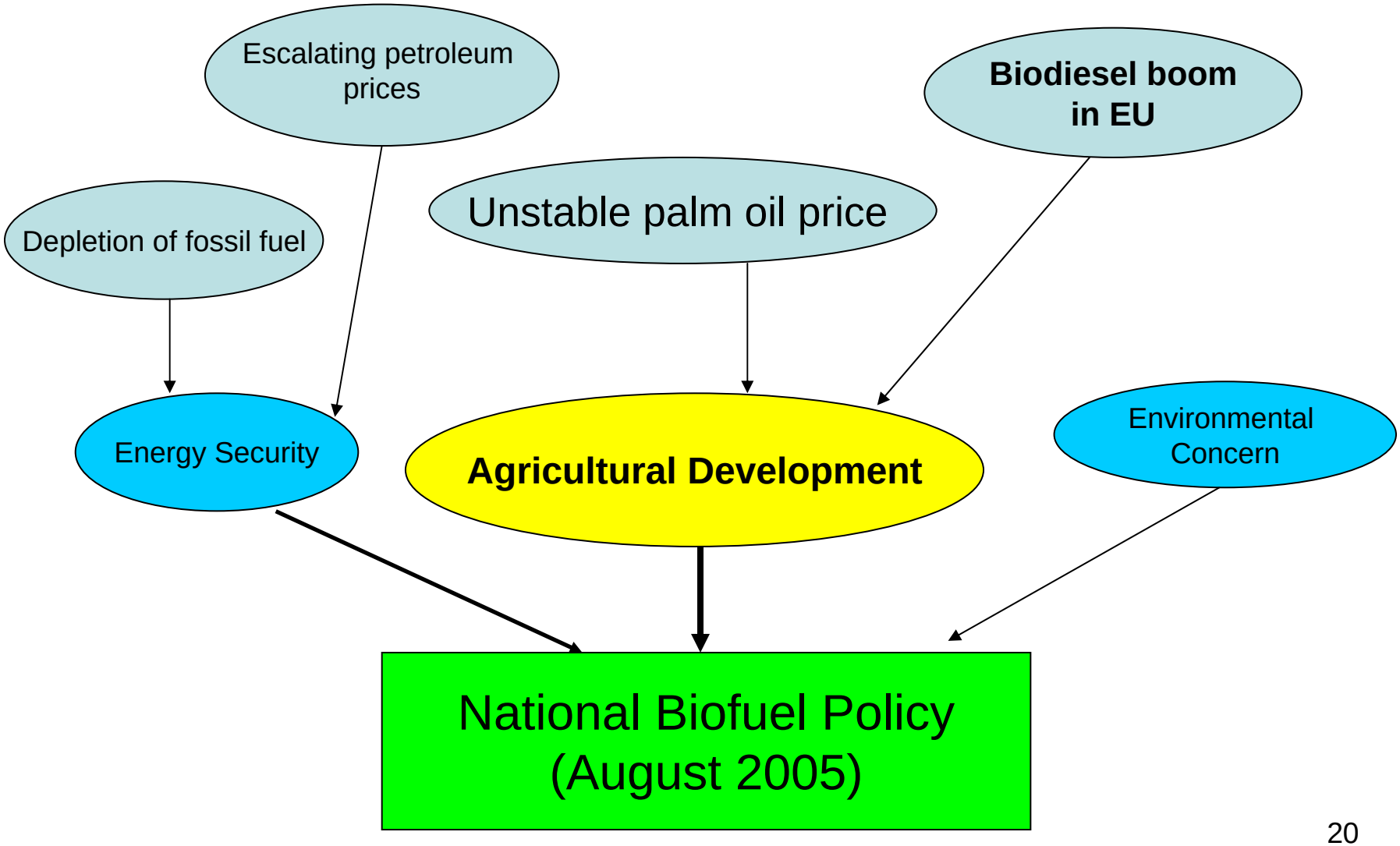
International palm oil prices are unstable

Note : Palm Okein RBD,Mal.cif.Rottesdam

Source: Oil World, “Oil World Annual 2006” (2006),

Oil World, “Oil World No.51/52, Vol.49. (2006)

Malaysia is promoting National Biofuel Policy



National Biofuel Policy (Objectives)

- Supplementing the depleting supply of fossil fuels with renewable resources
- Mobilizing local resources
- Exploiting local technology to generate energy for the transportation and industrial sectors
- Enhancing exports of biofuels
- Benefiting from the spin-off effect of more stable prices of palm oil

National Biofuel Policy (Implementation Plan)

○ Short term

- Malaysian standard specifications of B5 (5 percent processed palm oil and 95 percent diesel) will be established

- Selected government departments with their fleets of diesel vehicles will participate in trials for using B5 diesel

- B5 diesel pumps for the public will be established at selected stations

National Biofuel Policy (Implementation Plan)

○ Medium Term

- Malaysian standard specifications of palm-oil-based biodiesel for domestic use and export will be established
- Legislation to mandate the use of B5 diesel will be passed and enforced

○ Long Term

- The proportion of processed palm oil in the diesel blend will be gradually increased
- Greater uptake of biofuels technology by Malaysian companies and foreign companies abroad

Biodiesel production in Malaysia

- Biodiesel production in Malaysia is estimated 158 thousand tons in 2006 and 1.3 million tons in 2007

(PECC, “Pacific Food System Outlook 2006-2007”)

- Government has granted licenses to 32 biodiesel plants, with potential annual capacity of 2.6 million tons

(PECC, “Pacific Food System Outlook 2006-2007”)

- If Malaysia promotes B5 program in all regions, 500 thousand tons of biodiesel will be newly required

- Malaysia may export biodiesel to European markets at the range of 300-350 thousand tons by 2010 (Asian Palm Oil for Euro Biodiesel, 2005).

Main Biodiesel Projects in Malaysia (2006)

Source: F.O.Licht, World Ethanol & Biofuels Report, Vol.4, No11,2006

Biodiesel Production costs in Malaysia

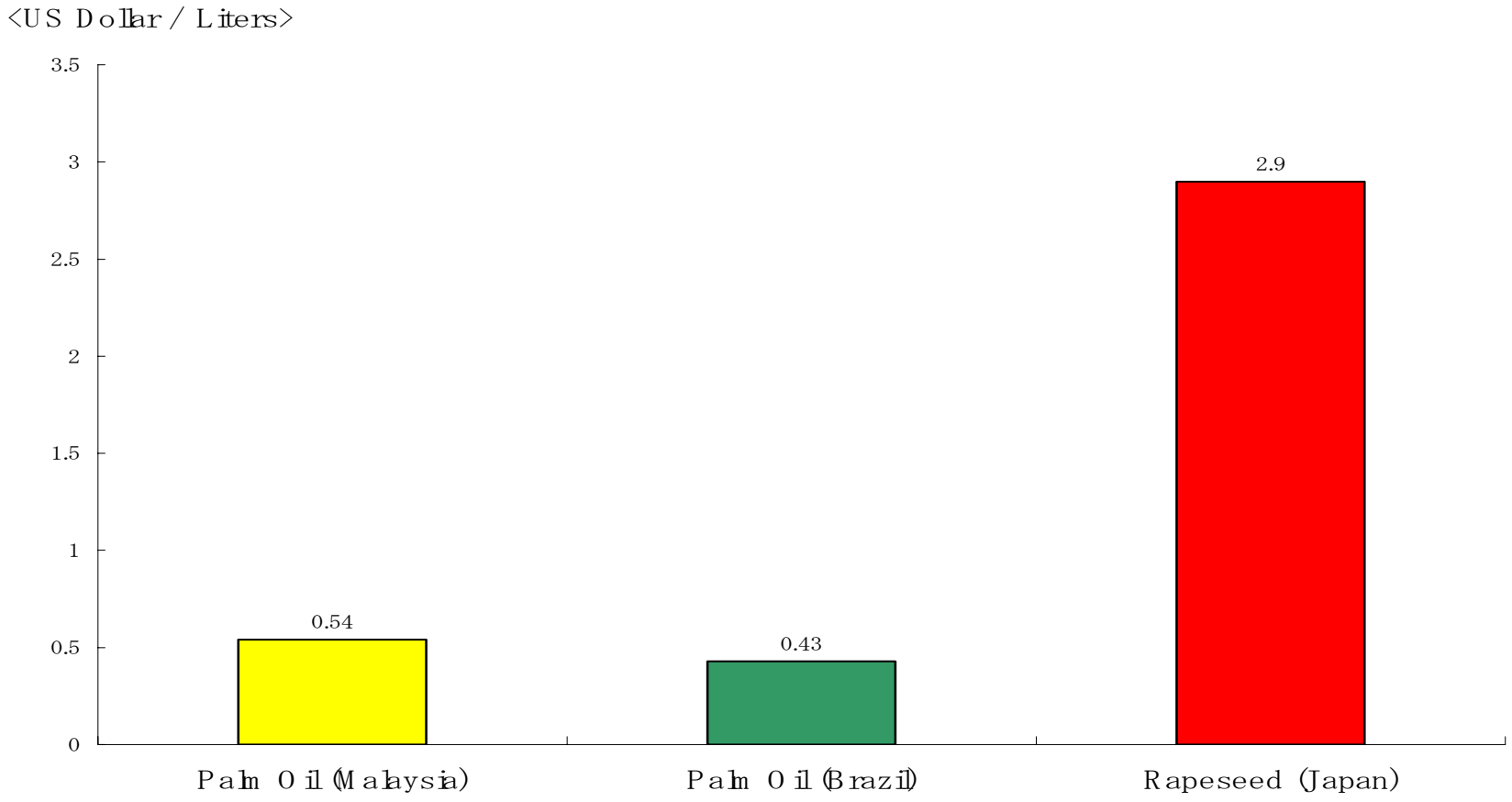
・ Raw material cost contributes about 80 percent of total production cost

(US $/Liter)

Raw material		
	Crude Palm Oil (CPO)	0.39
	Methanol	0.02
Conversion from CPO to Biodiesel		
	Capital Cost	0.07
	Variable Cost	0.05
Total		0.54

Note: Based on date from Japan Petroleum Energy Center (2004).

- Production Costs (International comparison)



Note: Malaysians cots is based on date from Japan Petroleum Energy Center (2006).

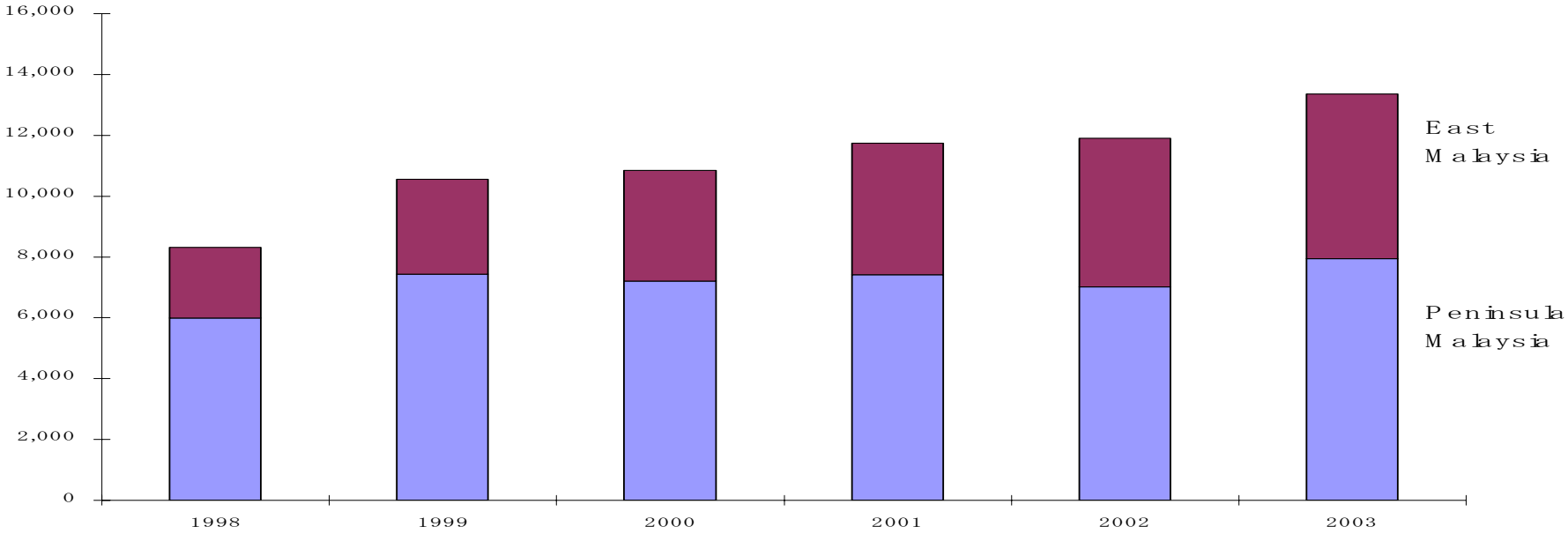
Brazilian cost is derived from Biodiesel in Brazil (2005)

Japanese cost is derived from Japan's Ministry of Agriculture, Forestry and Fisheries

Palm Oil production in Malaysia

- Malaysian palm oil production will expand to the future
- Particularly in Sarawak, East Malaysia

<10 ^{3} tons>



Source: MPOB (2005)

・ Malaysia's potential for palm area expansion is estimated to be about 2.0 million ha, which can produce 10 million ton of CPO

○ CPO Production in Malaysia

Current palm Area	3.6 million ha
Potential area expansion	About 2.0 million ha
Total national land area	33.0 million ha
Current production	12.1 million t/year
Production prospect	14 million ton in 2005 19 million ton in 2020

Source: Japan Petroleum Energy Center (2004)

Malaysian biodiesel export

- Malaysia wants to export biodiesel to European market

- Malaysian palm oil may become a raw material of European biodiesel production

- Whether European market chooses CPO or biodiesel from Malaysia is uncertain. It depends on the quality and cost of biodiesel

Benefits for Malaysia

- New demand for palm oil
- Mutual beneficial effects on petroleum and palm oil sectors
- Efficient utilization of raw materials
- Mitigating the effects of petroleum price escalation
- Savings in foreign exchange
- Environment-friendly source of energy
- Achieving socio-economic safety net

Concerns for biodiesel expansion

- Expansion of palm oil production is possible in Malaysia

- 1.0% of palm oil production is used for biodiesel in 2006, and 7.9 % of palm oil production will be used for biodiesel in 2007

- The expansion may cause a high international palm oil price

- In Malaysia, 11% of the total land area is already devoted to palm oil (F.O.Licht 2006)

- "Between 1985 and 2000, the development of palm oil plantations was responsible for an estimated 87 % of deforestation in Malaysia" (Friends of the Earth 2005)

- Sustainability of palm oil production and biodiversity are main concern for expanding bio-diesel production

Summary (Malaysian Biodiesel Program)

- Malaysia will expand biodiesel production from palm oil

- Malaysia may meet both domestic and international demand

- Malaysian biodiesel programs can contribute to mitigate energy in security and be beneficial for palm oil producers

- However, this program may cause to increase international palm oil price

- This program can damage for sustainability of palm oil production and biodiversities in Malaysia

Ⅲ Japanese Bio-Ethanol program

- Preventing global warming
- Development of strategic industries
- Vitalization of rural and farming communities
- Biomass Nippon Strategy was formulated in December 2002

Revised Biomass Nippon Strategy

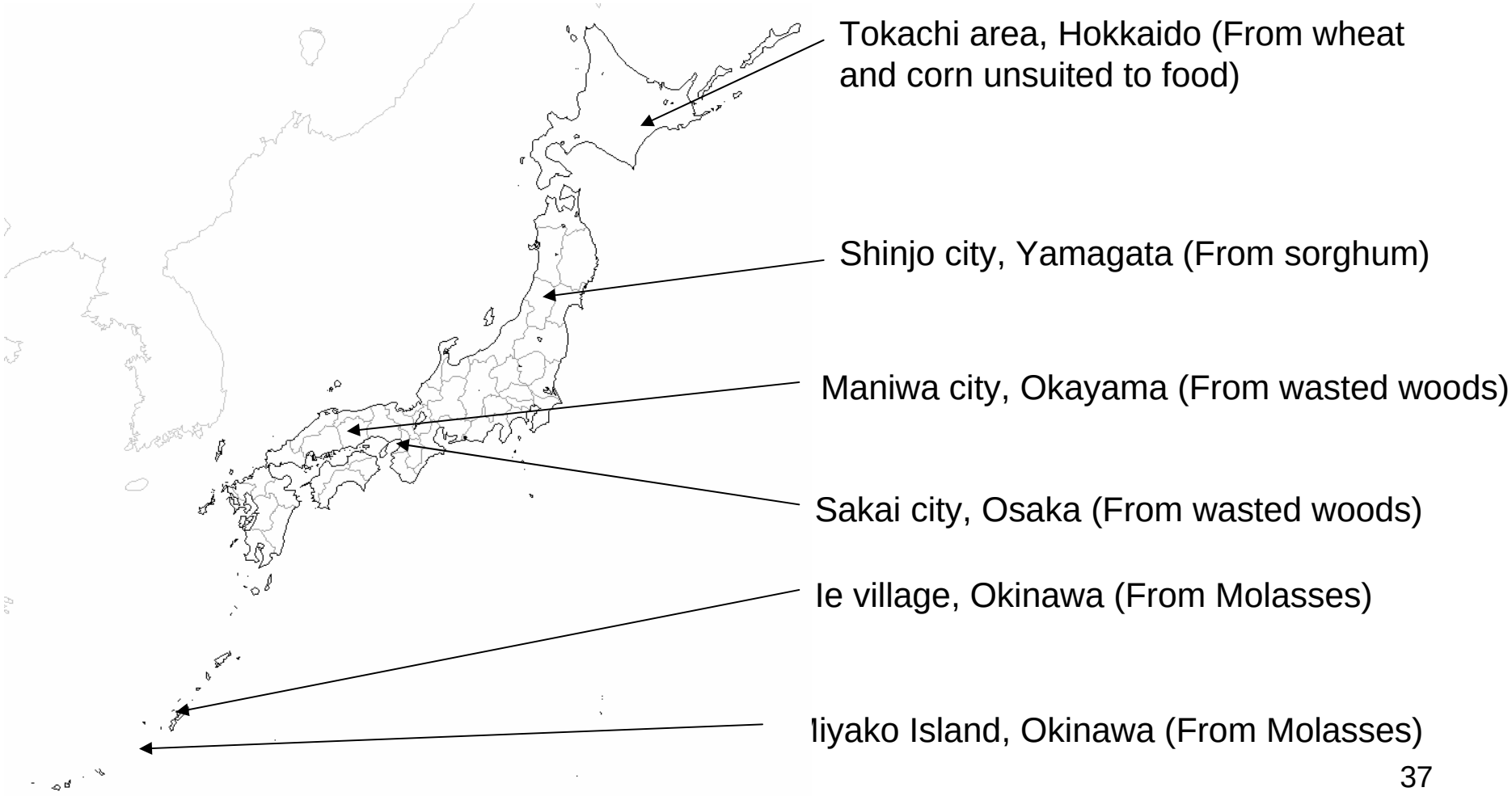
- Kyoto Protocol was put into effect in February 2005

- Revised Biomass Nippon Strategy was formulated in March 2006

- Promotion of utilization of biomass for transportation fuel, particularly of domestic biomass

Current Bio-Ethanol Production

- Japanese bio-ethanol production is at an experimental stage
- Current production level is 30 kl (April 2006)



For Further Promotion of Domestic Bio-Ethanol

- The abandoned arable land can be used to grow crops for bio-ethanol production

- Farmland planted with crops may be used to provide raw materials for bio-ethanol

- Technological innovation is the key

Expected Result

Food and Agriculture

- Reinforcement of international competitiveness to agriculture
- Improvement and maintenance of food supplying capability

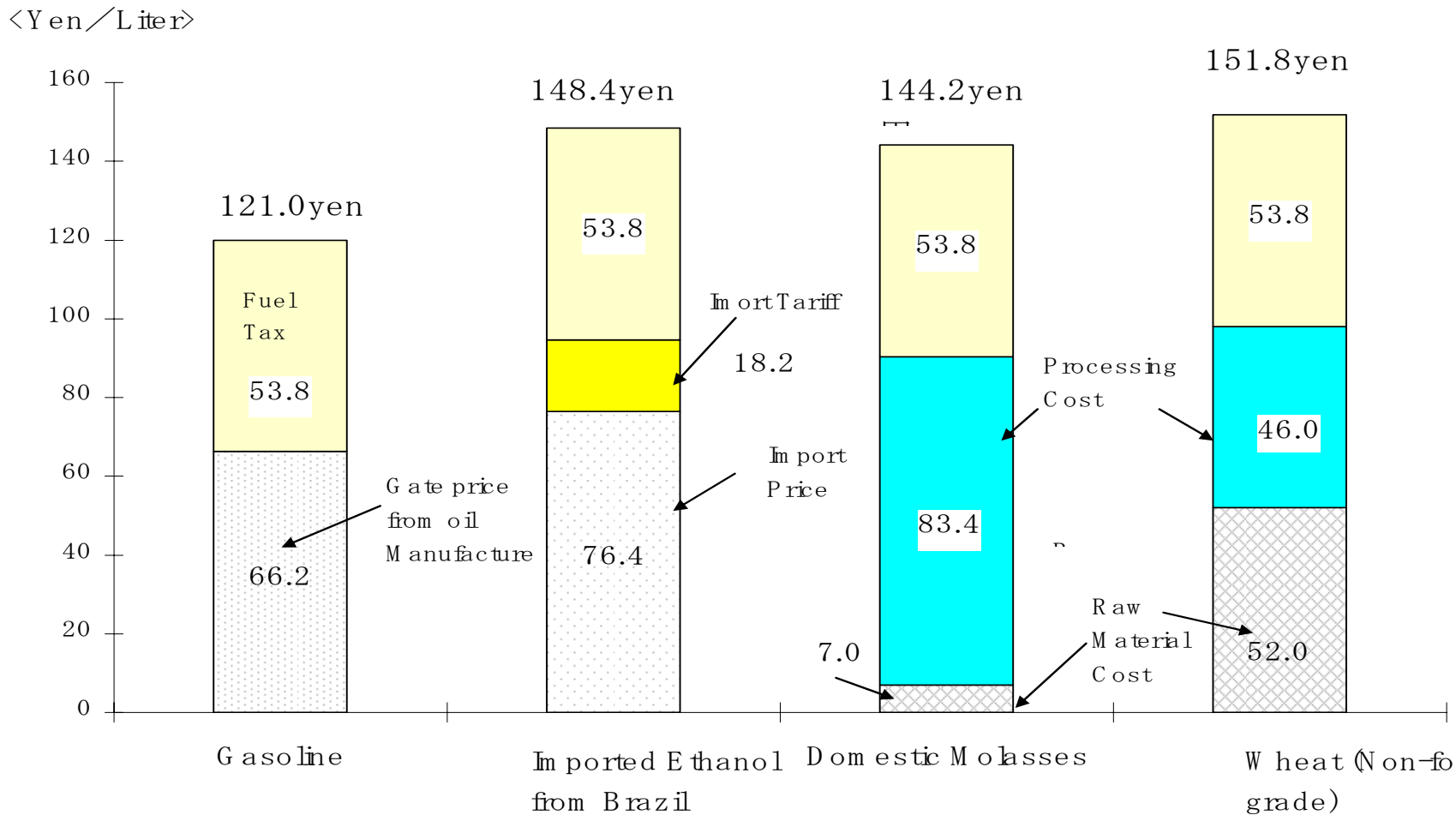
Environment

- Contribution to fulfillment of the target dedicated by the Kyoto Protocol
- Actions in consideration of Post-Protocol situation

Energy

- Action to cope with rising crude oil price
- Diversification of energy sources (energy security)

- Production cost and fuel-tax need to be reduced to expand bio-ethanol production in Japan



Summary (Japanese Bio-Ethanol Program)

・ Japanese government promotes bio-ethanol production and utilization for automobile

・ Securing raw materials for bio-ethanol, reduction of production cost, tax reduction for bio-ethanol are needed to expand bio-ethanol production in Japan

・ Further technical innovation is the key factor to promote domestic bio-ethanol production

Concluding Remarks

- The governments in Asian countries are promoting bio-fuel programs

- Their raw materials for bio-fuels have various sources

- Increasing bio-fuel consumption would compete with food and feed

- The governments in Asian countries are working for bio-fuel programs, which will not conflict with food security


Thank you for your attention !!