

# CONTRIBUTION OF OIL PALM INDUSTRY TO ECONOMIC GROWTH AND POVERTY ALLEVIATION IN INDONESIA

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## ABSTRACT

Key sectors or commodities are urgently required to accelerate the Indonesian economic growth during economic recovery stages. This paper assesses contribution of oil palm-based industry to economic growth, poverty alleviation, and income equity improvement. Empirical studies showed that oil palm has an important contribution to those aspects. Positive contribution to economic growth is indicated by its growth in term of investment, output, and foreign exchange earning. The oil palm-based industries have a significant contribution to household welfare in term of income and asset. Around Rp5–Rp11 million or more than 63% of household income of smallholder comes from the oil palm-based activities. The share of oil palm related asset to total household asset is also very significant, estimated to attain 63–72%. The small proportion (less than 10%) of poor people in oil palm communities can also be used as an indicator of oil palm contribution to poverty alleviation. Moreover, income distribution in oil palm central area is good (fairly egalitarian) with gini coefficient around 0.36. To overcome inhibiting factors in maintaining and improving the role of oil palm smallholder in economic growth, poverty alleviation, and better income distribution, some policy issues are discussed.

**Keywords:** Oil palms, economic growth, income equity, poverty, Indonesia

## ABSTRAK

### *Peran industri kelapa sawit dalam pertumbuhan ekonomi dan pengentasan kemiskinan di Indonesia*

Sektor atau komoditas unggulan sangat dibutuhkan untuk mempercepat pemulihan ekonomi Indonesia. Sejalan dengan itu, tulisan ini mencoba menilai kontribusi industri berbasis kelapa sawit dalam pertumbuhan ekonomi, pengentasan kemiskinan, dan perbaikan distribusi pendapatan. Hasil studi menunjukkan bahwa industri kelapa sawit mempunyai peran yang penting dalam ketiga aspek tersebut. Pengembangan kelapa sawit berdampak positif terhadap pertumbuhan ekonomi yang ditunjukkan oleh pertumbuhan investasi, output, dan devisa. Industri berbasis kelapa sawit mempunyai kontribusi signifikan terhadap kesejahteraan rumah tangga dalam hal pendapatan dan aset. Sekitar Rp5–Rp11 juta atau lebih dari 63% pendapatan rumah tangga berasal dari usaha kelapa sawit. Kontribusi usaha kelapa sawit terhadap aset juga sangat nyata, sekitar 63–72%. Peran dalam mengentaskan kemiskinan tercermin dari jumlah penduduk miskin yang kurang dari 10% pada masyarakat yang mengusahakan kelapa sawit. Distribusi pendapatan di sentra produksi kelapa sawit cukup baik (*fairly egalitarian*) dengan koefisien gini sekitar 0,36. Untuk mengatasi beberapa faktor penghambat dalam mempertahankan dan meningkatkan peran industri kelapa sawit dalam pertumbuhan ekonomi, pengentasan kemiskinan, dan perbaikan distribusi pendapatan, beberapa isu kebijakan didiskusikan.

**Kata kunci:** Kelapa sawit, pertumbuhan ekonomi, pemerataan pendapatan, kemiskinan, Indonesia

**E**conomic crisis hitting Indonesia since July 1997 has paralyzed most economic sector in Indonesia. The rate of inflation jumped to 77.63% in 1998 and the number of unemployed went up substantially. Most economic sectors have been severely hit by the crisis such that the Indonesia's Gross National Product (GNP) decreased to -13.20% in 1998. As a

result, the number of poor people increased followed by a worse income distribution (Badan Pusat Statistik 2001).

Unlike most sector and subsector, estate subsector, dominated by smallholder, has demonstrated its strength and resilience during the economic crisis. This phenomenon indicated that estate

subsector can be used as one of leading subsectors, not only when the economy in booming situation, but also in the crisis. Various studies showed that the estate crops played an important role in Indonesian economy as source of economic growth as well as improvement of income distribution. This implies that estate subsector could be used to accele-

rate Indonesian economic recovery, either in term of economic growth or equity.

Among estate crops developed in Indonesia, oil palm is perceived to have a potential in economic development and poverty alleviation. The important role of the commodity in the economic recovery can be seen on its impressive performance in the last two decades, even in the economic crisis period. For example, the area of oil palm plantation has experienced an 11% annual growth rate while export volume around a 13% annual growth rate (Direktorat Jenderal Bina Produksi Perkebunan 2002). Study by Girsang *et al.* (1995) in North Sumatra and Riau reported that oil palm development, especially nucleus estate crop projects, has a significant contribution to economic growth, indicated by output multiplier that is higher than two. The study also indicated that oil palm development has a positive impact on farmers' income. The similar results were reported by Winoto *et al.* (1997) for some oil palm nucleus estate smallholders (NES) in West Sumatra, Riau, South Sumatra, and West Kalimantan.

The general objective of this paper is to discuss the contribution of oil palm to economic development, poverty alleviation, and income distribution. Results of surveys conducted in Kampar (Riau) and Musi Banyuasin (South Sumatra) are used to empirically demonstrate the contribution of the crop. The selection of Kampar and Musi Banyuasin as case studies is based on their representativeness. Using some criteria, such as total area, number of development scheme, and role of the crop to rural household, employment and output contribution, the regions are considered as the most appropriate to represent oil palm smallholder.

## CONTRIBUTION OF CPO INDUSTRY TO THE ECONOMIC RECOVERY

### Contribution to Economic Growth

The economic crisis has hit almost all industries such that Indonesian GNP experienced a negative growth (-13.20%) in 1998. This implies that total added value of most industries decreased around 13.20% in 1998. Under this economic condition, crude palm oil (CPO) industry

showed its strength and resilience against the economic crisis. For example, total investment, especially in term of oil palm plantation area has been increasing. Since economic crisis, Indonesian oil palm area has increased 6.80%/annum, from 2.30 million ha in 1996 to 3.584 million ha in 2001. The growth was contributed by all types of oil palm management, namely smallholder, government-owned state, and private estates. In 2001, around 53.10% of oil palm area were managed by private estate (PBS). The share of smallholder (PR) and government-owned estate (PBN) was 31.90% and 14.90%, respectively (Direktorat Jenderal Bina Produksi Perkebunan 2002).

All growth indicators show that oil palm industry has a significant growth rate in the economic crisis (Table 1). The average area of oil palm before crisis was around 1.832 million ha, while that of after crisis was around 3.051 million ha. CPO production also increased 5.80%/annum in the crisis period. Before crisis, the average CPO production was around 4.015 million tons, while after crisis was around 5.966 million tons.

Another important economic contribution of CPO industry during the economic crisis is in term of foreign exchange earning. The average total export volume of CPO increased from around 1.781 tons before crisis to 2.700 tons during crisis, while total export value (foreign exchange earning) increased from around US\$646 million before crisis to around US\$1.074 million during crisis. The realized growth would be higher if the government did not stipulate a new policy to ban CPO export for several months in 1998.

The output of CPO downstream industries also increased during the crisis,

as indicated by the increase in CPO domestic consumption around a 6% annual growth rate. The consumption increased from around 1.26 million tons in 1996 to 3.46 million tons in 2001. In domestic market, CPO is mainly used as raw material of cooking oil (Direktorat Jenderal Industri Pengolahan Hasil Kehutanan 1996).

In the future CPO industry is estimated to continuously contribute to the economic growth. This is related to the competitiveness of the product, especially compared to other edible oils, such as soybean oil, sunflower oil, and rapeseed oil. The first argument for these phenomena is that CPO is considered as the most efficient land use, leading to the lowest production cost. Land productivity to cultivate CPO, soybean oil, rapeseed oil, and coconut oil is 3,200, 332, 521, and 395 kg/ha oil equivalent, respectively (Ong 1992). Another factor supporting the above arguments is that more than 80% of world population, mainly in developing countries tends to increase consumption of edible oil (Susila 1997).

The implementation of trade liberalization, especially Uruguay Round (UR) also strengthened the competitiveness of CPO in international market (Pasquali 1995). This is because of most edible oils produced in developed countries, such as soybean oil in the US and sunflower oil in West Europe, have enjoyed a protection and government subsidies. Susila (1998) estimated that around 82% of total market expansion due to UR will be enjoyed by developing countries producing CPO.

Using the efficiency of domestic resource use as criterion, Indonesia is an efficient resource use country in producing CPO. Susila (1998) estimated that

**Table 1. Contribution of CPO industry to some indicators of economic growth.**

Economic indicator	Average	
	Before crisis (1992–1996)	During crisis (1997–2001)
Area (million ha)	1.832	3.051
Production/output (million tons)	4.015	5.966
Export volume (million tons)	1.781	2.700
Export value (US\$ million)	646	1.074
Domestic consumption (million tons)	2.043	3.051

the value of private cost ratio (PCR) and domestic resource cost ratio (DRCR) of Indonesian CPO which are lower than one, indicate the resource use efficiency of Indonesian CPO industry. The value of PCR and DRCR are 0.53 and 0.48, respectively. This means that Indonesian CPO industry requires around US\$0.50 of domestic resource to gain US\$1 of foreign exchange. The substantial depreciation of rupiah has strengthened the competitiveness of Indonesian CPO producers.

In capturing this market opportunity, Indonesia has faced and will face a tough competition from Malaysia. CPO productivity of Malaysia was 3.66 t/ha, while Indonesia around 3.11 t/ha/annum. Moreover, Malaysia has more advanced CPO downstream industries compared to Indonesia. For example, Malaysia has 17 oleo-chemical plants with capacity of 1.3 million tons/year, while Indonesia has only 8 plants with capacity of around 0.8 million tons/year. Moreover, while Malaysia strongly supports CPO industries, Indonesia has imposed an export tax that inhibits export development.

### Contribution to Smallholder Income

The importance of estate crops as a source of income, especially in rural areas, has been well known. In general, estate crops have a great contribution to the household total income. Study conducted by Winoto *et al.* (1997) indicated that the share of estate crop income to household total income is more than 65%.

Surveys conducted in Kampar and Musi Banyuasin support the previous studies (Table 2). The average total income of oil palm smallholder in Kampar and Musi Banyuasin are around Rp18.91 and Rp11.08 million/annum, respectively. In Kampar, the contribution of oil palm based activities to total income is more than 60% or around Rp11.50 million/annum. Similar feature is showed in Musi Banyuasin with contribution around 60% of total income. This implies that oil palm is an important source of income in rural areas.

### Contribution to Smallholder Asset

Oil palm-based activities are also an important contributor to the total small-

holder asset, an important indicator of smallholder welfare. For example, the contribution of oil palm related asset to total asset in Kampar household is around 63% (Table 3). With total asset of Rp91.50 million/household, the contribution of oil palm related asset is around Rp58.40 million. In Musi Banyuasin, the contribution is around 72.10% of total asset attaining to Rp63.10 million/household. Considering that most household is transmigrant participants who have no a significant asset, it can be concluded that oil palm asset contributes significantly to household current asset.

### Contribution to Income Distribution

The development of oil palm through various projects or schemes gave an important contribution to improve equity. This can be seen from a relatively better income distribution of oil palm smallholder in Kampar and Musi Banyuasin. Although the income distribution of smallholder in Kampar shows three groups, the income distribution is fairly egalitarian with gini coefficient of 0.36. The similar results was found in Musi Banyuasin. In Kampar, the first group is

**Table 2. Income structure of oil palm household in Kampar and Musi Banyuasin.**

Source of income	Kampar		Musi Banyuasin	
	Value (Rp/year)	Contribution (%)	Value (Rp/year)	Contribution (%)
Owned farming	11,780,516.56	62.27	6,595,300.05	59.48
Oil-palm-based farming	11,491,379.30	60.74	6,640,616.92	59.88
Food crops	296,372.55	1.57	28,366.46	0.26
Livestock/fishery	-7,235.29	-0.04	-73,683.33	-0.66
Non-owned farming	7,139,259.45	37.73	4,493,637.51	40.52
Agricultural sector	1,592,740.20	8.42	1,032,509.40	9.31
Non-agricultural sector	3,353,382	17.72	2,102,017	18.96
Special income	422,058.82	2.23	461,247.86	4.15
Other income	1,771,078.43	9.36	897,863.25	8.10
Total	18,919,776.01	100	11,088,937.56	100

Source: Susila (2002).

**Table 3. Asset structure of palm oil farmer in Kampar and Musi Banyuasin.**

Type of assets	Kampar		Musi Banyuasin	
	Value (Rp)	Contribution (%)	Value (Rp)	Contribution (%)
Field	59,908,039.21	65.32	46,905,555.58	74.28
Estate	58,391,421.57	63.67	45,558,974.36	72.15
Rice field	245,098.04	0.27	85,470.09	0.13
Home yard	539,215.69	0.59	0	0
Fisheries	515,686.27	0.56	0.02	0
Livestock	69,558.82	0.07	38,888.89	0.06
Other	147,058.82	0.16	1,222,222.22	1.94
Nonfield	31,802,102.94	34.68	16,240,314.96	25.72
House	21,558,823.53	23.51	11,248,717.95	17.81
Livestock	411,500	0.45	458,521.37	0.73
Agriculture equipment	349,877.45	0.38	352,269.23	0.56
Motor vehicle	6,286,656.86	6.86	2,784,538.46	4.41
Household furniture	1,991,764.71	2.17	774,483.76	1.23
Saving	429,754.90	0.47	504,914.53	0.80
Jewelry	773,725.49	0.84	116,869.66	0.19
Total	91,710,142.15	100	63,145,870.54	100

Source: Susila (2002).

the poorest smallholders whose income is less or equal to Rp10 million/annum. This group is relatively small, accounting for around 8% of total population. The second group is the majority whose income lies between Rp10–Rp25 million/annum. This group can be considered as the common feature of smallholder income in Kampar, accounting for more than 75% of total population. The third group is the richest group whose income is more than Rp25 million/annum. This group contributes to around 13% of total population. The income distribution is better compared to that in rubber NES and cocoa development projects with gini coefficient more than 0.40 (Anwar 2002).

The variation of income is closely related to some factors, such as asset ownership and saving investment activities. The higher their productive asset, the higher their income. Saving and investment activities are perceived to have a great impact on asset and income. The higher their saving and investment activities, the higher their income.

### Contribution to Poverty Alleviation

Development of oil palm is also considered as an effective instrument to reduce or alleviate poverty in the rural area. In Kampar, the proportion of poor people in oil palm community is less than 5%. Similar feature was found in Musi Banyuasin with the number of poor people less than 10%. The small number of poor people can be explained by the major role of oil palm as the main source of income. Most NES participants have income more than Rp10 million/annum as each hectare of oil palm contributes to Rp5 million/annum. This figure is higher than poverty line in Kampar and Musi Banyuasin, which is around Rp7.10 million and Rp5 million, respectively.

Other arguments that support this condition are credit repayment and capital accumulation for replanting program. In general, oil palm smallholders have been able to repay their loan faster than they planned (Table 4). With 30 NES projects and total area of 151,624 ha and involving around 77,096 household, the average credit repayment has attained to around 84.81% of total credit. Moreover, participants in 18 NES projects can complete their loan repayment as their loan

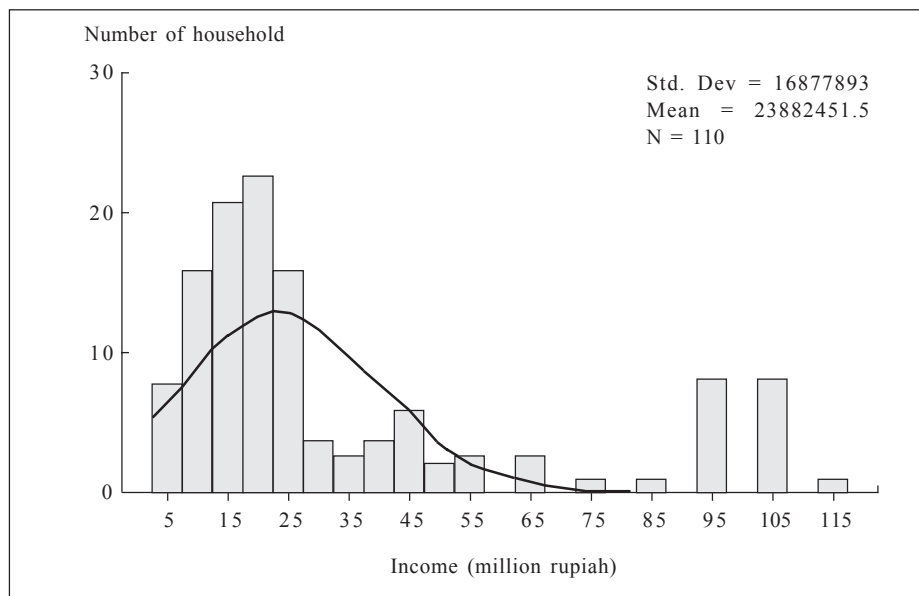


Figure 1. Distribution of household income in Kampar (Susila 2002).

Table 4. Credit repayment of estate crop NES participants.

Commodity	Number of NES project	Area (ha)	Number of household	Rate of credit repayment (%)	Number of NES project completing credit repayment
Oil palm	30	151,624	77,096	84.81	18
Rubber	30	151,244	74,370	36.86	0
Coconut	5	13,288	6,952	12.88	0
Tea	3	8,233	22,727	23.92	0

Source: Direktorat Jenderal Bina Produksi Perkebunan (2001); Tim Lembaga Penelitian IPB (2000).

repayments are exceeding 90%. All oil palm NES, except NES Kertajaya, is predicted to be able to repay their credit.

Compared to credit repayment of other crops such as coconut and rubber, the credit repayment of oil palm NES is much higher. For example, credit repayment of coconut and rubber NES is 11.88% and 36.86%, respectively. This represents the ability of oil palm smallholder in maintaining their business. (Winoto *et al.* 1997; Herman *et al.* 2000).

Some studies showed that oil palm smallholders have accumulated their capital as a preparation for replanting. Study done by Winoto *et al.* (1997) in NES Ophir revealed that oil palm smallholders have developed a program as a part of replanting program. This program is basically a saving program in which the participants have to save part of their income from oil palm to replant their oil palm plantation in the future. This program

calls *Iuran untuk Peremajaan Tanaman Perkebunan* (IDAPERTABUN). Under this program, the participants have to save their income around Rp40,000–Rp75,000/month, based on oil palm productivity or the age of oil palm plantation. A similar program has also been implemented in NES Sei Galuh, Riau by which the farmers have to save Rp30,000/month.

### INHIBITING FACTORS AND CONSTRAINTS OF OIL PALM DEVELOPMENT

CPO industry face some inhibiting factors and constraints which force the industry to adjust those problems to optimize the benefit gained from the changing situation. Susila and Supriono (2001) identified some inhibiting factors and

constraints faced by CPO industry in the future, namely, increase in production cost, trade policy, regional autonomy, environment issues, and social conflicts.

## Implementation of Regional Autonomy

Regional autonomy implemented since 2001 has had a substantial impact on oil palm industry. Among the relevant laws, law No. 25/199 regulating the revenue share between central and local government has a greatest impact on the development of estate crops in the region (Poernomo 2002). The law gives a wide authority to local governments to manage and allocate its budget and to collect their revenue.

The positive impacts of this law in term of policy efficiency have not been materialized. Most investors perceived that implementation of the law has increased business uncertainty. For example, there are no clear regulations related to land acquisition procedure and taxing. Moreover, wider authority of local government to collect revenue has increased retribution and local tax leading to an increase in production cost. This situation has created a pressure either to

existing plantations or planned investments. In other word, positive impacts of regional autonomy such as efficiency increase and better allocation of resources have been not materialized, while the negative impacts have been immanent. This could be considered as some side effects of inappropriate implementation of regional autonomy.

## Processing Plant

The development of CPO plants cannot keep pace with the development of fresh fruit bunch (FFB) production. For example, total capacity of CPO plants in South Sumatra is around 501 tons FFB/hour or all plants can process FFB produced by around 231,000 ha (Table 5). On the other hand, total oil palm plantation in the province is around 368,036 ha, implying that the CPO plant capacity should be increased by around 685 tons FFB/hour or 11 CPO plants with the capacity of 60 tons FFB/hour. The capacity of existing CPO plants cannot meet the FFB produced in the 16 provinces of CPO producers. This situation caused a serious problem in Riau and West Sumatra in 2001, which were some FFB produced by smallholders cannot be processed leading to a decrease in FFB price.

## Trade Policies and Market Mechanism

A trade policy that is relevant to oil palm is CPO export tax. The export tax rate changes frequently which raises the risk of CPO industry. Inconsistent trade policies cause difficulties in formulating long-run development program (Susila and Supriono 2001).

Market mechanism is another important factor that significantly influences estate crop development in the region. For non-NES market mechanism, the existing problem is low bargaining position of the smallholders, indicated by dominant role of traders in determining quality and price of the products.

Under the NES marketing system, determination of CPO rendement and price are also the main problems due to some factors as follows:

- Farmers have no enough knowledge to appreciate the measurement technique since it involves chemical processes.
- Farmer's products are generally heterogeneous so that there are always complaint from the farmers whose products relatively having better quality.
- CPO plant is unefficient causing the rendement to be lower than the otherwise.

The determination of farm gate price has also been a persistent problem. Determination of the price is based on two-week average prices. On the other hand, the prices fluctuate daily causing a wide gap between the current market price and price received by the farmers. This could be due to lack of socialization of the price formula. The problem is exaggerated by the prices offered by traders surrounding NES which tend to be higher. This occurs especially in the region where plant capacity is much higher than the availability of raw material.

## Environmental Degradation Issues

Another business environment that significantly affected estate crop development is environmental degradation issue. This issue restricted oil palm development such as in Kampar. Some experts claimed that oil palm expansion has

**Table 5. Distribution and capacity of CPO plants in Indonesia.**

Province	Number of plant (unit)	Capacity (t FFB/hour)	FFB production potency (t FFB/hour)	Over/under capacity (t FFB/hour)
Nangroe Aceh Darussalam	14	410	1,067	-657
North Sumatra	84	2,879	3,181	-202
West Sumatra	6	240	880	-640
Riau	44	2,062	3,388	-1,326
Jambi	13	600	1,423	-823
South Sumatra	20	1,155	1,840	-685
Bengkulu	6	230	390	-160
Lampung	4	125	523	-398
West Java	2	60	107	-47
West Kalimantan	12	430	2,058	-1,403
Central Kalimantan	3	90	825	-705
South Kalimantan	3	110	707	-597
East Kalimantan	3	130	775	-645
Central Sulawesi	1	30	213	-183
South Sulawesi	4	150	370	-220
Irian Jaya	2	80	174	-94
Total	221	8,781	17,921	-8,785

Note: Each ton plant capacity is equal to 200 ha plantation.  
Source: Direktorat Jenderal Bina Produksi Perkebunan (2001).

caused deforestation and monoculture practices that lead to environmental deterioration. The presence of oil palm enterprises also caused land conflicts and local people lost their opportunity to improve their welfare. This induced local people to plunder, either in term of oil palm plantation or production.

This issue should be handled properly to support oil palm development. The appropriate policies should be justified to promote oil palm development in the region, while the negative impacts of the development could be minimized.

## ALTERNATIVES OF POLICY ISSUES

Based on the problems and constraints in oil palm industry, policies and recommendation are needed to increase the contribution of CPO industry in economic recovery. Two categories of the policies are proposed (Table 6). The first category is growth-related policies that are dedicated to promote the role of oil palm smallholder in regional economic development and to alleviate poverty. The second is equity-related policies that are dedicated to improve welfare distribution. The general features of the policies and their impacts on growth and equity are discussed below.

### Formulation of a Coordinated National-Regional Production Policy

In the near future, a relatively sharp increase of oil palm area in some provinces tends to be inevitable. Local government policies such that in East Kalimantan, Riau, Jambi, and West Sumatra have set up a conducive business environment to expand oil palm plantation. However, market expansion is limited to not more than 6%/annum (Arifin and Susila 1998). Therefore, a coordinated national-regional production policy is needed to minimize the possibility of oversupply that weaken the bargaining position of Indonesia in international market. This policy is also proposed to minimize unnecessary and costly competition among regions in developing oil palm. This policy issue is crucial in regional autonomy era where some regions plan to expand oil palm plan-

**Table 6. Some policy alternatives and their likely impact on growth and equity.**

Policy/recommendation	Likely impact on	
	Growth	Equity
Formulation of a coordinated national-regional production policy	*	*
Development of CPO plants in non-NES projects	**	*
Development of super-mini CPO plant for remote oil palm plantation	**	**
Reformulation of farm gate price formula in NES marketing system	**	**
Modification of CPO export tax	***	*
Comprehensive assessment on environmental impacts of oil palm development	*	*

Note: \*\*\*: highly significant; \*\*: significant; \*: moderate.  
Source: Susila (2002).

tations without accurately considering market opportunity and competitive advantages. Moreover, local regulations that inhibit the development of oil palm industries (local tax and retributions) should be adjusted to the national regulations and laws.

### Development of CPO Plants in Non-NES Project

Development of CPO plants, either small or medium scale is crucial, especially in the next few years. As discussed before, the total capacity of CPO plants has been smaller than the potential production of FFB. Moreover, the development of self-supporting plantation in the last five years, especially for oil palm, has increased rapidly. Unless more CPO plants developed in the next few years, some FFB produced by non-NES oil palm farmers will not be able to be processed. This will depress FFB farm gate price, leading to a lower farm income and welfare.

### Development of Super-Mini CPO Plant

Development of self-supporting oil palm plantation caused a sharp increase in FFB production. Some FFB production cannot be processed due to lack of CPO plants or the plantation is remote from the plants. To overcome this problem, development of super-mini CPO plants, managed by farmer group, could be an alternative. Otherwise, the cost of processing will be

very expensive and rendement and quality of CPO will be low.

### Reformulation of Farm Gate Price in NES Marketing System

Price determination, in some cases, has caused a significant difference between the market price and the formulated price, because the formulated price is based on the average last two-week price. To reduce the problem, the price formula should use a closer reference price, such as the average of the last week prices.

Another improvement that should be considered is the formulation of CPO rendement. In some regions, CPO rendement is determined by using a rendement table, not on the basis of regular laboratory analysis. Following the table, rendement is fixed on the basis of the age of oil palm plantation and the assumption that the FFB is harvested following harvesting- standard criteria. In the field, the criteria are not fully obeyed. As a result, the use of rendement table tends to be irrelevant. The use of regular laboratory analysis could be an alternative to improve this situation.

### Modification of CPO Export Tax

CPO export tax has a significant impact on CPO industries. To minimize the negative impacts, reformulation of the tax is important to discuss. Firstly, the tax must be fixed for a certain period (for example for 5 years) to improve business en-

vironment, especially on stability aspect. Secondly, considering various aspects of the business, the tax should be implemented if the CPO price (FOB) is at least US\$300/ton. Moreover, since variable levy is inconsistent with the trade liberalization commitment, the fix rate will be preferable. Based on CPO price distribution, the recommended export tax rate is around 5.70%.

### Comprehensive Assessment on Environmental Impact of Oil Palm Development

To avoid unintended polemic of environmental impacts of oil palm plantation, the government together with other stakeholders should conduct a study to comprehensively assess the impacts of oil palm development. Results of the study could be used as a guideline in developing and managing oil palm plantation.

### CONCLUSIONS AND POLICY IMPLICATIONS

Key sectors or commodities are urgently required to accelerate the Indonesia

economic growth during economic recovery stages. Oil palm-based industries are able to play this role due to its relatively fast growth rate and resilience during the economic crisis.

Oil palm has a significant contribution to economic growth, poverty alleviation, and equity improvement. The positive contribution to economic growth is indicated by the growth of investment, output, and foreign exchange earning. The oil palm related industries have a significant contribution to household welfare in term of income and asset. Around Rp5–Rp11 million or more than 63% of household income of smallholder in Kampar and Musi Banyuasin, for examples, comes from the oil palm-based activities. The share of oil palm related asset to total household asset is also very significant, estimated to attain 63–72%.

The small proportion (less than 10%) of poor people in oil palm communities also indicates oil palm contribution in poverty alleviation. In addition, the ability of oil palm smallholder to repay their loan and to save part of their income for replanting program reflects a relatively high welfare of oil palm smallholder. For example, the rate of credit repayment of

oil palm smallholder is more than 84%, much higher than those attained by other estate crop smallholders. Income distribution in oil palm central area is also good (fairly egalitarian) with gini coefficient around 0.36.

In maintaining and improving the role of oil palm smallholder in economic growth, poverty alleviation, and income distribution, some inhibiting factors should be alleviated. These include: 1) lack of coordination between national and regional planning related to implementation of regional autonomy, 2) insufficient CPO plant, 3) inconsistent national trade policy, 4) less appropriate price determination in NES project, 5) and environmental degradation issue. To overcome these inhibiting factors, some policy issues should be comprehensively formulated. Those policies are: 1) formulation of a coordinated national-regional production policy, 2) development of CPO plants, 3) development of super-mini CPO plant for remote oil palm plantation, 4) reformulation of farm gate price formula, 5) modification of CPO export tax, and 6) comprehensive assessment on environmental impact of oil palm development.

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