

Dissertation Paper

The Development and Current Issues of the Malaysian Palm Oil Industry

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Summary

Since replacing the rubber industry, the palm oil industry has become the top primary industry that represents Malaysia. In 2006, however, Malaysia, which once took pride of being the world's top producer of palm oil for a long time, was overtaken by Indonesia. The challenges that the palm oil industry of both Malaysia and Indonesia are facing include issues such as tropical rainforest conservation, a matter that is being watched closely by the developed nations, and ensuring global competitiveness of palm oil against soybean, rapeseed or sunflower oils.

While Malaysia explores ways for sustainable development of its palm oil through the Roundtable on Sustainable Palm Oil (RSPO), this dissertation is written with focus on the use and current situation of biomass generated in the Malaysian palm oil industry and emphasis on the collaborations with Indonesia for sustainable development of its palm oil.

1. History of palm oil development in Malaysia

(1) Post-war rapid growth of the palm oil industry

The oil palm (Scientific name: *Elaeis Guineensis*) was brought over to the Bogor Botanic Garden in the Island of Jawa, Indonesia from West Africa in 1848 (Polunin, 2004).

The oil palm from West Africa was transplanted in Malaysia in 1896 (Yacob, 2005), much later after Indonesia. The early 20th century saw the various state governments in Malaysia experimenting to cultivate the oil palm where in 1917; the first commercial planting was carried out. This led to 2000 acres of oil palm planted yearly during the first half of 1920's. By 1930's, oil palm was planted on a scale of 14,000 acres per year

(Thoburn, 1984).

Unlike the tin and rubber industries, which supported the typical monoculture economy of the British colonial management, the palm oil industry developed rapidly in the latter half of the 20th century. The key factor that could have pushed this was the development of palm oil in a great scale by FELDA (the Federal Land and Development Authority that has now been privatized) established in 1956.

FELDA is an agency that was established to achieve effective development of the Malaysian's agricultural industry because it was necessary for the Federal Government to have a unified and systematic development of the agricultural industry.

Another reason for the establishment of FELDA was to hasten organized participation of the Malays into the rubber and palm oil industry to counter the dominance of British and Chinese shares in estates as well as the growing number of Chinese small estate holders.

The World Bank Delegation who surveyed Malaysia stated in its Recommendation Report (1954) that Malaysia has an agricultural industry with promising potential and called for systematic study and development of land and technology on its agricultural industry (Tunku Shamsul, Lee, 1988).

FELDA features a management system where it controls the entire FELDA settlements by supporting the economic activities of the settlers, providing social infrastructures to the settlers and introducing contractual farming and production system between FELDA and the settlers (Iwasa, 2005).

In short, scale merit was achieved by grouping and converting the small holders into cooperatives. What greatly differentiates the FELDA scheme for the palm oil industry from the rubber industry is that the FELDA scheme has been set from the beginning to cater for large scale estate-based production. A result of the pursuit for "economy of scale" to improve the economic efficiency, the palm oil industry has to be developed as such because of its harvesting, transportation and refining technology are more complex than that of the rubber industry (Tunku Shamsul, Lee, 1988).

The plantation area developed by FELDA for oil palm every year started to first surpass that of rubber trees in 1965 and continued to trace an upward trend. Looking at the trend of

plantation area developed by FELDA every year, it shows an increase of 1300 times within the period of 26 years which started at 375 hectares in 1961 to 492 thousand hectares in 1987 (68.1% of the entire FELDA plantation area). The main reason that propelled this trend was the higher rate of return for palm oil than that of rubber (Tunku Shamsul, Lee, 1988; MPOB, “MOPS, 2007”, 2008).

Based on the forecast that the demand for vegetable oils and fats in the future will greatly increase, FELDA has anticipated the high potential of palm oil if the quality of palm oil is improved so that its exporting volume can be increased (Tunku Shamsul, Lee, 1988).

With such background information, the production quantity of palm oil continued to increase owing to the new development of oil palm plantations and conversion of rubber plantations to oil palm plantations. Looking at Malaysia overall, the oil palm plantation area has recorded a growth of 6.7 times with 642 thousand hectares in 1975 to 4305 thousand hectares in 2007 within a period of 32 years (MPOB, “MOPS 2007”, 2008). The production trend of rubber and palm oil in Malaysia is shown in Table 1. This table shows the significant growth of the palm oil industry against the receding rubber industry in Malaysia.

Table 1: Production Trend of Rubber and Palm Oil in Malaysia

	Rubber	Palm Oil
1980	1530	2573
1985	1469	4133
1990	1288	6095
1995	1089	7811
2000	615	10839
2005	1126	14962
2008 (Estimated)	1320	16000

(Note) CPO (Crude Palm Oil)

Prepared from “*The Malaysian Economy in Figures*”, JETRO Kuala Lumpur, 2007

With such high accomplishments, the Malaysian palm oil industry has been the world’s top share-holder in the production of palm oil. However, Indonesia has recorded outstanding growth of late seeing Malaysia conceding the top spot to Indonesia in 2006.

As of 2006, Indonesia holds 43.2% of the world’s palm oil production quantity followed

closely by Malaysia at 42.8%. The combined share of both countries is 86%. Far behind at third and fourth spots are Thailand and Nigeria respectively (MPOB, "MOPS 2007", 2008)

(2) World's top producer for palm oil and vegetable oil

Without doubt, the world's growing demand for palm oil is the biggest factor that has pulled the production of palm oil this far.

The palm oil is used widely whether in foods such as oil for deep frying, margarine, ghee (a kind of butter commonly used in South West Asia and Middle East, particularly, in Indian foods), shortening for cakes and snacks and in instant noodles (the demand for palm oil increased due to the instant noodles boom in China) or in non-foods as in cosmetics, soaps and synthetic detergents. This wide use of palm oil gives it a bullish demand.

In 2000, the consumption of edible and industrial oil and fat per person in the world was 19 kg/person/year. If the consumption per person increases by 1 kg, then the demand from the 6.1 billion world's population at that time is expected to increase by about 6 million tons. Even if the 1 kg increase is demanded only by each person in China and India, the need for oil and fat from their population at that time can be converted to about 2.3 million tons (Oil & Fat Society, 2004).

Besides this, another advantage of palm oil is its steady production prospect compared with other oilseed crops. Compared to single-year crops such as soybean and rapeseed that are highly influenced by weather-related changes such as droughts, the supply of palm oil is more stable because it can be harvested all-year long and has very low weather-related risks. When compared with other vegetable oils, the export ratio of palm oil is overwhelmingly higher than its domestic consumption. This is also another factor for the growth of the palm oil share as it was able to meet the edible oil demand in the world market. In 2004 onwards, palm oil has overtaken soybean oil, once the world's most produced oil, and has recorded a production quantity that is top in the world.

Table 2: Production Trend of the World's Top 3 Vegetable Oils

(Unit: 1000 tons)

	Palm Oil	Soybean Oil	Rapeseed Oil
2000	21867	25563	14502
2001	23984	27828	13730
2002	25409	29850	13343
2003	28259	31241	12698
2004	30987	30729	15088
2005	33846	33612	16294
2006	37142	35278	18510
2007	38246	37481	18521

Prepared from the Malaysian Oil Palm Statistics 2007

2. Current Palm Oil Market Situation

(1) Malaysia's greatest concern on securing global competitiveness

During the author's interview with Tan Sri Dr. Yusof, the Chief Executive Officer of Malaysia Palm Oil Council (MPOC), in September 2008, the response from Dr. Yusof to the question posed by the author on "the greatest concern that is currently faced by the Malaysian palm oil industry" was "ensuring global competitiveness". The MPOC where Dr. Yusof is the Chief Executive Officer is an organization that works to increase the export of the Malaysian palm oil through the implementation of various improvements necessary to develop the palm oil. This organization also endeavours in reviving and improving the brand image of palm oil in the world's market. Having been the Head for the Palm Oil Research Institute of Malaysia (PORIM) and the Director General for the Malaysian Palm Oil Board (MPOB), Dr. Yusof is the very important person representing the Malaysian palm oil industry. Apart from being a very important person in the oil palm industry, he is busy running around all over the world as the organization's spokesman.

The straight-forward reply from Dr. Yusof that the greatest concern was "ensuring global competitiveness" was not expected by the author who was of the idea that the global competitiveness of the palm oil industry is strong and that the greatest concern should be the sustainable development of the palm oil industry beginning with conserving the tropical

rainforests.

In 2000, the share that Malaysia held on the production of palm oil was approximately half of the world's market at 49.6%, followed by Indonesia at 32.2% with a difference of 17.4 points. Unfortunately, 6 years later in 2006, though very slightly, Indonesia has overtaken Malaysia by 0.4 points seizing the top spot from Malaysia.

This just shows how rapid the growth of the Indonesian palm oil production was. Since then, this trend has not changed even in 2008 (OIL WORLD, No. 29).

Even with that, the greatest concern of the Malaysian palm oil industry is not the competition from Indonesia but rather how to maintain the global competitiveness of the palm oil industry amidst competition from other various vegetable oils such as the soybean, rapeseed and sunflower oils.

From the latter part of 1980's, a negative campaign against palm oil was launched, with the American Soybean Association (ASA) at its core. Following this, extensive criticisms that palm oil was not good for the heart because of its saturated fatty acid were sensationally organized. The Malaysian side recognizes this as having stemmed from the introduction of palm oil into the market that gave strong competition to soybean oil (unsaturated fatty acid) thus forcing the price of soybean oil to drastically fall (Yusof, 2007).

In order to counter the negative allegations on the effect of palm oil to health, the MPOB assigned numerous nutritional studies on palm oil. It took 15 years and 160 palm oil nutritional researches for palm oil to be re-acknowledged.

The result of the researches made clear that the presence of Trans Fatty Acid (TFA) was the main cause for the adverse effect to health. In short, TFA was identified to cause the increase of the bad LDL cholesterol and reduction of the good HDL cholesterol (Yusof, 2007).

Vegetable oils with unsaturated fatty acid such as soybean and rapeseed oils have to be hydrogenated when producing solid fats such as margarine and shortening. This process causes the unsaturated fatty acid to be converted to TFA, a substance harmful to the human body.

The Food and Drug Administration (FDA) of the United States has made the labelling of TFA content in foods mandatory from the beginning of January 2006 (TFA in Nutrition Labelling, FDA website). Following that, the United States developed ways to reduce the levels of cholesterol by mixing in palm oil, as a raw material, into its local vegetable oils.

As a result, the negative campaign on palm oil took shape as the call that expanded the palm oil market and rapid increase in demand in the United States.

The issue on genetically modified soybean accelerated the motion to make the labelling of genetically modified organisms (GMO) mandatory in Europe who has strong objections on GMOs. As palm oil is not a GMO, it has the potential to expand into markets with strong demand for non-genetically modified foods.

On the other hand, the negative campaign represented by the Center for Science in the Public Interest (CSPI) headquartered in Washington DC has now focused its campaign on an environmental issue, namely the destruction of tropical rainforest. However, its campaign criticizing palm oil as having adverse effects to the heart is still ongoing.

The CSPI Report emphasized that the labelling of TFA in the United States will lead to the increased import of palm oil into the United States. If importing of palm oil is unavoidable, the report stressed that only the minimum necessary volume of palm oil should be imported in and that palm oil should be from productions sites with good environmental aspects. For that reason, criticisms levied against palm oil continued to have strong roots in developed nations such as the Europe and United States.

Considering the extremely strong negativity against palm oil even now, it can be understood how it links to the awareness that the greatest current concern faced by the Malaysian palm oil industry is “ensuring global competitiveness”, as stated earlier.

(2) Increase in demand

The top four palm oil importing countries and regions in 2007 listed down by ranking were China, the European Union, India and Pakistan. These countries and regions led the group. The volume imported by China was 5.73 million tons. This was an increase of 4.2 times within a period of 10 years beginning from 1998. For the same period, the increase in

the European Union and India was the same at 2.2 times. Although the volume imported by the United States, ranked at 8, was only 1/8 of China's, it was a high increase at 6.2 times for the past 10 year's period.

Regardless of being the world's main producers for soybean and rapeseed oils, China and India showed a rapid increase in the volume of imported palm oil possibly due to the rapid economic growth of both countries. This shows that the improvement and changes in eating habits spurred by the growth in economy may have also contributed to the supply inadequacy of locally produced oils.

Lester Brown's suggestion that the economic growth in China will greatly change its eating habits and bring with it food crisis (Lester R. Brown, 1995) has created great reverberation in the world. The increase in palm oil import by China and India may have very well backed this assertion and prediction.

The expansion of the palm oil market in Europe and the United States was attributed by the recognition of palm oil's use as a raw material valuable in improving the TFA as review made on its effects to the human body mentioned earlier.

In 2007, Japan was ranked after the United States at number nine with an import volume of 520 thousand tons. This shows 1.5 times growth over the past 10 years period. This growth is consistent though not as significant as those of the major countries (MPOB, "MPOS 2007", 2008). The import volume of oil and fat by Japan in 2002 was 87.3% of its volume for local supply. Japanese industries are expecting the future market share for palm oil to increase because of stable supply (Oil and Fat Society, 2004).

Major export destinations of palm oil in Malaysian statistics are to countries different from the list of palm oil major importing countries mentioned earlier. The top and second ranks in 2007 were still dominated by China and the European Union respectively while Pakistan, the United States, Japan and India are ranked third, fourth, fifth and sixth respectively. (MPOB, "MPOS 2007", 2008).

3. Challenges for the Sustainable Development of Palm Oil

(1) The continuing negative campaign and its countermeasures

In 2005, the earlier-mentioned CSPI published a Report titled the “Cruel Oil” that came with a sub-title of “How Palm Oil Harms Health, Rainforests & Wildlife”.

This report forecasted that the world’s demand for palm oil will double by 2020 and estimated that Indonesia and Malaysia will have to clear their forest by 26,300 square miles and about 3000 square miles respectively for the development of new oil palm plantations. As a result of that activity, existence of mammals such as the orang-utans, rhinoceros, tigers and elephants, particularly in the islands of Sumatra and Borneo, will be threatened.

Although Malaysia and Indonesia do not directly affirm the criticisms made by developed nations, they too are not making it acceptable for the tropical rainforest to be reduced for the development of oil palm.

Backed up by the World Wide Fund for Nature (WWF), the Roundtable on Sustainable Palm Oil (RSPO) which is made of agencies, groups and companies from every country in the world, particularly from palm oil producing countries, was mooted. The inaugural Roundtable meeting was held in Kuala Lumpur in 2003 with 200 participants from 16 countries. This was followed by the second Roundtable meeting held in Jakarta in 2004. These meetings were to establish fundamental rules and standards of the organization before the RSPO was officially established. The RSPO is a non-profit international organization that ensures fair representation to all its stakeholders and is established under Article 60 of the Swiss Civil Code. Although it is headquartered in Zurich, Switzerland, the secretariat is presently based in Kuala Lumpur. The RSPO has now 260 ordinary members and 92 affiliated members. Its ordinary members are made of 9 banks and investors, 70 oil palm growers, 99 palm oil processors and traders, 38 consumer goods manufacturers, 24 retailers, 11 environmental / nature conservation NGOs and 9 social / developmental NGOs. It has an international membership such as from Malaysia, Indonesia, the European countries, the United States, Japan etc. (RSPO website).

After the official formation of RSPO, Roundtable meetings are held every year to discuss various issues.

Apart from that, a declaration to conserve the tropical rainforest at the Heart of Borneo was signed in Bali by the Ministers in-charge of tropical rainforests from Brunei, Malaysia

and Indonesia (WWF website). The signing of this declaration shows that palm oil producing countries are taking actions against the negative campaign.

(2) Rebuttals from the Malaysian side

Malaysian relevant parties acknowledge that there is a need to seriously seek ways to sustain the palm oil industry and to rebut criticisms on palm oil made by developed nations. Looking back at the exchange of views that Dr. Yusof, the CEO for MPOC, had with the members of the British Parliament during the Symposium on Sustainable Resource Development organized by MPOC in London in 2006, he rebuts as such. .

“If we look at the progressively increasing world’s population and demand for foods, our greatest challenge would be reducing starvation and natural resources. But, is it really possible to not increase the production of the palm oil which can supply enough quantity at a fair price?” he posed a question. “The oil palm is not solely for palm oil. It is also the raw material for biodiesel. It generates a lot of empty fruit bunches (EFB), trunks and leaves as raw materials for biomass products. It has great prospects because it can provide an all-year long supply,” he emphasizes the importance of oil palm.

Responding to the critics on the destruction of rainforests, as stressed by the members of the British parliament and NGOs, he has this to say, “The British demand that we stop developments in Sarawak to conserve the tropical rainforest and protect the environment. But it is a well-known fact that Britain has developed 70% of their national land for farming and there is only 12% of forest remaining. The excuse given by Britain is definitely illogical. Unfortunately, there are no NGOs to stand against the British Government to demand for improvement. Similarly, there are no NGOs to demand the British Government to rehabilitate the forests to improve the global warming situation. Compared to this, the forest coverage rate in the entire Malaysian land area is 63.6% and the green cover including farming fields is 76%”. (Yusof 2006, 2007)

Another merit of palm oil emphasized by the Malaysian side is its high productivity. Compared with soybean oil, the production volume per hectare of palm oil is 6000 liters compared with the 446 liters of soybean oil (Rhett, 2006)

(3) Similarity with the “North-South confrontation on the Kyoto Protocol”

The main cause of confrontation between North (Developed) countries and South (Developing) countries lie on the dispute to set the CO₂ reduction target figures to developing countries. The developing countries cannot accept the idea raised by developed countries, which have already emitted a lot of CO₂ in the course of economic development.

Malaysia criticizes developed nations who have reduced a great area of their forest during their economic development. Although they hadn't been held responsible for the development of colonial management of the monoculture economy, they carried out the negative campaign on palm oil. The structure of this confrontation is very similar with the North-South confrontation on the Kyoto Protocol.

According to dissatisfied Malaysia, “It has been reported in many studies that soybean and rapeseed oils affect the earth's environment more than palm oil in terms of sustainability and soil deterioration. Regardless to that well-known fact, there are almost no criticisms levelled to the soybean and rapeseed oils,” (Yusof, 2007).

The present issue of palm oil is the pressure to simultaneously solve conflicting mankind issues, which are to increase food production and to conserve the tropical rainforest (protecting rare wildlife and biological diversity and the prevention of global warming).

This issue is very complex with no unilateral solutions. The RSPO will continue to discuss these issues between various stakeholders whether of the same interest or in conflicting stands. It is hoped that the RSPO will be able to move one step forward through the establishment of the vision of tropical rainforest conservation, social system, management know-how, sharing of advanced scientific technology and international agreement.

(4) Palm oil industry moving towards zero emission

Solving the conflict between the palm oil industry development and tropical rainforest conservation is extremely difficult. Nevertheless, it has to be solved concurrently with the issue on the application of the palm oil-related biomass.

The conclusion in the “Oil Palm and the Environment” (PORIM, 1998) states that “the concept of palm oil zero emission is not merely a lip service but is a concept to be realized”.

One of the difficulties in biomass application is to quantitatively collect the accumulated biomass bulk at the specified locations, although the palm oil industry is able to generate quantitatively reusable biomass in large amounts such as that of oil palm trunks, empty fruit bunches (EFB) from fresh fruit bunches (approx. 30kg) and leaves (length abt. 8m, width abt. 45cm, weight 17kg).

For example, the leaves of oil palm were once cut and thrown away when collecting fresh fruit bunches. Now, an R&D Project to commercialize these discarded leaves into animal feed is being tested out.

This project is being tested at the Livestock R&D Center of the Malaysian Agricultural Research and Development Institute (MARDI) in collaboration with JICA. In this R&D Project, the huge oil palm leaves were shredded and dried in a solar dryer before other agricultural by-products were added into the dried shredded leaves. This was then prepared into pellets, which have high nutritional value as animal feed. Currently, a special tractor installed with a combined harvester and thresher has been invented to mechanize and integrate the collection and processing of the leaves and is now being tested. If this R&D Project were commercialized and introduced nation-wide, re-using only 5% of the oil palm leaves into the feed for the number of livestock cows is adequate to supply the demand for beef, milk and dairy products in Malaysia. This is advantageous not only because the waste products are re-used but also the need to develop new pasturelands by destroying the tropical rainforest will be eliminated (Sato, 2008).

Large quantities of empty fruit bunch and effluent (that releases methane gas into the atmosphere) are generated in palm oil mills. An R&D Project collaborated by 3 parties, namely the Kyushu Institute of Technology, Malaysia Putra University and FELDA, that

utilizes the gas released by the effluent to generate electricity (for use in electricity demand in palm oil mills) and re-using the empty fruit bunch (to produce polylactic acid or bio ethanol as a raw material for biodegradable plastics or so-called the bioplastics) is being tested and researched (Takata, 2006).

If this project can be commercialized, it will lead to the phasing out of effluent treatment pond (the lagoon) thus contributing to the prevention of global warming caused by the release of methane gas. At the same time, these clean oil mills will be able to co-exist with residential areas (At present, the bad odour from the effluent treatment pond is affecting residents living nearby the oil mills). This will help to control the development of new palm oil plantations caused by the relocation of the oil mills to the interior.

The basic idea behind this Project is “to increase the demand for palm oil from now onwards”. In order to increase the production volume without having to clear the forest, the oil production yield for each oil palm tree has to be increased and that the palm oil industry has to co-exist with the city and other industries.”

Actions to achieve zero emission in palm oil mills have to be synchronized with activities such as increasing the harvest yield through oil palm quality improvement, planting of vegetations or trees or rearing of livestock in oil palm plantations (partially being tested) or utilizing the oil palm leaves as animal feed mentioned earlier. The advancement of the tropical rainforest destruction can be stopped if the comprehensively and systematically managed system gets onto the rails with the entire palm oil industry.

Separately, another familiar case of oil palm that has been commercialized is palm kernel shell as a raw material utilized as activated carbon in deodorizers, dehumidifiers and facial soaps.

In actual fact, the use of palm oil biomass is being researched and developed in various aspects with investment incentives from the Government. Judging from the various approaches taken in Malaysia, new developments towards zero emission in palm oil-related industries can be expected.

Besides that, Malaysia has passed the Biofuel Industry Act 2006. The palm oil industry has expected the Act to assure the increase of palm oil future demand but with the soaring

palm oil price, the implementation of the Act has been postponed.

The demand for palm oil continues to rise when global concern is on the supply of foods. On the other hand, the environmental problem, namely the conservation of the tropical rainforest, must be solved simultaneously. Considering this background, it is unavoidable that the use of palm oil as alternative energy source to fossil fuel be seriously considered.

Sustainable development of the Malaysian palm oil industry can be achieved by taking up the challenge to improve palm oil productivity and achieving zero emission through the re-use of waste products.

Malaysia has placed the bio-industry as one of its leading industries for economic development (Takata, 2004) and the GDP per person in Malaysia has reached the level of approximately US\$7000 (2007, nominal rate).

Malaysia has declared their intention to be one of the developed nations by 2020 through its Wawasan 2020. If Malaysia could create a model capable of balancing its environmental problems and economic development, a “Malaysian Brand” can be established. This will give Malaysia an insight into sustainability. For that reason, the palm oil industry is the important test stone for Malaysia.

This is particularly so for Borneo whose future prospect is of great concern because of its advancing tropical rainforest size contraction due to the development of oil palm plantations. In view of this, Malaysia should not proceed alone but rather collaborate and deepen its relationship further with Indonesia in various aspects such as establishing a vision and system for sustainable development, sharing management know-how and exchanging technical knowledge. With this, it will be able to heighten its palm oil branding power that may be the way to maintain its global competitiveness.

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