

DEVELOPMENT OF DOWNSTREAM AGRIBUSINESS IN THE CONTEXT OF INCREASING VALUE ADDED PRODUCTS CPO

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Abstract

Commodity palm oil has a very large role in the economy of Indonesia. The Government supports the growth of the business world for oil palm plantations pengembangkan either increase the intensification and extensification in the new land. This study aims to provide an overview of the development of agribusiness in Indonesia downstream palm oil and efforts are made to the downstream industry in order to increase value-added agribusinesses downstream palm oil in Indonesia. The method used is descriptive method by which data is obtained from the Ministry of Agriculture, GAPKI, Statistics Indonesia, Ministry of Industry and Apolin. At the end of the discussion suggested to accelerate downstream process in Indonesia where the key lies in the macroeconomic management of the infrastructure and interest rates, stabilization policy linkages in the domestic cooking oil prices for inflation, as well as a consistent national energy policy.

Keywords: *Agribusiness, Crude palm oil, downstream industries.*

Introduction

Commodity palm oil has a very large role in the economy of Indonesia. Products of oil palm plantations in the TBS (Tandan Buah Segar) processed into semi-finished products in the form of CPO (crude palm oil) and palm kernel oil. Both products can be processed into a variety of advanced products for the food industry such as cooking oil, butter, alcohol, methyl and for non-food industries such as detergents, cosmetics, and other (Pahan, 2005).

The Government supports the growth of the business world for oil palm plantations pengembangkan either increase the intensification and extensification in the new land. The area increased rapidly from only 119 thousand in 1969 to 3.9 million in 1999. CPO production increased faster than that is only 188 thousand tons in 1969 to 6.4 million tons in 1999 either due to increased acreage and (especially) an increase in productivity. Not only the CPO production increased rapidly due to expansion / productivity of private and state plantations, smallholders were growing rapidly and increasing palm plantation centers spread to other provinces to Papua.

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Extensive plantation increased from about 1.1 million ha to 3.3 million ha in 2010. Plantation country still rose from 588 thousand ha in 2000 to 616 thousand ha in 2010. Similarly, private plantations increased from 2.4 million ha in 2000 to 3.9 million ha in 2010. So in total, oil palm plantations in Indonesia increased from 4.1 million ha in 2000 to 7.8 million ha in 2010, or nearly 2-fold in 10 years. Increase in CPO production is higher at almost 3-fold increase in 10 years ie from 7 million tons in 2000 to 20 million tons in 2010 (Sipayung, 2012:24).

The success of the institutional core-plasma managed to increase the share of the oil palm industry of the people in the national persawitan developed starting in 1980. In the institutional core-state plasma plantations (BUMN= *Badan Usaha Milik Negara*) and private plantations act as the core technology that provides services and knowledge for smallholders. So the success of plantation estates also a success in helping state and private plantation.

Of the CPO producers, there are some countries such as Malaysia, Indonesia, Nigeria, Columbia, Thailand, supported by appropriate conditions of plantation land (suitable) for the cultivation of oil palm commodities. Judging from the consumer side of the CPO, only certain countries that produce products derived from palm oil such as cooking oil, cosmetics, soaps, among the countries the United States, China, Europe and Russia.

With regard to the potential that the proposed oil palm agribusiness development also led to the development of industrial estates in the plantation community through the empowerment of the upstream (up-stream) and the strengthening of the downstream (down-stream). The objective of the two sectors was conducted to enhance the ability of plantation society and give support to any agribusiness that products produced from palm oil agribusiness higher the quality and amount. By region, palm oil agribusiness development in the future remains oriented in the production centers of palm oil today, namely Sumatra, Kalimantan and Sulawesi (Basar, 2009).

Advanced treatment processes of palm oil (CPO), palm kernel oil (PKO), a by-product (by product), a derivative (derivative product) both semi-finished products (semi-finishproduct) and finished product (finishproduct) is agribusiness palm oil downstream (downstream palmoil agribusiness). Within these activities are the creation of added value (added value), the largest in the agribusiness and the oil palm occurs at large downstream value-added created by the greater.

Development of downstream industries aim to export palm oil as raw material is no longer (CPO), but in the form of processed products, so the value added enjoyed by people of Indonesia in the country and to create new jobs. As for the problem in this paper are (1) How is the development of downstream palm oil agribusiness in Indonesia? (2) How to develop downstream industries in order to increase value-added agribusinesses downstream palm oil in Indonesia?

Study Approach

Palm Oil

Oil palm is a tropical plant, the area of development (habitat) in the Coast of West Africa from Angola to the region of Liberia. Long before the oil palm in and is known in Indonesia, oil palm is grown in West Africa such as Nigeria and Congo. In fact, palm oil has long been exporting West African countries to Europe for raw materials of soap, candles, margarine, lubricants vehicles and tools of war (Sipayung, 2010:13).

The oil palm plantation business (on farm) to primary products, namely crude palm oil (crude palm oil) and palm kernel oil (palm oil kernel). Crude Palm Oil or Crude Palm Oil (CPO) is a rather thick oil yellow reddish orange. CPO contains free fatty acids (EFA) 5% and contains many pro carolene or vitamin E (800-900 ppm). Core Oil Palm or Palm Kernel (PKO) is yellowish white oil obtained from the extraction of plant oil palm fruit core. Fatty acid content of about 5% (<http://www.politeknikeitrawidyaedukasi.wordpress.com> (download date 11 June 2012 at 12:22).

Various efforts have been taken by the government to stimulate productivity improvements and expansion of new areas. Development of the plantation area and production of private and state plantations (Table 1). The area increased rapidly from 4.1 million hectares in 2000 to 3.3 million hectares in 2010. CPO production increased faster than that of only 7 million tons in 2000 to 19.8 million tons in 2010, both due to increased acreage and (especially) an increase in productivity. Not only the CPO production increased rapidly due to expansion / productivity of private and state plantations, smallholders to rapidly expanding palm oil plantations and centers increasingly spread to other provinces to Papua.

Table 1 The development of oil palm plantation and production during the years 2000-2010

Year	State (ha)	Private (ha)	People (ha)	Total (ha)	CPO Production (ton)
2000	588,13	2.403.194	1.166.758	4.158.077	7.000.508
2001	609,95	2.542.457	1.561.031	4.713.435	8.396.472
2002	631,57	2.627.068	1.808.424	5.067.058	9.622.345
2003	662,8	2.766.360	1.854.394	5.283.557	10.440.834
2004	605,87	2.458.520	2.220.338	5.284.723	10.830.389
2005	529,85	2.567.068	2.356.895	5.453.817	11.861.615
2006	687,43	3.357.914	2.549.572	6.594.914	17.350.848
2007	606,25	3.408.416	2.752.172	6.766.836	17.664.725
2008	602,96	3.878.986	2.881.898	7.363.847	17.539.788
2009*	608,58	3.885.470	3.013.973	7.508.023	18.640.881
2010**	616,58	3.893.385	3.314.663	7.824.623	19.884.901

Sources: Directorate General of Estate Crops, Ministry of Agriculture, 2010

Note: *) preliminary data; **) data estimates

Sustainability of Palm Oil Downstream

Agribusiness term refers to the relationship between subsystems vertically and horizontal linkages with other subsystems outside of agriculture, such as services (financial and banking sectors, cooperatives, transport, trade, education and others). Agribusiness derived from the word, which means farming Agri = Agriculture and Business means the business or profit-oriented activities. Agribusiness (agribusiness) is an activity associated with the handling of agricultural commodities in the broad sense, covering any or all of the chain of production, processing input and output production (agro), marketing of agricultural input-output and institutional support activities. Relationships with business activity means the agri-related business activities that support agricultural activities and business activities are supported by agricultural activities (Davis and Golberg, 1957; Downey and Erickson, 1987; Saragih, 1998).

Various industries and products produced palm oil downstream agribusiness is widely used in various types of industries. For example, the food products industry (food industry), industrial products, pharmaceutical / health toiletries / cosmetics (health and personal care industries), fuel products, lubricating products, household products building materials, and use in agriculture. Production of palm oil downstream industry is still going to be on the increase both manifold as well as its use in the future either due to the deepening of the industrial, technological innovation and product and process due to changing tastes / needs of the community.

Agribusiness palm oil downstream of the economy can be grouped into three main groups, namely: (1) the oleochemical industry, processing industry CPO and PKO into

derivative products (intermediate products), (2) Industrial oleopangan (food oleo / oleo-edible) the industries that use oleochemicals into food products, and (3) non-food industry oleo (oleo nonfood / oleo non edible), ie, industries that use oleochemical products into non-food products.

Research Method

A review of the literature was conducted utilizing keywords such as “Crude palm oil”, “downstream industries”, “value-added” and “agribusiness”. Databases utilized included Ministry of Agriculture, GAPKI, Badan Pusat Statistik Indonesia, Apolin and Ministry of Industry. The search resulted in numerous refereed articles, books, and on-line resources. As sources were reviewed, additional citations were found and explored. The following table summarizes the salient themes relevant to this research.

Results and Discussion

Oleochemical industry

According to data Apolin (Oleochemical Manufacturers Association of Indonesia), the number of companies and oleochemical industry capacity in Indonesia in 2009 has amounted to 33 companies with a production capacity of fatty acid (986 thousand, glycerine (276 thousand) dan fatty alcohol (580 thousand) tons per year (Table 2). In general, any combination of these three companies produce these types of oleochemicals.

North Sumatra, West Java and East Java is the main center for oleochemicals industry nationwide. Approximately 90% of the fatty acid industry capacity is in three areas. Similarly, glycerine, glycerine 80% of industrial capacity is located in three areas. While the fatty alcohol production capacity of the existing, approximately 84% are in North Sumatra.

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Table 2 The number and capacity of Indonesian oleochemical industry

Province	Number of enterprise (unit)	Production capacity (ton/tahun)		
		<i>Fatty Acid</i>	<i>Glycerinee</i>	<i>Fatty alcohol</i>
Sumatera Utara	10	456.500	116.610	490.000
Jawa Barat	6	312.750	96.045	-
Riau	5	65.700	23.560	60.000
DKI Jakarta	7	5.500	7.050	30.000
Sulawesi	1	9.000	11.000	-
Papua	1	9.900	11.880	-
Jawa Timur	2	120.000	10.750	-
Lampung	1	6.750	-	-
Total	33	986.000	276.895	580.000

Sources: Ministry of Industry and Apolin

Oleochemical production developments in the period 2000-2008 showed an increase (Table 3) in particular fatty acid. Fatty acid production increased from 379 thousand to 565 thousand tons in the period. While the production of fatty alcohol and glycerinee increased only slightly compared with the fatty acid.

When compared to installed capacity, actual production of oleochemicals is still below the existing capacity (over capacity). This means in terms of production capacity, is still open for increased production.

Table 3 Development of production and market objectives Indonesian oleochemical industry 2000-2008

Year	<i>Fatty Acid</i>			<i>Glycerinee</i>			<i>Fatty alcohol</i>		
	Production (ton)	Export (%)	Dmestic (%)	Production (ton)	Export (%)	Dmestic (%)	Production (ton)	Export (%)	Dmestic (%)
2000	379.085	66,30	33,70	33.000	22,28	77,72	112.517	50,52	49,48
2002	376.685	61,31	38,68	34.000	34,07	65,93	118.200	51,14	48,86
2004	420.250	58,00	42,00	41.000	63,13	36,87	113.250	56,55	43,44
2006	530.200	57,61	42,38	42.400	43,34	56,66	113.650	83,16	16,83
2008	565.150	57,03	42,97	44.300	48,57	51,43	125.700	78,50	21,50

Source: BPS (data processed)

The interesting thing about this is the fatty acid industry, although largely aimed at export markets, there is a trend growing lead in the domestic market. In 2000, only about 33% of production marketed in the country, in 2008 increased to approximately 43%.

Given the importance of these basic oleochemicals industry for Indonesia, the government should give more serious attention to this industry. Oleochemical industry is the heart of Indonesian palm oil agribusiness. Development greatly affect the absorption of CPO production of industrial products affect the upstream and downstream so much.

Oil Edible Oil Industry

Palm oil downstream industry's first and oldest in the agribusiness industry of palm oil is cooking oil. In Indonesia, prior to growing palm oil industry, palm oil industry had already evolved and became the main source of cooking oil in Indonesia. With the increasing scarcity of raw materials coconut / copra on the one hand and the growing of palm oil available, gradually most of the palm oil industry to switch to palm oil industry.

According to data in 2007 (Ministry of Industry 2007) the spread of palm oil industry locations in Indonesia is mainly located at the six position of the North Sumatra, Riau, South Sumatra, Jakarta, West Java and East Java (Table 4).

Table 4 Location and capacity of the oil palm industry in Indonesia in 2007

Province	Production capacity (ton/year)	National share (%)
Sumatera Utara	3.042.828	19,94
Riau	3.274.909	21,46
Sulawesi Selatan	1.010.613	6,62
DKI Jakarta	2.333.906	15,29
Jawa Barat	1.612.080	17,12
Jawa Timur	1.985.548	19,57
Indonesia	15.259.884	100,00

Source: Ministry of Industry (2007) Data processing

Apparently, the location of the national palm oil industry is no longer so strong follow Weber's industrial location theory, known as index indicators Material (Material Index). According to the material index (the ratio of raw materials to final products), if the index is greater than one material, industrial location close to raw materials. Whereas if the index is less than one material, much closer to the consumer centers (Table 5).

Table 5 The number of the company, capacity of production and realization of industrial production of palm oil in Indonesia during the period 2002-2008

Year	Number of enterprise (unit)	Production capacity (ton/year)	Production (ton/year)	Utility (%)
2002	70	8.200.000	3.732.710	45,52
2003	72	8.364.000	4.217.920	50,43
2004	72	8.364.000	4.766.230	56,99
2005	72	9.778.000	5.385.825	55,08
2006	74	15.430.000	7.596.786	49,23
2007	74	15.430.000	7.374.213	43,79
2008	74	15.430.000	7.927.279	51,38
Growth (%/year)		11,11	13,37	2,04

Source: BPS (Processed Data)

Increased share of non-palm oil consumption is also expected to encourage increased production of raw materials, especially oil palm and maize nonsawit potential in Indonesia. This is in addition to diversification, production of vegetable oil feedstock will also conserve coconut germplasm and maize across generations.

Nationally, the consumption of palm oil consumed largely in the form of cooking oil, which reached 80%. The rest, that is 20% in the form of packaging (labels). In addition to its bulk cooking oil prices cheaper (20% -30% below the price of bottled cooking oil), Indonesia seems to have a lot of people demanding more detailed product attributes (brand minded) as obtained from packing cooking oil.

Given the limited share of branded cooking oil in Indonesia, and the high competition in this segment, some palm oil producers deal with the result that both bulk and branded cooking oil. Approximately 32% of existing oil producers produce branded cooking oil as well as bulk cooking oil. In this way, manufacturers can take advantage of bulk cooking oil market (mostly consumer-class to lower middle income) and market branded cooking oil (consumer class \ upper middle income).

Industrial Margarine / Shortening

Unlike the oil industry, the majority (74%) capacity margarine industry was in the center of the consumer. The remaining 26% that is how the raw material production centers such as North Sumatra, Riau, South Sumatra and West Kalimantan. In fact, about 50% of the existing production capacity located in DKI Jakarta. This indicates that the location of margarine industry is more oriented to consumer centers.

Margarine production tends to increase from year to year. In 2000 production reached about 338 thousand tons, increasing to about 580 thousand tons in 2008. Such an increase in the production of margarine in addition to the availability of raw materials (stearin, olein, PKO) in Indonesia, also made possible by the growing market of margarine / shortening both in domestic and export markets (Table 6).

In general, the location of the soap industry in Indonesia is more berorientas the consumer centers. Capacity of approximately 925 thousand soap industry in Indonesia, about 88% are in the consumer centers such as Jakarta, West Java, Banten, Central Java and East Java. Only 22% are in the center of the raw material producers in North Sumatra and Lampung.

Table 6 Development of production and market objectives Indonesia soap industry

Year	Bath Soap			Washing soap			Detergent		
	Production (ton)	Export (%)	Domestic (%)	Production (ton)	Export (%)	Domestic (%)	Production (ton)	Export (%)	Domestic (%)
2000	240.168	37,51	62,49	331.665	8,27	91,73	568.200	7,48	92,51
2002	255.200	48,99	51,01	352.416	10,16	89,83	603.712	9,85	90,15
2004	255.714	58,54	41,46	354.786	43,50	56,50	625.000	8,83	91,17
2006	267.800	56,37	43,63	365.920	47,35	52,65	652.100	2,46	97,54
2008	290.700	57,56	42,44	378.300	46,95	53,05	690.100	7,56	92,44

Source: BPS (Processed Data)

Thus, although the export volume of soap/detergent Indonesia is still relatively small, the country's export destinations have diversified in such a way that does not depend on a few countries. In the long term, this will facilitate Indonesia to increase the export volume of soap/detergent because it is known in many countries.

Biodiesel industry

Biodiesel industry is palm oil downstream industry is still relatively new in Indonesia. This industry has the momentum to grow-grow after fossil fuel prices experienced a significant increase in world market, especially after 2003. In addition, global concerns about global warming is primarily caused by emissions from fossil fuel consumption also stimulates the growth of the biofuels industry around the world including Indonesia.

According to data from Indonesia Biodiesel Producers Association (2009) Indonesia biodiesel industrial capacity has reached about 3 million tons per year (Table 7). This industry is the largest in North Sumatra, Riau, Jakarta, West Java, Banten, East Java

and East Kalimantan. With such capacity, the national biodiesel industry has been able to supply at least 3 million tons of biodiesel for domestic needs. Indonesia biodiesel production realization has so far not obtained accurate data.

Table 7 The number of corporate and industrial capacity of biodiesel in Indonesia

Provinsi	Kapasitas Produksi (ton/tahun)	Pangsa Nasional (%)
Sumatera Utara	2	105.000
Riau	4	2.150.000
DKI Jakarta	2	31.000
Jawa Barat	5	106.440
banten	3	111.000
Jawa Timur	3	200.000
kalimantanTimur	1	66.000
Indonesia	20	3.069.440

Source: Aprobi (2009)

Indonesia as the world's largest CPO production, Indonesia will also be able to actually become the world's largest biofuel producer. Of course the production of palm oil, Indonesia can produce biopremium, biogasolin, biopertamax and biodiesel if serious about developing it. Products other than biofuels is renewable (renewable energy), as well as environmentally friendly (environment friendly).

The main problem biofuel development in Indonesia is the political will and consistency of national energy policy, and not a technological problem especially raw materials. Fossil fuel subsidies should be repealed as soon as possible and diverted to biofuel subsidies (temporarily) and a period of time is gradually withdrawn, so consumers have time to adjust.

Other Downstream Industries

In addition to palm oil downstream industries described above, there are many more other industries that use palm oil as raw material. Some of these include shampoo industry (both for humans and for other uses), industrial toothpaste, cosmetics and toiletries industry, paint industry, plastic industry, industrial lubricants (lubricant). Likewise oleofood industry (especially the bread-rotian many industries use palm oil), and the pharmaceutical industry (vitamins A, E, lycopene, phytosterols, ubiquinone, and

others). However, data from the production of these industries are not adequately available, so it has not been described here.

In the future, palm oil downstream industries will still be growing, both due to the changing needs of society and technological change. With the increasing scarcity of fossil energy, the products derived from petrochemicals will also be increasingly rare / expensive. This will shift the use of palm oil derivative products. For example in 1970, approximately 80% of the world surfactant raw material of petrochemical (synthetic), but in 2007, began to shift the 50% of natural (vegetable oils including palm oil) and 50% of the synthetic.

In terms of economy, the deepening of the downstream industry is the increase in value added is greater. The more downstream, the increase added value. According to the Surfactant and Bio Research Centre IPB (2009), downstream products of palm oil has the highest value to lowest, respectively surfactants, methyl esters, fatty alcohol, glycerin, margarine, stearic, fatty acid and oil. While, to date most of the CPO is processed further in the country is still at a low value added products ie cooking oil. Acceleration of the deepening of the downstream industry to produce high value-added products such as surfactants and methyl ester should be a priority.

Economic Policies Competitive Sustainability of Palm Oil

Theoretically and empirically, infrastructure and interest rates are very important in the development of downstream industries. Many empirical studies have been conducted on palm oil agribusiness. Manurung (1993) and Ancient (2011) who claimed a decrease in interest rates could compensate for the loss of oil palm plantation agribusiness. Even in the conditions imposed export taxes, lower interest rates could compensate for losses due to oil palm plantations CPO export tax. The impact of lower interest rates also can make the price of CPO in the country goes down, oil production rose, and cooking oil prices go down without a CPO export tax and turunanya.

So, to speed up the downstream processs in Indonesia the key lies in the macroeconomic management of the infrastructure and interest rates, rather than on the export tax policy. Therefore, the interest rate should be lowered to a level competitive with other countries.

According Sipayung (2012:181) relationship with the management of high interest rates of inflation in Indonesia is not relevant because the inflation rate in Indonesia is not a

monetary phenomenon but a phenomenon of the real sector. Indonesia's international trade regime (in terms of monetary policy) have been leaning toward a pro-import regime for many Footloose industries are based on imported raw materials. To support the pro-import regime, the exchange rate tends to be designed to strengthen (appreciation). Such a view is particularly strong in Indonesia, including the government, so if the rupiah strengthened, and if performance is considered weak is considered a disaster. To keep the rupiah likely to strengthen, high interest rates will be retained so that the flow of external capital (capital inflow) go though a lot of hot money (indirect foreign investment). As a result of pro-regime such imports, the domestic economy to be depressed, especially the export sector and unwittingly Indonesia is only a market for other countries.

So, if you want to lower domestic interest rates, exports should be higher priority. Actually, Indonesia has long adopted a pro-export, or look out (outward looking) with the adoption of free trade (WTO) in 2001 and co-Asean Free Trade Area (AFTA), APEC and the last Asean China (CAFTA). However, the macro economic policy, Indonesia is not ready. Therefore, it is time (though late) political decisions are implemented in a macroeconomic policy that is changing the international trade regime that prioritizes export.

Release rate of the rupiah exchange rate causes domestic interest rates will gradually go down. The decrease in interest rates will encourage investment in the real sector including the industrialization of palm oil agribusiness. If the decline in interest rates is accompanied by the allocation of government investment in infrastructure, will accelerate and enlarge industrilisasi palm oil agribusiness in the country. Even with a relatively low interest rates to stimulate the business community to invest in infrastructure.

If exports can not be prioritized and the interest rate cuts can not be done (eg political factors), then there is a second alternative. The alternative is the use of export tax on CPO and its derivatives. Export tax on CPO and its derivatives to subsidize the government levied a special rate for palm oil agribusiness investment industrilisasi from upstream to downstream and partly used to build the infrastructure of downstream process of palm oil in the country.

Ideally, a combination of decline in domestic interest rates (regime change) and interest rate subsidies for agribusiness investment industrilisasi palm oil can be run simultaneously and definitively scheduled. Gradually, interest rates are lowered and

interest rate subsidies dwindle, until the domestic interest rate is competitive with other countries.

Result of the decline in interest rates is downstream process investment in the domestic palm oil will be quick. Likewise industrialisasi in the upstream (upstream, on-farm) will take place simultaneously, so that no CPO export tax policy and its derivatives, including stability of downstream process of cooking oil in domestic market will be ensured. Even if the export tax imposed on certain conditions, is only momentary and policy in the short term, rather than major policy of palm oil downstream policy.

In addition, stabilization policy linkages in the domestic cooking oil prices for inflation it was time to remove. This is done because the share of consumer spending on oil palm is only about 4% so that the contribution to the inflation rate is also relatively low at around 0.5%. Policies that allow the price of palm oil according to the market mechanism will encourage people substitute with coconut oil so that oil is the mainstay of Indonesia once again growing. Until now, Indonesia is still listed as the largest country in the world's oil, and Indonesia for palm oil to forget (Sipayung, 2012:182).

Then, a national energy policy should be consistent. Condition of energy resources, mostly non-renewable, especially petroleum, are now quite critical (Pangestu 1996, Sari 2002). The rate of discovery of energy reserves is lower than the rate of energy consumption. Reserves of fossil energy (non renewable) will someday be depleted. Indonesia also has adopted an international agreement to reduce CO₂ emissions from fossil fuel. Therefore, the development of renewable energy from biofuels (renewable and biodegradable) such as palm oil need to be done consistently.

Biofuel is made up of Bio-diesel and Bio-ethanol (ethanol) is an option to be used as oil substitute energy sources. Biofuel can be made from biological sources or biomass, such as palm oil. If the fossil fuel subsidies are still high, not competitive when developing biofuel (diesel, ethanol) from palm oil. Reduction of subsidies from fossil fuel needs to be done consistently and was diverted to biofuel subsidies. If unable to provide subsidies to biofuel (biodiesel), it should not be taxed because the export of biodiesel in the domestic market not competitive due to fossil fuel subsidies.

Recommendations for Government and Practice Conclusion

Developments in the domestic industry does not come by itself, there must be an effort (by design) through the economic climate that is conducive and competitive

economic climate in other countries, especially in the export market. If the investment climate more competitive downstream industry in other countries than in Indonesia, the deepening of the downstream industry will occur in other countries. This is what ought to consider the government through fiscal policy, monetary policy, institutional and legal certainty and security.

References

- Davis, H.J. and R.A. Golberg. 1957. *A Concept of Agribusiness*. Harvard Graduate School of Business Administration. Boston, Massachusetts.
- Direktorat Jenderal Perkebunan. 2010. Kementerian Pertanian. Jakarta.
- Downey, W.D and Erickson, S.P. 1987. *Agribusiness Management*. Mc Graw-Hill, Inc, New York. Second Edition.
- (<http://www.politeknikitrawidyaedukasi.wordpress.com> (diunduh tgl 11 juni 2012 jam 12:22)).
- Manurung, J. 1993. *Model Ekonometrika Industri Komoditi Kelapa Sawit Indonesia: Suatu Analisis Simulasi Kebijakan*. Tesis S-2. PPS-IPB. Bogor.
- Pahan, I. 2005. *Sebuah Pemikiran: Pola Peremajaan Areal Plasma dari Segi Pembinaan Petani, Ketersediaan Modal dan Mengatasi Kesenjangan Pendapatan*. Prosiding Seminar Nasional Perkebunan Kelapa Sawit Rakyat: Pemberdayaan Perkebunan Kelapa Sawit Rakyat sebagai Upaya Penguatan Ekonomi Kerakyatan. Pekanbaru, 15-16 April 2005. Pusat Penelitian Kelapa Sawit. Medan. Pp. 126-132.
- Pangestu, M (1996) *Indonesian Energy Sector: Facing Globalization Challenges*, Presented at National Symposium of Society of Indonesian Petroleum Engineers, Jakarta, 6th August 1996.
- Purba, JV. 2011. *Dampak Pajak Ekspor Terhadap Industri Minyak Goreng Indonesia*. Disertasi Doktor. SPS-IPB. Bogor.
- Saragih, B. 1998. *Agribisnis, Pardigma Baru Pembangunan Ekonomi Berbasis Pertanian*. Penerbit Yayasan Mulia Persada Indonesia dan PT. Surveyor Indonesia bekerjasama dengan Pusat Studi Pembangunan, Lembaga Penelitian Institut Pertanian Bogor.
- Sari, A.P. (2002) *Life After Oil: Energi untuk Mendukung Pembangunan yang Berkelanjutan*, www.pelangi.or.id
- Sipayung, Tungkot. 2012. *Ekonomi Agribisnis Minyak Sawit*. Bogor: PT Penerbit IPB Press.