



WORKING PAPER 99.18

**THE IMPACT OF THE ECONOMIC CRISIS ON
DEVELOPMENT OF THE ESTATE CROPS**

**Sultoni Arifin, Bambang Drajat, Wayan R. Susila and
Agus Supriono**

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CASER (Bogor) • CIES (Adelaide) • CSIS (Jakarta) • RSPAS (ANU, Canberra)

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**CASER/CSIS/CIES/ANU
joint research project on**



**Policy analysis of linkages
between Indonesia's agricultural
production, trade and
environment**

Rapid economic growth in Indonesia has been accompanied by significant structural changes, including for its agricultural sector and its unique natural environment. Recently questions have been raised about the impact of Indonesia's agricultural, industrial, trade and environmental policies on sustainable rural development. The nature of interactions between the economic activities of different sectors and the environment are such that an intersectoral, system-wide perspective is essential for assessing them. An international perspective also is needed to assess the impact on Indonesia of major shocks abroad, such as the implementation of the Uruguay Round agreements, APEC initiatives, or reforms in former centrally planned economies. There is increasing pressure on supporters of liberal trade to demonstrate that trade reforms at home or abroad affecting countries such as Indonesia will not add to global environmental problems (e.g., deforestation, reduced biodiversity). Again, this requires system-wide quantitative models of the economy and ecology, because typically there are both positive and negative effects at work, so the sign of the net effects ultimately has to be determined empirically.

To begin to address these issues, the Australian Centre for International Agricultural Research (ACIAR) has generously provided funds for a collaborative 3-year project (to mid-1999) involving the University of Adelaide's Centre for International Economic Studies (CIES) as the lead institution, Bogor's Centre for Agro-Socioeconomic Research (CASER) which is affiliated with the Ministry of Agriculture, Jakarta's independent Centre for Strategic and International Studies (CSIS), and the Economics Division of the Research School of Pacific and Asian Studies (RSPAS) at the Australian National University in Canberra. Being based on Indonesia with its rich diversity of environmental resources (and on which there are relatively good data) and its rapid economic growth, the project could also serve as a prototype for similar studies of other developing countries in Southeast Asia and elsewhere.

The key objective of the project is to assess the production, consumption, trade, income distributional, regional, environmental, and welfare effects of structural and policy changes at home and abroad particularly as they will or could affect Indonesia's agricultural sector over the next 5-10 years. Among other things, the analysis will focus both on the effects of economic changes on the environment, and on the impacts on Indonesia's agricultural production and trade of resource and environmental policy changes. The implications of regional and multilateral trade liberalization initiatives and Indonesia's ongoing unilateral trade reforms will be analysed, along with other potential domestic policy changes and significant external shocks such as the entry of China and Taiwan into the World Trade Organization. The analysis will draw on and adapt computable general equilibrium (CGE) models such as the national INDOGEM Model (built as part of an earlier ACIAR project) and the global GTAP Model.

The project is being undertaken in close collaboration with the Indonesian Ministry of Agriculture and ministries involved in trade, planning, and the environment. A Research Advisory Committee has been established to encourage close collaboration of representatives from those and other ministries.

ACIAR INDONESIA RESEARCH PROJECT

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DEVELOPMENT OF THE ESTATE CROPS**

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Introduction

The economic crisis, started in August 1997, was marked with the Rupiah depreciation in relation to the US dollar. The crisis now is undergoing in multi-dimension and hard hit most sectors of the Indonesian economy. This paper discusses the impacts of the crisis on the estate crop sub-sector, an export oriented and domestic resource based sub-sector. The results show that the crisis tended to benefit the sub-sector, especially in terms of Rupiah value of its export and its contribution to the Gross Domestic Products. The positive impacts, in terms of investment opportunity and revenue/profit to the private and state-owned companies, as well as smallholders, were also predicted to incur to the sub-sector.

The results, however, also indicate that the benefit was not fundamental, especially for crude palm oil export and estate smallholders. The sub-sector was still constrained with social crisis and other inherent problems stemming from low productivity, low quality products and government policy distortion. Therefore, there is a need for structural adjustment in the sub-sector and related sub-sector. The adjustment proposed includes short-medium-long term development strategy and policy.

Until now it seems that there is no sign that economic crisis in Indonesia will be ending soon. The economic crisis, started in August 1997, was marked with the collapse of our Rupiah currency in relation to the US dollar and also to the liquidity problem in the monetary sector of the Indonesian economy. During the crisis, the Rupiah depreciated up to 500 percent and the domestic rate interest jumped to reach 65 percent per annum.

Why did this happen to Indonesia's economy? It is believed that both internal and external factors of the Indonesian economy contributed to the crisis. Rachbini and Djunaesin (1998) thought that the existence of the Current Account Deficit, overvalued Rupiah and private and government debt problems are among the internal factors leading to the crisis. Whereas among the external factors creating the crisis are the financial movement factor in the triad power (US, Europe and Japan), the imbalance growth of financial institutions in industrial and developing countries in the global financial system and speculation factor in foreign exchange markets. In addition, Kartasasmita (1998) referred to the exaggerating saving-investment gap and the weakened financial institution due to debt problem as among internal factors determining the crisis.

The question arising is what are the effects of the crisis on the whole sector in the economy? As we noted, most of the sectors in the economy have been hard hit. Tambunan (1997) predicted that the crisis tends to have negative macro and micro impacts on the economy. Depreciation of the Rupiah currency and the liquidity problem in the financial sector generally worsened trade balance, investment, government revenue, balance of payment and economic growth of the country. In addition, the crisis has led to skyrocketing inflation.

In terms of micro impacts, the crisis has caused many firms with import dependent raw materials and domestically oriented markets experiencing cost-price squeeze. The hardest hit firms then had to lay-off their workers and some of them had to run out of business.

The macro and micro impacts have dominated the on going situation in the economy. Unfortunately, the government policy to resolve the crisis has not show not to work properly, leading to the emergence of social and political conflicts in the country. These political and social conflicts tend to worsen the situation marked with social unrest spreading out throughout the country.

As indicated previously, not all of the sectors in the economy were hard hit by the emerging economic crisis. Fortunately, the agricultural sector especially the export oriented and low import oriented sub-sector, such as the estate crop sub-sector, have been enjoying "boom" from the economic crisis. However, this sub-sector could not fully take advantage and get rid off constraints created by the crisis. In addition, the social crisis which in fact as a side effect from other sub-and/or other sector(s), has tended to become serious problems faced by the sub-sector. Therefore, a thorough analysis about the sub-sector is very important.

This paper will analyse the impacts of the economic and social crisis on the sub-sector. The focus of the discussion will be on the

major primary commodities or industries in the sub-sector, namely coffee, cacao, tea, natural rubber and palm oil commodities or industries. Specifically, the objectives of this paper are :

1. to discuss the macro impacts of the economic crisis on the sub-sector;
2. to discuss the micro impacts of the economic crisis on the sub-sector;
3. to analyse the social problems created by the social crisis from other sub-and/or sectors on the sub-sector, and;
4. to formulate short; medium; and long-term strategies and policies in order to take advantage of the opportunities and get rid of challenges created from the crisis.

The Importance Of The Estate Crop Sub-Sector To The Indonesian Economy

The importance of the sub-sector in the Indonesian economy has been well known. The sub-sector has traditionally played an important role as a source of foreign exchange earnings, employment, and economic growth. To elaborate its role in the Indonesian economy in more details, the discussion in this section is focused on various aspects of the sector related to its role in the economy, namely production contribution, gross domestic product, investment, and foreign exchange earnings.

Product Contribution

Although to fluctuating and varying among commodities, the production of the sub-sector has gradually and consistently increased. In 1987, the total production (based on five main commodities) was 7.771 million ton and it rose to 13.491 million ton in 1997, implying a 6.41 percent annual growth rate. The main contributors to the growth are palm oil and cocoa.

Rubber as one of the main estate crops Indonesia plays an important role in term of area and product contribution. Total rubber area in 1997 was around 3.52 million ha and around 83 percent is under management of smallholder. In the last decade, the area expansion of rubber has been relatively slow, due to several factors, mainly relatively low prices in the last decade (Indeco Utama, 1996).

Following this slow area expansion, rubber production has also experienced a slow growth rate, that is, around 3.53 percent per annum (Table 1). The total production in 1987 was 1.13 million ton and it increased to 1.55 million ton in 1997. The contribution of smallholders to the total production is around 76.3 percent, while that of private-

owned plantation and state-owned plantation is around 11.4 percent and 12.3 percent, respectively (Table 2).

Table 1. Indonesia estate crop production (000 tons)

Commodity	1987	1997	Growth (%)
Natural Rubber	1,130	1,549	3.56
Palm Oil	1,506	5,385	15.21
Cocoa	50	307	22.29
Coffee	389	454	1.74
Tea	126	151	2.01

Source: Directorate General for Estate Crops (1997)

Among the estate crops cultivated in Indonesia, oil palm is one of the commodities having experienced the fastest growth during the last decade. Area expansion has reached 11.18 percent per annum, much higher than that of the other estate crops. The total area for oil palm in 1996 was around 2,226,837 ha and was estimated to achieve 2,426,449 ha in 1997 (Directorate General for Estate Crops, 1998). This figure placed Indonesia as the second largest producer, behind Malaysia, in terms of oil palm planted area.

This impressive expansion has been attributed to the fact that cultivation of oil palm is more profitable than that of other perennial crops, such as rubber or cocoa. Various studies such as those reported by Susila (1995) and Indeco Utama (1996) indicated the cultivation of palm oil is more profitable than that of other estate crops. Using FIRR as an indicator of profitability, the FIRR of oil palm, rubber, and cocoa are 24.5, 16.4, 16.6 percent, respectively (Indeco Utama 1996). This situation has induced the conversion of some perennial crops, such as rubber to oil palm, especially during the last five years.

The producers in terms of investment (long-term response) have responded to the relatively stable and high CPO price. In other words, the relatively stable and high price of CPO has induced the producers to expand their plantings. The CPO domestic price tends to increase at a 10.4 percent annual growth rate during the last decade. This relatively stable and high price has given an incentive for continuous expansion of oil palm plantation.

Table 2. Production share of smallholders, private and state-owned plantations, 1997

Commodity	Production Share (%)		
	Smallholders	Private-Owned Plantation	State-Owned Plantation
Natural Rubber	76.28	11.43	12.29
Palm Oil	22.31	42.51	35.18
Cocoa	77.91	10.74	11.36
Coffee	94.90	2.27	2.83
Tea	20.62	22.23	57.15

Source: Directorate General for Estate Crops (1997)

The government has also contributed significantly to the vast development of oil palm plantation in Indonesia. Through various projects, such as the nucleus estate small holder project, the government has played a central role in the expansion of oil palm plantation. Various government policies such as credit subsidy and PIRTRANS induced the development. Devaluation of Rupiah against US\$ has also an important contribution to the area expansion (Herman and Susila, 1995).

As a consequence of rapid development of planted area, CPO production has sharply gone up, especially during the last decade. For instance, CPO production in 1987 was around 1.51 million ton, increasing to around 5.39 million ton in 1997. This implies that the annual growth rate of the production is 15.2 percent in the last decade. The sharp production increase has been attributed to private-owned plantation and smallholders. They had experienced 18.6 and 35.3 percent annual growth rate in the last decade, while that of state-owned plantation had experienced just 6.7 percent annual growth rate in that period.

Cocoa is another crop that has experienced a relatively fast growth in the last decade. The total area of cocoa in 1987 was around 172,000 ha and it jumped to 633,000 ha in 1997, implying a 15.6 percent annual growth rate. The main contributor to the fast growth has been smallholders with a 34.4 percent annual growth rate. As a result, the area share of smallholders has been around 70 percent in the last five years. Besides price increases in 1970's, the government policies to promote area development has also a key factor in boosting area expansion of cocoa.

Following the fast growth in area, cocoa production has also increased rapidly. In the last decade, the production has increased by a 24.9 percent per annum, from around 34,300 ton in the year 1986 to

317,700 ton in the year 1996. Moreover, similar to the area expansion, the main contributor to the increase has been the smallholders who has experienced a 28 percent annual growth rate. In 1997, the production share of smallholders, private and state-owned plantation was 72.0, 17.2, and 10.9 percent, respectively.

The contribution of coffee to production has been relatively stable in the last decade. Dominated by smallholders whose area is about 95 percent of total area, the total area of coffee in Indonesia has increased slowly. The total area in 1987 was about 389,000 ha and increased to 454,000 ha in 1997, indicating a 2.1 annual growth rate.

Because of slow area expansion, coffee production has also increased at a relatively low growth rate. The production growth rate in the last decade was 1.74 percent per annum, from around 389,000 ton 1987 to 454,000 ton in 1997. The production share of the smallholders in the last decade has been 95.0 percent, while that of private estate and state-owned plantation has been 2.3 and 2.8 percent, respectively.

During the last ten years, there has been a relatively small increase (1.6 percent per annum) in the size of land cultivated with tea. The total area in 1987 was about 121,000 ha and it increased to 139,000 ha in 1997. Cultivated mostly in Java and Sumatra, tea plantation in Indonesia has been dominated by smallholders, accounting to 44.8 percent of the total area. The area under management of state-owned plantation is around 31.0 percent while that of private-owned plantation is 24.2 percent.

Tea production has experienced a 2,0 percent annual growth rate in the last decade. Slow area expansion and relatively low tea price have attributed this slow production growth rate in the last decade. Total tea production in 1997 was around 151000 ton and production share of smallholders is around 20.6 percent. On the other hand, production share of private and state-owned plantation is around 22.2 and 57.2 percent, respectively.

From the above description, in general, it can be summarised that there are two factors contributing to the production increase of the five main estate crops, namely price increase and area expansion. Unfortunately, during the period of 1987-1997, the productivity of those crops has only a small share.

Gross Domestic Product Contribution

As the output of the sub-sector has been increasing, the gross domestic product (GDP) of the sub-sector is also increasing. While the GDP in 1987 was Rp 4,682 million, it jumped to Rp 16,389 million, indicating a 14.94 percent annual growth (Table 3). The figures in Table 3 show that the GDP contribution of the sub-sector has been consistently increasing. The fast expansion of oil palm and cocoa has played an important role in promoting the fast increase of GDP of the sub-sector.

In contrast to its fast growth, the GDP share of the sub-sector has been declining in the last decade. In 1987, the share of the sub-sector was 4.87 percent and it has been declining to 2.87 percent in 1997. This implies that the share has been declining at -5.70 percent per annum in the last decade. This situation has been attributed by a relatively faster growth of other sectors, mainly industrial sector.

Table 3. Gross Domestic Product at current market prices (million Rupiah).

Year	Estate crop	Total	Share of estate crop (%)
1987	4,682	96,110	4.87
1988	5,381	117,144	4.59
1989	6,185	142,782	4.33
1990	6,854	164,927	4.16
1991	7,877	201,022	3.92
1992	9,054	245,018	3.70
1993	9,015	296,861	3.04
1994	10,587	348,711	3.04
1995	12,676	416,342	3.04
1996	14,148	490,317	2.89
1997	16,389	570,628	2.87
Growth (%)	14.94	21.89	-5.70

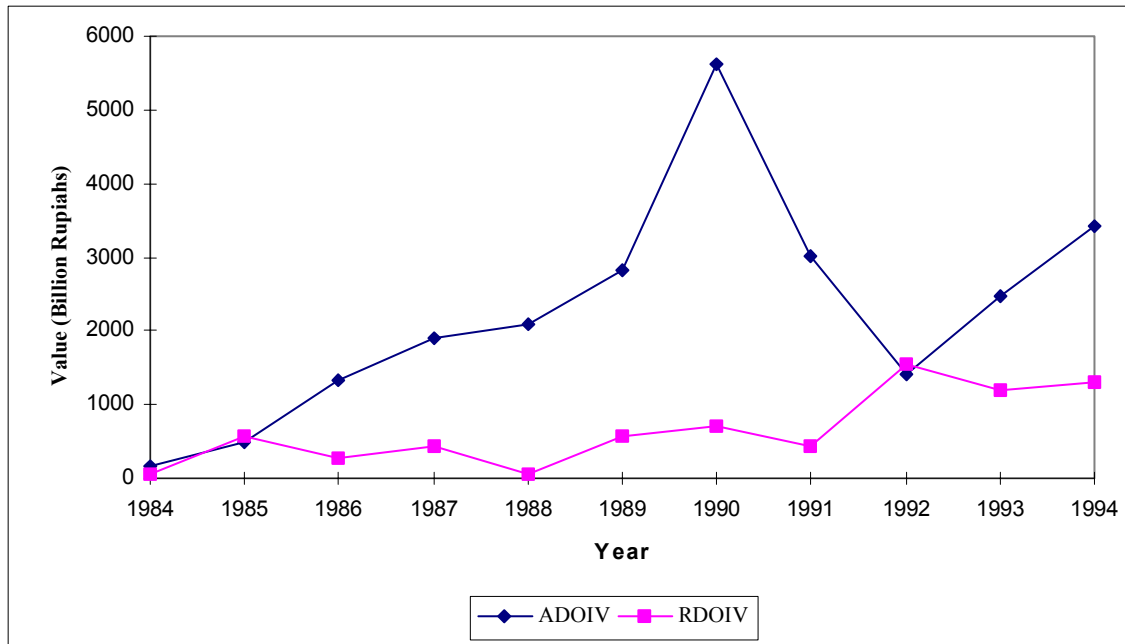
Source: Central Bureau of Statistics, 1998.

Investment Contribution

Estate crop sub-sector also has a significant contribution to the investment increase in Indonesia. Although investment in the sub-sector tends to fluctuate, the trend is increasing (Figure 1 and Figure 2). Domestic investment (Figure 1), either approved and realised investment, has increased in the last decade. For an example, while the realised investment was Rp 62.9 billion in 1984, it achieved to Rp 1,294.1 billion in 1994, implying a 10.55 percent annual growth rate. As seen in Figure 1, the realised investment has been far below the approved investment (about 30 percent of the approved investment).

Foreign investment in the sub-sector also shows an increasing trend (Figure 2). The approved and realised foreign investment in the sub-sector had been highly fluctuated, especially before 1990. Since 1991, the foreign investment has showed an increasing trend. However, foreign investment has been concentrated only on oil palm plantation, accounting for 54 percent of total foreign investment (Herman and Susila 1995).

Figure 1. Fluctuation of approved and realised domestic investment, 1984 -1994.

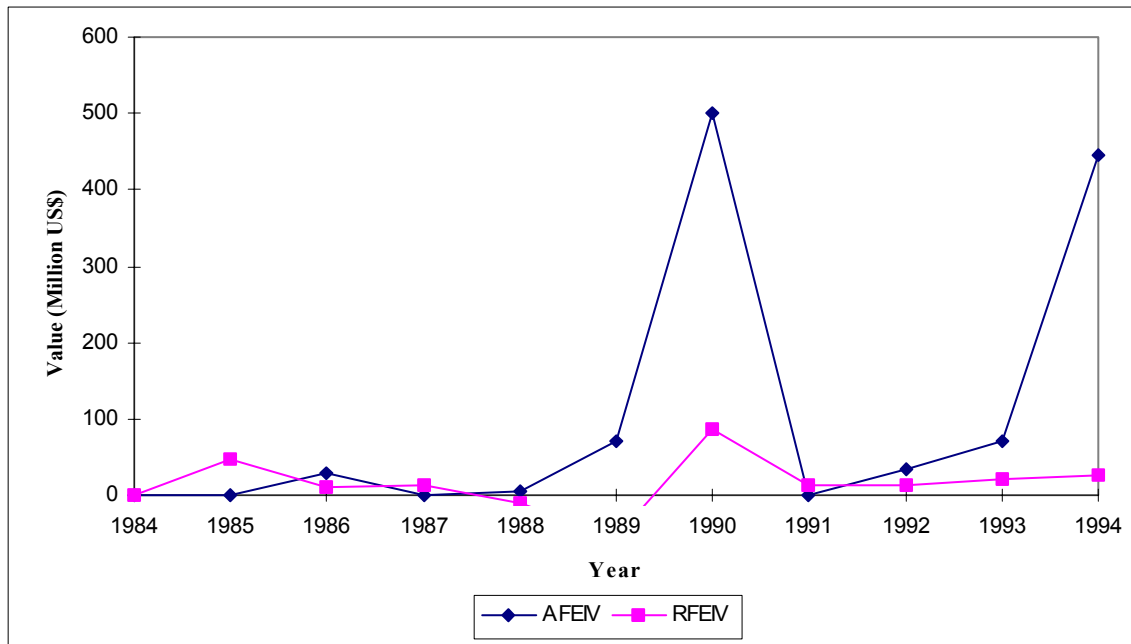


Note : ADOIV = Approved domestic investment; RDOIV = Realised domestic investment

Foreign Exchange Earning Contribution

As the commodities produced by the sub-sector is mostly exported, the sub-sector has traditionally been considered as a source of foreign exchange earning. In the last decade, the contribution of the sub-sector to the Indonesian foreign exchange earning is around 2.48 percent. As seen in Table 4, the main contributors to the sub-sector are rubber, palm oil, cocoa, coffee, tea, and coconut.

Figure 2. Fluctuation of approved and realised foreign investment, 1984-1994.



Note AFEIV = Approved foreign investment; RFEIV = Realised foreign investment

The export value of rubber in the last decade shows an increasing trend with an 8.45 percent annual increase. Palm oil could be considered as one commodity whose contribution has sharply increased at 29.25 percent annual increase in the last decade. Cocoa has showed a similar trend with a 24.55 percent annual growth rate. On the other hand, export value of coffee and tea in the last decade has tended to decline. The performance of the export value of those commodities attributed to several factors, such as, price in international market, drought, and production trend.

Table 4. Indonesia estate crop export value (million US\$)

Commodity	1987	1997	Growth (%)
Rubber	958	1,988	8.45
Palm Oil	144	1,446	29.25
Cocoa	41	295	24.55
Coffee	536	504	-0.68
Tea	119	85	-3.70

Source: Central Bureau of Statistics, 1998

The Likely Impacts Of The Economic Crisis On The Estate Crop Sub-Sector

The Analytical Framework

As described previously, the crisis was marked with depreciation of monetary exchange rate, liquidity problem and social unrest. The first factor is predicted to have positive impact on the estate crop sub-sector, however, the other two factors are likely to have negative impact on the sub-sector.

As we know, most industries in the estate sub-sector use domestic raw materials in their operation and most of their output is exported to foreign countries. Therefore, the sub-sector will probably benefit from the economic crisis. However, the high rates of interest and the emerging social unrest originating from outside the sub-sector may reduce the benefit gained.

Furthermore, there are some firms in the industries forced by government policy or regulation to sell their output in the domestic market. Therefore, the benefit from the exchange rate crisis could not be fully enjoyed. Unfortunately, these types of firms are also influenced negatively by other critical factors, such as drought and poor physical facilities.

The impacts of the crisis on the sub-sector will result in challenges and opportunities. These challenges and opportunities in turn will have impacts, which include macro, micro and social impacts to the sub-sector. Meanwhile, the introduction of government policies and/or discretion related to the sub-sector will, in fact, improve or even worsen the performance of the sub-sector.

The analysis below will be directed toward short, middle and long term development strategies and policies in order to take advantage of the opportunities and challenges created by the crisis, especially those related to the sub-sector.

Macro Impacts

The macro impacts of the economic crisis on the estate crop sub-sector will be analysed in terms of export responses, gross domestic product and investment changes. In accordance with the above analytical framework, the following analysis will be directed toward evidence and prediction of the impacts.

Export Responses

It is predicted that the export of primary estate commodities (natural rubber, palm oil, cocoa, coffee and tea) in both quantity and value will increase as a result of Rupiah depreciation. However, the

figures in Table 5 show that the prediction is not necessarily true. Other factors, such as drought, barrier capacity to export, export restrictions (export tax policy and export ban for palm oil), and other forms of barriers may be attributed to that unexpected export performance.

Table 5. Export of five main estate crops

Commodity	1997				1998	
	I	II	III	IV	I	II
Natural Rubber						
- volume (000) tons	396.3	373.8	404.6	382.2	404.7	375.2
- value (million US\$)	525.8	471.2	303.6	532.4	377.9	348.6
- value (billion RP)	1.265	1.150	0.901	6.372	3.458	3.880
Palm oil						
- volume (000) tons	359.8	483.2	1,056.6	992.1	142.2	268.9
- value (million US\$)	187.4	286.0	513.3	459.3	65.4	142.1
- value (billion RP)	0.451	0.698	1.524	5.497	0.598	1.582
Cocoa						
- volume (000) tons	37.9	47.2	71.1	62.0	32.1	70.2
- value (million US\$)	45.5	59.8	95.0	94.8	45.0	101.1
- value (billion RP)	0.109	0.146	0.282	1.135	0.412	1.125
Coffee						
- volume (000) tons	62.2	91.5	103.7	50.5	51.4	96
- value (million US\$)	91.7	156.8	165.2	89.8	100.0	113.8
- value (billion RP)	0.227	0.383	0.491	1.075	0.915	1.267
Tea						
- volume (000) tons	26.4	23.1	10.8	3.4	15.8	15.5
- value (million US\$)	31.9	31.1	15.6	6.1	31.1	29.1
- value (billion RP)	76,772	75,915	46,327	73,005	284,560	323,930

Source: Central Bureau of Statistics, 1998

The above figures also mean that the advantage of the exchange rate depreciation enjoyed by the sub-sector is still limited to increasing revenue valued in Rupiah. They can also be interpreted that booming resulting from the existing productivity and quality has not been realised yet. This is due to the fact that the production function and export supply of estate crop commodities is not responsive to price changes (Susila, *et al*, 1995, Susila, *et al*, Fajar, 1997 and Susila, *et al*, 1998).

Special analysis is also done to determine the relationship between the export value and the price and exchange rate changes during the economic crisis by using Gauss-Newton method. The results clarify that all price changes do not affect the export value. However, as predicted, the exchange rate depreciation tends to increase export value, except for palm oil due to export barriers. Excluding the export value of palm oil, it is also noted that the export value tends to be higher during the crisis as the coefficients of dummy variables are positive and two of them are statistically significant (Table 6).

From the above arguments, it can be implied that if the sub-sector during the crisis operates at the level of high productivity and quality hence its production and export supply are responsive to price changes, the boom enjoyed by the sub-sector will be fundamental. Productivity

problems are found in most estate crop plantations, whereas quality problem with respect to export market is especially inherent to cacao. As widely known, the Indonesian cacao exported to the USA is subject to automatic detention.

In addition to the above arguments, Saragih (1998) outlined reasons why the estate crop sub-sector could not fully take advantage of the exchange rate depreciation. **First**, estate crops are perennial crops so that the production and hence export do not instantaneously increase even though their output prices are highly enough to give incentives. **Second**, prolonged drought in 1996 may still have negative impacts on production and hence export. **Third**, stocks of estate commodities held by Indonesia are considered relatively a small part from those managed by other exporting and importing countries. The small fraction of stock held by Indonesia makes it impossible to respond to price changes. This phenomenon is especially true in the case of natural rubber commodity. **Fourth**, the existence of high rates of export tax policy applied to palm oil and its derivatives limits the export of those commodities.

In addition to the fourth reason, as explained by an official in the Joint Marketing Board of state-owned plantation, the existence of a new established body of palm oil marketing called Center for Palm Oil Marketing (CPOM) gives more restrictions to export palm oil and its derivatives. This organisation treats export market as a residual market hence the palm oil will be exported only if the domestic market has already been supplied. Most of the palm oil produced by the government owned companies are subject to the intervention by the CPOM. Since last year, the export of palm oil produced by the state-owned plantation has been prohibited.

The government (Ministry of Trade and Industry) also intervenes in the domestic market for palm oil by fixing the “selling” price of CPO produced by the state-owned plantation and marketed by Joint Marketing Board (JMB). In fact, this price is lower than that of the “undistorted” market price (Figure 3). This distortion will certainly give rise to more severe losses for the state-owned plantation producing CPO.

Despite of these challenges, the crisis offers some opportunities to the sub-sector. The crisis facilitates the sub-sector to adjust its export structure. As explained before, the currency depreciation enables the exported estate commodities to be more competitive. This situation makes it possible for the estate crop companies to divert part of their output from domestic to international market which in turn will result in foreign exchange earnings and thus increases government revenue.

Another opportunity coming from the crisis in the longer term is the creation of incentives to improve productivity and quality of estate commodities in order to gain more in export market. Part of the benefit obtained from the increasing export can be used to intensify maintenance activities in estate plantation and to apply modern technology to the processing estate commodities.

Gross Domestic Product Changes

It is believed that the sector, which can take advantage from the crisis, is a domestic resource based sector, such as the agricultural sector including the estate crop sub-sector. Figures in Table 7 shows that this sector and sub-sector have enjoyed a positive growth reflected by their increasing contribution in the Gross Domestic Product (GDP), even though the GDP tends to decrease over the period analysed. Although the adjustment process is not instantaneous, the contribution of the estate crop sub-sector tends to increase in both absolute and relative value, especially in the second and third quarter of 1998.

It is known that the estate crop sub-sector is one of the significant contributors to the Gross Domestic Regional Product (GDRP) in some provinces, especially in the province of North and South Sumatra. Therefore, the economic impact of the crisis would positively affect the economy of those provinces, especially to the output of estate plantation. Taking advantage of incentives and eliminating constraints created from the crisis could possibly increase the contribution of the sub-sector to GDP and GDRP.

The revenue and output incentives resulting from the crisis give an opportunity for the sub-sector to further increase its share to the GDP and GDRP. Improvement of technology in both cultivation, especially up keeping and processing raw materials will improve productivity and production, which in turn will add more benefit to the sub-sector. However, there is also a challenge of high rate of interest. The high rate of interest makes it difficult for agents in the sub-sector to finance the output expansion. The agents in the sub-sector, especially that of estate smallholders face difficulty in obtaining credits.

Investment Changes

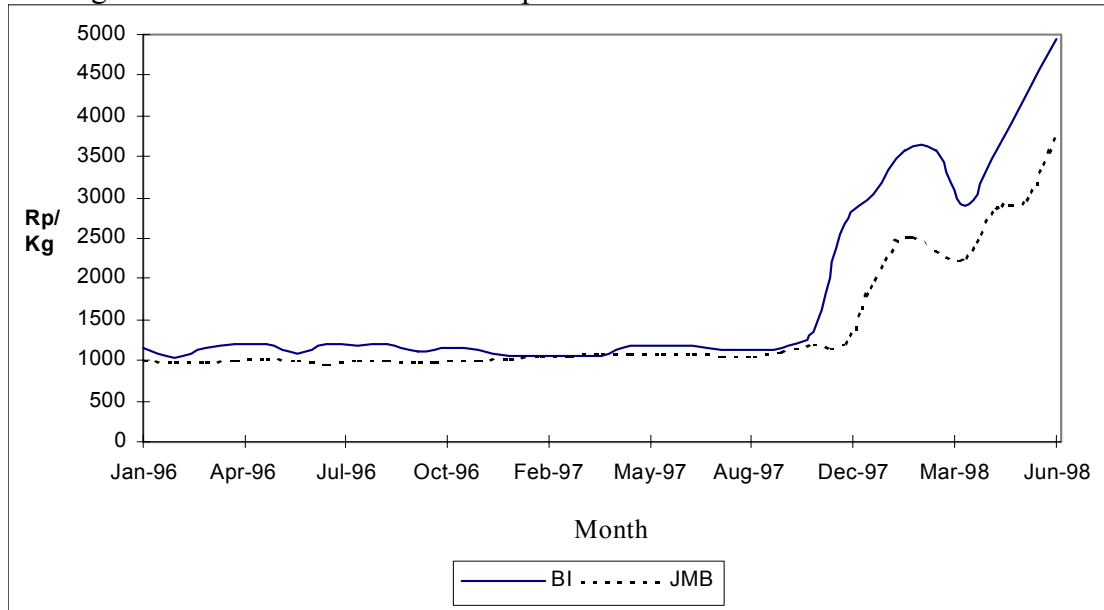
As a consequence of currency depreciation, it is expected that investment in the sub-sector can be stimulated in the long run. Part of the capital accumulation derived from the benefit of the sub-sector can be directed to

Table 6. Export Unit Value Equation Results

Approx. Parameter	Estimate	Prob> T
CPO Price Current	0.1921	0.7490
Lag 1	-0.2593	0.5955
Lag 2	0.5243	0.3314
Exchange Rate Current	-0.2060	0.2616
Lag 1	0.0134	0.9182
Lag 2	0.0662	0.5733
Dummy (Jan 1996-July 1997 = 0; Aug 1997-Aug 1998 = 1)	3.0414	0.5868
	R ² =	0.1605
	R ² _{adj} =	0.0793
Cacao Price Current	-0.1391	0.9513
Lag 1	1.1030	0.3933
Lag 2	-2.7070	0.2650
Exchange Rate Current	6.0636	0.0015
Lag 1	-0.7196	0.5295
Lag 2	0.5770	0.6021
Dummy (Jan 1996-July 1997 = 0; Aug 1997-July 1998 = 1)	51.4609	0.4653
	R ² =	0.6402
	R ² _{adj} =	0.5374
Coffee Price Current	-6.5584	0.3171
Lag 1	4.1025	0.2900
Lag 2	-2.1219	0.5802
Exchange Rate Current	9.8002	0.0003
Lag 1	1.9154	0.2346
Lag 2	3.5939	0.0241
Dummy (Jan 1996-July 1997 = 0; Aug 1997-July 1998 = 1)	211.5288	0.0078
	R ² =	0.8513
	R ² _{adj} =	0.8088
Tea Price Current	8.7657	0.5402
Lag 1	0.8374	0.9240
Lag 2	14.8818	0.8632
Exchange Rate Current	13.6717	0.0002
Lag 1	2.2584	0.2856
Lag 2	3.6512	0.0720
Dummy (Jan 1996-July 1997 = 0; Aug 1997-July 1998 = 1)	248.2031	0.0287
	R ² =	0.8454
	R ² _{adj} =	0.8013
Natural Rubber Price Current	-3.1392	0.3119
Lag 1	0.02145	0.9859
Lag 2	0.5974	0.6802
Exchange Rate Current	5.3497	0.6911
Lag 1	-0.4001	0.9310
Lag 2	-0.0811	0.9310
Dummy (Jan 1996-July 1997 = 0; Aug 1997-July 1998 = 1)	58.0408	0.4074
	R ² =	0.6382
	R ² _{adj} =	0.5348

Note: All variables are in percentage changes (See Carter and Pick, 1989)

Figure 3. Distorted and undistorted prices of CPO in the domestic market



Notes : BI = Bank of Indonesia; KPB = Joint Marketing Board

Table 7. Share of estate crop sub-sector on GDP at 1983 constant market price

Year & Quarter	Estate Crop Sub-Sector		Agriculture Sector		GDP Rp. billion
	Rp. billion	%	Rp. billion	%	
1997 I	1,549.2	1.45	11,694.1	10.95	106,756.5
1997 II	2,602.6	2.42	12,736.8	11.82	107,758.7
1997 III	3,643.5	3.32	10,903.4	9.94	109,729.6
1997 IV	2,976.4	2.72	8,485.5	7.75	109,440.4
Total	10,771.7	2.48	43,819.8	10.10	433,685.2
1998 I	1,963.9	1.98	12,097.1	12.18	99,337.3
1998 II	2,763.0	3.07	12,306.1	13.68	89,934.8
1998 III	4,060.1	4.44	12,857.1	14.04	91,546.5
Total	8,787	3.13	37,260.3	13.27	280,818.6

Source: Central Bureau of Statistics (1998)

investment activities, such as area expansion, improvement of cultivation and processing technology, improvement or establishment of infrastructure facilities, and other activities including those in the down stream industry.

Apart from the above argument, the investment in the sub-sector is known to be a function of output price and interest rate. Previous study indicated that the price is positively related to area expansion (Susila, Abbas and Prayogo, 1995, Susila, Suhaeti, Fajar, 1997 and Susila, Haryanto and Nainggolan, 1998). Assuming that the price in Rupiah jumps up as a consequence of crisis, so part of capital

accumulation derived from revenue can be directed to expand plantation area. Although area expansion is not elastic to price changes, the prediction may be true, especially for private-owned plantation.

However, previous study also showed that investment in the sub-sector is also determined by the rate of interest. Interest rate is negatively related to investment in the sub-sector (Susila and Herman, 1996). This means the high rate of interest ranging from 30 to 65 percent per annum during the crisis may worsen the feasibility of investment in the sub-sector.

Assuming that other factors affecting the investment in the sub-sector remain constant, it can be predicted that the net effect of the crisis to investment changes in the sub-sector will possibly increase or remain constant as a result of price and interest rate changes. For the state-owned and private-owned plantation, the price effects may offset the interest rate effects. The component of own capital in the structure of capital will be increased hence reducing debt in financing the investment. However, this phenomenon will not likely occur for the estate smallholders. Although there is a different possibility of investment changes in the state and private-owned plantation and smallholders, it seems reasonable to predict that in the future the investment changes is likely to occur in the sub-sector.

Micro Impacts

The micro impacts of the economic crisis on the estate crop sub-sector will be identified on the ground of changes in cost structure, output price, asset/equity, income/profit and output experienced by state, private-owned plantation and smallholders. In general, Tambunan (1997) predicted that the crisis would affect cost structure, output and input prices. The net effect will be dependent on the source of raw materials, marketing structure of output and the structure of capital, equity and portfolio business. The following analysis presents the above-mentioned impacts on the micro level of the sub-sector. The sub-sector will be separated into three types of ownership, namely the state, private-owned plantation and smallholders. Table 8 shows the likely micro impacts of the economic crisis on the estate crop sub-sector.

As a determinant of the crisis, the currency depreciation will hit the cost structure of the plantation and smallholders through the debt or loan, especially that financed with foreign currency, namely US dollar. The increasing cost will most probably be found in the private-owned plantations as most of their debts in US dollar. The state-owned plantation to some extent will also be hit, whereas the smallholders will only experience minor or no effects on their cost structure. In addition, the use of imported inputs, such as pesticides and certain fertilisers will also increase the cost burden. The size of the cost burden from the

biggest to lowest will follow consecutively from the private, state-owned plantations and smallholders.

As noted earlier, the currency depreciation will have no effects on output price in US dollar value; however, it in fact affects the output price in Rupiah value. This prediction is based on the fact that most of the estate crop commodities are tradeable. However, the extent of the effects will be different between the plantations and smallholders. The smallholders receive the lowest price increase, whereas both state and private-owned plantations enjoy an equal portion of price increase.

Evaluation of the asset value shows that smallholders will be the worst as most of their asset is in Rupiah. The ordering condition allow that the state-owned plantation ranks second and this is followed by the private-owned plantation. The US dollar evaluation of the asset showed that the private-owned plantation is in the first rank followed by the state-owned plantation and then smallholders.

Table 8. The likely micro impacts of the economic crisis on the estate crop sub-sector

Indicator	State-Owned Plantation	Private-Owned Plantation	Smallholders
Cost Structure -US\$			
Debt	+	++	=
Inputs	++	+++	+
Output Price - US\$	=	=	=
- Rp	++	++	+
Asset Value - US\$	+	++	=
- Rp	--	-	---
Revenue/Profit - US\$	+	++	=
- Rp	++	+++	+
Output	+	++	=

Notes : + increase; - decrease; = constant

In the short run, it is predicted that revenue or profit in both Rupiah and US dollar will probably increase significantly in the private-owned plantation. The state-owned plantations will also enjoy increases in revenue or profit, but the revenue or profit gained will not be as much as that of the private-owned plantation. The smallholders will also get more revenue or profit, but they will receive the least.

In the middle and possibly in the long run, it is predicted that the output of the state and private-owned plantation will likely increase, with higher gain in the latter. Meanwhile, the output of smallholders is predicted to remain constant.

All the above predictions, unfortunately, are not supported with the evidence yet. However, it will be interesting to look at how prediction of cost and profit impacts was derived. The following is devoted to deriving prediction using cost structure and profit of CPO

(Table 9). The figures show that the total production cost of the state-owned plantation is higher than that of the private-owned plantation in both North Sumatra and Riau. Assuming that the CPO selling price is the same, ie. Rp. 1.010 per kg, therefore, the net profit received by the state-owned plantation is lower than that received by the private-owned plantation. As outlined in the previous section, the economic crisis will certainly give more benefit to the private-owned plantation.

Further, on the basis of cost advantage comparison between Indonesian and Malaysian CPO industries, the economic crisis may potentially give more benefit to the Indonesian CPO industry. This view is based on the previous study that the total variable cost of CPO in Malaysia is 28 percent higher than that in Indonesia (Table 10). However, the potential benefit of export revenue created from the crisis can not be fully realised because of the existence of export restriction and ban.

Table 9. Cost structure and profit of plantations and CPO factories by ownership: state vs. private (Rp/kg CPO)

Cost/Profit	State-Owned		Private-Owned	
	N. Sumatra	Riau	N. Sumatra	Riau
Material (FFB) cost				
a. Self-cultivated	301	408	1.0	n.a
b. Bought from plasma	1,126	1,033	623	
Factory Processing cost	92	106	} .	} .
Over head cost	213	144	}70	}60
Total CPO production cost				
a. Self-cultivated	606	658	528	n.a
b. Bought from plasma	1,126 *	1,139	1,048	883
Profit				
a. Self-cultivated	+ 404	+ 352	+ 482	n.a
b. Bought from plasma	- 116	- 129	- 38	+ 127

Source: Institute of Developing Economies, 1997. *Waves of Change in Indonesia's Manufacturing Industry*. Pangestu and Sato (Eds)

Note : CPO selling price = Rp. 1,010; *Revised by the Authors

Unfortunately, both examples are not the real case during the crisis, As outlined in the previous section, export of palm oil is subject to export barrier policy imposed by the government.

Table 10. Cost Competitiveness Comparison between Indonesia and Malaysia as of mid 1996

Cost Item	I Indonesia	II Malaysia	Ratio I/II
I. Variable production cost			
1. FFB production cost per kg	Rp. 87	Rp. 116	0.75
2. FFB production volume (ha/yr.)	19 ton	23 ton	0.83
3. Rendemen (%)	22.3 %	19 %	1.17
4. CPO production volume (ha/yr.)	4.2 ton	4.3 ton	0.98
5. CPO production cost per ha	Rp. 1,501,000	Rp. 3,095,000	0.48
	US\$ 641	US\$ 1,323	0.48
6. FFB production cost per kg	Rp. 389	Rp. 611	0.64
7. CPO factory cost	Rp. 82	Rp. 40	2.05
8. Plantation + Factory cost	Rp. 471	Rp. 651	0.72
II. Other costs			
1. Land rent per ha	Rp. 1 million	Rp. 1-1.5 million	0.67
2. Interest rate (%/yr.)	19 %	8-9 %	2.24
3. Infrastructure/Utility	++	--	++
4. Transportation cost	++	--	++
5. Bureaucracy cost	++	--	++

Source: Institute of Developing Economies, 1997. *Waves of Change in Indonesia's Manufacturing Industry*. Pangestu and Sato (Eds) Note : ++ : relatively high; -- relatively low

Social Impacts

Economic crisis marked by the depreciation of Rupiah and liquidity problem in the monetary sector has decreased purchasing power of consumers and caused high inflation. Following this economic situation, laying-off workers is inevitable so that urban and rural unemployment has been sharply increased. Finally, this condition has led to social unrest.

This social unrest, coupled with political crisis, has caused several problems in the sub-sector. The first problem is plundering of lands, especially lands that are under the management of state and private-owned plantations. The case of PT Tri Sangga Guna in Padang, West Sumatra is an actual example. About 300 smallholders surrounding these estates plundered the oil palm estates of PT Sri Sangga Guna. A plundering of around 2000 ha of plantation belonging to PT Perkebunan Nusantara II also occurred in Deli Serdang, North Sumatra¹⁾.

The second problem in the sub-sector stemming from the economic crisis is a sharp increase in robbing or stealing of estate crop products²⁾. Robberies have been done openly in several areas such as in Banyuwangi, Malang (PT Perkebunan Nusantara XII), Lampung, and North Sumatra (PT Perkebunan Nusantara IV).

The third problem related to the crisis is acts of plantation damaging conducted by society surrounding plantations. This occurred

1) Kompas, July 28th 1998

2) Bisnis Indonesia, September 3rd 1998 and Kompas, August 10th 1998

in Malang, West Java, where the society replaced cocoa plantation with annual crops. PT Perkebunan Nusantara XII management stated that they suffered from a loss of around Rp 12 billion³⁾.

Conclusion and policy implication

The estate sub-sector is one of the important sub-sectors contributing positively to the Indonesian economy, especially during the turbulence of economic crisis. This paper analyses the macro and micro impacts of the economic crisis on the estate crop sub-sector. Attention is also given to the social impact on the sub-sector resulted from the social crisis originated from inside and outside the sub-sector. This paper also finds evidence and prediction that the sub-sector has not yet fully taken advantage and resolved constraints created from the crisis.

The results show that the export response is still limited to increase export value in Rupiah. The response in terms of quantity indicates that the export is not price responsive, especially for quantity response of palm oil. The government policy to restrict export by imposing high rate of export tax (up to 60 percent) and discretion to ban export from the state-owned plantation are the two constraints inhibiting the export expansion of Indonesian palm oil. Indonesian palm oil industry fails to exploit its competitiveness in international markets.

Further result indicates that the estate crop sub-sector shows increasing contribution to GDP in both absolute and relative values. The share of the sub-sector is also predicted to increase, especially in the regions dominated by the estate crop plantations, such as North and South Sumatra. Similar to that of quantity response of export, the output response is relatively slow. This is may be due to low productivity and quality of the estate crop products.

This paper is also concerned with investment changes, a long-run situation analysis. It is expected that the investment in the sub-sector will increase even though it will be constrained by the high rates of interest. The capital accumulation is predicted to be the main source of the estate crop development.

In terms of micro impacts, the results suggest that the economic crisis have different effects on the state, private-owned plantations and smallholders. Using cost structure as an indicator, the crisis will mostly hard hit the private-owned plantation. Using other indicators, namely output price, asset value, revenue/profit and output, the results also show that the private-owned plantation will be the agent mostly affected by

³⁾ Sinar Tani, August 19th 1998

the crisis. This is followed by the state-owned plantation and then the smallholders.

This paper also finds the emerging social impact on the sub-sector. The agents, especially the state-owned plantation faces social unrest including plundering of lands, robbing or stealing of estate crop products, and acts of plantation damaging. People surrounding the plantations conduct these.

Implication: the Development Strategy

The existence of macro, micro and social impacts on the estate crop sub-sector makes it necessary to draw some development strategies. These strategies can be short, medium and long term. In the context of short-term development strategy, it is necessary for the government to create incentives of export and to pay attention on the social impact. In the medium term development strategy, the direction is to enhance export, to improve productivity and quality, and to promote partnership between people surrounding the estate crop plantations. In the long-term development strategy, the export development and sustainability are set by reconsidering the current development strategy of the sub-sector and including laid off workers and poor people surrounding the estate crop plantations.

Short Term Policy

The incentive of export is directed to remove export barriers, to restructure marketing output and to improve the efficiency of estate crop industries. The removal or the reduction of export barriers referring to the WTO rules is one of the policies recommended. In line with this recommendation, the export tax of CPO, and the export ban imposed to the state-owned plantation and the low domestic price of CPO set by the government are subject to this policy.

The policy to restructure marketing output can be done by relying on market mechanism, both for domestic and international market. The policy on treatment of export market as a residual market like that implemented for export market of CPO becomes irrelevant policy.

Relying on market mechanism makes the export and domestic prices of estate crop commodities function as a determinant of efficiency. Given cost structure of the agents in the estate crop industries and taken into account that undistorted market prices are higher than those of the distorted ones, the efficiency of the industries is believed to improve.

Referring to social unrest, the government together with the estate crop plantations should include people surrounding the area in the Social Safety Network. The action of the Social Safety Network program has to reach such people.

Medium Term Policy

The export enhancement is mainly directed to make the export supply becomes more responsive to price changes as well as currency depreciation. The policies relevant to this strategy include the establishment of the stock accumulation of estate crop commodities as a source of export supply, export liquidity assistance and the provision of the competitive rate of interest.

Meanwhile, the government should promote a better technology to increase productivity and quality. The policies relevant to this direction include the empowering institutions of estate crop research and development, the implementation of small scale unit of processing technology, and the empowering rural institutions, such as groups of farmers and cooperatives. In the monetary sector, the policies relevant to the medium strategy include the reduction of interest rates. Furthermore, the inclusion of laid-off workers and poor people in the partnership institution is one of the policies to reduce social unrest.

Long Term Policy

In the future, the estate plantation and smallholders development has to pay attention on some strategic aspects, namely agribusiness development, regional development, empowerment of institutions and society, and integrated farm development. The previous development programs, such as Nucleus Estate Smallholders, Project Management Unit, Foster Parent, and others are considered irrelevant any more.

The future profile of estate plantation and smallholders development will at least be two types. First, land ownership fully belongs to cooperatives, of which farmers are members, and small to medium scale companies. Then, they make a contract farming with private or state-owned plantations with the latter providing a certain percentage of their profit for human resource development of cooperatives and companies.

Secondly, the cooperatives and small to medium scale companies, and the state or private-owned plantations join together as share holders in the development (joint venture). The cooperatives get their capitals from Primary Cooperate Credit for Members. Some other types of estate crop development may be introduced. It will most probably be the modification of the two types above.

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