Chapter 3

THE PALM OIL INDUSTRY IN INDONESIA: ITS STRUCTURAL CHANGES AND COMPETITIVENESS

by

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1. INTRODUCTION

The palm oil industry is one of the leading resource-based industries in Indonesia. The nature of the industry has shifted from government control to private initiative in the last two decades. The purpose of this paper is to analyze the process of structural changes in the Indonesian palm oil industry and to examine the competitiveness and challenges for sustaining the development. The scope of analysis is not limited to the oil palm plantation industry but covers aspects ranging from plantation, crude palm oil production, oil splitting and refining to processed goods industries such as edible oil, soap and oleochemicals. This wide scope is important for grasping the structure of production and distribution of the industry as a whole.

1.1. Palm Oil in the Global Perspective

Palm oil is the second largest vegetable oil after soybean oil in the world production volume out of the 7 largest vegetable oils[1]. This is because palm oil is a high-yield and low-cost commodity[2]. The growth rates of world palm oil production and consumption exceeded those of soybean oil during the 1980s and are expected to maintain this high pace. It is estimated that before 2002 palm oil production will surpass that of soybean oil to become the largest vegetable oil.

[1]The 7 largest vegetable oils are soybean oil, palm oil, rape-seed oil, sunflower oil, peanut oil, cotton-seed oil, coconut oil in order of large production volume.

[2]The production cost of palm oil is said to be 40 per cent lower than that of soybean oil and less than one fourth of that of rape-seed oil, and the yield per hectare is 9 times of soybean oil and about 5 times of rape-seed oil, as follows ;

	Production Cost (US$/ton)	Yield per Hectare(ton/ha)
Palm oil	180	2.88
Soybean oil	315	0.32
Rape-seed oil	750	0.60

Source: Oil World 1987

Indonesia ranks next to Malaysia in palm oil production, crop area and export volume (see Table 1). Malaysia holds 51 per cent of world production and 63 per cent of world export, but its shares are constantly declining. In contrast, Indonesia has recorded high growth with an average annual growth rate of 12 per cent in production and 17 per cent in export during the last 15 years. Indonesia is estimated to surpass Malaysia to be the world largest

Table 1 : The Top 5 Countries in Production, Crop Area, Export and Consumption of Palm Oil

(1) Production (Unit : 1,000 tons, number in bracket indicates percentage from world total)

	Malaysia	Indonesia	Nigeria	Thailand	Ivory Coast	World Total
1981	3,352 (60.6)	822 (14.9)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	5,535 (100.0)
1987	4,851 (58.5)	1,478 (17.8)	n.a. (n.a.)	n.a. (n.a.)	n.a. (n.a.)	8,298 (100.0)
1990	6,095 (55.7)	2,413 (22.0)	580 (5.3)	226 (2.5)	270 (2.1)	10,951 (100.0)
1993	7,403 (53.6)	3,421 (24.8)	645 (4.7)	297 (2.2)	320 (2.3)	13,806 (100.0)
1994	7,220 (51.1)	3,860 (27.3)	640 (4.5)	316 (2.2)	290 (2.1)	14,137 (100.0)
1995	7,811 (51.4)	4,200 (27.6)	650 (4.3)	360 (2.4)	290 (1.9)	15,201 (100.0)
1981 ~ 95 Annual average growth rate	6.2	12.4	2.3 (1990~95)	9.8 (1990~95)	1.4 (1990~95)	7.5

(2) Mature Area (Unit : 1,000 hectares)

	Malaysia	Indonesia	Nigeria	Ivory Coast	Thailand	World Total
1989	1,598 (50.2)	514 (16.1)	260 (8.2)	115 (3.6)	86 (2.7)	3,185 (100.0)
1990	1,710 (49.3)	620 (17.9)	270 (7.8)	128 (3.7)	94 (2.7)	3,466 (100.0)
1993	2,001 (47.2)	924 (21.8)	345 (8.1)	155 (3.7)	118 (2.8)	4,238 (100.0)
1994	2,076 (46.7)	1,009 (22.7)	345 (7.8)	159 (3.6)	136 (3.1)	4,443 (100.0)
1995	2,161 (46.1)	1,129 (24.1)	350 (7.5)	161 (3.4)	145 (3.1)	4,691 (100.0)
1989 ~ 95 Annual average growth rate	5.2	14.0	5.1	5.8	9.1	6.7

(3) Export (Unit : 1,000 tons)

	Malaysia	Indonesia	Singapore	Papua NewGuinea	Ivory Coast	World Total
1981	2,791 (70.2)	239 (6.0)	519 (13.1)	n.a. (n.a.)	65 (1.6)	3,977 (100.0)
1987	4,784 (70.5)	860 (12.7)	514 (7.6)	n.a. (n.a.)	80 (1.2)	6,783 (100.0)
1990	5,949 (68.8)	1,163 (13.5)	679 (7.9)	143 (1.7)	156 (1.8)	8,645 (100.0)
1993	6,265 (66.3)	1,719 (18.2)	448 (4.7)	243 (2.6)	170 (1.8)	9,446 (100.0)
1994	6,895 (63.3)	2,173 (20.0)	328 (3.0)	225 (2.1)	148 (1.4)	10,889 (100.0)
1995	6,596 (62.6)	2,070 (19.6)	399 (3.8)	220 (2.1)	125 (1.2)	10,543 (100.0)
1981 ~ 95 Annual average growth rate	6.3	16.7	- 1.9	9.0 (1990 ~ 95)	4.8	7.2

(4) Consumption (Unit : 1,000 tons)

	Indonesia	12 EC Countries	China	Pakistan	Malaysia	World Total
1981	518 (10.4)	563 (11.3)	100 (2.0)	256 (5.1)	352 (7.0)	4,997 (100.0)
1987	794 (9.5)	938 (11.3)	400 (4.8)	412 (5.0)	479 (5.8)	8,323 (100.0)
1990	1,237 (11.2)	1,306 (11.8)	912 (8.3)	692 (6.3)	528 (4.8)	11,040 (100.0)
1993	1,790 (13.5)	1,582 (11.9)	1,081 (8.2)	1,134 (8.6)	880 (6.6)	13,259 (100.0)
1994	1,985 (13.7)	1,784 (12.3)	1,384 (9.5)	1,210 (8.3)	975 (6.7)	14,531 (100.0)
1995	2,030 (13.8)	1,763 (12.0)	1,283 (8.7)	1,210 (8.2)	1,145 (7.8)	14,712 (100.0)
1981 ~ 95 Annual average growth rate	10.2	8.5	20.0	11.7	8.9	8.0

Note: Production shows the total amount of CPO. Export and consumption show the total amount of CPO and refined oil.

Source: ISTA Mielke GmbH, *Oil World* (Annual), April 1988, April 1994, April 1996.

producer of palm oil in the period from 2005 to 2010[3]. Therefore, the palm oil industry has great potential as one of the most promising industries for Indonesia.

What differs from Malaysia, however, is that Indonesia is a large consumption country of palm oil due to the large population. While palm oil consumption is increasing in some developing Asian countries like China and Pakistan, Indonesia is still the highest consumer at present, accounting for 14 per cent of world oil palm consumption.

1.2. Palm Oil in the Historical Perspective

In 1848, oil palm was transplanted from its original home, Africa, to the Bogor botanical garden for the first time in Asia. Commercial production of palm oil was started in 1911 at a Belgian plantation in East Sumatra. The production of palm oil in the Dutch East Indies reached its peak in 1938 with 227,000 tons, which made the East Indies a major world production base, equally ranked with East and West Africa. After the Republic of Indonesia's independence, palm oil production stagnated at a level half of 1938, mainly due to the aftermath of the war of independence. In 1957, Dutch-owned plantations that had been a core of the colonial economy were nationalized. But it was after the first five-year development plan started at the end of 1960s that the oil palm plantations were rehabilitated with a high-yield hybrid Tenera species introduced from Malaysia where plantations had begun to be developed soon after the war[4].

During the last quarter of the century, the volume of palm oil production in Indonesia has maintained a remarkable rate of expansion (see Table 2). As early as 1970, Indonesia recovered the peak level of production in the pre-war period and kept 2-digit growth rates throughout the 1970s and 1980s. In 1995 Indonesian crude palm oil (CPO) production reached 4,200 thousand tons per year. This performance presents a clear contrast to rubber and coconut production with growth rates of 4 per cent at the highest. Although crop areas of oil palm still fall short of those of rubber and coconut, the

[3]Directorate General of Plantation, Ministry of Agriculture in Indonesia estimates that the production volume of palm oil in 2005 is 9,901 thousand ton in Malaysia and 9,891 thousand ton in Indonesia, and that in 2010 is 11,052 thousand ton in Malaysia and 12,293 thousand ton in Indonesia. (Amang, 1995: 7).

[4]Tenera species, a hybrid of Dura and Pisifera, was originally born in Belgian and French laboratories during WWII and was first experimented in Indonesian plantations, but was actually developed in Malaysia in the 1960s.

production volume exceeded that of rubber in the early 1980s and that of coconuts in 1990. Thus palm oil became Indonesia's largest plantation commodity.

Table 2 : Crop Area and Production Volume of the Three Largest Plantation Products in Indonesia (1967 ~ 1996)

	Crop Area (1,000 hectares)					Production Volume (1,000 tons)					
	Oil palm	Coconut	Rubber	Others (2)	Total	Crude palm oil	Palm kernel	Coconut (1)	Rubber	Others (2)	Total
1967	106	1,473	2,072	n.a.	n.a.	168	34	1,096	701	n.a.	n.a.
1970	133	1,806	2,299	n.a.	n.a.	217	49	1,203	815	n.a.	n.a.
1975	189	2,217	2,293	n.a.	n.a.	397	82	1,390	825	n.a.	n.a.
1980	295	2,680	2,391	2,182	7,548	720	128	1,666	970	2,883	6,367
1985	597	3,050	2,775	3,453	9,875	1,243	259	1,920	1,055	2,818	7,295
1990	1,146	3,334	3,040	3,869	11,389	2,431	486	2,293	1,296	3,239	9,745
1993	1,613	3,636	3,405	4,364	13,018	3,421	602	2,606	1,475	4,001	12,105
1994	1,804	3,681	3,472	4,440	13,397	4,006	797	2,649	1,499	4,143	13,094
1995	1,952	3,712	3,517	4,496	13,677	4,350	878	2,690	1,535	4,088	13,541
1996	2,077	3,723	3,575	4,508	13,883	4,749	994	2,704	1,578	4,241	14,266
Percentage from total (%)											
1985	6.0	30.9	28.1	35.0	100.0	17.0	3.5	26.3	14.5	38.6	100.0
1990	10.1	29.3	26.7	34.0	100.0	24.9	5.0	23.5	13.3	33.2	100.0
1995	14.3	27.1	25.7	32.9	100.0	32.1	6.5	19.9	11.3	30.2	100.0
Annual average growth rate											
1970-75	7.3	4.2	- 0.1	n.a.	n.a.	12.8	10.8	2.9	0.2	n.a.	n.a.
1975-80	9.3	3.9	0.8	n.a.	n.a.	12.6	9.3	3.7	3.3	n.a.	n.a.
1980-85	15.1	2.6	3.0	9.6	5.5	11.5	15.1	2.9	1.7	0.5	2.8
1985-90	13.9	1.8	1.8	2.3	2.9	14.4	13.4	3.6	4.2	2.8	6.0
1990-95	11.2	2.2	3.0	3.0	3.7	12.3	12.6	3.2	3.4	4.8	6.8

Notes: (1) In form of copra
(2) 18 other commodities such as coffee, tea, pepper, cloves, cacao, cotton, sugarcane, etc.
(3) Figures of 1996 are estimation.

Source: Direktorat Jenderal Perkebunan, *Statistik Perkebunan Indonesia Tahun 1988 - 1990*, Jakarta 1990 (Directorate General of Plantation, *Indonesian Plantation Statistic, 1988 ~ 1990*, Jakarta 1990) / *Statistik Perkebunan Indonesia Tahun 1994-1996*, Jakarta 1996.

1.3. Structural Transformation of the Industry

From the viewpoint of markets of palm oil, the development of Indonesian palm oil industry since the end of the 1960s can be divided into 3 phases. The first phase was an export period from 1967 to 1978 when 80 to 90 per cent of palm oil was exported (see Table 3). Crude palm oil, along with natural rubber sheets, was regarded as a major source of foreign exchange revenue. For edible oil in the domestic market, coconut oil was allocated. The second phase was a domestic-oriented period from 1979 to 1986 when palm oil was directed to complement coconut oil as a domestic edible oil. While the palm oil supply doubled in this period, domestic use was given high priority so that the export volume fluctuated as seen in Table 3. The

third phase has been a domestic market plus export period after 1987 when palm oil exports have exhibited a constant increase. Despite the domestic consumption increase [as high as 14 per cent annually (1987 to 1993 on average)], the export capacity increased even faster due to the sufficient expansion of total supply (18 per cent annually in the same period on average).

Table 3 : CPO's Export Ratio Over Production (1969 ~ 1995)

		Production (1,000 tons)	Export (1,000 tons)	Export ratio over production (%)
First period :	1969	189	179	95
Export period	1970	217	157	72
	1971	250	209	84
	1972	270	237	88
	1973	290	263	91
	1974	348	281	81
	1975	397	386	97
	1976	431	406	94
	1977	458	405	88
	1978	457	412	90
Second period :	1979	641	351	55
Transition to domestic market	1980	721	503	70
	1981	800	196	25
	1982	887	260	29
	1983	983	346	35
	1984	1,147	143	12
	1985	1,243	617	50
	1986	1,351	609	45
Third period :	1987	1,506	638	42
Domestic market + export	1988	1,834	853	47
	1989	2,113	917	43
	1990	2,413	1,163	48
	1991	2,658	1,628	61
	1992	2,910	1,304	45
	1993	3,300	1,719	52
	1994	3,860	2,173	56
	1995	4,200	2,070	49

Notes: Exports in 1991 ~ 1995 include olein, stearin and refined oils.
Sources: 1969 ~ 1989 : same as source of Table 2
1990 ~ 1995 : same as source of Table 1

It is noteworthy that the changes in market orientation were closely related to changes in the producers' structure. In the second phase, the state-owned plantations were the dominant player, supporting the domestic-oriented nature of the industry, since the government could effectively control the activities of the state-owned plantations. In the third phase, a new entry surge of private capital into the plantation industry enabled the dramatic increase of palm oil production, allowing the constant increase of exports. The private capital, furthermore, entered into new fields of oil processing

industry and had significant impact on the existing structure of the industry. Thus, the development process of the industry was driven by the transformation of the structure of producers.

Sections 2 and 3 describe the second phase and the third phase respectively. Then in section 4, the competitiveness and challenges faced by the industry are to be examined.

2. THE DEVELOPMENT OF INDONESIA'S DOMESTIC-ORIENTED PALM OIL INDUSTRY

2.1. A Switch-Over from Export to Domestic Edible Oil Use

After the inauguration of the Soeharto government, the former Dutch and Japanese plantations, which had been nationalized in the Soekarno era, were restructured into 32 state-owned plantations under the control of the Ministry of Agriculture. Other ex-foreign plantations were returned to the former owners with enactment of the Foreign Investment Law (Law No.1 1967). Oil palm cultivation in the Soeharto era, therefore, was restarted by the state-owned and foreign plantations. Until 1984, the state-owned plantations kept the dominant position, accounting for 62 per cent to 70 per cent of all oil palm crop areas (see Table 5).

Since Indonesian people have traditionally preferred coconut oil, as much as 90 per cent of the edible oil consumed in Indonesia was coconut oil before 1978. Coconut oil production, however, was a low growth industry with low productivity, mainly because of the dependency on small-holders (99 per cent in 1975). Therefore, the government decided to supplement material oil with palm oil, for a stable supply of edible oil which was one of the basic staples required by the local market. The choice was due to the fact that oil palm provided a higher yield and was mainly cultivated by state-owned plantations so that the quantitative control of production was easier for the government.

From 1978 to 1979, the government announced a series of policies for switching the market of crude palm oil (CPO) from export to domestic edible oil use. The essential points of these policies can be summed up into the following 3 points. The first point is that the government created a system to directly control price and quantity of domestic supply of CPO. In order to set the official price of CPO, the government had already set up

"a Permanent Working Committee on Palm Oil" in 1973 which was composed of 3 Ministries, that was, Agriculture, Industry and Trade. With the Ministerial Joint-Decree of 16 December 1978, the scope of control was expanded to the quantity of domestic CPO allocation. The second point is that the government restricted CPO exports. In addition to the above-mentioned domestic allocation as a substantial export restriction, in 1979 the government assigned taxes and license fees from the Ministry of Trade for the CPO exports. The third point is that the government guided the existing coconut oil processing firms so as to add or switch processing facilities to palm oil processing.

Table 4 : The Number of Establishments and CPO Processing Capacities as Classified by Starting Period and Ownership of CPO Processing Companies

(Number in bracket is in %)

Period	Ownership	Cooking oil Olein and Stearin		Margarine		Soap	
		Number of companies	Processing Capacity (1,000 tons/year)	Number of companies	Processing Capacity (1,000 tons/year)	Number of companies	Processing Capacity (1,000 tons/year)
~ 1978	State-owned plantations	1	22	–	–	–	–
	Foreign companies	1*	72	1*	49	1*	30
	Domestic private companies	4	122	6	41	2	6
	Sub total	6	216 (13)	7	90 (32)	3	36 (19)
1979 ~ 82	State-owned plantations	2	150	–	–	–	–
	Foreign companies	1	23	1	8	–	–
	Domestic private companies	17	1,051	9	70	6	31
	Sub total	20	1,224 (69)	10	78 (27)	6	31 (17)
1983 ~ 86	State-owned plantations	–	–	–	–	–	–
	Foreign companies	–	–	–	–	–	–
	Domestic private companies	1	30	1	12	1	6
	Sub total	1	30 (2)	1	12 (4)	1	6 (3)
1987 ~ 89	State-owned plantations	–	–	–	–	–	–
	Foreign companies	–	–	–	–	–	–
	Domestic private companies	1	15	2	54	3	44
	Sub total	1	15 (1)	2	54 (19)	3	44 (24)
Unspecified period	Domestic private companies	10	270 (15)	3	50 (18)	14	70 (37)
Total	State-owned plantations	3	172 (10)	0	0 (0)	0	0 (0)
	Foreign companies	2	95 (5)	2	57 (20)	1	30 (16)
	Domestic private companies	33	1,488 (85)	21	227 (80)	26	157 (84)
	Total	38	1,755 (100)	23	284 (100)	27	187 (100)

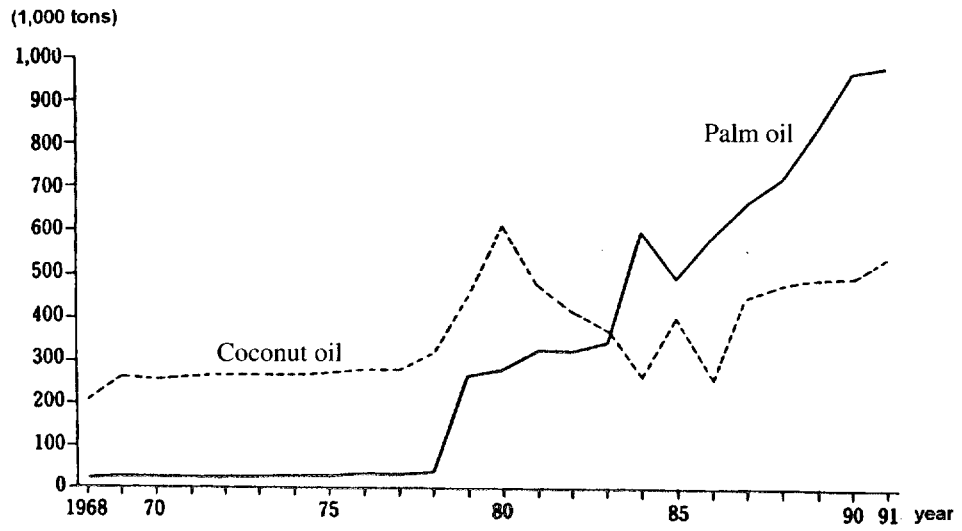
Notes: (1) Period is the year the companies commence CPO processing, which does not always correspond to the year of companies' establishment
(2) CPO processing capacity data is as of 1989
(3) Number inside the brackets indicates percentage of CPO processing capacity from total
(4) * Indentical company (P.T. Unilever Indonesia)

Source : Processed from *CIC, Study on Indonesian Plantation and Market of Palm Oil 1990*, Jakarta 1990

One of the results of these policies was that after 1979 palm oil refining/ splitting/ processing firms increased, especially those invested by domestic private capital. Before 1978, the firms which held a pioneering status in the Indonesian palm oil processing industry were the 4th state-owned plantation (PTP IV, now PTPN IV) with the first domestic splitting plant and *PT. Unilever Indonesia* with edible oil, margarine and soap plants. However, after 1978, the central position was taken by domestic private firms. As shown in Table 4, the establishment years of palm oil processing firms (or switch-over from coconut oil) are concentrated in the period from 1979 to 1982. Other than the policy inducement, the large size and high expected growth rates of the palm-based edible oil market provided entry incentives for the domestic private firms. Figure 1 shows that by 1986 palm oil held a dominant position in the domestic edible oil market.

A good example of domestic private capitalists who consolidated palm oil business in this period is the *Sinar Mas Group*. The Group had so far engaged in coconut oil refining with *PT. Bimoli* (*PT. Bitung Menado Oil*

Figure 1 : Production of Cooking Oil in Indonesia (1968-1991)



Sources: Republik Indonesia, *Lampiran Pidato Kenegaraan Presiden Republik Indonesia di depan Sidang Dewan Perwakilan Rakyat 16 Agustus.*
(Republic of Indonesia, *Attachment to the State Presentation of the President of the Republic of Indonesia in front of House of Representatives Assembly on August 16*), during the period of 1968~1991

Ltd.) established in North Sulawesi in 1970. In 1979 and 1981, the Group acquired coconut-oil refineries in Jakarta and Surabaya and switched these firms to palm-oil refineries[5]. These two refineries came to function as the Group's production base of the "*Bimoli*" brand palm oil and as a leader of palm oil supply in the Indonesia's two largest markets, Jakarta and Surabaya.

2.2. The Government-Controlled System of Supply and Price

Under the stabilizing policy of domestic edible oil market, a distribution system of palm oil was formed as shown in Figure 2.

(i) CPO Allocation

State-owned plantations produced CPO within each site by squeezing oil palm 'fresh fruit bunches' (FFB) that they themselves cultivated or bought from neighboring small-holders. The state-owned plantations collectively sold CPO to a distribution apparatus named Joint Marketing Office (or KPB: *Kantor Pemasaran Bersama*), that was a substructure directly held by state-owned plantations. The Joint Marketing Office allocated the majority of CPO to domestic processors according to their refining capacity, and the rest to export. The quantity of domestic supply was set by the aforementioned Ministerial (Agriculture, Industry and Trade) Joint-Decree. The 6 largest private plantations[6] also had to sell their CPO for domestic supply and export through the Joint Marketing Office. Other private plantations were not required to sell CPO through the Joint Marketing Office. Consequently, the Joint Marketing Office covered a dominant part of the CPO distribution and played a role as a 'control valve' for domestic CPO supply in terms of quantity.

(ii) CPO Price Control

The Joint Marketing Office was a pivot not only for CPO flows but also for price control. The official buying price of CPO by the Joint Marketing Office was set by the aforementioned Ministerial Joint Decree. The Office then allocated to processors with the same unified price.

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[5]Based on the articles of associations of each company in Ministry of Justice, *Tambahan Berita Negara* (Official Gazette Supplement), 1972-200, 1986-115,1986-116.

[6]These were 3 foreign and 3 domestic plantations, namely, *PT. Socfin Indonesia(Socfindo)* (Belgium), *PT. London Sumatra*(UK), *PT. Tolan Tiga* (Belgium), *PT. Sadang Mas, PT. Paya Pinang*, and *PT. Kuala Gunung*.

By setting the CPO price, market prices of refined oil are indirectly controlled on the one end, and buying prices of FFB by plantations from small-holders are also controlled on the other end. How can this be done? The government guides margin ranges of each stage of processing and distribution; 10 per cent for refiners, 5 per cent for wholesalers and 5 per cent for retailers. Thus an end price of edible palm oil, which should be a free market price, has been substantially controlled. Meanwhile, the buying price of FFB from small-holders is automatically calculated from the official CPO price with a specific numerical formula (Okaido et al.:57).

(iii) Trade Restrictions

After the export tax was introduced in 1979, the government continued to set trade restrictions in response to every fluctuation of the international price of CPO to control voluntary trade activities of plantations and oil processors. For instance, in 1984 when the international price soared, some plantations intended to export CPO. Then the government raised the export tariff and the export surcharge by 5 per cent and 37 per cent respectively. Conversely, when the international price dropped below the level of domestic price in 1986, some processors contemplated importing low-priced CPO, which the government coped with by setting import restrictions.

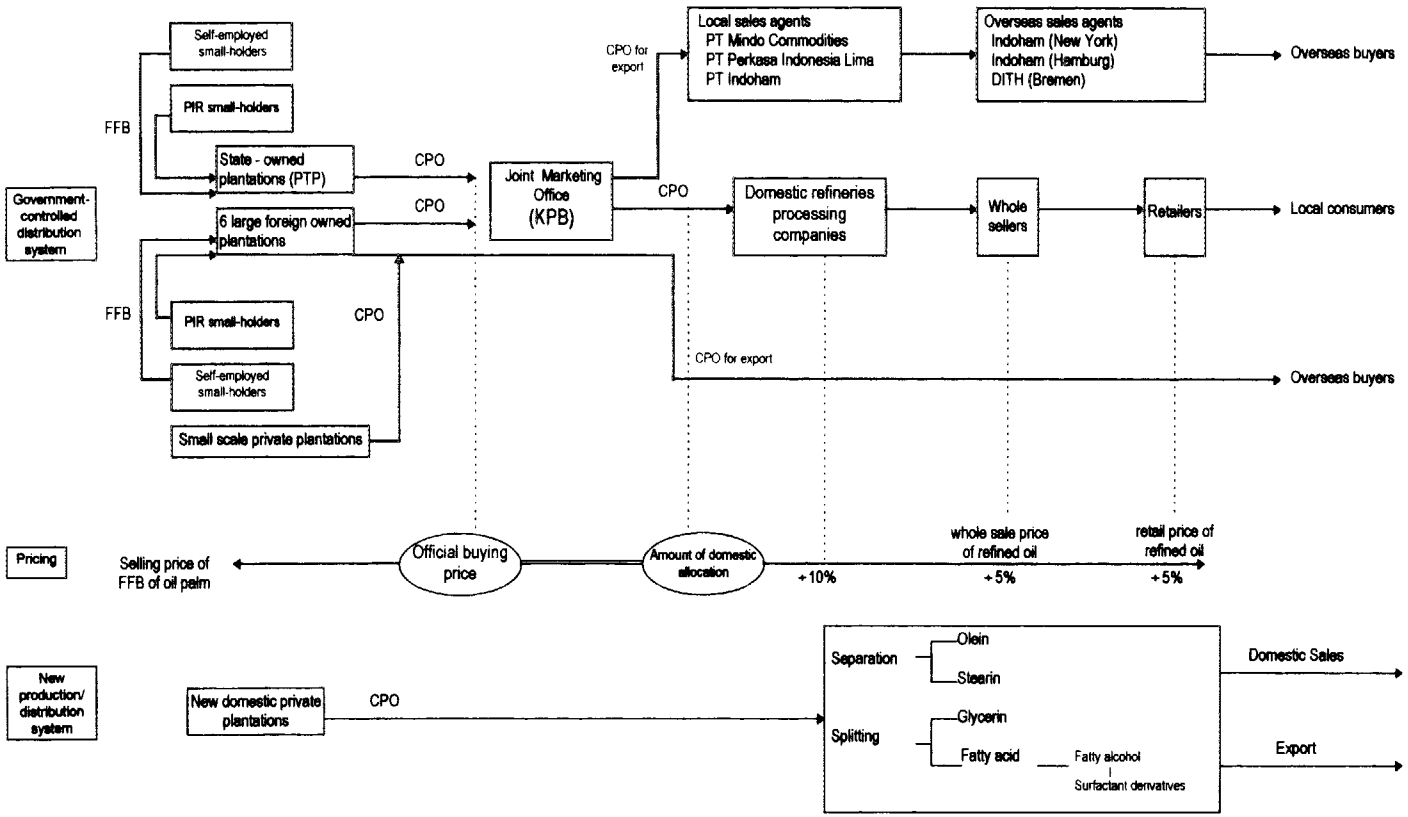
(iv) Effects of the Government-Controlled System

In sum, the government built up a system to directly and indirectly control palm oil distribution, extending from the crude oil production to retailing stage, with the tools of allocation, price ceilings and trade restrictions.

This system had a justifiable *raison d'être* that CPO producers as well as edible oil consumers should be protected from fluctuations in the international market price of CPO. Actually, domestic prices of CPO fluctuated less and were generally lower than international prices. If the average of international CPO prices in the period from 1984 to 1989 was 100 (=US$536 per ton), that of domestic official prices was 59(=US$319 per ton)[7]. While the standard deviation of international prices in the same period was 138, that of domestic official prices was only 48. Thus, the control system can be evaluated as effective with regard to its purpose to stabilize domestic CPO supply with relatively low prices. However, the

[7]Calculated from (Okaido et al.: 59). For international CPO prices, "CIF Rotterdam" prices are recalculated into "FOB Indonesia" terms with freight costs. For domestic prices, the official prices called "FOB Belawan" are converted into US dollars terms.

Figure 2 : Distribution and Pricing System of CPO and Refined Oil



Notes : FFB : Fresh Fruit Bunch CPO : Crude Palm Oil PIR : Nucleus Estate System (Perkebunan Inti Rakyat)

Sources : Developed based on the information from the following sources; K. Okaio et al., "Palm Oil Subsector in Indonesia", *Fund Research Quarterly* No. 25, Feb 1990, Tokyo: OECF, p.57, CIC, *Study on Indonesian Plantation and Market of Palm Oil 1990*. Jakarta 1990.

purpose to keep domestic cooking oil prices low and stable was less effective. The average of domestic palm-based cooking oil prices in the same 1984 to 1989 period was US$526 per ton, 9 per cent higher than the international palm-based cooking oil prices US$428 per ton. The standard deviation of domestic cooking oil prices in this period was 92, which was not low though far below of that of international prices, 154.

Tomich and Mawardi (1995) evaluates the government-controlled system as loss-creating, both to producers and consumers. According to their study, the combination of the above three tools provided a -9 per cent nominal rate of protection on average from 1978 to 1987 to the plantations, and consumers paid 6 to 12 per cent above import parity price for domestic edible oil from 1981 to 1987.

The profit ratios of CPO producers were lower than they should be because of the low fixed CPO prices and restrictions on profit-seeking. According the author's survey, "missing profits" were felt by CPO producers, as high as around 10 per cent, though they still gained a high level of profit ratios[8]. The low-priced material oil and the high-priced edible oil compared with the international standards indicate an existence of transferred profits gained by processors / wholesalers / retailers of edible oil. Some processors expanded rapidly their capacity of production during this period to pursue larger market shares, which resulted in concentration of the domestic edible oil market. An example was the *Sinar Mas Group* which gained a market share of as high as 60 per cent in the branded edible oil market with its popular brand "*Bimoli*" in the mid 1980s.

3. IMPACT OF EXPORT ORIENTATION ON THE STRUCTURE OF PALM OIL INDUSTRY

3.1. Background of Export Orientation

After 1987, the export volume of palm oil (including processed oil) began to increase and the export ratio rose compared with the first half of the1980s

[8]An expert of palm oil industry estimates that "missing profits" for plantations due to the fixed CPO prices are around 10 per cent, since their profit ratios could be 110 per cent (averaged domestic market prices of CPO Rp.1050 /kg compared with averaged CPO production costs Rp.500 /kg) but the realized ratios are around 100 per cent (averaged CPO set prices Rp.1000 /kg compared to the above costs) as of 1996.

(see Table 3). This increase of palm oil exports was due firstly to an overseas demand factor, and secondly to a domestic supply factor.

Overseas demand for vegetable oils has been rapidly increased because oleochemicals came to be spotlighted as a substitute of petrochemicals and animal fats in light of environmental problems. It is because oleochemicals have high bio-decomposability, make use of regenerative resources, and also fit the health preferences of consumers in the developed countries. Among oleochemicals, high-yield low-cost palm oil attracted the widest attention.

The domestic factor was a reinforcement of Indonesia's CPO supply capacity which could afford to expand exports after meeting domestic demand. The government also started to encourage exports of palm oil as one of the prospective manufactured export goods.

In what way does this export orientation have an impact on the structure of the industry? The export orientation invited a new entry surge of domestic private capital into the plantation industry. The private capital took the initiative of vertical integration and development of new processing industries. These movements drove the government to deregulate the control system and to reform the state-owned plantations. The transformation process is still going on at present.

3.2. An Entry of Domestic Private Capital into the Plantation Industry

The ownership structure of the oil palm plantation industry [where state-owned plantations dominated over 60 per cent of total crop area] began to visibly change after 1987 (see Table 5). The crop area of private plantations grew as high as 24 per cent annually after 1987 and exceeded the share of state-owned plantations in 1989. The share of private plantations rose from 22 per cent to 46 per cent with a sharp contrast to the fall of that of state-owned plantations from 50 per cent to 20 per cent in the period from 1987 to 1995. Private plantations include foreign-owned and domestic private plantations. The traditional foreign giants such as *PT. Socfindo* and *PT. London Sumatra* still hold a dominant position but there is almost no entry of newcomers from overseas, except for recently from Malaysia. It was domestic private plantations that played a central role in the remarkable expansion of crop area and production of palm oil after 1987.

The first change of the ownership structure that had been dominated by state-owned plantations occurred with the start of the small-holder fostering program, before the export orientation of palm oil. A small-holder fostering program called NES [Nucleus Estate System, or PIR (*Perkebunan Inti Rakyat*) in Indonesian] was introduced in 1977. In this program, small-holders, each provided with 2 hectares of crop area and 1 hectare of dwelling and food crop area, are placed around a nucleus (or *inti*) plantation. The nucleus plantation gives technical support to small-holders from the implanting stage and transfers ownership of the crop land to small-holders after 3 to 5 years when harvesting starts. Small-holders pay the land fee in approximately 10 years out of their revenues from selling oil palm fresh

Table 5 : Oil Palm Crop Area as Classified by Ownership (1967 ~ 95)

(Unit: 1,000 hectares; number in bracket indicates percentage from total)

Year	State-owned Plantations	Private Plantations	Small-holders	Total
1967	65.6 (62.0)	40.2 (38.0)	– (–)	105.8 (100.0)
1968	79.2 (66.2)	40.5 (33.8)	– (–)	119.7 (100.0)
1969	84.6 (70.8)	34.9 (29.2)	– (–)	119.5 (100.0)
1970	86.6 (65.0)	46.7 (35.0)	– (–)	133.3 (100.0)
1971	91.2 (65.5)	48.0 (34.5)	– (–)	139.2 (100.0)
1972	96.6 (63.5)	55.5 (36.5)	– (–)	152.1 (100.0)
1973	98.0 (62.1)	59.7 (37.9)	– (–)	157.7 (100.0)
1974	117.5 (64.7)	64.2 (35.3)	– (–)	181.7 (100.0)
1975	120.9 (64.0)	67.9 (36.0)	– (–)	188.8 (100.0)
1976	141.3 (66.9)	69.8 (33.1)	– (–)	211.1 (100.0)
1977	148.8 (67.5)	71.6 (32.5)	– (–)	220.4 (100.0)
1978	163.5 (65.3)	86.7 (34.7)	– (–)	250.2 (100.0)
1979	176.4 (67.6)	81.4 (31.2)	3.1 (1.2)	260.9 (100.0)
1980	199.5 (67.7)	88.8 (30.2)	6.2 (2.1)	294.5 (100.0)
1981	213.3 (66.9)	100.0 (31.3)	5.7 (1.8)	319.0 (100.0)
1982	224.4 (68.0)	96.9 (29.4)	8.5 (2.6)	329.8 (100.0)
1983	261.3 (64.4)	107.3 (26.5)	37.0 (9.1)	405.6 (100.0)
1984	340.5 (66.5)	131.0 (25.6)	40.6 (7.9)	512.1 (100.0)
1985	335.2 (56.1)	143.6 (24.0)	118.6 (19.9)	597.4 (100.0)
1986	332.7 (54.8)	144.2 (23.8)	129.9 (21.4)	606.8 (100.0)
1987	365.6 (50.2)	160.0 (22.0)	203.0 (27.9)	728.6 (100.0)
1988	373.4 (43.3)	293.1 (34.0)	196.3 (22.7)	862.9 (100.0)
1989	366.0 (37.6)	383.7 (39.4)	223.8 (23.0)	973.5 (100.0)
1990	372.2 (33.0)	463.1 (41.1)	291.3 (25.9)	1,126.7 (100.0)
1991	395.2 (30.1)	531.2 (40.5)	384.6 (29.3)	1,311.0 (100.0)
1992	389.8 (26.6)	638.2 (43.5)	439.5 (29.9)	1,467.5 (100.0)
1993	380.8 (23.6)	730.1 (45.3)	502.3 (31.1)	1,613.2 (100.0)
1994	386.3 (21.4)	845.3 (46.8)	572.5 (31.7)	1,804.4 (100.0)
1995	390.4 (20.0)	905.2 (46.4)	656.1 (33.6)	1,951.6 (100.0)
Annual average growth rate (%)				
1967 ~ 78	8.7	7.2	–	8.1
1979 ~ 86	9.5	8.5	70.5	8
1987 ~ 95	0.8	24.2	15.8	13.1

Source: Direktorat Jenderal Perkebunan, *Statistik Perkebunan Indonesia 1994-1996: Kelapa Sawit*, Jakarta, 1996.

fruit bunch (FFB) to CPO factories in the nucleus plantation. At the start, only state-owned plantations participated in this program. However, in 1986, newly developed oil palm plantations were obliged to participate in the NES program. To encourage participation, a low-interest-rate loan scheme for new plantations started (90 per cent of total investment can be borrowed at a 9 per cent interest rate, later increased to 12 per cent) and the area allocation ratio between a nucleus plantation and its small-holders was eased from 20 : 80 to 40 : 60. This low-interest-rate loan scheme was welcomed by the private sector and exhibited its effects by expanding investment until the scheme was canceled in 1990[9].

After the deregulation in 1986, the private capitalists set out exploiting new areas in Riau, Jambi, South Sumatra and Kalimantan, even with the obligations and additional costs and risks of fostering small-holders. This expansion was limited to groups with enough capital for such large and long-term investment: the first group was composed of conglomerates with other core businesses such as *Salim Group, Sinar Mas Group, Raja Garuda Mas Group, Indosawit Group* (jointly owned by *Salim* and *Raja Garuda Mas*), *Astra Group*, and *Bakrie Group*, and another group was medium-sized integrated oil processing capitalists like *Musim Mas Group, Asap Abadi Group* (or *Hasil Karsa Group*) and *Surya Damai Group*. These two groups were a major catalyst for the dramatic expansion of private plantations after 1987.

3.3. Vertical Integration of Plantation and Processing Industry

One of the motivations for the large entry of domestic capital into the oil palm plantation business was vertical integration. For those who already had processing industry, it meant backward integration for material procurement. The ratio of raw material costs in total production costs of palm oil processing industry is relatively high, so that stable and low-cost material procurement is a crucial matter for the processors. In addition, unlike the petrochemical industry, the palm oil industry generally has a feature that the upstream stages are more profitable than the downstream stages; it is said that profit ratios are 70 per cent in plantations, 20 per cent in CPO squeezing and 10 per cent in refinery, and in case of the profit ratios

[9]The loan scheme for NES plantations was continued with normal interest rates. Recently, loans with low interest rates were initiated only for cooperative members, called Prime Cooperative Credit for Members (KKPA).

in plantations up to CPO squeezing in Indonesia, 50 per cent is certain, 100 per cent is common and 200 per cent is not impossible[10]. Therefore, the inducement to backward integration for downstream processors is originally strong.

Table 6 : Integration of Palm Oil Processing Processes by Major Plantations

Name of Plantations	Crop Area (Hectare)	Location	Palm Oil Processing				
			Oil Extraction	Separation	Splitting	Olein Processing	
			CPO	Olein & Stearin	Fatty Acids	Margarine	Cooking Oil
State-owned Plantations*							
1 PTP VII	85,972	North Sumatra	O	O			
2 PTP II	60,557	North Sumatra	O	O			
3 PTP VI	59,447	North Sumatra	O	O			
4 PTP IV	44,596	North Sumatra	O	O			
5 PTP V	37,043	North Sumatra	O				
6 PTP X	28,120	Lampung	O				
7 PTP III	21,167	North Sumatra	O				
8 PTP I	15,110	Aceh	O				
9 PTP XI	9,839	West Java	O				
10 PTP IX	9,135	North Sumatra	O				
Foreign Plantations							
1 PT Socfin Indonesia	34,465	Aceh, North Sumatra	O		O		
2 PT London Sumatera Indonesia	15,228	North Sumatra	O				
3 PT Tolan Tiga Indonesia	7,929	North Sumatra	O				
4 PT Tasik Consortium	5,738	North Sumatra	O				
5 PT PP Pangkatan	1,538	North Sumatra	O				
Domestic Private Plantations							
1 PT Ivo Mas Tunggal	13,658	Riau	O	O	O		O
2 PT Tunggal Perkasa Plantation	9,843	Riau	O				
3 PT Torganda	8,404	North Sumatra	O				
4 PT PP Asam Jawa	7,940	North Sumatra	O				
5 PT Gunung Melayu	7,069	North Sumatra	O		O	O	O
6 PT Incasi Raya	6,510	West Sumatra	O	O	O		
7 PT Duta Palm Perkasa Nusantara	6,040	Riau	O				
8 PT Wirya Perca	6,015	Aceh	O				
9 PT Inti Indosawit Subur	n.a.	Riau	O		O	O	O

Source: Same as source of Table 4
Note : * Before integration into PTPN.

We can observe a relatively high degree of integration in domestic private capital between plantation and processing stages compared with state-owned and foreign-owned firms. Table 6 clearly demonstrates this tendency. Some private plantations integrate not only separation (production of olein and stearin) but also olein processing (production of margarine and edible oil) and/or splitting for industrial use (production of fatty acids and fatty alcohol). On the contrary, only 4 state-owned plantations carry out the separation process. Forward integration by state-owned plantations have not proceeded, partly because their own background is as planters rather than industrialists

[10]Based on the author's interview at a Japanese oil processing company which has businesses in Malaysia and Indonesia, and with leaders of the Federation of Indonesian Vegetable Oils and Fats Associations (FAMNI).

and partly because they are under the scope of the Ministry of Agriculture[11]. In the meantime, foreign-owned plantations tend to specialize more in plantation industry. An oil processing multinational, *Unilever* (*PT. Unilever Indonesia*) seems to have no interest in entering into plantation in Indonesia at present.

While Table 6 only covers integration within one company, integration within a business group is also making progress. The most prominent cases are *Salim Group* and *Sinar Mas Group*[12], both of which respectively hold a number of affiliated firms, ranging from plantations and CPO traders to oil processors, refiners and processed goods manufacturers. Figure 3 shows the structure of the *Salim Group's* palm oil business and the flows of goods. The major feature is perfect (backward and forward) integration from raw materials to end users which covers distributors in each stage and reaches overseas.

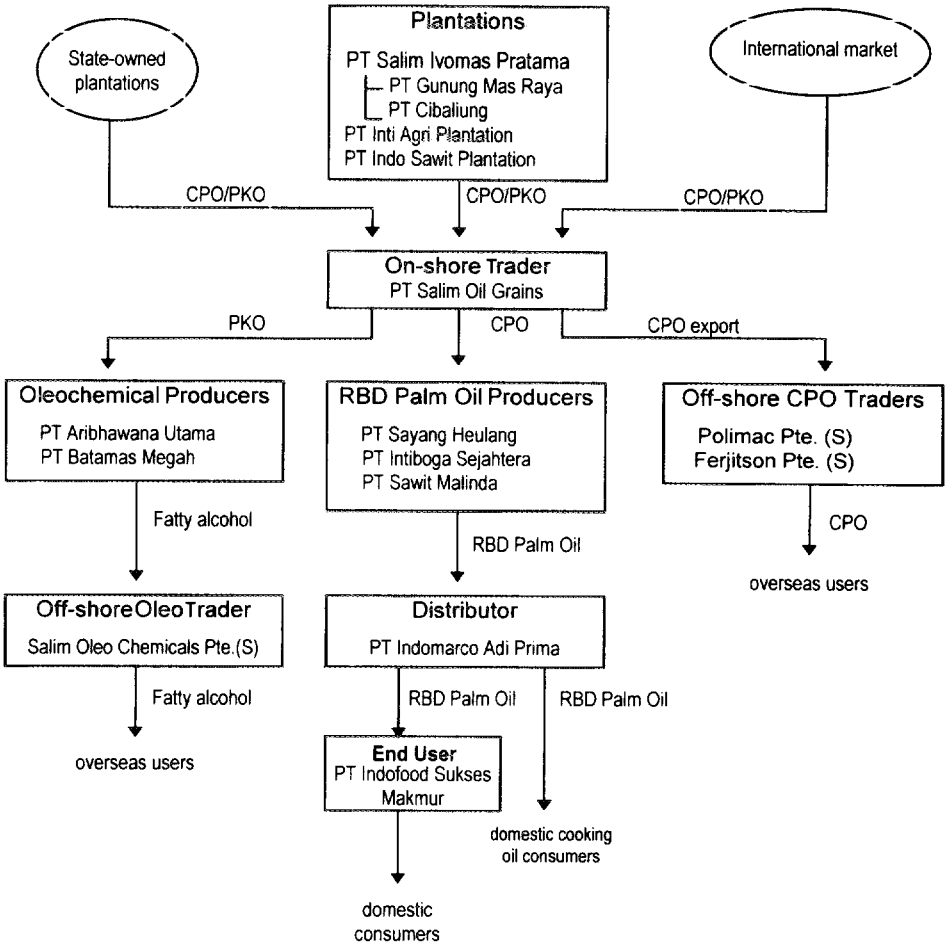
Naturally, the two groups' refiners started direct in-group procurement of CPO. For instance, *Sinar Mas*'s refiners had already procured more CPO from in-group than from the Joint Marketing Office in 1993. They admitted that, compared with CPO from the Joint Marketing Office, in-group CPO had advantages both in price and quality, though not enough to meet all the group's demand[13]. The pricing of in-group procured CPO is not subject to the controlled prices but is based on the international prices, they say. It is interesting that, despite of the perfect vertical integration, they employ pricing policy responsive to international market signals rather than differentiated internal pricing. In any way, the vertically integrated private system allowed them their own discretion in price formation and CPO procurement. This constituted pressure from inside the industrial system to push the government-controlled system to change.

[11]The former's reason was heard from the government side and the latter from the state-owned plantation side.

[12]*Salim Group* and *Sinar Mas Group* jointly set up a number of ventures in oil palm plantations and processing industry since 1983. In 1990, however, the company was broken up and almost all joint-ventures were split into single ownership by either group. Therefore, at present, both of the groups hold plantations, refineries and other oil processing firms respectively. Although the edible oil refining was *Sinar Mas's* oldest core business, their original brand "*Bimoli*" was acquired by *Salim* as a result of the splitting. Another brand "*Filma*", that had been an old brand by *Proctor & Gamble* in 1950s, left in hands of *Sinar Mas* and came to be the second largest brand.

[13]Based on the author's interview at *PT. SMART*, Muljoredjo factory in Surabaya.

Figure 3 : Vertically Integrated Production and Distribution Structure ----- the Salim Group's Case (1996)



Source : Based on the author's survey
Note : ☐ group companies (the names of the companies are not all the group companies but only some major ones.)
(S) : a company registered in Singapore
CPO : crude palm oil
PKO : palm kernel oil
RBD Palm Oil : refined bleaching deodorized palm oil

3.4. New Development of Processing Industry

In the palm oil processing industry, the main processes are: (a) separation of CPO into olein and stearin, and (b) splitting (high-pressured hydrolysis) of CPO/PKO (palm kernel oil) into fatty acids and glycerin. Main uses of outputs are (a) for edible oils and (b) for making soap (glycerin for medical use). In Indonesia, processes (a) and (b) were introduced in the 1970s for

domestic consumption and recently, exports of the output have also started. The so-called oleochemical industry includes such processes as (c) methyl-esterilization of CPO/PKO to produce fatty alcohol and glycerin, (d) hydrogenation of fatty acids from process (b) to produce fatty alcohol, and (e) fractionation of fatty acid / fatty alcohol to produce surfactant derivatives. Fatty alcohol and surfactant derivatives, which are usually known as raw materials of detergents, shampoo and cosmetics, are also widely used as industrial chemicals such as additives for the leather and textile industries, a bleach for paper industry and a friction inhibitor for metal processing industry. Out of these processes, vertical integration with plantations firstly began with process (a), then process (b), and recently with processes (c)(d)(e).

Oleochemical pioneers in Indonesia are two companies, namely *PT. Cisadane* and *PT. Sumi Asih*, which have engaged in process (b) and (e) since the mid 1980s, but they did not integrate plantations. In the early 1990s, integration between plantations and oleochemicals was realized by *Salim Group* and *Sinar Mas Group*. *The Salim Group* set up fatty acid/fatty alcohol factories in Belawan, North Sumatra and Batam island (process (d)), surfactant derivative plants in Jakarta, Singapore, Australia and Germany (process (e)). The plant in Jakarta is a joint-venture with *Henkel* from Germany. Meanwhile, the *Sinar Mas Group* built in Belawan a fatty acid factory with *Nippon Oils*, *Shiseido, Marubeni*, and *Hitachi Zosen* from Japan (process (b)(e)). The oleochemical products from all the domestic firms including *Cisadane* and *Sumi Asih* are mainly for export, which has already reached US$375 million in total in 1995[14].

As seen in Figure 2, the newly-introduced vertically-integrated oleochemical industry was a system independent from the government-controlled system. The two systems differ in terms of plantation ownership, products and markets. Nevertheless, the new system influenced the old system, since the big producers in the edible oil industry (down-stream of the old system), *Salim Group* and *Sinar Mas Group*, are at the same time major players in private plantations and the oleochemical industry (up-stream and middle-stream of the new system). CPO from the new system can flow into both the oleochemical and edible oil industry without any external intervention. The natural consequence was that the degree of dominance of the

[14]Data from the Ministry of Industry and Commerce. *Kompas*,13 February 1997.

government-controlled system began to decline. As the quantity of CPO which did not go through the Joint Marketing Office increased, the degree of government control was reduced.

3.5. Changes of the Government-Controlled System

(i) Policy Changes

Besides the internal pressure for changes from the industrial system, the government was exposed to waves of deregulation and trade liberalization. The pressure from the two directions pushed the government to change policies regarding the palm oil industry.

The starting point of deregulation in the palm oil industry was a policy package of 3 June 1991 (*Pakjun* 1991), with which several Joint-Ministerial-Decrees were removed for the purpose of loosening the control of CPO trade and distribution. The removed decrees included trade restrictions and the Joint Ministerial Decree of 1978 on domestic allocation of CPO. By the removal, the strict setting of monthly allocation volume was eased, but was not abolished.

In 1994, the official prices of CPO were changed into the less rigid "base prices" (*harga dasar/harga patokan*) with reference to international prices. At the same time, a new type of export tax for CPO was introduced. The rate of export tax was made variable, according to the difference between the base price and the international price. With this, the government's direct price control system, which had been totally separated from international prices, came to an end, though the export tax still constitutes a export barrier to ensure domestic supply. Thus the price formation system in the palm oil industry was basically transformed from the government total control toward the market mechanism based on international market prices.

However, the government's dilemma was that domestic supply of edible oils should be stabilized, since the domestic prices of CPO and edible oils tended to rise faster with larger fluctuations after the easing of direct control. The instruments to ensure domestic supply for the moment are (1) export tax, (2) domestic allocation of CPO from state-owned plantations with the base prices, and (3) a buffer stock of CPO through BULOG. These instruments are criticized as market interventions with the least effects by (World Bank, 1995) and (Indef, 1996); the former concludes that (2) and (3) with below-market prices have no meaningful effect on final market

prices, and the latter calculates the welfare loss caused by (1) and welfare transfer from CPO producers to "oligopolistic" edible oil producers.

(ii) Reform of State-Owned Plantations

What the government undertook besides policy changes was a reform of state-owned plantations. In fact, the state-owned plantations increasingly came to be exposed to competition with newly-emerging large private plantations in CPO prices, cost management, efficiency of management, investment strategies and so on.

First, 27 state-owned plantation companies[15] (PTP: *perseroan terbatas perkebunan*) were integrated into a smaller number of companies (9 companies in 1994 and then reorganized to 14 companies in 1995) named PTPN (*PTP Nusantara*) so as to improve the efficiency of management. Secondly, director posts in charge of marketing and finance were newly introduced in each company[16]. This shows a direction that the function of the Joint Marketing Office is to be gradually transferred to each company's own discretion, in order to improve the marketing and cost control capability of each state-owned plantation. Thirdly, efforts of joint investment started to compete with large private investment based firms. A consortium of 14 state-owned plantations invested in a new fatty acid plant on the island of Batam (*PT. Agro Industri Nusantara*) and a mega project in Irian Jaya that is to cost Rp1 trillion for 10 years with 89,000 ha oil palm crop area and 11 CPO plants. Fourthly, state-owned plantations are encouraged to go public by the Minister of Agriculture as a discipline for sound management.

These measures can be evaluated as the first step to enhance the efficiency and competitiveness of state-owned plantations. Whether the reform can produce any effects to realize the potential competitiveness of this state-owned sector is one of the key questions about the future development of the Indonesian palm oil industry as a whole.

[15] Originally there were 32 state-owned plantation companies (PTP) but later the number decreased to 27 companies because PTP-14 and PTP-17 were liquidated and PTP-15/16, PTP-21/22 and PTP-24/25 were combined together.

[16] *Kompas*, 10 May 1994.

4. COMPETITIVENESS AND CHALLENGES OF THE INDONESIAN PALM OIL INDUSTRY

4.1. Cost Advantages and Disadvantages

Palm oil in Indonesia, according to a survey of World Bank, is one of the lowest-cost vegetable oils after soybean oil from Argentina and Brazil (World Bank, 1996: 7). An investment company from UK, Commonwealth Development Corporation, evaluates production costs in North Sumatra as the cheapest in the world[17]. The author's field survey in 1996 (Table 7) shows that the production cost of Indonesia's CPO ranges from US$226/ton (Rp.528/kg) in private plantations, US$269/ton (Rp.606/kg) in a state-owned plantation in North Sumatra (both mainly using self-cultivated FFB), to US$377/ton (Rp.883/kg) in private plantations, and US$461/ton (Rp.1,078/kg) in a state-owned plantation in Riau (both mainly procuring FFB from plasma small-holders). Even the highest level of these costs is far lower than international CPO prices, over US$600/ton in average in

Table 7 : Cost Structure and Profit of Plantations and CPO Factories by Ownership: State vs. Private

(Rp./kg (CPO))

Cost / Profit	State-owned		Private	
	N. Sumatra	Riau	Medan	Riau
Material (FFB) cost				
a) Self-cultivated	301	408	458	n.a.
b) Bought from plasma	1,126	1,033	978	823
Factory processing cost	92	106	}70	}60
Overhead cost	213	144		
Total CPO production cost				
a) Self-cultivated	606	658	528	n.a.
b) Bought from plasma	n.a.	1,139	1,048	883
c) Total a) +b)	n.a.	1,078	n.a.	n.a.
Profit				
a) Self-cultivated	+404	+352	+482	n.a.
b) Bought from plasma	-116	-129	-38	+127
c) Total a) +b)	n.a.	-68	n.a.	n.a.
: CPO selling price = Rp. 1,010				

Source: Field Research and Interview by the author.
FFB=Fresh Fruits Bunches
CPO=Crude Palm Oil

[17] *Kompas*, 24, December 1996

1995. This indicates high profitability of CPO production industry in Indonesia.

What is the source of Indonesia's cost advantage? Compared with Malaysia, the total variable production costs of CPO in North Sumatra and Riau in Indonesia are 28 per cent lower than that of Malaysia (Table 8); more precisely, the yields (tonnage of CPO per hectare per year) are almost the same level, the fruit (FFB) production costs are 25 per cent lower in Indonesia, the CPO factory costs are over twice higher in Indonesia, and the total costs are lower in Indonesia. Indonesia's lower fruit production cost is firstly due to cheap labor and secondly due to cheap fertilizer. Meanwhile, Malaysia's lower factory cost is due to high productivity of labor-saving processing facilities with larger scale merit per factory; the standard capacity in Malaysia is more than 60 ton FFB per hour with 35 workers, whereas in Indonesia 30 ton/h with around 35 workers or 45 to 60 ton/h with around 45 workers.

Thus, as far as variable production costs are concerns, Indonesia has an advantage primarily based on its low labor costs. For land, rents are relatively low because of abundant land supply. Nevertheless, overhead cost factors

Table 8 : Cost Competitiveness Comparison between Indonesia and Malaysia as of mid 1996

Cost item	(I) INDONESIA	(II) MALAYSIA	(I) / (II) Ratio Malaysia =1.00
I.Variable production costs			
1) FFB production cost per kg (F)	Rp. 87	Rp. 116	0.75
2) FFB production volume (/ha/yr)	19 ton	23 ton	0.83
3) Randamen (%)	22.3%	19%	1.17
4) CPO production volume (/ha/yr) 2)*3)/100	4.2 ton	4.3 ton	0.98
5) FFB production cost per ha 1)*2)*1000	Rp. 1,501,000	Rp. 3,095,000	0.48
	US$ 641	US$1,323	0.48
6) FFB production cost per kg (CPO) 1)/3)*100	Rp. 389	Rp. 611	0.64
7) CPO factory cost	Rp. 82	Rp. 40	2.05
8) Plantation + Factory cost 6)+7)	Rp. 471	Rp. 651	0.72
II.Other costs			
9) Land rent per ha	Rp. 1 juta	Rp. 1.5 juta	0.67
10) Interest rate (%, year)	19%	8~9%	2.24
11) Infrastructure/Utility	+ +	- -	+ +
12) Transportation cost	+ +	- -	+ +
13) Bureaucracy cost	+ +	- -	+ +

Source : Data based on the field research by the author.
Note : + + : relatively high
- - : relatively low

including transportation costs, financial costs and self-financed infrastructure costs constitute Indonesia's cost disadvantage (see Table 8). High overhead costs are observed particularly in state-owned plantations as revealed in Table 7. Some top managers from foreign companies which have palm oil business both in Indonesia and Malaysia evaluate that Indonesia's cost advantages in labor and land are offset by overhead cost burdens so that there is no difference in total costs between the two countries.

4.2. Challenges for Competitiveness

What is more important, however, is the fact that the cost advantages derived only from labor and land abundance are not going to last forever. Moreover, though still abundant, land in newly-developing Kalimantan and Irian Jaya is not so productive as and more costly than land in Sumatra. Therefore, in order to sustain the growth of this industry in the long run, the crucial task is to overcome disadvantages and to cultivate competitiveness by means other than inherent advantages. It is also necessary to take the industry as a whole into account, not only CPO production and exports.

The field survey the author conducted in North Sumatra, Riau and Aceh in 1996 revealed major disadvantages perceived by the industry side as possible bottlenecks for the future development, as follows:

a) a shortage of port and storage facilities for palm oil products
b) a shortage and poor maintenance of inland and offshore transportation systems and facilities (roads, pipelines, pumps, tanks, vessels etc.)
c) limited marketing capabilities; poor market information, limited marketing intelligence function, weak marketing networks, low profile and no market presence of Indonesian products in overseas market
d) high bureaucratic costs in procedures and coordination with competent authorities
e) a shortage and high cost of middle-term and long-term investment funds
f) a shortage of nursery trees, thereby necessitating delays in planting or buying high-priced imported ones
g) an export tax burden
h) difficulty in developing agroindustry due to the in-between position of the two Ministerial authorities: Agriculture and Industry & Commerce
i) poor support for R&D Institutes by the government
j) demerits of BUMN (state-owned corporations) nature; low consciousness of cost management, productivity and efficiency, limited problem-finding capability and enterprising spirits.

Out of these, e) to g) are mainly related to the private sector, h) to j) are public sector, and a) to d) are both sectors. These points reflect perceptions of problems to overcome at the production sites.

Additionally, from the longer-term perspective, cultivation of Indonesia's new advantages should be challenged. This paper focuses especially on the two challenges; 1) development of competitive domestic processing industries, 2) enhancement of capabilities of technology related to the industry.

(i) Development of Competitive Domestic Processing Industry

When it comes to competitiveness of the Indonesian palm oil industry, one could easily think that there is nothing to be questioned, because of the bright prospect of CPO exports based on the cost advantages of Indonesia. Considering that Indonesia's CPO production capacity is large and the world demand is strong for the future, no basic obstacle is found in CPO exports, only remaining optimization problems. However, from the viewpoint of industrial development in Indonesia, it is important to balance the CPO exports and its domestic processing which would produce higher value added. Or rather, it is the processing industry that Indonesia should cultivate to enhance its competitiveness as one of the largest raw material holders in the world. Therefore, how to effectively develop the processing industry and how to enhance its competitiveness should be the first challenge for the Indonesian palm oil industry.

The two sectors in the palm oil processing industry that are of particular significance are the traditional edible oil industry and the newly-developing oleochemical industry. The edible oil industry cannot avoid being an object of the discussion on competitiveness toward the implementation of free open trade, because the quality and product differentiation in the Indonesian edible oils are still quite poor in light of the international standard. Although, this is worth analyzing for the oleochemical industries focused here.

In oleochemical products like fatty acid, fatty alcohol, surfactants and a variety of derivatives, the portion of costs of material oils (CPO or PKO) in the total production costs is generally high; e.g. 70 per cent for fatty acid. This is why cost savings by vertical integration from raw material are as large as around 40 per cent in average[18]. Indonesia has an obvious advantage

[18] Based on information from experts in the Indonesian industrial circle.

for constructing an integrated oleochemical industry. Nevertheless, up to 1997 oleochemical producers in Indonesia are limited to only six companies (see Table 9) and there is no new entries planned in the near future.

Since the end of the 1980s, oleochemical multinational giants such as *Henkel* (Germany), *Proctor & Gamble* (USA) and *Kao* (Japan) have already invested in the palm-oil-based oleochemical industry in Malaysia and built large-scale integrated complexes respectively. Table 9 shows the clear difference between Malaysia and Indonesia in the number of producers, involvement of foreign investors, and the number of expansion plans. In this sector, a key to success lies in stable material procurement (PKO and CPO), production technology, transportation technology, and research & development. In most of these aspects, links with foreign companies are crucial. Furthermore, the foreign connection is key for marketing, since developed countries are major markets for oleochemical products; 83 per cent of exports from Malaysia are bound for Europe (45 per cent), USA (21 per cent) and Japan (17 per cent). In this sense, it cannot be denied that Indonesia has fallen far behind Malaysia. In the short run, the world top multinationals are unlikely to initiate 'double investments' in Indonesia after having invested in Malaysia in the same lines of business. This situation is quite similar to the electronics industry during the early 1970s to the early 1990s, in which the accumulation of technological capabilities and supporting industries in Indonesia fell far behind Malaysia and remains so up to the present despite the recent surge of foreign investment inflow.

Now Malaysian plantation capital (such groups as *Robert Kuok*, *Siam Darby* and *Golden Hope*) has begun to flow into central Kalimantan to procure material oils for their processing industry by developing their overseas plantations. If the overseas demand for CPO/PKO is high and the prices are constantly high as estimated, it is a natural consequence for Indonesia to pursue the course to become a raw material supplier for the Malaysian oleochemical industry, rather than to be an oleochemical manufacturer. Unless there are effective policy supports and incentives for promoting new investment by domestic as well as foreign capital, it is far from an easy challenge for Indonesia to develop a competitive oleochemical industry domestically.

(ii) Enhancement of Technological Capability

The second challenge is related to the technological capability of the industry, in both plantations and processing industry.

Table 9 : Production Capacity of Main Oleochemical Producers in Malaysia and Indonesia

(1000ton/year)

Company	Foreign Investor	Fatty acid	Methyl ester	Fatty alcohol	Soap chip
MALAYSIA					
Asid Chem		220 (80)			
Uni Chema M.	Unilever (UK/HL)	100			100
Southern Asid		80			
Akzo Nobel	Akzo (HL)	80 (60)			
Pan Century		60 (60)			
Palm Oleo	Miyoshi Oil (J)	45 (80)			
Natural Oleo		45 (45)			
Henkel Oleo	Henkel (G)	25	25 (60)		15
Henkel Rika	Rika (J) LG (K)		30	30	
Fatty Chemical	Kao (J)			85	
Kao Oleochemic	Kao (J)				
Kao Soap	Kao (J)				7
FPG	P&G (USA)		200	60	
KSP	Miyoshi Oil (J)				45
INDONESIA					
SOCI	Nippon Oil (J)	99			
Sumi Asih		90			
Cisadane		150			
Aribhawana		40		34	
Batamas			82	59	
AIN		n.a.			

Source : *Chemical Industry Daily* (Japanese), 14 May 1996 / Data by APOLIN (Asosiasi Produsen Oleochemical Indonesia).

Note 1 : Expansion plans in parentheses.

Note 2 : SOCI : PT Sinar Oleochemical International (Sinar Mas)
Sumi Asih: PT Sumi Asih Oleochemicals
Cisadane: PT Cisadane Raya Chemicals
Aribhawana: PT Aribhawana Utama (Salim)
Batamas: PT Batamas Megah (Salim)
AIN: PT Agro Industri Nusantara (PTPN consortium)

In the industrial history, accumulation of technology is prone to take place near markets or near raw material producing places because of the density of related information. Because of this situation, Indonesia is qualified to be one of the centers of technological development of the palm oil industry. Actually, Malaysia, as the largest raw material producer, has now become the world center of R&D of palm-related technology alongside Europe in the last two decades.

Concerning plantation-related technology, Indonesia already has a research center in North Sumatra, namely, the Indonesian Oil Palm Research Institute

(PPKS: *Pusat Penelitian Kelapa Sawit*)[19]. This institute is managed by a committee composed of presidents of state-owned plantations and a director of R&D (*Litbang*) of the Ministry of Agriculture, but the institute's status is neither a governmental institute nor a pure private organization. This indistinct status stems from its historical background, since the institute was originally set up by the commercial association of rubber planters in East Sumatra in 1916 and after independence it was succeeded by the Research Institute of the Sumatra Planters Association (RISPA) which retained its private status but was supervised by the Ministry of Agriculture (Asosiasi,1993:1-2).

This status is one of the reasons why the Institute is outside the scope of budget allocation and other supports by the government; an annual financial subsidy makes up only 2 per cent of the Institute's research expenses of Rp36 billion and research findings have been paid little attention by the government. On the other side, the Institute's research cooperation with the private sector is inactive, especially in the sector of agroindustry new product development. This is partly because the Institute is not free from the supervision of the Ministry of Agriculture. The result is that the Institute's function is limited to cooperation mainly with state-owned plantations in soil investigation and tree crop cultivation technology[20].

Meanwhile, the Malaysian counterpart, the Palm Oil Research Institute of Malaysia (PORIM), has clear status as a governmental organization under the Ministry of Basic Industry. The Institute gets a full range of support from the government, from financial assistance (one of the sources is the export tax revenue of CPO and other palm oil products), invitation of foreign experts to direction of new products and new technology development including extraction and commercialization of vitamins. It was this Institute that scientifically denied a rumor spread by the American soybean oil industry circle that palm oil contains high cholesterol, and proved that palm oil has even lower cholesterol while containing vitamins A, E and carotene.

To enhance Indonesia's technological capability and awareness of the significance of technology accumulation, the government needs to encourage

[19]This is a new name since 1993 after a merger of three research centers, namely *Pusat Penelitian Perkebunan* (*Puslitbun*) in Medan, *Pusat Penelitian Perkebunan Marihat* (*Puslitbun Marihat*) in Marihat, and *Pusat Penelitian Perkebunan Bandar Kuala* in Bandar Kuala, North Sumatra.
[20]Based on the author's hearing survey in PPKS in Medan in 1996.

research and development activities either by the private sector, the public sector or inside the government. In this context, the Indonesian Palm Oil Research Institute should be revitalized so as to actually function as a catalyst of basic technological development. Since basic R&D activities constitute public property goods for the industry as a whole, the status of such institute should be that of a fully governmental institute like POLIM. A private institute commonly-funded by the majority of producers is another alternative, but the neutrality of research and burdens of funding remain problems. To finance costly R&D activities, even the fully governmental institute may have to be partly supported by a pool-fund by producers. This is also POLIM's case. In the case of a R&D institute under the control of the government, the most crucial point is that the scope of R&D is assured to be wider than the limited agricultural sector, covering from soil and breed improvement to industrial processing of crop trees, oleochemicals and edible oils. This needs deregulation and coordination between the two government authorities on agriculture and industry.

4.3. The Role of the Government

Since 1984, the tide of deregulation started to swell in Indonesia, and all forms of government tools to control domestic markets like tariff/non-tariff barriers, entry ban, price ceilings, allocations and subsidized loans have become prey to criticism as harmful intervention to distort markets. The palm oil industry, though deregulated, is still one of the controversial industries because of the remaining regulated allocation, base prices, export tax and buffer stock. The most recent criticism is voiced by Indef (Indef, 1996).

It is crucial at this point to reexamine the role of the government, and reevaluate the effectiveness of its instrument.

First, policies to promote an infant industry (e.g. entry barriers, subsidized loans, and protective tariff) are apparently no longer relevant for the Indonesian palm oil industry which has a long history of development. Exceptions may be made for subsidized loan schemes for small-holders in the newly developed areas in the East Indonesia, and time-scheduled tariff protection for some oleochemical products which are newly developed.

Second, it is perceived, at the moment, that the government of Indonesia will never abandon its task of ensuring a stable domestic supply of edible

oils, which is considered as one of the basic indispensable goods. All the four instruments used are for such purpose. Though this role of the government is considered fundamental, the instruments are of possibly more transitory nature. If a commodity exchange market is set up in the future, it would be more effective for the government to use the market to adjust the supply-demand gap rather than to use the Joint Marketing Office and BULOG.

Third, the main challenges discussed above indicate the need for industrial promoting policies. The policies may include incentives for investment in new fields of processing industry and R&D activities. The industrial promoting policies should be based on the government's clear vision for the wide and long perspective on industrial construction, with the government's supervising capability to ensure unified standards. The recent export promoting measures for sound exporters in selected high-priority sectors (4 sectors in 1996, expanded to 10 sectors in 1997 including vegetable oils and oleochemicals) called PET (*perusahaan eksportir tertentu*) can be evaluated as an attempt toward this direction. If the government continues with the CPO export tax system, the effective utilization of the revenue for common benefits of the industry can be seen as an alternative industrial policy. Some of the benefits include maintenance and construction of the infrastructure and R&D by the Indonesian Palm Oil Research Institute. It can be seen as a devise for sustaining growth of the industry by investing the profit from existing advantages into the future competitiveness of the industry. However, it should be noted that the crucial prerequisites for an effective government industrial policies are transparency, accountability with no arbitrariness.

5. CONCLUSION

Since the mid 1980s, the Indonesian palm oil industry has been transformed from the totally government-controlled inward-looking edible oil industry to the private-led semi-outward-looking oil processing industry with a wide variety of potential new areas of business, including oleochemicals. The growth rates of CPO production and exports have accelerated remarkably.

The engine of this transformation was domestic private capital. The investors actively reacted to changing overseas demands and took the initiative in long-term investment in oil palm plantations and in exploitation of a new

frontier of the oleochemical industry. In this process, some have successfully constructed their own in-group vertical integration that is independent from the existing government-controlled system. This private initiative forced the government to deregulate the control system and to reform the state-owned plantations.

The prospect of the industry is no doubt bright, in light of the increasing world demand for CPO/PKO and processed products. However, the present advantages of Indonesia's palm oil industry are not firmly-rooted but dependent on cheap variable costs, especially low labor costs. Since this advantage is potentially of short duration, Indonesia should cultivate grounded competitive advantages as the future world largest raw material producer. In this effect, what is of special significance for Indonesia in the long-term perspective is to develop processing industries accompanied by acquisition of technological capabilities related to the wide scope of this industry.

The government devices for stabilizing domestic supply of edible oils have been derided by critics as a form of harmful market intervention. Although the critics are partly correct, it does not mean that all the government policies are unnecessary. What is needed at present are new industrial promotion policies, with which investment into the processing industries and efforts for R&D would be encouraged more effectively. In order to do so, the most important government task is to present a clear long-term vision for construction of this high-priority industry and to conduct more drastic deregulation for the government to position itself as an effective and transparent supervising authority to realize the industrial vision.

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