

**The Palm Oil Industry From
The Perspective of Sustainable
Development:**

**A Case Study of
Malaysian Palm Oil Industry**

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ABSTRACT

Demand for vegetable oils has been growing strongly since the last decade due to increased in global population and oils consumption. Palm oil is one of the most important vegetable oils in the world and each year million tonnes of palm oil has been traded globally to be consumed by million people around the world. The palm oil industry in Malaysia particularly is evolved dramatically since the last three decades and hence produced varieties of products such as crude palm oil, palm kernel oil, palm kernel cake, oleo-chemical as well as new bio-fuel products to fulfil the demand from food and non-food industry in the world. However, the rapid development in this industry creates many questions on the issues of sustainable development of palm oil. Palm oil industry in the Southeast Asia region suffered various criticisms and negative reports from the international non-government organizations on the issue of sustainability. As one of the main producer of palm oil, Malaysia is also being accused for conducting unsustainable practices in developing this industry although the industry's history spans across for more than 100 years. Malaysia was the main producer and exporters of palm oil since 1960 before it has been surpassed by Indonesia due to limitation of land for further expansion.

This study was conducted to investigate into Malaysian experience in developing this industry with regard to sustainable development as well as identify its policies and initiatives towards preservation of the environment. Any policies and initiatives implemented by this industry will be categorized based on economy, environment and social perspectives in order to identify whether the palm oil industry in Malaysia is conducted within the framework of sustainable development. This

study applied qualitative approach in completing the research by using case study and literature reviews methodology. Case study is an appropriate method used to narrow down a very broad field of research into one easily research-able topic. In order to save time and money, this study only focused on one of the palm oil producing country to investigate the whole structure of this industry and relates it with the issue of sustainable development and for this purpose, this study selected Malaysia.

According to the findings of this paper, Malaysian's government has included various policy efforts in an attempt to conduct the industry within the framework of sustainable development. This industry has been regulated by at least 17 major regulatory frameworks to cover all kinds of environment aspects including land, environment, and pesticide as well as wildlife protection. These regulations have been imposed since 1960s with collaboration from various government agencies. In term of economic perspective, the National Biofuel Policy is launched to enhance the contribution of palm oil to economy and at the same time to create renewable energy that is safe and consume less energy. In term of social perspective, palm oil is the development tool in eradication poverty program launched since 1960. As a result, Malaysia is successful to reduce the incidence of poverty rate among poor. However, this study reflects some recommendations that need to be addressed by the government for future direction of palm oil industry. This study suggested that Malaysia should focus more on developing the downstream sector that is yet to be captured based on vast opportunity on new existing global market. Since Malaysia is one of the main palm oil producing countries in the world, it is a time to establish new independent accreditation organization with other producing countries, to support the industry from various issues pertaining sustainability.

It is anticipated the finding of this study will positively influence both parties including international NGOs as well as industry players and government to be mutually understanding about each responsibility in ensuring the sustainable development of this industry. At the same, the information regarding Malaysian's experience in developing this industry can be used as important tool to guide other newly producing countries in this industry. The list of recommendations proposed at the end of this study is expected to contribute towards strengthening the position of palm oil to Malaysian economy and source of main important supply of vegetable oil at the global market.

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LIST OF ACRONYMS

ASA	American Society of Agronomy
BMP	Best Management Practice
CIFOR	Center for International Forestry Research
CoP	Code of Practice
CPKO	Crude Palm Kernel Oil
CPO	Crude Palm Oil
DOE	Department of Environment Malaysia
EKC	Environmental Kuznets Curve
ETP	Economic Transformation Program
EPP	Entry Point Program
EU	European Union
FELCRA	Federal Land Consolidation & Rehabilitation Authority
FELDA	Federal Land Development Authority
FFB	Fresh fruit bunches
FAO	Food and Agriculture Organization, United Nations
FoE	Friend for Earth
GDP	Gross Domestic Product
GNI	Gross National Income
IFC	International Financial Corporation
IPOA	Indonesia Palm Oil Association
IPM	Integrated pest management
ISO	International Standard Organization
IUCN	International Union for conservation of Nature
IPM	Integrated Pest Management
KLSE	Kuala Lumpur Stock Exchange
KPPK	Ministry of Plantation Industry and Commodity, Malaysia
LCA	Life Cycle Assessment
MPOA	Malaysian Palm Oil Association
MPOWCF	Malaysian Palm Oil Wildlife Conservation Fund
MPOGC	Malaysian Oil Palm Growers Council
MPOA	Malaysian Palm Oil Association
MPOB	Malaysian Palm Oil Board
MPOC	Malaysian Palm Oil Promotion Council
NEP	New Economy Policy
NGO	Non-Governmental Organization
NKEAs	New Key Economic Areas
PORAM	Palm Oil Refiners Association of Malaysia
R&D	Research and Development
RAN	Rainforest Action Network

RISDA	Rubber Industry Smallholders Development Authority
RM	Ringgit Malaysia
RSPO	Roundtable on Sustainable Palm Oil
UNEP	United Nations Environment Program
UNCED	United Nation Conference on the Environment and Development
WCED	World Commission on Environment and Development
WWF	World Wildlife Fund

CHAPTER 1

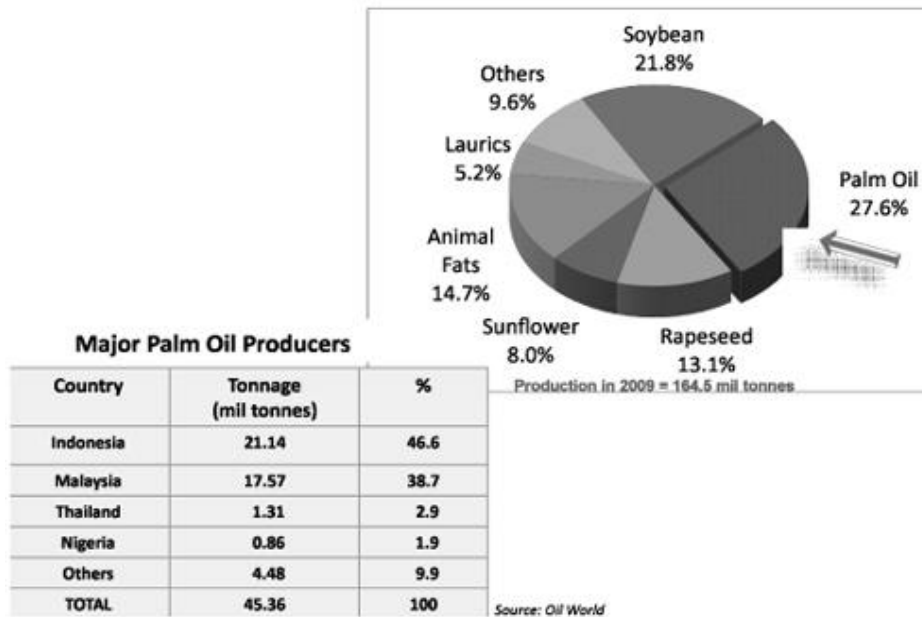
INTRODUCTION

1.1 RESEARCH BACKGROUND

Demand for vegetable oils has been growing strongly since the last decade due to global population growth and increased in oils consumption. Growth in vegetable oil consumption is driven mainly by economic expansion in developing countries. In most developing nations, vegetable oil consumption per capita rose considerably in the 1990s, by 65 per cent in Indonesia and 94 per cent in India, due to increase in income and people consumed more oil (Murphy 2007). Oil crops have played a key role in improving food energy supplies in developing countries (FAO, 2002).

Palm oil and soy bean oil together account for nearly two-thirds of world utilization, and most of the world's recent production growth. Previously soybean oil was the most consumed edible oil but in 2005 this oil lost its leading global position to palm oil. Palm oil is now the most important tropical vegetable oils in the global market for oils and fats markets, as measured by either production or international trade (World Growth, 2010). In the period 1995-2010 palm oil production is more than tripled to 46.7 million tonnes, mainly produced by two major producing countries, Indonesia (47%) and Malaysia (38%) (Product Board MVO, 2010). In 2009, palm oil contributed 27.6 per cent to world oils and fats production share with its production of 45.5 million tonnes as compared to soy bean, which accounted for 21.8 per cent share with production of 35.9 million tonnes (Oil World, 2010) as shown in Figure 1.

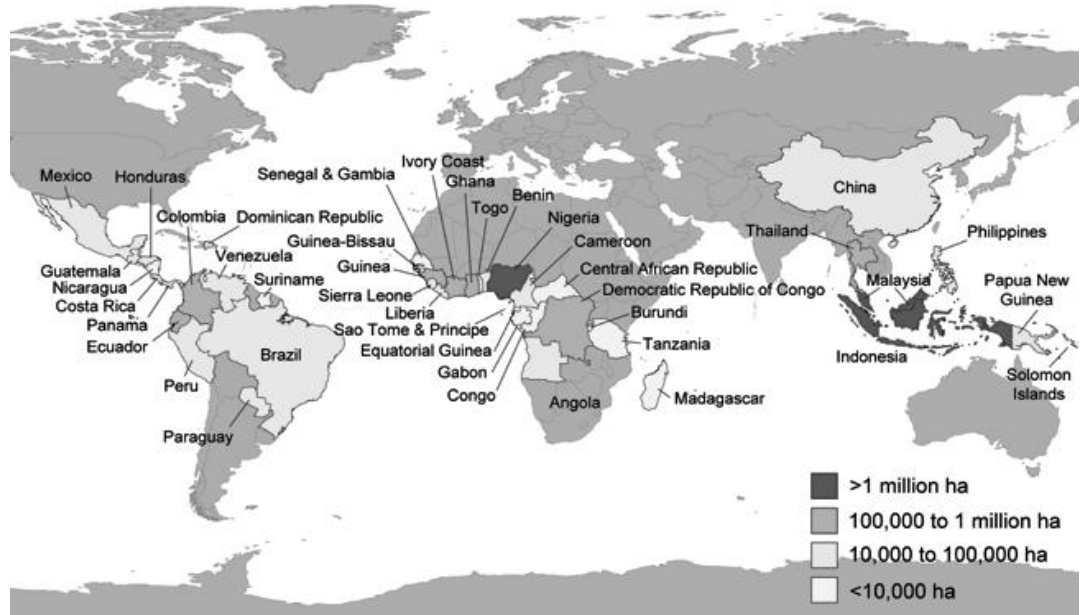
World Production Share in 2009



**FIGURE 1: WORLD PRODUCTION SHARE OF MAJOR VEGETABLE OIL IN 2009
WORLD MAJOR PALM OIL PRODUCERS IN 2009**

Although oil palm was originated in Africa, it has been planted in almost 43 countries in tropical regions of Southeast Asia, Africa and South America as shown in Figure 2. Indonesia and Malaysia are the two major producers of palm oil in the world, contributed 21.1 and 17.6 million tonnes respectively in 2009. Significant increase in production is also occurred in other countries such as Thailand, Ecuador, Columbia and Papua New Guinea. In 2006 Indonesia surpassed Malaysia as the leading global producer of palm oil due to stagnation of Malaysia's palm oil production in expanding the plantation area. The growth of the industry has increased tremendously, as shown by the expansion of planted hectare which started from less than 2 million hectares in 1980. In 1995-2010 periods, the global mature palm oil area increased from 8 million hectares to 12.8 million hectares (Product Board MVO,

2011). This impressive growth mainly contributed by the strong demand and economy reforms implemented in response to Asian financial crisis in the late 1990s.



(Source: Koh and Wilcove 2008a)

FIGURE 2: EXTENT OF OIL PALM CULTIVATION IN 2006

Global palm oil imports rose from 10.3 million tonnes in 1995 to 35.8 million tonnes in 2009, growing by more than 35% in the last five years of this period. The major importing countries of palm oil in 2008 are China (6.3 million tonnes), India (4.8 million tonnes) and European Union (4.1 million tonnes) which accounted for 52% of the global imports. Most of the imported palm oil either in the form of crude palm oil or palm kernel oil is mainly used in food and non-food industry for cooking oil and feedstock for processing activities including mixed in animal feeds.

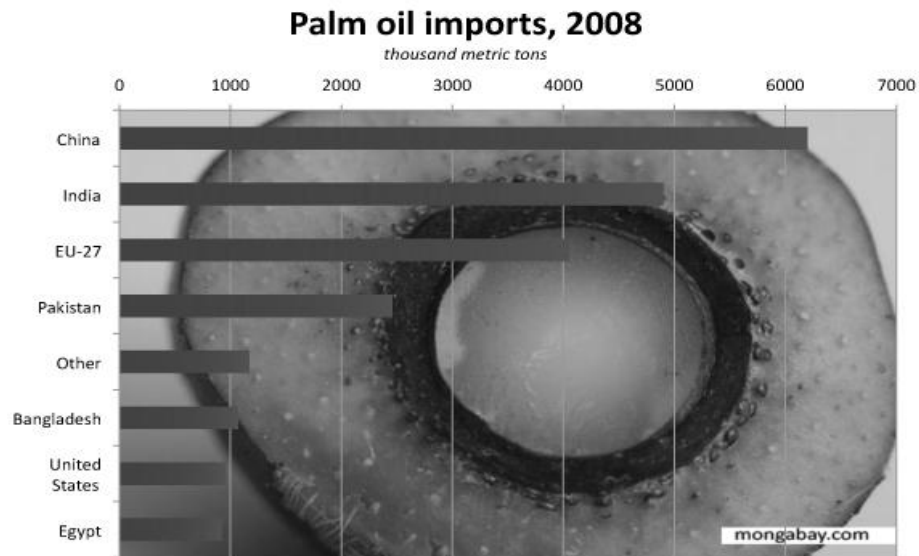


FIGURE 3: MAJOR IMPORTING COUNTRIES OF PALM OIL 2008

1.2 PROBLEM STATEMENT

Palm oil is one of the most traded agriculture commodities in the world. Global palm oil production is increasing every year, prompted largely by expanding bio fuel markets in the European Union (European Commission 2006) and by food demand in India and China (Clay, J. 2004). In Malaysia, palm oil industry has been an important agriculture sector in the economy for the past three decades. The important role of this industry to the Malaysian's economy is not only because Malaysia depends substantially on oil palm for its foreign exchange earnings, but also because palm oil is used a development tool in poverty alleviation program for the past three decades.

Rapid growing of global demand of palm oil in the past decade reflects the total cultivation of oil palm in the producing countries, particularly in Malaysia and Indonesia. In order to meet the overwhelming demand, oil palm area needs expansion thus more lands are required for plantation. In some producing countries, expansion of oil palm leads to new areas is opened up for plantation and in most cases it involves deforestation. Conversion of primary forest to oil palm plantation accounted for more than 10 per cent of deforestation in Indonesia and Malaysia between 1990 and 2010 (Koh et al. 2011). It is reported that tropical land occupied by palm oil plantation increased from 1.55 million hectares in 1980 to about 12.2 million hectares in 2009 (IFC, 2011). During the UN Climate Change Conference (UNCCC) in Copenhagen, it had been mounted that conversion of forest land to other uses by developing countries including oil palm plantation is considered as deforestation. Deforestation is a major source for greenhouse gasses emissions and this activity should be curbed. This scenario attracted the attention from the world particularly international non-government organizations (NGOs) on the issue of sustainable development in the palm oil industry.

The palm oil industry particularly in the Southeast Asia region suffered various criticisms and negative reports from the global NGOs to discredit palm oil. The whole industry has to face the growing accusations made by NGOs about the potential impact of palm oil plantation on environment and people. Some of them also launched anti palm oil campaign to harness support against palm oil. These issues could escalate to cause significant damage in the eyes of a consuming public that consider it as socially conscious. This intensive campaign is attacking companies' reputations and public trust over the production. Large international companies and

owners of top-level brands are particularly vulnerable to criticism and often become target group in palm oil campaigning program (Nikoluyuk et al, 2010). Some of the global environment organizations accused this industry is not being conducted within the boundary of sustainable development and contributing to a loss of biodiversity, uncontrolled green gas emissions, conduct unsustainable farming practices, soil, air and water pollutions, chemical contamination as well as land disputes and social problems.

Contrary, palm oil producers accused western NGOs are unfairly targeting Southeast Asia's oil palm industry while ignoring agricultural activities in other regions that also harm biodiversity, such as soy bean cultivation in South America. They also argued that oil palm cultivation is not a threat to biodiversity and deforestation because it is only cultivated in the designated allowable agriculture zoning area thus less disturbance to original habitats and permanent forests. Some analysts also stressed that cultivation of palm oil is able to maintain the biodiversity and preserve the flora and fauna.

Intense media debates between environmental NGOs and industry player will be continued if the appropriate solution to overcome this issue is not giving attention by the world. It will affect the future development of palm oil industry as this issue is concerned about the trade-off between economic development and environmental protection, in which, at the end will reflect the social development of local communities. While at the same time, the earth must be protected from further deterioration elements, to ensure the safety of future generations.

1.3 RESEARCH OBJECTIVE

Why the issue of sustainable development in the palm oil industry is important to be addressed? Palm oil is one of the most important vegetable oils in the world and each year million tonnes of palm oil has been traded globally to be consumed by millions people around the world. The industry is evolved dramatically and hence produced varieties of products such as crude palm oil, palm kernel oil, palm kernel cake, oleo-chemical as well as new bio-fuel products to fulfil the demand. However, the rapid development in this industry creates many questions on the issues of sustainable development of palm oil. The palm oil industry particularly in South East Asia regions is being pressured by the international NGOs to prevent the deforestation activities. In Malaysia palm oil is the most important agricultural commodity in the country, and contributes substantially to the economy. Unfortunately, the Malaysian palm oil industry is also being accused for conducting unsustainable practices in developing this industry. These continuous pressures might affect the wellbeing of this industry in the future.

I have been interested in this subject after being exposed to many news and discussions by various parties regarding these issues. Many findings from previous studies revealed that this industry is one of the major caused of environmental degradation. However, knowing the facts that all the agriculture activities are the main driver for ecological impact, it is undeniable fact that oil palm cultivation is significantly contribute the same effects to the environment. But how big the impact and is there any mitigation measures has been taken? In this regards, my priority concern in this topic is not only to identify the environmental impact caused by this

industry, but also to investigate the sustainable practices by the whole industry, if any. Therefore, this paper attempts to investigate into Malaysian experience in developing this industry with regard to sustainable development as well as identify its policies and initiatives towards preservation of the environment. In this regards, the determination of sustainable development will be based on economy, environment and social perspective and how these aspects are approached by the palm oil industry. Any policies and initiatives implemented by this industry will be categorized based on economy, environment and social perspectives in order to identify whether the palm oil industry in Malaysia is conducted within the framework of sustainable development.

In guiding this study to achieve its objectives, there are two questions to be asked in this study:

- a) How the government of Malaysia mitigates negative environmental impact caused by the palm oil industry considering the concern of international NGOs?
- b) Does the actions and policy being implemented are sufficient in promoting this industry towards a sustainable manner based on economic, social and environmental approach?

1.4 METHODOLOGY

Research process begins with identifying of problem or specific issue that need to be researched. It follows by developing research questions to help the research achieves its objectives. Problem or issue is identified through observation and

focusing on the situation that happened, then this process will be further explored by the researcher by conducting literature reviews through the available resources of information before conducting actual research activities.

This study will apply qualitative approach in conducting the research by using case study and literature reviews methodology. Researcher Robert K. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1984). This qualitative case study is an approach to research that facilitates exploration of a phenomenon within its context using a variety of data sources (Baxter.P & Jack.S, 2008). A case study is an in-depth study of a particular situation rather than a sweeping statistical survey. It is a method used to narrow down a very broad field of research into one easily research-able topic. In this case, in order to save time and money, this study only focused on one of the palm oil producing country to investigate the whole structure of this industry and relates it with the issue of sustainable development. This is an appropriate technique since almost all the oil palm producing countries is having a similar climate condition and geographical advantage that suitable for oil palm plantation.

Choosing Malaysia as a centre of research in this issue is an appropriate choice as this country is pioneered in the commercial plantation since early 19th century. The industry was also at the forefront of technology and production (Jomo and Rock, 1998) both in upstream and downstream sector for the global market. This study will elaborate more on the palm oil industry in Malaysia including the historical

background of this crop plantation, role and contribution of this sector to the nation development, supply chain activities and institutional framework. The current status of this industry with regard to the concepts of sustainable development will be discussed based on previous studies conducted by academician, NGOs, institutional financial organizations as well as other interested parties. Then, this study will explore the actions and role of the government and private sectors in Malaysia in dealing with this issue.

Literature reviews technique is used as an essential methodology mainly to search for secondary data and information from the published journal, books, and published papers presented at various mediums and publications from the organization websites. Statistical data used to describe about the performance of this industry are collected both from the international bodies such as World Bank and Food and Agriculture Organization (FAO). While for statistical data for Malaysia, mainly was collected from the monitoring agency on palm oil such as the Malaysian Palm Oil Board (MPOB), Department of Statistic Malaysia, Ministry of Plantation Industries and Commodities Malaysia (KPPK) and Economic Planning Unit, Prime Minister's Department.

1.5 POTENTIAL SIGNIFICANCE OF RESEARCH

With reference to the research objectives, this study will provide opportunity to describe and analyze the current position of palm oil industry in Malaysia with regard to sustainability. Research and development in this industry is conducted on continuous basis, thus there might be new findings on the issue of sustainable as well

as new measures taken by the industry in dealing with this scenario. This study will try to accumulate the information and helps to disseminate various views to complement the overall augments on the issues of environmental impact and sustainable development of the industry. It is anticipated that the finding of this study will positively influence both parties including international NGOs as well as industry players and government to be mutually understanding about each responsibility in ensuring the sustainable development of this industry. At the same, the information regarding Malaysian's experience in developing this industry can be used as important tool to guide other newly producing countries in this industry. The list of recommendations proposed at the end of this study is expected to contribute to strengthening the position of palm oil in Malaysian's economy and as source of main important supply of vegetable oil in the global market.

CHAPTER 2

CASE STUDY: THE MALAYSIAN PALM OIL INDUSTRY

2.1 GENERAL FACTS ON MALAYSIA

Malaysia is physically split into two parts by the South China Sea, Peninsular Malaysia consists of 11 states and East Malaysia consists of two states, Sabah and Sarawak. The total country area is sum up to 329,847km² with population at just under 29 million inhabitants. The climate is tropical with even temperature throughout the year which experiences hot and humid weather. This country is enriched with natural resources which have been a driver of economy. Previously, tin mining was the main economy resources that attracted Western's conquest to Malay states while Colonial British's planters transformed its arable land into rubber and oil palm plantations. Besides rubber and oil palm, agriculture also involves cultivation of cocoa, pineapple, pepper while rice paddies are actively cultivated in the northern part of Peninsular Malaysia.

Malaysia has experienced tremendous economic transformation in the last 40 years and known as one of the best economic records in Asia with GDP per capita of US\$14800. The performance of economy has been largely dependent on its export sector. The growing average is 7.2 per cent in 2010 which supported by the consistent growth in services sector by contribution of 48.2 per cent to GDP followed by manufacturing sector (41.4%) and agriculture sector (10.5%). Malaysia has also maintained unemployment at its natural rate of about 3.5 per cent. While inflation has also been kept low mainly on account of a strong balance of payment position driven

by strong performance in the export sector and capital inflows from abroad. The prolonged performance has been driven by the government determination on economic development by introducing appropriate policy direction timely. Malaysia is now ready towards achieving the status of developed country by year 2020 by enhancing the development based on knowledge-economy.

About two third of Malaysia is covered by land forest over 130 million years old. Generally there are three main types of forests, namely rain forest, mangrove and large area of peat swamp forest. These forests are full with various flora and fauna as well as animal species and wildlife. Tropical rain forest is often divided into primary and secondary forest while peat swamp forest is waterlogged forest found in low-lying area (Arhem.K, 2011). A large expanse of tropical rain forest primarily occupies the hills and mountains and often forms the protected spines of the country in both Peninsular Malaysia and East Malaysia. Basically land is used for agricultural activities; urbanisation and township while the remaining 59.5 per cent or 19.52 million hectares is remained forested particularly in Sabah with total forested areas of 44 per cent, Peninsular Malaysia (32%) and Sarawak (24%) (Convention Biological Diversity, 2012).

2.2 HISTORICAL BACKGROUND OF OIL PALM PLANTATION

Started by pioneering efforts in the early part of the century, palm oil industry in Malaysia has grown to become dominant and dynamic industry. Doubtlessly oil palm is proven to be one of the main drivers of Malaysia's agriculture sector, contributed 30.1 per cent to 32.3 per cent per annum of agriculture's GDP for the

period of 2006-2010 (Statistic, 2006-2010). Significantly, the role of this industry is not only towards building the economic based, but also to attainment the socio-economic objective. The history of oil palm already spans across more than 100 years in Malaysia, hence giving advantage to this country as one of the successful contributors of oils and fats in the world (PEMANDU, 2010).

Oil palm had been introduced to Malaya (later known as Malaysia) by the British government in the early 1871 as ornamental plants for landscaping (MPOC Publication). During the period, agriculture sector was driven by the contribution of rubber and tea as the primary commodity. In 1911, Frenchman, Henri Fauconnier bought the oil palm seeds from the first commercial plantation in Sumatra and planted at his Rantau Panjang Estate in Selangor (CH.Teoh, 2002). Fauconnier established the first commercial oil palm plantation in Tannamaran Estate to replace the unsuccessful planting of coffee (Tate, 1996). In the beginning, most of the plantations owned by the English owners and most of the labours for the plantation areas were brought from India by the British to work as plantation workers. The average size of plantation was quite small, only a couple of hundreds hectares each (Tate, 1996). Extraction of crude palm oil was mainly exported to European for processing and used in production of food and non-food products. The colonial government had imposed an export tax on primary commodities, using much of the revenue to develop and maintain infrastructure (Lim 1968; Jomo 1986; Rasiah 1995). Lack of infrastructure, financial support and protection from the government during the colonial era, is resulted in slow development of downstream sector. However, the colonial government encouraged the establishment of palm oil industry at the early period in order to support the economy due to the falling price of rubber.

This sector was developed rapidly after the independence in 1957, when the government started to focus on the various schemes and assistance particularly in R&D activities in order to steering the palm oil sectors. Since early 1960, government took initiatives to diversify the economy from rubber and tin to industrialization and other alternative crops. In relation to agriculture, oil palm cultivation was promoted by the government with the aim to reduce over dependency of the national economy on rubber and tin (Basiron & Weng, 2004). The introduction of commercial plantation scheme system in 1917 had effectively increased the planted area from only 400 hectares in 1920s to 3.4 million hectares in 2000 (Basiron & KW Chan, 2004) and reached 4.5 million hectares in 2009. In 1960, the total planted area was only 54,700 hectares and was owned by large estates while smallholders and government owned plantations were non-existent (Pletcher, 1991). Currently, oil palm becomes the biggest plantation crop in Malaysia due to rapid expansion of cultivation area in Sabah and Sarawak. Of the total palm oil planted areas in 2011, Sabah has the largest plantation areas of 1.432 million hectares and while Sarawak covers almost 1.021 million hectares in 2011, as shown in Figure 4.

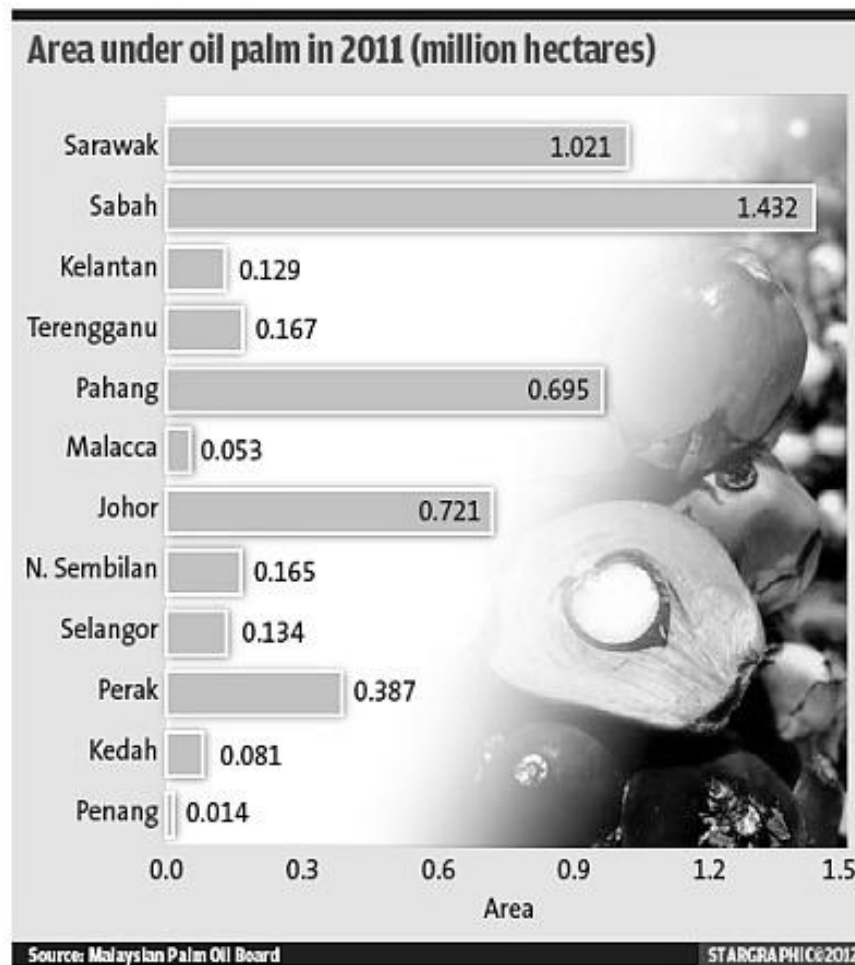


FIGURE 4: DISTRIBUTION OF PALM OIL PLANTED AREA BY STATE, 2011

2.3 OIL PALM ECOLOGY AND GROWING CONDITIONS

Oil palm is an agriculture crop that needs natural resources for growing. Initially it was planted as ornamental crops before commercial planting started in 1917. However, the large-scale cultivation did not take off until the 1960s, following the government's crop diversification thrust strategy to reduce the country's dependence on rubber (CH. Teoh, 2002). As an industrial crop, suitable land and climate condition for plantation are important elements in order to optimize growth and production. The palm oil plant grows within 10 degrees in latitude from the

equator; however ideal growing conditions are within five degrees. Therefore, most of palm oil producing countries are located around the equator that hold the highest density of palm trees around Southeast Asia region, including Malaysia that is naturally endowed to plant oil palm. Cultivation of oil palm is deemed suitable in the deep well-drained medium loam soil, rich in humus with a well-distributed rainfall of 2500 to 4000 mm per annum and a temperature range of 19-33° C. It is a water-loving crop and it requires adequate irrigation. However, this crop responds well to drip irrigation and yields are reported to increase by at least 20 per cent. Oil palm is planted in triangular system at spacing of 9 X 9 X 9 m accommodating 143 plants in a hectare. Planting can be done in any seasons, but the best period should be around June to December. Oil palm requires adequate irrigation, as it is a fast growing crop with high productivity and biomass production. For yielding palms of above three years of age, a minimum of 150 litres per day is required while for the older plantations the requirement goes up to 20 litres per day. In short, oil palm plantation is deemed suitable to be planted in the lowland evergreen tropical rain forest particularly peat swap area that support the highest biodiversity of any terrestrial ecosystems and covered almost all areas in Southeast Asia particularly Malaysia and Indonesia.

There are three oil palm varieties, Dura, Pisifiers and Tenera, use for industrial production. The oil palm fresh fruit bunches (FFB) are unique crop product which can produce two types of oil. Crude palm oil (CPO) is obtained from the mesocarp while palm kernel oil can be obtained from the kernel within the nuts (S.Vijaya, et al 2010).

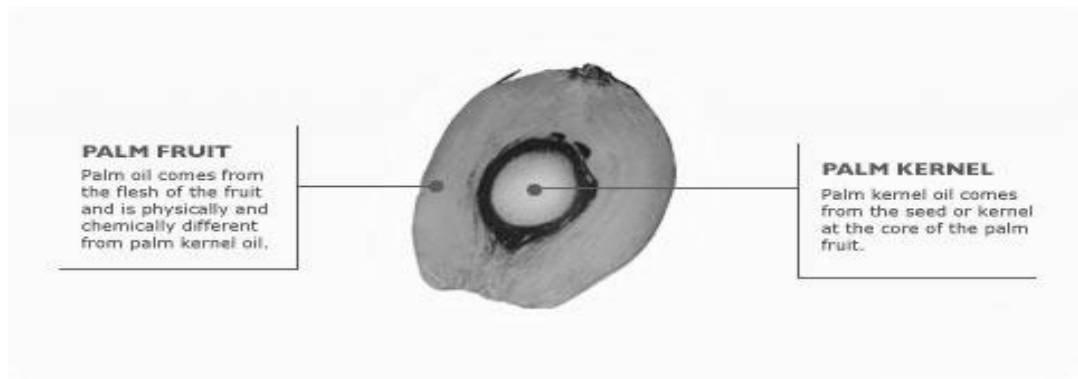


FIGURE 5: CROSS SECTION OF FRUITLET

Once harvested, the FFB must be treated in an oil mills within 24 hours to preserve quality of oil. In normal circumstances processing mill plants will be built within the area of plantation. Supply of high quality seed, seedling and young palms from breeders and nursery operation are among important factor for every plantation to be success in long term. Usually a germinated seed will be cultured in the pre-nursery for three months before moving up to nursery for additional nine to 10 months. After this initial phase, the plant will be moved to plantation area for normal growing. The first harvestable fruit brunch will be produced after 30 to 36 months in the plantation area and usually only weight between two to three kg. The peak productivity of fruit brunches will occur in the 8th to 15th years of plantation. The tree can reach up to 70 to 100 feet in height and typically will be removed from production once reach 25 feet which coincides with the industry limit weight. The un-branched oil palm tree can live up to 200 years, but economically viable life of span is about 22 to 25 years before cutting down for replanting.

2.4 ROLE AND CONTRIBUTION OF PALM OIL TO NATION DEVELOPMENT

The palm oil industry is currently ranked as the fourth largest contributor to the national economy with contribution of RM53 billion in gross national income (GNI) accounts. Palm oil is set to remain as the major commodity, expected to contribute to the nation economy for at least up to 10 years with a total of GNI of RM178 billion in 2020 (PEMANDU, 2010). The continuous achievement of this industry was driven by the decision made by the government to diversify the economy from solely dependence on rubber and tin to the oil palm, resulted in successful development of oil palm sector. Following the recommendation made by the World Bank mission in 1955, government of Malaysia decided to promote the plantation of oil palm as one of new agriculture commodity beside rubber. It was an important decision made in order to expand the narrow base of economy and diversify it further to generate better economic growth. The diversification strategy involved the initiatives to develop manufacturing through establishment of industrial estates and expand the export of palm oil outputs (Rulianda 2008). During that time, most of the plantation started to combine both rubber and oil palm trees in their cultivation areas as the return from oil palm was better than rubber (Basiron.Y, KW. Chan, 2004).

The development of palm oil industry embarked on a new dimension in economy base by creating wealth to nation as well as functioned as appropriate tool in alleviating poverty among poor. The emergence of palm oil into the Malaysian economy during the late 1950s and early 1960s could not have come at a better time to assist the country in alleviating poverty, especially in the rural areas (Arief Simeh

2001). Rural development and poverty alleviation had been priority agenda of the government and it was clearly stated in the Second Malaya Plan (1961-1965). Incidence of poverty among the agricultural farmers recorded a highest rate of 68.3% in 1970. In 1960s government embarked on the new scheme of planting palm oil as one of the poverty eradication programme which aims to alleviate poverty in the rural areas. Three rural development agencies had been set up by the government to drive the establishment of large plantation areas through land rehabilitation programme and newly opened land namely:

- a) Federal Land Development Authority (FELDA)
- b) Federal Land Consolidation and Rehabilitation Authority (FELCRA)
- c) Rubber Industry Smallholders Development Authority (RISDA)

In general, selected poor landless people will be selected to enrol in these programmes and placed as settlers in the new opened areas established by the respective agencies. Government built common infrastructures such as housing area, community hall, shop, health clinic and school to facilitate them with new life. Supports and loans were provided to them until the oil palm matured, and they could sell the agriculture revenue to pay back their loans and support their life. In this regards, government used oil palm as vehicle to improve the standard of living of poor in the rural areas and it was shown by the decreasing rate of poverty of agriculture sector by 21.2 per cent in 1990 (Arief Simeh 2001). By 2008, the smallholdings in the settlement areas managed to earn monthly income of RM1386 (US\$355) from oil palm plantation, not including other additional income, which is far above the national poverty line of RM529 (US\$139) (Global Oil & Fats Mag, 2008).

FELDA is the world's biggest oil palm planter with planted area close to 900,000 hectares in Malaysia and Indonesia. FELDA considers as a key driver for the promotion of palm oil industry in the country. It was established by the government in 1956 with the socio-economy responsibility of developing plantation land for the landless and rural poor Malays (Yaacob, 1991). During the initial establishment, FELDA involved in the development of agriculture-based settlements, planted with plantation crops, initially with rubber and subsequently with oil palm by opening new plantation areas, mainly by logged over forest land (CH.Teoh, 2002). The focus gradually changed to commercial development management of plantations on a commercial basis since there was limited of forest land to be developed. The first planting of oil palms under the FELDA scheme was in 1961 at the Taib Andak Complex in Johor, Peninsular Malaysia and involved 8,100 hectares of land. In 1965 the total planted area under the FELDA increased to more than 11,000 hectares, or 11.4 per cent, of total oil palm areas (Pletcher, 1991). The involvement of FELDA in oil palm plantation was one of the initiatives under the new economy strategy known as New Economy Policy (NEP), announced in 1971.

2.5 SUPPLY CHAINS IN PALM OIL INDUSTRY

The palm oil industry is one of the highly organized sectors in the agriculture system; consists of upstream and downstream sector which are successfully complement each other's to become more developed and diversified sector. However, the development of this industry is still heavily skewed towards upstream activities and the downstream is still yet to be fully explored. Over the last 50 years, R&D activities and technology have helped raising yield and thus maximizing the

production of oil palm. Generally the palm oil supply chain can be divided into four big segments of upstream production, midstream activities (trade and transport), downstream processing and consumer production (Sime Darby, 2009). These segments can be narrowed down to major players that have direct involved in the oil palm production such as plantations or growers, millers, refiners, processors, manufacturers and retailers (CH. Teoh, 1999).

The upstream sector of the oil palm industry consists of several groups of producers that have important role to ensure the sustaining supply of this important vegetable oil to the whole world. Palm oil sector has unique combination of ownership and is mainly divided into two big entities of private ownership and smallholder. Smallholders can be further grouped into organised smallholder under the management of government agencies and independent smallholders which accounts for 25 per cents and 14 per cents of total cultivated area respectively (MPOB, 2012). While the rest of 61 per cents of total cultivated area is dominated by large plantation companies either solely owned by the private or government-linked company, as shown in Table 1.

Category	Hectare	Per centage
Private Estates	3,037,468	60.7
FELDA	703,027	14.1
FELCRA	162,259	3.2
RISDA	79,743	1.6
Other Government/States Agencies	319,786	6.4
Independents Smallholders	697,826	14

SOURCE:MPOB WEBSITE

TABLE 1: OIL PALM PLANTED AREA BY CATEGORY, 2011

According to the definition used by the Roundtable on Sustainable Palm Oil (RSPO), independent smallholders are defined as farmers who are producing palm oil based on family-enterprise ownership and usually own less than 50 hectares of land. This group of farmers has freedom in making decision on their land, self-managed, self-financed and not contractually bound with any mills or associations. They manage the land without direct assistance from the government or private company and sell their crops directly to mills or traders. However, in order to ensure the productivity of palm oil, government through respective agency will provide the assistance and supports. On the other hand, consolidated smallholders which are characterized as farmers who contractually bound by credit agreement and certain planning as well as being supervised in planting and management technique by either government schemes or mills. In Malaysia, this type of smallholder enrolled into the special government scheme and managed by the rural development such as FELDA, RISDA and FELCRA.

The biggest palm oil cultivation areas are owned by the private through plantation companies' ownership. The private sector has been the main driver for growth in the development and production of palm oil in the last two decades (B Ramasamy, 2005). This entity holds 61 per cent of total cultivated oil palm areas since 1980 with total areas of 3.07 million hectares in 2011. The sizes of palm oil companies vary considerably, depending on the size of their plantation estates which range from a few hundred hectares to more than 100,000 hectares. Most of the companies are listed in the main board of Kuala Lumpur Stock Exchange (KLSE) in Malaysia as well as on the foreign security boards.

The downstream industry covers all activities for processing oil palm into semi-finished materials in the form of refined oil before exporting to other countries. Most of the plantation companies have their own refinery plants and crushing mills in the plantation areas. Producing refined oil provides a tight margin which in the end is giving low return on equity. However, for companies that gets into the more value added parts of the chain, which is processed food production, health foods, oleo chemicals, and branded products, margins might go up significantly. Therefore, the industry is currently shifting the focus from the general refined products to the more specialized high value added products to move up the value chain. In the oleo chemical industry, palm oil and palm kernel oil are used to produce various chemical feed stocks, such as fatty acids and fatty esters, which are required in the manufacturing of various non-food products. In addition, palm oil can also be directly used to produce bio fuel.

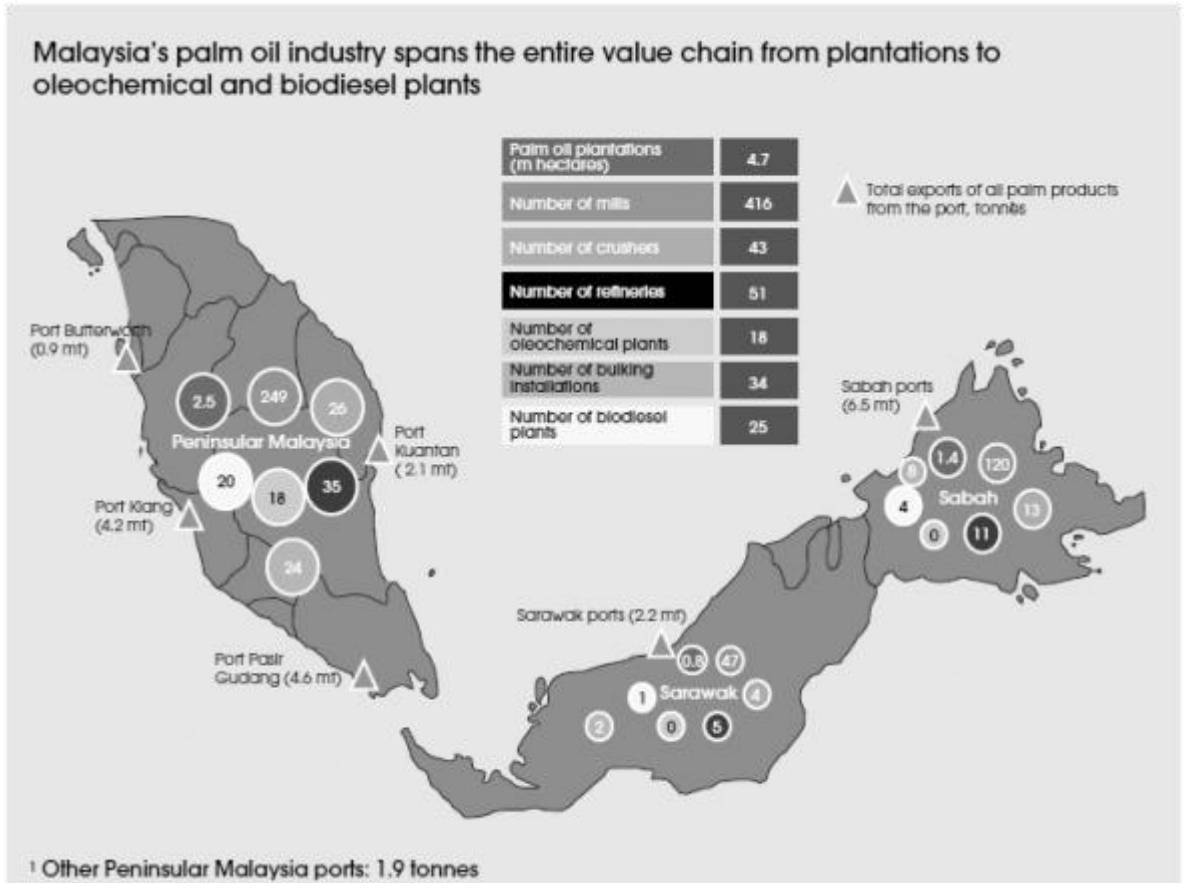


FIGURE 6: PALM OIL INDUSTRY SUPPLY CHAINS IN MALAYSIA

2.6 INSTITUTIONAL FRAMEWORK

The continuous achievements of this industry are supported both by the private and public sector. Although the palm oil industry is driven by the private sector, the government has played a significant role in determining the direction of the development of this sector (CH. Teoh, 2010). History has shown that the government's decision to harnessing the potential of palm oil to drive the development of the country after the Independence, has successfully alleviated poverty and placed Malaysia as a top palm oil producer in the world. The dynamic progress of the

industry is largely attributed to the strategic approach by the government in developing agriculture land.

Emphasis is not only attributed to just merely efforts in enhancing production, but was also accompanied by initiatives in penetrating and deepening of markets, research and development activities and a conducive regulatory framework (Arief Simeh, 2001). This was supported by the establishment of strong government institutional with collaboration and involvement from private sectors. In the early year, originally there were three main institutions involved to carry out the stipulated policy objectives, namely Palm Oil Registration and Licensing Authority (PORLA), Palm Oil Research Institute of Malaysia (PORIM) and Malaysian Palm Oil Council (MPOC).

PORLA was established in 1976 to carry out task to set the quality standards for palm oil products to ensure a supply of high quality export products. These were involved two major inspection programs, firstly was the quality of oil products at their strategic points of processing and secondly was trade, including ports of export, to ensure that only palm oil products with the appropriate quality were delivered. Licenses were compulsory for people involved in transportation, sale, purchase, broker, export, import, storage, and survey or testing of any palm oil product. The quality control of palm oil products undoubtedly benefited the overall quality of palm oil products and thereby the reputation (Lars C. Bruno, 2010). PORIM was established in 1978 mainly for developing technologies which aimed to increase the efficiency of palm oil production and increased the usages of palm oil. The research done at PORIM could be divided into three main areas of biology, chemistry and

technology as well as techno-economic and provide technical advisory services. However, in the mid of enhancing the government capability in development of this industry and strong institutional support, PORIM and PORLA were merged to form a new agency, Malaysian Palm Oil Board (MPOB) in 2000. As a premier agency in monitoring the industry, MPOB is responsible to promote and develop national objectives, policies and priorities for the well-being of the industry growth.

At the same time, MPOC is tasked to develop a comprehensive strategy to position Malaysia as an international leader in the oils & fats market through promotional activities. Seeing the need for product development in order to sustain the upstream development of palm oil, the industry was flagged for sectoral support under the Industrial Master Plan of 1986 (IMP1). The IMP1 emphasized the rationalization of refining and fractionation to increase efficiency and competitiveness of Malaysian palm oil in the world market (Sime Darby, 2009). As a result, Malaysia became a hub of palm oil downstream processing and thus leads in exporting the refined oil. In IMP2, government focused on the expansion of cultivation area to East Malaysia and encouraged private sector to seek raw materials for downstream activities abroad. R&D activities had been intensified particularly to increase oil palm productivity and further value-added in product development. Government is very serious on deepening the advantage of this industry thus set palm oil as one of the key areas to be focused in the latest government's policy to boost the economy and achieve a high income status by 2020. Three areas will be given priority attention including increase the upstream productivity, expansion of downstream as well as sustain the sustainability of palm oil industry.

2.7 COMPETITIVENESS OF MALAYSIAN PALM OIL

Malaysia overtook Nigeria as the world's leading exporter and producer of palm oil in 1966 and 1971, respectively (Gopal 2001: 122; Hacaharan Singh Khera, 1976; Malaysia, 1975). Since then Malaysia keeps the position as the biggest producer of palm oil in the world and contributes almost half of the world production of palm oil. The current status of palm oil as it is today is without doubt due to the significant contribution of Malaysian palm oil industry, as a pioneer in this industry since 1960s. Malaysia becomes a role model for many other producing countries to spur their economy through agriculture sector. Although the world position had been taken over by Indonesia, it was primarily due to constraints on land for further expansion. The area under cultivation in Malaysia has reached the saturation point thus hinder the expansion activity (Okamoto.S, 1997). The natural climates that is hot and wet along the year with temperature marks ranging from 25 to 35 degree Celsius and has evenly distributed rainfall of 2000mm per year, is an advantage to Malaysia in palm oil plantation context. Since not many countries has the similar pattern of climate though located only 10 degree latitude away, oil palm becomes the 'golden crop' which drastically change the landscape of Malaysia agriculture and economy since 1960s (Ariff Simeh, 2001). In term of land utilization, palm oil cultivation covers almost 58% of the total cultivated land in Malaysia as compared to other crops such as rubber, cocoa and food crops. Half of the agricultural employments in the country are provided by this commodity either at the upstream level or at the downstream level; hence oil palm is an important socioeconomic crop for Malaysia (Basiron.Y, 2005).

The commercialisation of the palm oil industry in the 1960s allowed Malaysia to gain a “first mover” advantage in terms of expertise and technological advancement over other nations who only started commercialised planning much later. This industry has progressed well due to good insight and governance by the government and strong support by the private enterprises. Having advantage as the pioneer in the development of palm oil sector in the world, Malaysia is successful leading the R&D in all aspects of palm oil including pioneering the technological breakthroughs in the palm oil industry. The industry has adopted innovative techniques and sustainable practices in ensuring that oil palm cultivation remains in harmony with the environment. Malaysia will continue to forge ahead with new innovations covering a wide spectrum of the industry from upstream to downstream and in particular, the new emerging sectors of oleo-chemical and bio diesel to enhance the industry’s performance

A major reason for the slowdown in growth was limitation on land available for development. However, study conducted by Sumathi, Chai and Mohamed in 2008 stated that Malaysia is the largest producer of palm oil in the world, having supply almost 50% of the world’s palm oil demand through exports. Craven in 2010 also revealed that in terms of global supply, Malaysia is still the leading country which indicates that this country has always been a leading supplier of palm oil in the global market. Thus, to remain competitive in the global market, productivity must be increased through innovation as well as expand the value added at every level of value chains.

Although Malaysia is now ranked second after Indonesia, interestingly, almost 25 per cent of oil palm area in Indonesia is owned by private plantation companies from Malaysia. Expansion of cultivation in Malaysia is limited due to low available land for plantation; therefore it is easier to expand plantation in Indonesia rather than diminishing returns in further development in Malaysia. Of the global oilseed planted area of 239.82 million hectares in 2009, Malaysian oil palm accounted for just 1.9%. Yet, this 1.9% was able to supply 11.1% (18.25 million tonnes) of global vegetable oils and fats output and accounted for 25.6% (16.37 million tonnes) of Malaysia's export trade in oils and fats in 2009 (Sime Darby). Today, 4.7 million hectares of land in Malaysia is cultivated with oil palm, producing 17.57 million tonnes of palm oil and 0.66 million tonnes of palm kernel oil. Malaysia is one the largest producers and exporters of palm oil in the world, accounting for 11% of the world's oils and fats production and 26% of export trade of oils and fats (MPOC 2010). China, the European Union, Pakistan, United States, India, Japan and Bangladesh are the major importers of Malaysian palm oil. In 2006, these countries altogether accounted for 65.3% or 9.41 million tonnes of the total export volume.

2.8 PALM OIL BENEFITS AND ADVANTAGES

Palm oil has emerged as the important source of vegetables oils in the global market due to its competitiveness and advantages as compared to other oilseed crops. Many studies reveal several factors that contribute to the successful of oil palm in the global oils and fats market. Price of palm oil is more competitive than other vegetables oils. As a result the consumption of palm oil recorder high growth rate of 7.9 per cent annually compared to soy oil which recorded growth rate of 5.6 per cent

during the past 40 years (Basiron, Balu & Chandramohan, 2004). The productivity per unit area of palm oil is higher than any other crop (Ming & Chandaramohan, 2002). Production of palm oil is more sustainable than other vegetables oils since it consumes considerable less energy in production due to long productive lifespan of 25 years, uses less land in terms of broad-acre cultivation method and generates more oil per hectares compares to other oils. In term of yield, oil palm produces the highest tonnage of oil per hectare per year compare to other vegetable oils, as presented in Figure 6. In comparison with soybean oil which produces 446 litres/hectare, palm oil is able to produce 5,950 litres/hectare that is 12 times more.

Source	Yield (liters/hectare)	Comparison of yields
Palm	5,950	1.00
Coconut	2,689	0.45
Jatropha	1,818	0.31
Rapeseed	1,190	0.20
Soybean	446	0.07

TABLE 2: YIELD PER HECTARE FOR MAJOR VEGETABLE OILS

Another contributing factor leads to increase demand of palm oil in the global market is due to increase health awareness among consumers. This trans-fat-free edible oil contains two types of Vitamin E as antioxidant: *tocotrienols* and *tocopherols* (Figure 7). Tocopherols can be sourced from other vegetable oils such as soy oil, canola and sunflower while tocotrienols are only available in high concentrates in palm oil. Tocotrienols is more powerful anti-oxidant and more potent than tocopherols which able to lower the blood cholesterol levels, regress the atherosclerotic plaques in stroke patients, inhibit the entry of white bloods cells into arterial wall and able to inhibit blood clot formation in the bloodstream. By this way, palm oil helps protect a person from some chronic diseases as well as delay the ageing

process of the body. In this regards, palm oil is the most obvious option choose by food producers due to its natural semi-solid feature.

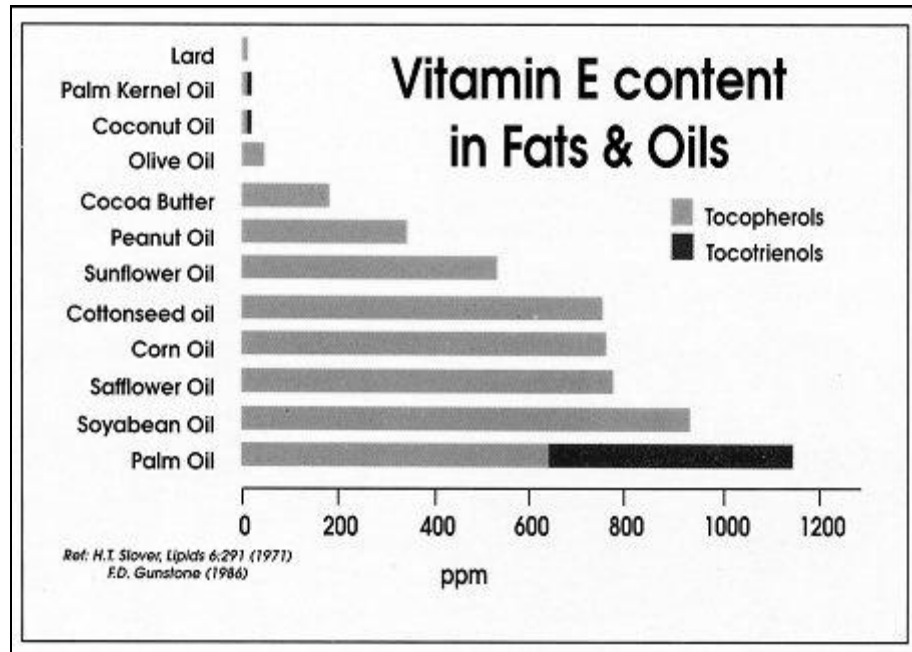


FIGURE 7: VITAMIN E CONTENT IN MAJOR VEGETABLE OILS

Unlike other oils, palm oil is a balanced oil as it contains equal amounts of both unsaturated (mainly oleic) and saturated (mainly palmitic) fatty acids, with the former constituted mostly by the preferred mono-unsaturates. The main saturated fatty acid in palm oil is palmitic acid that is neutral and does not raise blood cholesterol levels. Other saturated fatty acids, in particular myristic, are known for their cholesterol raising effects.

Palm oil is the most versatile oil as it can be used in various food and non-food applications with or without only minimal modification. It receives very high demand since it can replace animal and other vegetable oils used in the processing industries. An estimated of 74 per cent of global palm oil usage is for food products and 24 per

cent is for industrial purposes (USDA 2010). Palm oil extractions are widely used as an ingredient in the food products such as margarine, cookies and milk. Oleo chemical from palm oil is used in the production of non-food industry to produce household products such as detergents and soap. The recent application of palm oil as bio fuel for automotive indicates its important role in the development of alternative fuel source (Belamina, 2010). These will create another new opportunity to be explored by the producing countries.

2.9 CONCLUSION

Through its long, colorful and historic journey, the Malaysian oil palm industry has and will continue to prosper while continuing to assume a significant role in the country. The good demand for the oil as well as new opportunities in the form of bio diesel as an alternative fuel will ensure that the journey forward will be equally exciting. The Malaysian oil palm industry is undoubtedly the pride of the nation. However, issue on environmental and sustainable of this industry is part of challenges faced by this industry in the future.

CHAPTER 3

SUSTAINABLE DEVELOPMENT OF PALM OIL INDUSTRY

3.1 INTRODUCTION

Concern over the environment impact caused by the human development activities has increased recently. People around the globe, regardless of nationality, age, education background and ethnic keeps on talking about global warming, greenhouse effects, deforestation and other environment impact caused by improper development. Government and private sectors are being urged to commence all development projects within the concept of sustainable development. Sustainable development becomes the main word uses in almost all planning proposal to reflect the impact of the proposed development.

Therefore, this chapter will discuss the concept of sustainable development particularly within the framework of agriculture sector and its evolution. Palm oil is one of the agriculture sub sector thus this chapter will describe how the development of this industry affected the environment based on the three main pillars of sustainable - environment, economy and sociology. The emergence of dispute among the industry players and global environmentalists on the impact arise from oil palm development will also be highlighted in this chapter.

3.2 AGRICULTURE AND ENVIRONMENT

Agricultural expansion is one of the major drivers of tropical biodiversity loss worldwide (Foley et al., 2005; Green et al., 2005). An expanding global population and burgeoning demands for food have resulted in agricultural areas increasing dramatically in the tropics with 80% of the world's new agricultural land coming from the conversion of tropical forest (Gibbs et al., 2010). Agriculture is the most important user of the natural resources such as water, forest, nutrients and pastures. Thus, this activity can negatively affect the environment through overuse of the natural resources as inputs or through their use as a sink for pollution (DFID, 2004). Experience has shown that agriculture based on intensive use of inputs is prone to mismanagement that leads to environmental degradation, particularly where the system of incentives is inappropriate (Conway, 1997).

In 1960s, concerns were voiced about the environmental risks caused by agriculture, driven by the book written by Rachel Carson entitled *Silent Spring* (Carson, 1963). According to the report by the United Kingdom Department for International Development (DFID) 2004, agricultural intensification and extension have had negative impact in these four critical areas:

a) Land degradation

Land degradation threatens the productivity of existing farmland and pastures. In many developing countries, agricultural land has soil that is low quality or prone to degradation. About 1.2 billion hectares (almost 11% of the earth's vegetated surface) has been degraded by human activity over the past 45 years. An estimated

5–12 million hectares are lost annually to severe degradation in developing countries (Pretty and Koohafkan, 2002). Causes of degradation include water and wind erosion, contamination from industry and agriculture (including excessive use of pesticides and fertilizers), and overuse of irrigation water causing desalinization. Soil degradation appears to be most extensive in Africa, where it affects 65 per cent of the area used as cropland, compared with 51 per cent in Latin America and 38 per cent in Asia.

b) Water use and availability.

Irrigated agriculture is a major user of water and is crucial to the world food supplies. One fifth of the world's cropland is irrigated, and this produces 40 per cent of the food supply for world. In Southeast Asia, over 80 per cent of water resources are now used in agriculture. Despite great investment, water use efficiency in irrigation is generally very low and there are major concerns regarding resource depletion and persistent conflicts over water rights. Unsustainable exploitation of groundwater may lead to unforeseen problems such as arsenic contamination of drinking water.

c) Loss of biodiversity.

Diverse agricultural systems and landscapes are resilient to shock and stresses, with various plants, insects and animals help control pests and keep soils fertile. Many of the world modern agricultural systems have become highly-simplified, and no longer making the best use of this “beneficial” biodiversity. Deforestation is one of the primary threats to biodiversity in tropical forests around the world. Deforestation has many direct causes, including conversion of forests to pasture

for livestock, expansion of agricultural lands, commercial logging, and urbanization. Indirectly, deforestation is influenced by a host of other factors, including road construction, technological change, agricultural prices, household incomes, and land tenure and security.

d) Declining genetic diversity in agriculture itself.

Currently, 150 plant species are cultivated for food worldwide, however only three types of plants (rice, wheat and maize) supply 60 per cent of the world's calories. Genetic diversity in crops has been spiraling downwards – some 30,000 varieties of rice were grown in India 50 years ago; now only 10 varieties cover 75 per cent of all the rice-growing area. Reductions in agro-biodiversity increase disease and pest problems (Pretty, 2005).

These activities will be prolonged as the world populations are kept increasing and agriculture is one of the main source for generating foods. Every year, the global food demand is increasing and still many people around the world particularly in the African countries face hunger as ability to reach foods is very limited. According to report by Food and Agriculture Organization, United Nations (FAO), in 2009 around one billion of people around the world are considered undernourished. In the developing countries, agriculture is considered as the income generator and proven to be an effective tool to alleviate poverty among poor people.

3.3 CONCEPTS OF SUSTAINABLE DEVELOPMENT

The concept of sustainable development emerged from the post-war environmental movement, which recognized the negative impact of human growth

and development on the environment and communities. Sustainable development can be defined and be interpreted in many ways but its core approach is about balancing between needs and awareness of the environment, social and economy limitations of the nation. The most frequently quoted definition is from the *Our Common Future* report, also known as the Brundtland Report, produced by the World Commission on Environment and Development (WCED) in 1987. The report defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This definition emphasised two important keywords; needs where priority should be given to the needs of poor; and limitations imposed by the ability of technology and social organisation in meeting the present and future needs. This concept became most popular approaches and helped shape international agendas as well as attitude towards economic, social and environmental development.

The Brundtland proposed seven major interrelated proposals for sustainability (i) reviving growth; (ii) changing the growth quality; (iii) meeting essential needs for jobs, food, energy and water; (iv) ensuring a sustainable population level; (v) conserving the resource base; (vi) reorienting technology and managing risk; and (vii) merging environment and economic decision making (WCED, 1987). Nevertheless, this report did not establish any blueprints for policy development. Every country has to create its own approach that reflects its own needs. Thus, it created many different interpretations on the concepts particularly among developed and developing countries. Recognizing that each country has unique problems, development priorities, and information needs, it was felt that there was a need to analyze sustainable development at the national level (Palanivel.T, 2009).

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

“A world in which poverty and inequity are endemic will always be prone to ecological and other crises. ... Sustainable development requires that societies meet human needs both by increasing productive potential and by ensuring equitable opportunities for all.”

“Many of us live beyond the world's ecological means, for instance in our patterns of energy use. ... At a minimum, sustainable development must not endanger the natural systems that support life on Earth: the atmosphere, the waters, the soils, and the living beings.”

“In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development; and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations.”

From the Brundtland Report, “Our Common Future”

FIGURE 8: EXTRACTION FROM THE BRUNDTLAND REPORT

Developed countries emphasized the integration between environmental and economic consideration into decision about development, which means any decision today do not have any negative impact for the next generation. However, the priority concern is that in striving to avoid environmental degradation, the decisions should not jeopardize economic competitiveness at global scale. On the other hand, developing countries are more concern about meeting the needs of present generation with belief that people who do not meet present needs will not worry about long-term environmental degradation. Their focus are more toward achieving economic growth, through enhancing infrastructures, increasing the food supply through agriculture as well as creating more job opportunities for people.

3.3.1 THREE PILLARS OF SUSTAINABLE DEVELOPMENT

In the early years, the world perceived development solely as economic growth. However, the perception started to change gradually as any approaches to development creates many challenges including environmental and social aspects such as poverty issue, disparity of income as well as social disturbances. These challenges are being perceived as unsustainable developments. These aspects have been highlighted in the Brundtland report which introduced a new approach in seeing the importance of sustainable development for future survival. Sustainable development is a visionary development paradigm consists of three pillars - economic growth, environmental protection and social equity. Ensuring the development is conducted within the boundaries of sustainable, thus it must take into consideration the interrelation between these pillars. Recently many development projects in various countries regardless the development status, generated conflicts to environment and people due to improper planning and short-vision development. Thus, it creates negative impact to environment such as pollution, land erosion, and disaster which later affect the social well-being of local populations. Although it has been past 20 years, the unsustainable action continues and sustainable become elusive and difficult to achieve.

This general definition of sustainable development is being adopted by other sectors to reflect the core activities of each sector. In agriculture sector, term sustainable agriculture has been widely used and one of the definitions used in the United States was defined by the American Society of Agronomy (ASA) in 1989. Sustainable agriculture is one that, over the long term, enhances environmental

quality and the resource base on which agriculture depends; provides for basic human food and fibre needs; is economically viable; and enhances the quality of life for farmers and society as a whole. This wide definition is taking into consideration the main aspect of sustainable development that cover economic, ecology or environment and social perspectives.

The three pillars in sustainable development are also being described in defining the concept of agricultural sustainability in the report by DFID in 2004. The conceptual parameter in defining agricultural sustainability is not only a concern on initial change on environmental or ecological aspect, but further includes the economic and the wider social and political dimensions (Cernea, 1991). Environmental and social sustainability of productive resources are much depends on economic profitability to do the reinvestment in order to maintain the resources. In this regards, achieving a balance between these three are the greatest challenges to envisage the concept of agricultural sustainability (DFID, 2004).

3.3.2 Theoretical Framework of Sustainable Development

Ulrich Grober in 2007 stated that the concept of sustainable development was originally synonymous with sustainability which both words are derived from the older forestry term "*sustained yield*". It had been published in a comprehensive handbook of forestry written by the German nobleman Hanns Carl von Carlowitz (1645 - 1714), entitled *The 'Sylvicultura oeconomica'*. This book precisely explained about the concept of sustain-yield which was much related to the forestry sector later

became the acceptable concept in every development that concerns about environment.

The serial discussion about sustainable development at the international arena was first held in 1972 in Stockholm and considered the first truly international conference devoted exclusively on the environment issue and marked the emergence of international environment laws (BacDorin Paul). The outcome – Stockholm Declaration- set out the principles for various international environmental issues including human rights, natural resource management, pollution prevention and the relationship between development and environment. Since that the word sustainable became a popular topic in all academic and research papers, meeting of local authorities and corporations as well as international organizations forums. Unfortunately the word is only a fashionable concept in theory but it is considered expensive to be put in implementation.

The term sustainable development came to prominence through the United Nations (UN) Brundtland Commission which produced the report entitled Our Common Future in 1987 which aimed to raise awareness among developed countries as well as pledged the international cooperation concern on the global environment change. The report highlights the seriousness of environmental problems due to unsustainable productions and consumptions caused by many industries around the globe. It was coincided as effort to bring the environmental issue to the attention of the mainstream and created awareness among them in overcoming the escalating problem. Sustainable development has since then formed an important framework and basis for numerous conventions and agreements made in concern for developmental

and environmental issues (Mattias J, 2008). Eventually, this concept received further attention at the United Nation Conference on the Environment and Development (UNCED) in Rio de Janeiro in 1992, attended by 10,000 participants from 178 countries. The key outputs of the conference was the Rio Declaration, Agenda 21 and the Commission on Sustainable Development which had been set up to complement each other's. Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally by organization of the UN and has proved to be influential in the design and development of national policies and programs of legislation on the environment (Roberts, 1995).

Agenda 21 was clearly articulated the commitment of leaders from around the world to support the sustainable development whereby 178 countries adopted the program prepared their own national sustainable development strategy with the objectives of improving quality of life, efficient use of natural resources, protection of the global commons, management of human settlements, and sustainable economic growth. It also recognizes that the persistence of severe poverty in several parts of the world alongside a standard of living based on wasteful consumption of resources in other parts is not a sustainable model, and that environmental management must be practiced in developing and industrial countries alike.

The next international conference on environment concern held at Kyoto, Japan in 1997 which adopted the Kyoto Protocol with the aim to reduce the emission of greenhouse gas. Under the agreement, 37 countries rectified the protocol commit themselves to a reduction of four greenhouse gasses produced by their industries with the ultimate objective of stabilizing the gas concentration in the atmosphere at the

level that would prevent dangerous interference with the climate system. In 2002, the World Summit on Sustainable Development in Johannesburg took place as a main platform to review the progress on environment concern since Rio Conference 1992 and to agree on a new global deal on sustainable development. Some authors consider the summit as a “progress in moving the concept of sustainable development toward a more productive exploration of the relationship between economic development and environmental quality” (Asefa, 2005).

Since the concept of sustainable development emerged *vis-a-vis* the Bruntland report and vigorously discussed in Rio Summit, this concept has been universally accepted and adopted either by public or private sectors in conducting their activities. Sustainable development concept has been integrated into the operations and governing mandates by almost all prominent international bodies particularly international financial organizations in awarding development project to the hostess countries. Although it has been interpreted differently by different countries and entities of business, dominantly it is agreeable that all economic growth should make it environmentally sensitive in order to protect the environment and secure the well-being of people. Governments and organizations have taken up sustainable development as a desirable goal and developed metrics for sustainable development; concerns not only focus on environment, but also to the economy and social well-being.

The year 2012 has marked the 20th year after the first UNCED Rio Summit in 1992. Although twenty years has passed, the issue on sustainable development is still become prominent aspect in many international conferences. Sustainable development

is not a short-term planning and can be achieved within the current scope of development. Every year, population of the world keeps on increasing, new problems keep on arising thus any sustainable approaches should consider and adjustable to the current situation. The proposed Rio +20 Summit is hoped to strengthen the commitment from all developed and developing countries towards achieving the sustainable development that integrate these three pillars of economic, environment and social aspects.

3.4 LINKAGE BETWEEN ECONOMY GROWTH AND ENVIRONMENT

Sustainable development requires that societies meet human needs both by increasing productive potential and by ensuring equitable opportunities for all. In order to meet the needs, economy should have enough supply of goods and services by conducting activities that able to generate enough supply. The economic activities that provide those products ultimately depend on natural resources and inevitably lead to some disruption of the natural environment (Perman.R et el, 1996). This causal relation emerged by the idea of sustainable development embodied in the famous empirical model that link the relation between growth and environment known as Environmental Kuznets Curve (EKC) (Figure 9).

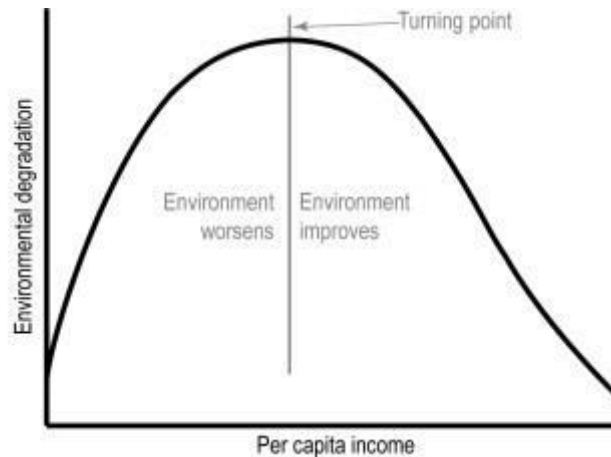


FIGURE 9: ENVIRONMENTAL KUZNET CURVE: RELATION BETWEEN ENVIRONMENTAL DEGRADATION AND INCOME PERCAPITA

EKC hypothesis contends that pollution increases initially as a country develops its industry and thereafter declines after reaching a certain level of economic progress (Azmi Sharin et al.) which is known as turning point. This implicitly suggests that environmental damage is unavoidable in the initial stage of economic development, but beyond some level of income, this trend reverses, so that a high income levels economic growth leads to environmental improvement. It is shown by the inverted U-shape curve relation between various environment degradation indicators and income per capita or growth. From this empirical model, it can be explicated as developing or poor countries, environmental degradation tends to happen in large scale while the wealthy countries, the growth is slow thus efforts to reduce pollution is being addressed by policy changes.

EKC have been acceptable as a standard features in the technical literature of environmental policy although their application is strongly contested. Some of the advocates argued that the scale of Kuznets curve may differ for different environmental impact and regions. However, this EKC may apply in the case of deforestation for economic development (Figure 10).

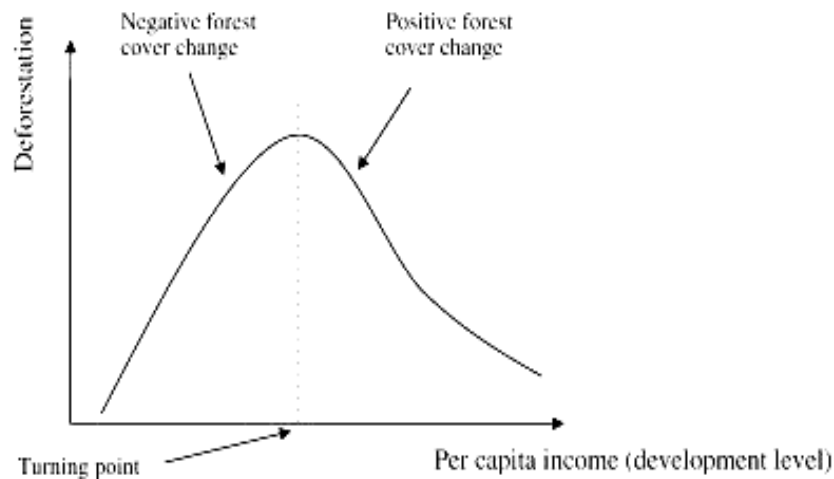


FIGURE 10: EKC RELATION BETWEEN DEFORESTATION AND INCOME PERCAPITA

A study by Bhattarai and Hamming (2001) investigated the relationship between income and deforestation across 66 countries in three regions: Latin America, Africa and Asia proved that the inverted U-shape EKC supported the relationship. Effendi Agus Waluyo et al in his study on Environmental Kuznets Curve for Deforestation in Indonesia also found there is evidence to support the existing of inverted U-shape in his study. This implies that while the deforestation rate increases at the initial stage of economic growth and declines after the threshold point of US\$990.40. The empirical evidence shows by EKC supported the scenario that happened in the palm oil industry in Southeast Asia particularly in Malaysia and Indonesia.

3.5 EFFECT OF THE PALM OIL DEVELOPMENT

Rapid expansion of palm oil industry is caused by highly demanded of vegetables oil in the global markets. This scenario attracts the global attention and

question on the sustainability of this industry becomes intense debates recently. The expansion of oil palm plantation area creates impact on the environment, economy and social in either positive or negative manners. View from most of the academic writings or reports tend to focus on one side arguments either to protect the industry or to accuse the industry for environmental degradation, basically based on the writer's aims on the report. In order to discuss this issue, this study will take some example from other producing countries in providing fair and balance explanations.

3.5.1 Economy Perspective

It is undeniable fact about contribution of palm oil towards the economic development of the producing countries. In Malaysia, this industry is successfully contributed to economy growth, eradicate poverty, provide hundreds of job opportunities to local and foreign worker, improved infrastructure and housing need as well as generate towards future development to the nation. As the world's cheapest edible oil, it is now the primary cooking oil for many people in developing countries in Asia, Africa, and the Middle East. In 2009/2010, four Asian countries imported 35 per cent of the global supply: India, China, Pakistan, and Bangladesh. Domestic markets in Indonesia, Malaysia, Nigeria, and Thailand met their own needs, consuming 24 per cent of global production. However, the primary consumer base in these regions is large, growing, and highly price-sensitive in regard to staple food products, thus major reductions in the production of palm oil could potentially lead to increase in cooking oil prices. Dissatisfaction due to increase in cooking oil price will lead to food riots as what had happened in 2007-2008, when the world faced the food price crisis that leads to several

demonstrations and food riots among people in developing countries. The food riots that erupted on virtually every continent caused massive destruction to the country economy and political stability.

Although producing country like Malaysia imposed restriction on opening new area of palm oil in the tropical forest area, these activities still prolonged due to lack of enforcement. Permanent forest had been cleared for timber logs only and in some cases the areas remained implanted with palm trees. In Indonesia, government is eagerly to open a new plantation due to the lucrative of palm oil industry leads to many grants to establish oil palm plantations are being distributed. However, in many cases, the company only interested to clear the forest for timber, but failed to grow the oil palm. As a result, many cleared-forest become useless grassland and vulnerable to loss of soil during heavy rain. This kind of unethical activities generated loss to economy and waste of resources.

Plantation companies are still having difficulties in seeking local labours to work at plantation areas; therefore they are highly depending on foreign labours. While salaries of foreign labours are not high as those of the local workers, there are hidden cost involved in hiring foreign labours such as costly agent fees and levies fees. This will add cost to the overall production in term of paying levy to legalise the working permit for foreign workers. In addition, these workers are going back to their country, mostly are Indonesian, after being trained in the local plantations. This is considered indirect impact to

economy when these trained labours worked at the plantation companies in competitor's country like Indonesia.

3.5.2 Sociology Perspective

In developing countries, this industry has been seen as one of the source of income and effective tool to combat poverty among poor people. Socio-economic benefits of a sustainable oil palm plantation could include poverty alleviation and long-term employment opportunities. Profit sharing may provide a further incentive, attracting more workers to the palm oil sector, along with better living and working conditions (Alban and Cardenas, 2007). Depending on the role played by authorities and smallholder cooperatives, smallholders may benefit substantially from oil palm production in due to its higher returns to land and labour, compared to other commonly grown agricultural products (Rist et al 2010). For instance, oil palm might be an alternative for farmers to invest in and benefit from the higher returns they offer, instead of destroying forest for cattle pasture (Butler 2011a).

In Malaysia, the palm oil industry is played a significant role in poverty alleviation among smallholders and the rural population (Arif Simeh & T. Ariff, 2001). However, independent smallholders in this industry are perceived to be inefficient and unproductive (Rahman et al, 2008). Some of them in particular those who are living in Sabah and Sarawak were earning only equivalent of a plantation foreign workers and are heavily reliant on remittances from family member working elsewhere (Porter, 2010). These independent smallholders are more vulnerable to the oil palm's price volatility

which impacted their daily remunerations and ability to spend on basic need particularly foods.

Palm oil also created a number of adverse social impact, in particular to displace people and indigenous communities, who are affected by deforestation and changes in land use. Some issue as housing and land right, low wages received as plantation workers as well as poor treatment are among the main issues surrounding this industry, mainly happened during the new area opened up phase. This industry is inherently labour-intensive, requiring an average of five workers per hectare while competing oils only need one worker for every 200 hectares. Malaysia is highly depending on foreign labour in particular from Indonesia since most Malaysian observed to be reluctant to work in oil palm plantation due to tough working condition and poor wages (AAB Dayang et al, 2011). Increasing population of foreign workers in the country, particularly from the low-class communities create social problems and endangered the national security aspect.

For some of indigenous communities particularly in remote area of Sabah and Sarawak, forest and rivers become part of their places for important livelihood activity and primary source of income. Some of them still depends on forest and river for fishing, hunting and small scale activities. Conversion of forest areas into oil palm plantation in Sabah and Sarawak areas resulted in drop of fish stock, loss access to forest resources and loss of cropland (AAB Dayang et al, 2011). River pollution is consider as one of the factor in lessen the fish

population while deforestation leads to decrease in forest resources such as rattan, herb resources and wild fruits.

3.5.3 Ecology (Environment) Perspective

It is undeniable that the development of oil palm cultivation creates impact to the environment, same alike other agriculture crops. Deforestation, biodiversity loss, land conflicts among major agriculture crops, climate change and threat to wildlife habitats are among major environmental impact that have been discussed in almost all papers on oil palm development. One of the main reason that contribute to environment impact to the ecology system in the Southeast Asia region is due to its natural features that are not native to the region. Therefore, the expansion of the alien oil palm plantation in the area might affect the local ecosystem.

Another reason is caused by the monoculture cultivation practices by the industry. Monoculture is the agricultural practices of producing or growing a single crop or plant species over a wide area for a long conservative period. Based on economy of scale aspect, oil palm is viable to be planted on the huge areas and usually the replanting only take place after 25 years when the tree is not productive. In normal condition, the rain forest is able to absorb and softening the impact of heavy rain with its thick foliage. However, the monoculture of the oil palm plantation is unable to protect the ground to the same extent therefore suffers from landslides and the washing away of the upper soil-layer, which hold most of the nutrition (Mattias. J, 2008).

The development of palm oil industry contributes positively from the economic and social perspective while from the environmental perspective, this industry contribute negatively. The sustainable development concept deems applicable to this industry in which holistic approach between this three perspectives should be used to balance between this two impacts. This industry is a very important source of income, generate employment and help reduce the poverty rate and at the same time contribute to environmental degradation through deforestation and loss of biodiversity.

3.6 DEBATE ON THE ISSUE OF PALM OIL SUSTAINABILITY

Debates and negative campaigns on palm oil are never encountered any endings. Palm oil first attracted opposition from competing fats due to its popularity and dominance in the food and oleo-chemical sectors in 1980s. An outraged millionaire industrialist Phil Sokolov suffered a heart attack and started campaigning themed "The Poisoning of America" featured nationwide full-page newspaper advertisements describing the dangers of saturated fats found in palm oil. This manifested itself in several "anti-palm oil" campaigns mounted in the United States, centred on blocking its importation. More seriously, concerns were raised on the purported link between palm oil and saturated fats in raising blood cholesterol levels. This persisted despite studies that proved otherwise. Science has shown that palm oil, unlike trans fatty acids found in other oils, addresses concerns over cholesterol levels linked to rising incidence of heart diseases. All these myths and outright untruths have been debunked by research, which has forced the palm oil opponents to open a new battlefield, shifting the focus to the environment.

Today, palm oil has to face the same scenario. Divergent opinions between industry players and NGOs about the impact of oil palm plantation create un-finished debates over the issue of its sustainability. NGOs contend the expansion of oil palm agriculture in Southeast Asia destroys huge tracts of tropical forest and threatens the survival of many native species while palm oil producers have accused NGOs of unfairly targeting Southeast Asia's palm oil industry while ignoring the agriculture activities in other regions that also harm the biodiversity (Nature, 2007). The debate is highly polarized with the pro-development side asserting that palm oil is a highly sustainable industry that feeds the world while the pro-conservationists have blamed the palm oil sector as being the underlying cause of deforestation and other environmental and social illness (CH. Teoh, 2010).

This vigorous campaigns to denigrate the palm oil industry that is being mastermind by NGOs spreading to Australia and European Union's governments with the aims to pressure processed food manufacturers and consumers into boycotting palm oil (World Growth, 2009). The basis contention is based on claims that this industry damages the environment and threatens endangered species such as *orang-utan* and other wildlife animals. However, it is agreeable fact that the expansion of oil palm has been taking place for more than 30 years. The massive expansion in the palm oil industry did not really catch the attention of the major NGOs until the "the year the world caught fire" (WWF, 1997). In that year, which also coincided with the Asian Financial Crisis, vast forest fires occurred in Indonesia, Papua New Guinea, Brazil, Colombia and Africa (CH. Teoh 2010). A follow-up study by World Wildlife Fund (WWF) and International Union for conservation of Nature (IUCN) identified

the use of fire for clearing land prior to oil palm cultivation as one of the major causes of the forest fires in Indonesia (Rowell and Moore, 2000). These initiated the continuous campaigns by other NGOs around the world as well as attracted several financial organizations including the World Bank into the massive actions to condemn this industry as the major caused for environment degradations. Australian government had imposed compulsory regulation to all foods that contain palm oil ingredient to be labelled appropriately in order to inform the consumer the presence of palm oil by approved the Food Standard Amendment (*Truth in Labelling- Palm Oil*) Bill 2009 in 2010. This is part of their NGOs' campaign to further discriminate palm oil industry. The primary objective of food labelling should be address information asymmetry between producers and consumers on health and safety issue; instead it has become a tool for political campaign by activist as political instrument (T. Wilson, 2011).

According to Greenpeace, an independent global campaigning organization in the United Kingdom, huge areas of tropical rain forest and peat swamp lands in Southeast Asia are being destroyed to make way for oil palm plantations. They believe this scenario will create disaster for natural biodiversity and local communities, as well as release vast amount of greenhouse gasses into atmosphere, which leads to accelerate the climate change phenomenon. Their actions are fully supported by a few other NGOs such as Friend for Earth (FOE) and Rainforest. FOE, in their report entitled *The Oil for Ape Scandal* that 90% of the world's palm oil exports come from the oil palm plantation in Malaysia and Indonesia, situated on the islands of Borneo and Sumatra. The cultivation of oil palm favours the lowland areas of forest that is the only remaining habitat of the orang-utan. The report also stressed

that the orang-utan is endangered because the habitat loss and palm oil becomes the greatest threat enemy of orang-utan and their continued survival in the wild.

There are two common allegations thrown by these NGOs which relates to environment in Southeast Asia; deforestation for oil palm plantation releases carbon dioxide and diminishing of the peat swamp forest. According to their reports, the high demand for palm oil has caused massive destruction of rain forest in Indonesia and Malaysia, to make way for oil palm plantation. When the trees are cutting down, more carbon dioxide has been released to atmosphere, thus reduce the ability of the planet to process greenhouse gases back into oxygen. Deforestation also destroys the wildlife habitat and in turn endangers the species that rely on that habitat. On the contrary, deforestation also leads carbon dioxide have been sequestered rather than released back into the atmosphere by replanting activities. Replanting new trees allow the lands to be covered with a new young, actively-growing trees in which make absorption of carbon dioxide at a fast pace. Leaving forests for a long time will probably make the tree dies in the wild then become rotten thus release the wasting carbon dioxide to the atmosphere.

Oil palm is deemed suitable to be planted in the peat swamp forest. Oil palm which belongs to palmae group is an important part in biodiversity of peat swamp forest due to its ability to survive in water logged conditions and high acidic contents (Mukhtar, 2001). This scenario becomes the focus of NGOs to accuse this industry for destroying the forest. Peat swamp is important to the global climate for their ability to hold huge amounts of carbon above ground in vegetation and below ground in slowly decomposing organic material. Clearance of this kind of forest will make the area

become drain and allow the carbon to release to atmosphere thus turn this dry land to become prone to flood and fire. Peat lands contain twice the carbon stock compared with other type of forest land (P.O Lee, NST 2011). The conversion of Southeast Asia peat forests is estimated to account for 6-7 per cent of the total global release of carbon dioxide into the atmosphere (UNEP, 2007). Conversion of natural peat swamp forest into oil palm plantation is initiated and implemented by stakeholders from outside the forest area such as national companies, government and international companies (FAO). Up to 2002, about 11 per cent of palm oil plantation in Malaysia and Indonesia were established on deforestation peat swamps (Koh et al 2011).

The continuous critics made by NGOs disappointed the industry player particularly in Malaysia and Indonesia and is seen as a threat to newly producing countries that is highly depending on oil palm as food security. Critics made are unjustifiable, misinformation and failed to analyze the palm oil industry's contribution to prosper the socio-economic perspective and accept the truth facts, but instead, only linked it to the environmental issues. None of the critic supported by any means of fair solutions to the problem and people who involve directly in this industry particularly the smallholders.

Despite all the criticism and negative campaigns received, this industry is also obtained fair and full supports from international world organizations that comprehend the important of palm oil to the producing countries as source for economic growth as well as to the world as food security. They believed though this industry is one of the major impedance to environment, appropriate measures can help mitigate the problems. Producing countries are encouraged to adopt the sustainable

approach in dealing with this issue. According to Biodiversity Support Program (2001), in recent years, sustainable agriculture has been promoted as an effective tool to reduce deforestation in tropical areas by using certain techniques for specific suitable conditions. The palm oil industry and pro-development organizations argue that the palm oil industry has been sustainable for a long time. The positive attributes and contributions of palm oil to national economies and local well-being were promoted by organizations such as the MPOC and pro-development NGOs, World Growth. MPOC stated that “palm oil is the only product able to sustainably and efficiently meet a large portion of the world’s increasing demand for oil-based consumer goods, foodstuff and bio fuel” (MPOC 2009). In its report, “Palm Oil – The Sustainable Oil,” World Growth reviewed the accusations against the palm oil industry and assessed the impact of palm oil on sustainability and economic development (World Growth, 2009). Most of the pro-development assertions are based on the comparative advantage of palm oil have based on actual performance of this industry as compared to allegations made by most of the environmental NGOs which based on the bias and baseless statements. It is believed that some of the false statements made by them will undermine public confidence on them. As mentioned by Koh (2010), environmental activists can also be guilty of inflating claims and employing scare tactics to win public support for their causes. As claim made by the Rainforest Action Network (RAN) that “*orang utans* are predicted to become extinct by 2011 but noted that this is unlikely to happen as there are at least 50,000 individuals in numerous wild populations in Sumatra and Borneo.

The counter debates between these two parties keep on prolonged, although accused governments are volunteered to set a roundtable dialogue with the respective

NGOs. However many attempts were failed as NGOs failed to turn up. This scenario will generate threat to newly producing country particularly in the African continents in which food security is one of the prime challenges. Since palm oil is a very important commodity not only to the producing countries as well as to importing countries, appropriate solution towards ending the conflict at the international level should be discovered to ensure the continuous production of palm oil.

3.7 PALM OIL INDUSTRY: DISASTER OR DRIVEN?

Sustainable development in agriculture sector particularly palm oil sector becomes a new topic and attract attentions from various parties at the global arena. Although numerous academic studies have been conducted within the framework of sustainable development of palm oil sector specifically in Malaysia and Indonesia, this area is still considered new. Most of the studies or reports provide a picture of this industry in the context of environmental aspect; however none is making a connection based on theoretical approach of sustainable development which covers the three pillars of sustainable development. Thus in-depth and continuous observations should be undertaken to improve the scenario particularly in terms of develop solutions to the problem arise in a holistic manner.

Due to recent debate between international environmentalist NGOs and palm oils players on the issue of sustainable development of this sector, there are increasing numbers of reports produce for certain organizations and conferences to elaborate on this important issue. Based on the internet search on 29 May 2012, there were about 2.5 million results on the topic of sustainable development in palm oil industry. The

search engine gave result on the topic that cover entire world while searched on the same issue that cover only Malaysia produced about 541,000 results. The results indicated that the whole world has been addressing this issue due to the importance of palm oil in the global market as main ingredient used in food and non-food applications.

Oil palm *Elaeis guineensis* is grown across more than 13.5 million hectare of tropical, high-rainfall, low-lying areas, a zone naturally occupied by moist tropical forest, the most biologically diverse terrestrial ecosystem on Earth (Corley, et P.B. 2003). The two largest oil palm producing countries—Indonesia (4.1 million ha) and Malaysia (4.7 million ha)—are located in Southeast Asia (FAO 2007). Coincidentally, this region also contains 11% of the world's remaining tropical forests (Iremonger *et al.* 1997), and harbors numerous endemic or rare species, many of which are restricted to forest habitats (Koh, 2007). As such, the potential impact of oil palm expansion on tropical forests and biodiversity in the region are a major conservation concern (Koh & Wilcove 2007). Tropical land occupied by palm oil plantation increased from about 1.55 million hectares in 1980 to about 12.2 million hectare. In order to address growing concerns from European government agencies, environmentalists and consumers of oil palm products, the oil palm industry in Southeast Asia has argued both that oil palm plantations are beneficial to biodiversity, and that expansion of oil palm cultivation has not come at the expense of forests (MPOC 2008).

According to McMorrow and Talip (2001) the problem of forest decline began since 1890 with logging, tobacco and rubber plantations and is continuing today partly because of the palm oil development. Mattias Johansson (2008) in his study on

the Indonesia palm oil sector found that palm oil industry is a very complex issue, but it can be approached in many ways when it touched the issue of sustainable. Mattias evaluated the level of sustainable development of palm oil industry in Indonesia by studying the link between three pillars of sustainable development which are economically, environmentally and sociology. His study concluded that the palm oil sector in Indonesia is not functioning within the frames of sustainable development. The industry is failed to balance the need to be environmentally and sociology sustainable due to economic interest of the sector. Strive for economic growth leads to highly depending on the expansion of this industry which able to generate vast income to Indonesia. The palm oil industry is a lucrative business, thus grants to open up new plantation areas are given by the decision maker to attract new investment without giving consideration to the negative impact on environment and social life of local people. According to FAO, Indonesia has experienced the greatest destruction of forest of the other country in the Asia Pacific region, losing 1.212 million hectares per year from 1981 to 1990 and another 1.084 million hectares per year from 1991 to 1995 (Okamoto.S, 1997).

Mohd Rafi Yaacob revealed in his study in 2007 about the environmental cost involved due to expansion of palm oil industry in Malaysia. This research investigated the environmental practices by the palm oil companies listed in the main board of KLSE, Malaysia and the relationship of these practices with stakeholders' pressures, environmental effectiveness and competitiveness. Although this industry creates environmental impact such as deforestation, water and air pollution as well as depletion of flora and fauna, actions have been taken to mitigate the effect due to pressure by the stakeholders. The palm oil companies perceived deforestation and

exploitation of rain forests as legitimate practices for economic gain, as those activities were conducted according to the law even though this was at the expense of the natural environment. His study also identified that even though there are wide ranges of environmentally friendly alternatives or techniques to increase production yield, identified through research and development activities, the responding companies preferred plantation expansion as the means to increase palm oil yields.

Klara Arhem (2011) in her study about environmental consequences of the palm oil industry in Malaysia agreed that due to several driver factors, oil palm plantation in Malaysia and Indonesia keep on expanding and this creates primary environmental issues that surrounding both countries thus created debates among international NGOs. The simplest way to reduce environmental impact would be, stopped producing and planting oil palm; however this is not realistic action as the demands from global markets keep on increasing. Deforestation is also not a specific issue surrounding oil palm sector but also concern on other crops plantation. She suggested that the government and companies to take immediate action to implement the best management practices and sound-use policy in determining the consequences of future oil palm expansion.

In 2007, Sune Hansen conducted a feasibility study of performing a Life Cycle Assessment (LCA) on the crude palm oil production in Malaysia. Initially this assessment used to indicate the environmental threat posed by the crude palm oil production and the result showed that there were evidence that these activities created a significant environmental impact due to vast production quantities. It was suggested that environmental investments should be enhanced and fully support from the

government is needed by impose certain incentives. This will allow more industry players to adopt cleaner technology investments in their processing activities.

Among the latest research on evaluating the issue of sustainable development of palm oil was undertaken by the Center for International Forestry Research (CIFOR) in early 2012 focused on the palm oil sector in Indonesia. By using several research methodologies such as remote sensing technique and interview with stakeholders this study concluded that palm oil sector in Indonesia is not carried within the sustainable development dimension. Research findings indicated the environmental and socioeconomic impact happened including deforestation, pollution, uneven benefits received by employees and local people as well as land scarcity particularly at the designated plantation areas. Almost 25 per cent of palm oil areas in Indonesia are owned by the plantation companies from Malaysia.

Although the government and the industry players denied the unsustainable practices in the plantation practices, however there is evidence that able to counter the claims. Casson (2003) in his study revealed the data of land use change between oil palm and other crops such as rubber, cocoa and coconut plantation in Malaysia between 1990-2002 period. During the period, oil palm had replaced the other unproductive crops for a total of 841,200 hectares however the increased plantation areas of palm oil was about 1.6 million hectares. The remaining 47 per cent or 758,000 hectares areas of new plantation might involve deforestation as it was supported by the data on Malaysia deforestation for the period 1995 to 2000 which accounted for about 87 per cent.

Most of the debate about this industry is framed in terms of trade-off between economy contributions and environmental conflicts, while the effect on social is derived in either way. A simple conclusion derived from several research conducted above confirmed that the palm oil industry is a major threat to the environment since it is part of agriculture sub sector which depends on specific ecology and biodiversity systems for growing. Despite all the negative impact to environment, it is proven from all the studies conducted that palm oil industry creates wealth and prosperous to the producing countries in terms of economic growth and poverty alleviation.

The challenges are enormous; therefore it is crucial tasks of producing countries in ensuring the industry activities are carried out within the concept of sustainable development. In maximizing efficiency and applied the concept of sustainability, the development of policy should consider all the resources available, integrate modern techniques in production, intensify the use of land as well as inculcate the use of good agronomy practices in supply chains activities. Increase productions are not necessarily by expanding the areas, but it should be accelerated by improving the research and development. However, one of the major obstacles is to determine which conservation strategies are the most suitable for each case as there are limited guidelines to enable conservation practitioners to decide the best practices.

CHAPTER 4
INITIATIVES TOWARDS ACHIEVING SUSTAINABLE
PALM OIL INDUSTRY

4.1 INTRODUCTION

Although the discussion in the preceding chapter shows that the oil palm industry as a whole has a favorable environmental profile, there is much scope for improving the environmental performance of the industry. Regardless of the negative comments and accusations by various parties towards this industry, the development of palm oil must be continued as it is an important crop in the world. As mentioned by Klara Arhem (2011) stop the production of palm oil is not the realistic ways, it appears as the policymakers have an important role in determining suitable policy to reduce the environmental impact. In Malaysia, the palm oil industry leaders and even the government have acknowledged those ecological problems associated with palm oil both in the past and at present. They have been putting efforts to address and possibly rectify those ecological problems, for example, through agreements and existing laws on the protection and conservation of ecology, habitats and species (Lapeenranta, 2009).

This chapter will explore the initiatives undertaken by the government of Malaysia in reducing the possible environment impact from this industry. The commitment of the government towards continuous improvement of palm oil industry in Malaysia is based on the holistic approach of sustainable development introduced

in the Bruntland Report, which focused on people, profit and planet as well as right to development.

4.2 ENVIRONMENT COMPLIANCE

Environmental conservation is seen as an important agenda being stressed by the Malaysian palm oil industry. This is proven by various measures and policies developed by the government to mitigate the impact of this industry to environment. The country's record on environmental conservation started as early as 1976 and was stated in the Third Malaysian Development Plan. It can be said that this industry is well regulated in which all growers, millers, refiners, processors and traders have to register and apply licenses before operating.

4.2.1 Regulatory Framework

As the largest producer and exporter of palm oil in the world since four decades ago, Malaysia has always placed a strong emphasis on the improvement in various aspects of upstream and downstream activities with regard to sustainable development. Since in the early development, back in 1950-1960s, this industry has been governed by various laws and regulations aimed to make this industry viable, although the word of sustainable has not been used. Palm oil is highly regulated industry as compared to other crops, currently is adhered to more than 15 laws and regulations under the four important subsections of environmental regulatory framework:

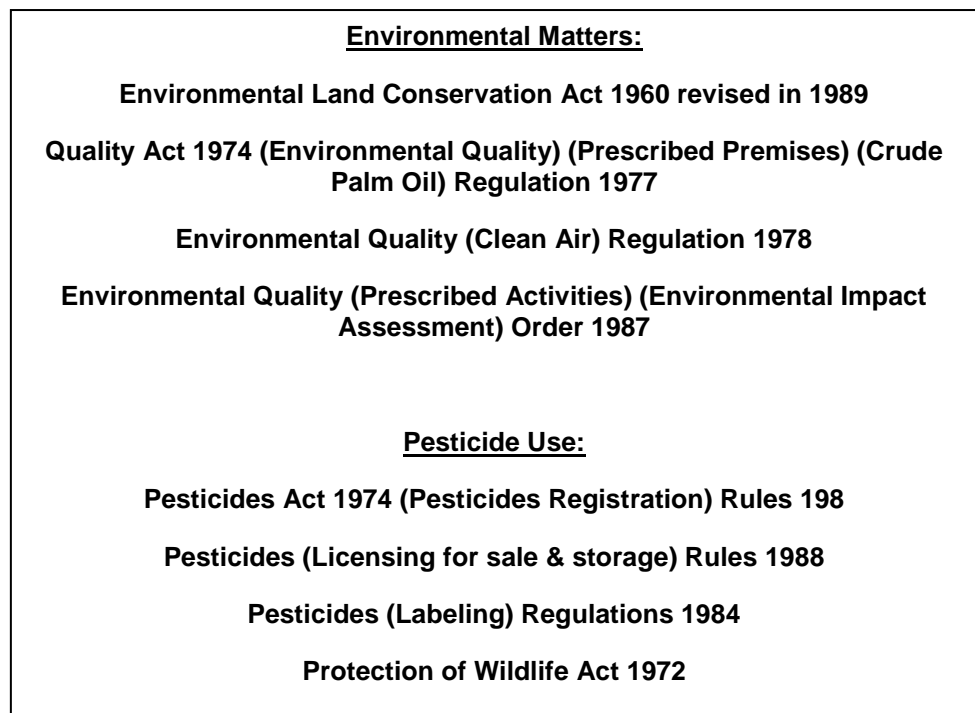


FIGURE 11: PALM OIL INDUSTRY REGULATORY FRAMEWORK

4.2.1.1 Environment Matters

The government of Malaysia realized the adverse impact of this industry as early as 1960's and 1970's due to extensive pollution of the country surface water and pollution of air caused by the oil palm processing mills. Comprehensive environmental control of the crude palm oil industry commenced soon after the enactment of the Environmental Quality Act, 1974 (EQA) and the establishment of the Department of Environment (DOE) in 1975. In order to regulate the discharge of effluent from the crude palm oil industry as well as to exercise other environmental controls, the Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order, 1977

and the Environmental Quality (Prescribed Premises)(Crude Palm Oil) Regulations, 1977 were promulgated under the EQA. Palm oil became the first industry applied the environmental quality control in order to ensure the sustainability.

Consultative and advisory body had been established with the cooperation between DOE, the Malaysian Oil Palm Growers Council (MOPGC), and PORIM (later known as MPOB). The primary task of this body was to initiate and monitor the progress of waste treatment research, establish appropriate technology based effluent discharge standards, and recommend an acceptable implementation schedule. A handbook on Industrial Processing and Environment: Crude Palm Oil Industry was launched to provide technical knowledge and pollution control technology to the respective stakeholders with aim to increase awareness on the environmental regulation and standard. These approaches were undertaken by the government in augmenting environmental control of the palm oil industry which has contributed to the improved environmental management. The compliance rate among the palm oil mills in the first decade of the implementation of the regulation was impressive and the average compliance rate was up to 75 per cent (DOE, 1991).

4.2.1.2 Land Matters

In Malaysia, the allocation of land for the purpose of urban development, agriculture use and foresters reserved is gazette under the National Land Code 1965. This allocation is based on the pledge made by

Malaysian two decade ago at the Rio Earth Summit to set aside 50% of land as forests to provide for biodiversity and habitat requirement, 25% for urbanization while another 25% for agriculture purposes. Malaysia has a land area of 33 million hectares with 56% or 18.5 million hectares is forested land area as shown in the Table 2:

Population	27 Million
Avg. pop. growth rate (2007 est.)	1.8%
Total land area	33 Million ha
Forested land area (2007)	56% -18.5 mil ha
Total cultivated land	20% -6.6 mil ha
Oil palms	13.6% -4.5 mil ha (2008)

Source:MPOB 2010

TABLE 3: LAND AREA IN MALAYSIA

Study conducted by P. Koh & D.S. Wilcove (2008) indicated that during the period 1990–2005, between 55% and 59% of oil palm expansion in Malaysia can be attributed to conversion of forests, and between 41% and 45% of oil palm expansion was likely due to conversion from pre-existing cropland (including rubber plantations). This figure however can still be reverted by these two tables on Land Use Change 1990-2008 and Forest and Deforest Rate 2000-2010.

Year	Palm Oil (million ha)	Rubber (million ha)	Cocoa (million ha)	Coconut (million ha)	Total (million ha)
1990	2.029	1.836	0.393	0.314	4.572
2000	3.377	1.431	0.076	0.159	5.043
2002	3.670	1.348	0.051	0.155	5.224
2004	3.880	1.282	0.044	0.147	5.353
2005	4.051	1.250	0.033	0.144	5.478
2006	4.165	1.225	0.033	0.142	5.565
2007	4.305	1.248	0.028	0.117	5.698
2008	4.480	1.247	0.021	0.115	5.863

SOURCE: MPOB, 2010

TABLE 4: LAND USE CHANGE (LUC) OTHER CROPS TO OIL PALM

Total expansion of oil palm plantation from 1990 to 2008 was about 2.451 million hectares, in contrary the total hectares of other crops was decreased for example; rubber area has decreased from 1.836 million hectares to 1.247 million hectares in 2008. This is part of land use change program between rubber and oil palm mostly happened in the plantation estates. Recently the oil palm cultivation takes place only over previously logged land, and mainly on land converted from rubber, cocoa and coconut cultivation (MPOC, 2007a). The total oil palm plantations of 4.5 million hectares are planted within the allowable agricultural land which occupies about 25 % of the total agriculture land area of the country. According to study conducted by the group Science, Technology and Society at Utrecht University, Netherland in 2008, the most important causes of land use change vary per region. In Sabah and Sarawak the most important causes have been timber extraction and shifting cultivation while in Peninsular Malaysia, and in recent years increasingly in Sabah, forest cover has been affected most by conversion to agriculture, mainly palm oil production.

The oil palm industry in Malaysia is a negligible user of agricultural land, and is not the cause of deforestation as the crop has been cultivated on land set aside for development and agriculture purposes, as accused by the NGOs. Deforestation happened in the early year of oil palm establishment as developing country needs to develop its land for food security and generate income. The relation between environmental damage and development is well explained by EKC's hypothesis. It is unavoidable scenario; however, this country took proper actions to mitigate the negative impact. Malaysia still managed to maintain at least 55 per cent (of 33 million hectares) of the forest areas as compared to other countries, as shown in the Table 4.

COUNTRY	FOREST AREA (MILLION HA)			DEFORESTATION (MILLION HA)		
	YEAR	2000	2005	2010	2000-2005	2005-2010
AUSTRALIA		154.92	153.92	149.30	1.00	4.62
INDONESIA		99.41	97.86	94.43	1.55	3.43
ARGENTINA		31.86	30.60	29.40	1.26	1.20
MALAYSIA		21.59	20.89	20.46	0.70	0.30

Source : FAO Global Forest Resources Assessment (2010)

TABLE 5: FOREST AND DEFORESTATION RATE FOR SELECTED COUNTRIES

This is due to the regulation imposed by the government on deforestation of permanent forest for oil palm cultivation as this forest has been gazette by an Act of Parliament and conversion into other purpose is not allowable. Under

the present policy, the non-forested zone is simply defined for national development use while the rest remains as permanent forest. The use of land for oil palm cultivation in Malaysia is insignificant. For example, the land area occupied by oil palm plantations in Malaysia is less than 0.1% of the total agricultural area globally. Within the country, oil palm occupies 15% of the total land area as compared with 55 % forest, indicating a prudent policy by Malaysia to keep its forest and forgo an opportunity to earn a higher income from a more sustainable agricultural development.

4.2.1.3 Wildlife Matters

The government took the initiatives to establish the Malaysian Palm Oil Wildlife Conservation Fund (MPOWCF) in 2006, a special fund for sustaining the flora and fauna as well as conservation activity of the wildlife including orang utan. This project received a good response from the plantation companies particularly from the public listed companies through their corporate social responsibility program. The initial fund with a total amount of RM20 million contributed from government grants and industry players, meant for conducting study and special projects, managed by the MPOC. The establishment of MPOWCF will serve the following purposes:

- i. Helps to portray the good image of Malaysian palm oil by providing concrete assurances that its cultivation does not cause deforestation or loss of wildlife and their habitat through a focused conservation research program to be undertaken by experts from the academia, government agencies and NGOs,

- ii. Provides funds for continuous studies on wildlife, biodiversity and environmental conservation while factoring the overall impact of the palm oil industry on these parameters.

No.	Project	Partner	Purpose	Status
1	Jungle Patrol Unit	Sabah Forestry Department	Safeguard wildlife and deter poaching	2007- ongoing
2	Tabin Wildlife Reserve	Tabin Wildlife Sanctuary/Sabah Forestry Dept	Book "Tabin-Sabah's greatest wildlife sanctuary"	2007-2009
3	Diversity of Ground Vegetation	Sabah Forestry Dept	Study in oil palm plantation	2007
4	Biodiversity conservation on ox-bow lake study	Universiti Malaysia Sabah	Inventory and environmental assessments	2007
5	Orang Utan Island	MK Land	Orang Utan Awareness programme for school children and Orang Utan Infant Care	2007-2009
6	Orang Utan Survey	Borneo Conservation Trust (BCT), Sabah Wildlife Department (SWD) & HUTAN (NGO)	Assess population & recommend solutions to increase population of orang utan	2008
7	Orang Utan Conservation Colloquium (OUCC 2009)	BCT, SWD, HUTAN	• Discuss current status of orang utan within oil palm landscapes and Discuss models for Orang Utan conservation	2009
8	Biodiversity for Plantation Managers	Wild Asia	Awareness on biodiversity and wildlife conservation	2010
9	Wildlife Rescue Centre	Sabah Wildlife Dept/ShangriLa Rasa Ria	Rescue & translocation of endangered wildlife found in oil palm landscapes	2010-ongoing
10	Sabah Wildlife Conservation Colloquium 2012	Sabah Wildlife Department	Shared/highlighted conservation efforts and studies, with a focus on endangered species in Borneo, Malaysia.	2012

TABLE 6: PROJECTS CARRIED OUT WITH MPOWCF FUNDING

4.2.2 Palm Oil Code of Practices

In response towards becoming more sustainable in the long run, government through MPOB has developed its own standard for certification of practices for sustainable production of palm oil which comprise six areas along the supply chains.

The code of practice (CoP) introduced in 2008 is set to enhance the reputation of Malaysian palm oil in meeting the demands of an increasingly health and environment conscious market. The six areas of CoP that is certified under the ISO 17021 will include:

- a) Code of Good Practice for Nurseries
- b) Code of Good Practice for Palm Oil Estates
- c) Code of Good Practice for Palm Oil Mills
- d) Code of Good Practice for Palm Kernel Crushers
- e) Code of Good Practice for Palm Oil Refineries
- f) Code of Good Practice for the Handling, Transport and Storage of Products from the Oil Palm

These CoPs can be applied along the supply chains including plantation, mills and across the industry with aims to reduce emission and ensure sustainability in the industry (Wahid, 2010). Implementation of the code will take into accounts the elements of hygiene, food safety and quality as well as traceability which is the important criteria in meeting standard requirements from the importing countries. The participating countries will demonstrate on how these best practices can be implemented in their daily operation to ensure global acceptance of their produces, thus, at the end of the day, it will also contribute to the nation's economic growth.

4.2.3 Best Development Practices

Over the year, the industry has developed many practices to minimize the negative impact to the environment particularly during the land clearing and after planting the crops. Integrated pest management (IPM) and zero burning technique are among the best developed practices have been used by commercial scale plantation. The adoptions of the zero burning technique for replanting on a commercial scale started since 1989 (Mohd Hashim et al, 1993) has been a major factor in minimizing air pollution by plantation in Peninsular Malaysia. This is the technique used to reduce the clearing method by burning the old crops which previously had been a common method of oil palm cultivation. The new technique that complies with the Environmental Quality Act 1974 and the Environment Quality (Clean Air Regulations) 1978, includes the disposal of old palms by shredding and decomposition in the fields, thereby avoiding air pollution and helping return the plant nutrients to the soil. Malaysia has been successfully implemented this technique by improving awareness among the plantations and smallholders. This technique has proven to be the most environment-friendly technique; it was subsequently adopted as the industry standard in palm oil replanting. It was awarded the Roll of Honor in the Global 500 at Rio de Janeiro in 1992 for the commercialization of the technique.

The implementation of IPM reduces the use of pesticides in plantations. The main objective of IPM is to reduce the need for pesticides in the plantation areas by using natural predators like owls, snakes, and insects to control pests. It is estimated that about one per cent of the oil palm planted area is treated with pesticides every year (Wood and Corley, 1990). IPM combines biological control and the judicious use

of pesticides and safer application methods, such as trunk injection of insecticides. Nevertheless, some stakeholders are still concerned over potential chemical contamination, particularly in the groundwater. MPOB is also collaborating with an agrochemical company to study the environmental impact from the use of metsulfuron, a commonly used herbicide (Cheah U.B., pers. com.). IPM is considered important practices for sustainable development.

4.2.4 Life Cycle Assessment (LCA)

Enhancement on the palm oil activity with regard to the environmental impact of palm oil needs a thorough evaluation on every activity along the supply chain. It is imperative to consider the ecology effects of the production and processing plants to show the environmental performance of the palm oil sector. In this regards, MPOB took the initiative to introduce the use of LCA for palm oil products, including palm bio diesel, from the crop grown on mineral soils (MPOB, June 2011). LCA is a process tool to evaluate the environmental impact associated with a product, process, and activity by identifying and quantifying the energy and materials used and the waste products released into the environment (Halimah Muhamad et al, 2012). Through this process, compilations of inflows and outflows within the supply chain will be evaluated to identify any environmental impact associated with these flows. Results interpreted in this assessment will help make a decision for improvements to the environmental performance.

Before introducing this assessment technique to the private sector, MPOB conducted several studies for the application of LCA on certain supply chain activities

including activity in the oil palm nursery. For example, in 2012, MPOB conducted a study on the environmental impact rise from the oil palm nursery activity and the result shows that, the production of an oil palm seedling in the nursery had an insignificant impact on environment (Halimah Muhamad et al, 2012). However, it was identified that the area contributed to the fossil fuel depletion sourced from the use of seedling poly-bags and use of *pesticides dithiocarbamate* to protect the seedling. In this regards, recommendation will be made on the type of poly-bags and pesticide to reduce the impact on environment. LCA envisaged the government commitment through cooperation from the private sectors in contributing to the sustainable development of the palm oil industry. Companies engage in LCA will gain additional credibility thus inspire trust and confidence in their products, services and events by demonstrating conformity assessment to meet environmental and societal needs as well as global market requirement.

4.2.5 Palm Oil as Carbon Sink

Studies have shown that oil palm plantations are as effective as rain forest in acting as carbon sink-areas of dry matter that serve to absorb the harmful greenhouse gases from the atmosphere. Oil palm plantations are capable of assimilating up to 36.5 tonnes of dry matter/ha/year, which is significantly more than the 25.7 tonnes of dry matter/ha/year assimilated by rain forest. With the industry in its growth phase, most oil palms are still growing to maturity; and oil palm agriculture helps to enrich soil organic matter. A study on seedlings shows that doubling of CO₂ can increase the photosynthetic rate by nearly 10-fold.

During planting, several measures are taken to prevent soil degradation and conserve soil fertility. On hilly land, contour terracing is carried along steep slopes. Silt pits help reduce the length of slope while trapping soil and plant nutrients. Pruned fronds placed along the slope minimize soil erosion and fertilizer loss. Very often, hilly forest areas with slopes greater than 250 meter are left untouched. Oil palm trees are unique in a way that they have higher leaf area index that allows them to have better photosynthetic efficiency. As a results, palm trees will produce more oxygen to the air and absorb more carbon dioxide from the atmosphere. A study has shown that an oil palm tree has a leaf area index of 5.6 which is comparable to that of the rain forest.

4.2.6 Roundtable of Sustainable Palm Oil (RSPO)

Growing concerns about the environmental impact of palm oil initiated the formation of Roundtable on Sustainable Palm Oil (RSPO), a nonprofit, industry-led trade organization with the objective of promoting growth and use of sustainable oil palm products through credible global standards and engagement of stakeholders. This organization was initiated by WWF, established in 2004, unites stakeholders from seven sectors (Figure 10) of the palm oil industry from all over the world to develop and implement global standards for sustainable palm oil.

Players in the Sustainable Palm Oil Supply Chain



FIGURE 12: PLAYERS IN THE SUSTAINABLE PALM OIL

Malaysian palm oil industry is one the founding member of RSPO and has been actively participating in RSPO discussions. By March 2011, the ordinary members of RSPO are 432 members account for approximately 35% of the palm oil produced worldwide and the proportion is shown below (Figure 11).

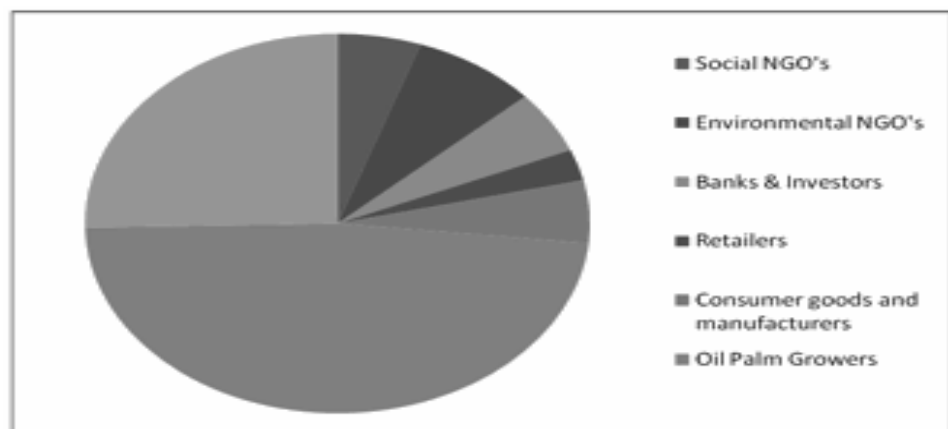


FIGURE 13: PROPORTION OF MEMBERS OF THE RSPO

The main vehicle of RSPO is to promote the growth and use of sustainable palm oil through co-operation within the supply chain and open dialogue with its stakeholders. RSPO adopted the concept of sustainable development that is composed of legal, economically viable, environmentally appropriate and socially beneficial management and operations. RSPO has established eight fundamental principles and 39 criteria regarding the production of sustainable palm oil. A key criterion is that new plantations must not replace primary forest areas or areas required to maintain or enhance one or more High Conservation Values. The other criteria deal with respecting the rights of local inhabitants and employees and conserving the habitats of endangered animal species. The Roundtable has set up certification schemes to assure oil processors and consumers that the sustainable palm oil they purchase indeed supports plantations that operate in a sustainable way. Independent, well-established, RSPO-approved certification bodies are responsible for carrying out audits at the entire supply chain including plantations and mills.

Implemented in a holistic manner, the RSPO could serve as the basis for overall sustainability management. For instance, RSPO's Principle 8 on continuous improvement could be a key driver for long-term economic viability. A survey conducted by Teoh Cheng Hai in May 2011, among nine plantation companies that collectively accounted for about 45% of total production of certified sustainable palm oil (CSPO) globally showed that implementation of the RSPO principles had resulted in considerable improvements in their triple-bottom line performance (economic, social and environmental). At the plantation level, effective implementation of best practices required by the RSPO standard had resulted in improvements in operational efficiencies and reductions in costs. At the corporate level, the respondents reported

that certification had enhanced their corporate image and reputation and provided better access to international markets.

Palm oil obtained from plantations that meet the RSPO will qualify to be labeled as ‘Certified Sustainable Palm Oil’. Two large plantation companies from Malaysia, United Plantations Bhd., and Sime Darby Plantation Sdn. Bhd. became the first company to be certified under the RSPO scheme in 2008. In total, there are about 34 mills (Table 6) around the world has been certified with RSPO certification, in which 20 mills are located in Malaysia and owned by local company.

Table I Certification of palm oil by country and company					
<i>Company</i>	<i>Country</i>	<i>Mills</i>	<i>CPO (mt)</i>	<i>PK (mt)</i>	<i>PKO (mt)</i>
United Plantations Berhad	Malaysia	6	185,324	50,195	
New Britain Palm Oil	PNG	4	257,338	62,181	
Sime Darby	Malaysia	5	209,444	51,460	
Kulim Bhd	Malaysia	3	88,914	24,943	
Wilmar/PPB Oil Palms	Malaysia	3	122,900	27,400	
PT Musim Mas	Indonesia	2	135,000	31,250	
IOI Corp	Malaysia	1	63,000	14,850	
SIPEF/Hargy Oil Palms Ltd	PNG	2	78,158	0	5,830
Cargil/PT Hindolie	Indonesia	2	51,344	12,122	
Kuala Lumpur Kepong-KDC	Malaysia	2	92,000	22,000	
PT London Sumatra	Indonesia	4	169,480	30,017	2,772
Total		34	1,452,902	326,418	8,602

TABLE 7: RSPO CERTIFICATION OF PALM OIL BY COUNTRY AND COMPANY

RSPO Secretary General Darrel Webber confirmed the commitment shown by Malaysia in achieving its significant milestone as the second largest RSPO membership by country after United Kingdom; contributes 45% to the total volume of global CSPO; makes up 36 per cent of certified grower companies around the world; and almost 50 per cent of total mills certified globally are from Malaysia. Malaysia is

believed to continue its success and leadership towards sustainable palm oil as the business model of the future (Darrel Webber, 2012).

4.3 ECONOMIC COMPLIANCE

Palm oil industry has proven to be important sources of income to the nation and has been successful in eradicate poverty among poor. This industry creates multiplier effect by creating various supporting industries including the set-up of small and medium industry particularly in the oil palm plantations. Oil palm has many applications either in food or non-food or due to successful research and development activities, respective R&D palm oil agency in Malaysia found new applications. Therefore, government takes initiatives to establish supporting policy and guidelines to enhance the contribution of palm oil to the nation's economy.

4.3.1 The National Biofuel Policy

The government of Malaysia launched the National Biofuel Policy in March 2006. The original mandate was to stabilize the price of the CPO and exploitation of new export market opportunities (Chin, M. 2011). The establishment of policy came in time as currently Malaysia has to face many negative comments regarding the issue of sustainable of the palm oil industry. The fast depletion of fossil fuels, coupled with the increasing awareness of environmental issues, concern for increasing greenhouse gas emissions and escalating petroleum prices, has led to concerted efforts in the search for renewable and environmentally friendly alternative energy sources. In this regards, bio fuels have an important role to play as alternative sources of energy. For

instance, bio fuels can lessen the dependency on fossil fuels and contribute to energy security national strategies.

Moreover bio fuels are targeted in international and national agendas as means to comply with Kyoto Protocol targets and as Climate Change mitigation measures. This increasing interest on bio fuels has created a new market opportunity especially for developing countries in the tropics, where the production of bio fuels and their feedstock can be very lucrative and have the potential to contribute to poverty alleviation directly by the development of domestic industry, employment and national economic health. As the world's largest producer and exporter of palm oil, the Malaysian government realized its potential to become a pioneer in the bio diesel industry (Lim and Teong 2010).

The commercial interest in biodiesel dates back to the early 1980s. Continuous efforts on R&D had been carried out by MPOB to explore further potential of these new findings. The first commercial-scale bio diesel plant began operations in Pasir Gudang, Johor in 2006 (Abdullah et al. 2009). During August–December 2006, 55 000 tonnes of bio diesel was produced in Malaysia before the production increased to almost 130 000 tonnes in 2007 (MPOB 2008). In term of export, in 2009 the export volume of Malaysian bio diesel increased by 24.9 per cent to 230 000 tonnes, from 180 000 tonnes in 2009 (Basri, 2010). The European Union was the largest bio diesel export market, accounting for 119 000 tonnes (or 52.4% of total bio diesel exports), followed by the United States with 40 000 tonnes (17.4%) (Basri 2010). It was reported by MPOB that the export revenue generated from bio diesel was RM605.8 million in 2009. To date, Malaysia has 25 biodiesel plants, with the total capacity of

2.6 million tonnes; however current production is less than 10 per cent of the total installed capacity (PEMANDU 2010).

However, many of these proposed projects have been delayed or cancelled due to the dwindling viability of bio diesel, resulting from increasing palm oil prices and decreases in fossil fuel prices (Abdullah *et al.* 2009). The industry is extremely vulnerable as a result of fluctuating palm oil and petroleum prices and restrictive bio fuel policies in key consumer markets. The Malaysian government will need to decide on the role of bio fuels in the economy for the coming decade. Will bio fuels primarily be produced for export earnings, capitalizing on demand from EU and US markets? Or, will bio fuels be consumed primarily in the domestic transport sector? In order for the domestic bio diesel market to be viable, the domestic bio fuel sector should be encouraged to diversify the choice of feed stocks (e.g. animal fats and waste oil) to reduce dependency on palm oil.

4.3.2 New Key Economic Area

Realizing the importance of the palm oil industry to the country's economy, palm oil industry had been selected by the government of Malaysia as one of 12 New Key Economic Areas (NKEAs) towards achieving high income status by year 2020. This inspiration had been announced in the 10th Malaysia Plan (2011-2015) in 2010. As one of the NKEAs, this industry will be positioned as the core of the Economic Transformation Program (ETP) and will receive special support from the government in term of funding and special talents. Palm oil industry is set to raise its GNI contribution from the current RM52.7 billion to RM178 billion by 2020 and this will

be achieved through the implementation of eight core entry point projects (EPP) (Ng et al, 2011).

The Palm Oil NKEA is aimed at improving upstream productivity and expanding downstream areas, whilst focusing on its sustainability. In this regards, independent smallholders will also receive attention and support from the government. At the same time, downstream sector that is still yet to be fully captured will be enhanced while the role of private sector will be reinforced in steering the industry. The palm oil industry is expected to grow by seven per cent over the next 10 years determined by these three main factors:

- a) Further gains in average productivity of fresh fruit bunch yields and the oil extraction rate;
- b) Expansion of new land by Malaysian companies abroad due to land limitation;
- c) The venture of large companies into high potential downstream activities such as processed food, bio diesel and oleo chemicals.

In order to achieve this economic target, two important elements that should not be neglected are the social well-being and environment soundness. With the implementation of EPP, it is targeted to improve the salary of independent smallholders by 47 per cent by 2020. Dependency on the foreign labors will be reducing up to 15 to 20 per cent as a result of major gains in workers' productivity. In addition, new jobs opportunity is created at the upstream and downstream levels by 41,600 jobs and 81,800 jobs respectively. The above data signifies the government strategies to strengthen the palm oil industry and improve farmers' quality of life, in parallel.

4.4 SOCIAL COMPLIANCE

Malaysia strives to strike the sustainable development through the holistic approach in balancing between environment, economic and social. As mentioned in Bruntland's report, one of the focus areas in sustainable development is that the needs of the poor in all nations must be met – hence, sustainability efforts should address the eradication of poverty in the nations. In this regards, the vision to eradicate poverty among poor people, back in early years has been achieved by using palm oil as tool for development.

The palm oil industry as a major employer protects people in the widest sense by the eradication of poverty, creating jobs, a decent livelihood, providing infrastructure and a contribution to social stability. The palm oil industry is a major source of employment, and as the planted area grew from 1.2 million hectares in 1980 to 4.7 million hectares in 2009 (a 3.9-fold increase) (MPOPC, 2010), the industry generated a 4.9-fold increase in employment as illustrated in the Table 7. Based on estimated 5-person per household, the total number of people in Malaysia dependent on the oil palm industry could well be around 2.26 million.

Year	Area (ha)	People Employed (person)
1980	1,203,306	92,352
1990	2,029,464	115,285
2000	3,376,664	251,039
2007	4,304,913	426,000
2008	4,487,957	438,000
2009	4,691,160	451,000
2010e	4,853,766	603,786

TABLE 8: OIL PALM PLANTATION AS SOURCE OF EMPLOYMENT

The economic contribution of palm oil and other plantation commodities provided the assurance of a remunerative source of income and unlimited employment opportunities throughout the year. A day at work of harvesting oil palm fruits can provide a person with an income of more than US\$30 (Basiron.Y, 2011). In a country where two meals per day would cost only US\$4, such an income is rather remunerative. Nobody should be deprived of a better life or even resort to begging as long as he or she is willing to put in a few hours of work in a day in the oil palm plantation. The unemployment rate in Malaysia is recorded as 3.4 per cent (DOS, 2012) which means the country is enjoying full employment rate. However, this also means that, there is still not enough supply of labor particularly in plantation sector. This is where employment opportunities offered by the plantation industries in Malaysia also benefit labor from other countries. The income earned by the 300,000 foreign workers employed in the Malaysian oil palm industry, ensures that there is food on the table on a daily basis for 1 million of their family members living back home in Indonesia, Bangladesh, the Philippines and other neighboring developing countries (Basiron.Y. 2011). In simple terms, the oil palm industry not only provides

an income to Malaysians, but shares this benefit with an additional one million foreign workers.

The oil palm industry is also a major source of income for the government through the collection of corporate taxes. The benefits from such income will be more prevalent as the multiplier effects of government spending will be extended to other sectors such as education, health and infrastructural development. The government taxes the palm oil industry in the form of a windfall tax and uses the money raised to make cooking oil affordable to the public. It is clear that palm oil provides solutions on many fronts: affordable food, lucrative income and overall stability to the country. This is one of the factors for preserving social stability in the country that has been enjoyed by Malaysian.

In terms of eradicating poverty among poor, government through land development agency, FELDA, was tasked with carrying out land development and resettling the landless in the country, and now has developed 853,313 ha of land and resettled 112,635 families (Ahmad Tarmizi, 2008). FELDA has successfully helped eradicate poverty amongst settlers. The success story of the FELDA scheme has helped ensure that the income levels of the scheme's settlers has remained well above the national poverty line, with the gap between settlers' mean income and the national poverty line widening consistently. In 2006, the estimation of monthly income received by FELDA smallholder was RM1338 and increased to RM3000 in 2010, which is far above the national poverty line of RM720 per month as shown in Table 8.

Year	Felda Settler ¹	Independent Smallholder ²	National Poverty Line (PGK) ³
2006	RM 1,338 (US\$ 429)	RM 476 (US\$ 153)	RM 526 (US\$ 169)
2007	RM 2,221 (US\$ 712)	RM 1,209 (US\$ 388)	RM 740 (US\$ 237)
2008	RM 3,278 (US\$ 1,051)	RM 1,094 (US\$ 351)	RM 691 (US\$ 221)
2009	RM 2,457 (US\$ 788)	RM 944 (US\$ 303)	RM 666 (US\$ 213)
2010	RM 3,000 (US\$ 962)	RM1,259 (US\$ 404)	RM 720 (US\$ 231)

TABLE 9: LEVEL OF INCOME OF OIL PALM SMALLHOLDERS

In Malaysia, smallholder sector which makes up 40 per cent of oil palm planted areas in Malaysia is among crucial components in the palm oil industry. There is more than 300,000 small farmers throughout Malaysia cultivate oil palms, contributing to more than 18 million tonnes of palm oil exported to the world every year. These small farmers, in addition to earning income from cultivating oil palms, have also adopted an entrepreneurial spirit, raising livestock and cultivating fruits and vegetables amid their oil palms. As a result, palm oil has directly contributed to the adoption of ingenious new practices that raise the productivity of agriculture production as well as improve the standard of living throughout the country. Hence, over the years, the oil palm industry has consistently contributed to poverty eradication and narrowing of the income gap between rural and town-folk, created rural townships where workers reside and enjoy good quality of life with adequate social infrastructure such as housing, health, religious facilities.

4.5 AWARENESS AND CONCERN FROM THE INDUSTRY PLAYERS

The implementation of any sustainable measures imposed and suggested by the government of Malaysia will not be effectively carried out if the industry players fail to give adequate responses. As mentioned in the previous chapters, the palm oil sectors in Malaysia is driven by the private sectors, accounted 60% of the plantation areas. In order to identify the level of commitment by the private sector, this study chooses five major plantation companies in Malaysia to find out their response on the issue of sustainability. Due to limited time, this study only reviews the companies' policy which can be found in their official website. The sample is taken from the companies already listed in KLSE as follows:

- a) Genting Plantation Berhad
- b) Kulim Berhad
- c) TDM Berhad
- d) United Plantation Berhad
- e) Sime Darby Plantation Berhad

All five companies endorse the principles of sustainable in their daily activities based on the holistic approach of protecting the planet, people and profit. A number of initiatives have been developed by these plantation companies, which aim to define and provide a framework for 'sustainability' in production. All these initiatives share some common features; in particular, they use environmental, social and economic indicators to define sustainable or good management practices at the field level. Their commitments are articulated in their Corporate Social Responsibility statements and it can easily be found in their official websites. Through the concerted

efforts that have been put in years by these companies had shown tremendous result in which three companies, United Plantation Berhad, Genting Plantation Berhad and Sime Darby Berhad already received the certificate from RSPO while the other two companies are due to receive it by 2012. Hence, the commitment presented by the respective plantation companies show very clear objectives and responsibilities in adopting appropriate management strategies in compliance with sustainable concepts.

4.6 CONCLUSION

Does all the pro-active measures taken by government of Malaysia in confirming the palm oil industry is conducted within the boundary of sustainable is sufficient? Should palm oil industry continuously be blamed and be accused for the environmental degradation caused by this industry? Should Malaysia stop producing this crop to avoid further disaster to the environment? What is alternatives economy activities should be carried out to replace oil palm plantation?

The exponential population increase in recent decades has increased the practice of agricultural land conversion to meet demand for food which in turn has increased the effects on the environment. Climate change and agriculture are interrelated processes, both of which take place on a global scale. Global warming is projected to have significant impact on conditions affecting agriculture, including temperature, precipitation and glacial run-off. Environmental impact caused by agriculture activities including oil palm plantation definitely cannot be eliminated, but it can be reduce by taking appropriate actions and imposed laws and regulations on the sector. Thus, any initiatives taken by any related parties including Malaysia and

RSPO in reducing the environmental impact with aims towards creating a sustainable environment should be tolerated by global world particularly the respective international NGOs.

Malaysia's efforts to promote sustainable development has resulted in her being ranked number 38 among 146 countries worldwide by the Environmental Sustainability Index Study 2005, Yale University. In addition, a follow-up 2006 study ranked Malaysia ninth among 133 countries in terms of efforts taken to reduce environmental stress on human health and protecting ecosystem vitality.

CHAPTER 5

CHALLENGES, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

In the next decade, it is expected that the consumption of vegetable oils will be increased by more than 25 per cent to 184.3 million from current 46.8 million in 2010, due to increase in world population and improving purchasing power. Palm oil is expected to play a dominant role in meeting the demand. As one of the main producing country, the future direction of the Malaysian palm oil industry is very much depending on this scenario since most of its products are for export market. Thus, in order to remain competitive in the market-place, the industry needs to improve the productivity, explore opportunities to diversify the income base, widen the end-use- base for palm oil and explore new marketing approaches.

5.2 PALM OIL AND FOOD SECURITY

Food security is defined in the World Food Summit 1996 as existing “when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life”. According to the World Health Organisation (WHO), food security is built on the available of food, accessible to food and use of food. Palm oil is the cheaper vegetable oils available in the market and has been a constant supply of cooking oil in the major developing countries. In this regards, palm oil industry plays an important role in enhancing food security among the developing countries and has long been an acceptable and affordable food source to the majority of the world

populations. Even doubling the oil palm cultivated area in Malaysia would not have any significant additions to global greenhouse emissions but it would significantly provide an additional 25 per cent increases in supply of edible oil for the world market. As palm oil is clearly proving to be the only source of supply for those countries with a net import need for edible oils, it makes a lot of sense to increase the supply of palm oil for meeting food security needs of the world. Therefore, any efforts to reduce or limit the role of palm oil in the developing world would be likely to have an adverse impact on food security; both in the countries that currently produce it as well as those that consume it as a food staple (World Growth, 2010). Restriction of oil palm expansion contributes to the increase in the price of food and limits the supply of edible oil, thus it will result in decreasing the accessibility to get cheaper cooking oil. Ensuring adequate supply of edible oils for the world market at affordable prices is very important to low income people of the developing world.

5.3 CHALLENGES

Over the past 50 years, Malaysia has been a world leader in palm oil industry, able to manage a systematic productive plantation with a variety of palm oil products as a result of intensive and continuously research and development activities. Within 30 years, this industry had shown a tremendous growth for almost 600 per cent, averaging around seven per cent growth per annum (USDA, 2011). However, this era of growth may be coming to the end due to arising of many obstacles and challenges that hinder the overall performance of the industry. Malaysia was the main producer and exporter of palm oil since 1960 before being surpassed by the neighbouring country, Indonesia. Major issues and challenges faced by the palm oil industry in

Malaysia have been discussed in many academic writings, conference papers and publication journals, as being stated in the next section.

5.3.1 Trade Barriers

The rapid globalization and dismantling of trade barriers is resulting in many change in today's international trade environment. The future of food-based agriculture crop like palm oil is becoming more complex due to changing of consumer's lifestyles and growing concern about health, food safety, and the environment. Consumers become more demanding on the safety and quality of food and the source of raw materials for preparing the food products. These requirements have important implications on trade, particularly on the market access and development when certain countries imposed stringent standard in international trade. For example, concern over deforestation has led to unfair restrictions on imports of palm oil in the EU and the United States (USA). The proposed imposition of stringent certification for sustainability on investment in oil palm cultivation by the World Bank would reduce the expansion and development of the palm oil sector.

5.3.2 Land Scarcity for Expansion

Malaysia was the main producer and exporter of palm oil since 1960 before being surpassed by the neighbouring country, Indonesia due to limitation of available land for expansion. Government's commitment in sustaining at least 50 per cent of land in forested form and pressured from the international NGOs on the issue of deforestation constrained the expansion of oil palm. With 4.7 million hectares out of

6.6 million hectares of agricultural land already planted with oil palm, this industry faces the shortage of prime agricultural land for the further expansion. Although most of the producers already shifted to Sabah and Sarawak, the best land has been delineated and mostly planted (Khoo.K.M, 2002). New developments are thus shifting more and more to the marginal areas with poorer soils, terrain and rainfall. Inevitably, such plantings will cost more to develop, will be less productive and will lead to higher production costs. In addition, this kind of land may create more issue on environmental degradation by the NGOs. Therefore, industry should consider a better solution to increase the productivity of oil extraction without increasing the area of cultivation.

One of the best solutions is through enforcing the replanting policy with special attention is given to palm trees owned by individual smallholders with current areas of 365,000 hectares (Pemandu, 2010). It is estimated that 25-30 per cent of palm trees already passed the productive year. However the replanting rate is still low due to longer waiting period for new tree to start producing (USDA, 2011). In the context of increasing demand for palm oil and related environmental and social concerns about palm oil expansion, there is a need for extension knowledge on how to increase the average palm oil yield per hectares in a sustainable way, thus increasing overall palm oil production without additional land use. In contrary, there is a huge opportunity for the neighbouring competitor to expand their area due to available land for expansion. In fact, some of the Malaysian companies already started venturing to other countries such as Indonesia and Liberia to expand their investments. Currently, Malaysian companies have collectively established over 1 million hectare of active

palm oil plantation in Indonesia and own a further 1 million hectare of land bank (USDA, 2011).

5.3.3 Labour Shortage and Limitation of Mechanization

Palm oil industry in Malaysia is still highly dependent on foreign labours for harvesting, general up keeping and maintenance of plantation areas. Too many foreign labours in the plantation area create social disturbance with local people as well as increase the criminal rate in the country. High labour requirement in the upstream sector hinder the process of mechanization in the plantation areas. Mechanization must meet stringent criteria such as able to reduce the labour cost, increase productivity as well as improve the product quality. Thus it is one of the key challenges of the plantation in scale up its mechanization level.

5.3.4 Competition from Neighbouring Countries

The palm oil industry faces increasing competition from the neighbouring countries such as Indonesia and Thailand mainly on the issue related to the cost of production. Indonesia overtook Malaysia's position as the main producer of palm oil in 2006. This year, it is predicted that the competition becomes more challenging due to change in Indonesia export tax structure. Indonesia has slashed its export tax on palm oil product by more than half in Oct 2011 while Malaysia charges high duty on crude palm oil shipment to protect the domestic refining industry. This recent policy may lead many local downstream producers to import processed palm oil from that country. Indonesia is also able to produce palm oil with relative low cost due to high

supply of cheap labour and available land for expansion. Competition is also derived from another palm oil producing country in the South American continents. Brazil has announced the plan to scale up their palm oil cultivation areas to more than 850,000 hectares in the Amazon forest, which is suitable for palm oil plantation. Brazil aims to become a good producer though not a big producer by inculcate the concept of sustainable development in their plans.

5.3.5 Low Palm Oil Yield among the Smallholders

Currently, the average yields produce by the independent smallholders are 17 tonnes per hectare compared with 21 tonnes per hectare and 23 tonnes per hectare for organised smallholders and plantations, respectively (The Edge, 2010). The average plot size per family is around 3.9 hectare and normally these smallholders are lacked of knowledge in the latest technology and lack of exposure to implement the plantation best practices. They are scattered geographically, disorganised and highly dependent on the middlemen to channel their FFB to the nearest mills. If they are not being assisted, these smallholders will leave behind and probably with effect the total production and quality of palm oil produce in the country.

5.3.6 RSPO Credibility

RSPO has been set up with the objective of promoting growth and use of sustainable palm oil products through credible global standards and engagement of stakeholders. However, until now, RSPO keeps on receiving criticism from the industry players as well as the NGOs on their credibility. According to Laurance

(Laurance et al, 2009) RSPO has been dominated by palm-oil producers and it was suggested that this organization should be restructured to give more weight and decision-making power to environmental organizations and experts. However, Malaysia Star editorial claimed that palm oil producers representing only 18 per cent of the organization membership, thus this disproportionally membership created discrimination on the producers' part. Palm oil producers also claimed that this organization has been dominating by the NGOs such as Greenpeace and Friend of Earth. Although efforts have been intensified by the producers to certify their products, but much have been said by the NGOs on the sustainable of palm oil. As a result in 2011, the biggest Indonesia Palm Oil Association (IPOA) has withdrew the membership in RSPO while Malaysian Palm Oil Association (MPOA) urged their members to stop seeking new RSPO certification for the production of certified sustainable palm oil due to poor uptake of the RSPO-certified palm oil. About 60 per cent of certified palm oil is remained unsold (Rajesh Chhabara, 2011). One of the weaknesses of RSPO is related to their establishment that based on voluntary basis. Recently, Indonesia and Malaysia, the main producer of palm oil accounted for more than 80 per cent of world share is proposing to establish their own accreditation guideline through setting up of Indonesia-Malaysia Palm Oil Group.

5.4 RECOMMENDATIONS

With Malaysian economy hugely dependent on revenue from palm oil, accounting for eight per cent or almost RM52.7 billion of the nation GNI, it is very important for this industry to identify the needs to stay on the top of the game. Based on the commitment to ensure the sustainable in this industry, this study will try to

provide some recommendations for the industry to spur the growth. There are three important aspects to be considered by the industry in order to remain resilient in the global market. First, Malaysian's palm oil should accelerate the downstream sector as measure to mitigate the problem of scarce land for expansion, insufficient supply of cheap labors as well as rising competition on production of crude palm oil from other producing countries. Second issue is related to the need to establish an international accreditation body to endorse the supply of palm oil that complies with sustainable criteria. There is also a need to raise awareness among the international communities about the real threats of palm oil industry in the future.

5.4.1 Accelerating the Downstream Sector

With strict obligation to maintain forest cover as well as inconsistent supply of cheap labors, it is difficult to expand the new plantation area. Therefore, government's decision to accelerate the downstream sector and intensify the value added products appear in an appropriate time. Malaysia cannot rely on exports of primary commodities solely as cost of production in term of wages and land price are kept increasing. Currently, the industry has yet to capture the full potential of existing downstream opportunities. In 2009, only 18.5 per cent of the palm oil output is exported as downstream products as opposed to 81.5 per cent exported as upstream products either in crude form or processed form (PEMANDU, 2010).

In order to ensure the consistent growth, the industry has to integrate and invest the resources into the high potential downstream applications. There are a lot of opportunities for the industry to explore in order to widen the demand base for palm

oil products including in the nutraceuticals, pharmaceuticals and high value food applications. On the other hand, a vast quantity of biomass is available to be converted into value added products which can generate additional income to the industry. Oil palm biomass is one of the answers to growing concern over environmental issues affecting natural forest conservation. Each year, the oil palm industry generates more than 80 million tonnes of biomass in the form of empty fruit bunch, oil palm trunks and oil palm fronds in which less than 10 per cent is being exploited. Utilisation of palm biomass into value-added products such as pulp and paper, automotive components and MDF have the potential to generate additional revenue.

Oil palm as one of the main resource-based industries can be considered the backbone for the Malaysian industrial sector if any difficulties arising in the upstream sector. The resource-based industries have enabled the Malaysian economy to be more diversified and this has accorded more resilience condition. Although there has been a noticeable progress in the downstream activities, there is a need to accelerate the production of higher value-added products for the export markets. This will require further upgrading of technology and more market-driven product development activities through intensive R&D initiatives. In this regard, more severe collaboration between MPOB and private R&D agencies are essential.

With increasing competition from other producing countries, this industry cannot rely on existing global market that is currently being dominated by China and India. New market penetration particularly among the Muslim countries in Asia and African continents should be explored. In this regards, producing consumer products

either food or non-food that is safe and *syariah-compliance* can contribute to the boost in demands among Muslim communities. There is an increasing trend among consumers to choose products based on natural or plant-based resources for cosmetics and personal care products. Palm oil by-product in oleo-chemical form is one of the suitable plant-based ingredients in most of the household products.

Malaysia should encourage either local or international companies to set up local processing factory to complete the overall supply chain in the country. This can be accelerated by providing more conducive business environment in term of taxation structure as well as infrastructure facilities. High dependency on low skilled foreign plantation workers can be reduced and at the same time more local skilled workers can be trained. However to ensure sufficient amount of raw materials for the downstream processing, production from the upstream sector should be consistent with the industry needs. Government should enforce the replanting scheme and make it mandatory particularly among independent smallholders to cut down their trees after 25 years and start the replanting with new high grade seedlings that able to increase the yield. Malaysian is targeted to reach the yielding rate of six tones per hectares by 2020, as compared to current rate of four tons per hectare.

Comprehensive supporting facilities should be parallel with the development of downstream industry. Appropriate government policy, sufficient R&D facilities and available grants, establish training center, upgrading infrastructure facilities are part of favorable business environments to support the success of downstream activities. The most important is structural transformation should in placed where

attention is no longer on primary exports, but on downstream activities related to developing high value-added products targeted for the export market.

5.4.2 Establishment of New International Organization for Accreditation

Currently, most of the palm oil producing countries depends on RSPO as medium to certify that their products are complied with the sustainable practices although the membership of RSPO only represented 35 per cent of palm oil producers in the world. Depending on RSPO as a medium for accreditation is not an efficient and reliable guideline for a long-term period. There are many factors that contribute to the raising of criticism over the credibility of RSPO as an organization that has the power and ability to certify the palm oil industry:

- a) RSPO is only voluntary organization established by European NGOs which do not have the power to make rule and being consider them as the right actor to manage this issue and right to make a decision on the behalf of public. In addition, two third of palm oil comes from Asian producers, thus it creates continuous doubtful on European influence in this organization.

- b) The membership of RSPO is based on voluntary concept and open to every party that share the same interest in this issue. Thus disproportionately of membership that represent each sector shows the weaknesses of RSPO in solving problems arise in each sector and being the centre of criticism from various members on the credibility issue. Any members can

withdraw their memberships at their own consideration since it is not a compulsory participation although it representing the main player in the industry.

- c) RSPO can be considered new type of private governance which becomes a normal trend in many global commodity chains. As private governance, this round table can only be participates by private party which aims to improve the sustainability of a specific global commodity chains (G. Schouten, 2011). It is a multi-stakeholders platform and government are only stepped in as observer party.

With recent criticisms on the credibility of RSPO, it is a time for Malaysia as one of the main producers of palm oil products considered about new measure for palm oil accreditation. However, initial plan to create its own certification palm oil organization is not an efficient ways to solve the problems. Instead, Malaysia should initiate the way together with other producing countries such as Indonesia to propose an establishment of new accreditation organization at international level. Discussion at multilateral or through the regional organization is one of the efficient measures to avoid any discrepancies in the future. In this regards, this industry should not compete on sustainable benchmark between producing countries, but should strengthening the existing practices in ensuring the sustainable practices. Accreditation organization should be independent and be responsible for managing the accreditation system and able to conduct the on-going supervision on the industry. Any accreditation to be acceptable and reliable should be conducted within the guidelines of International Standard Organization (ISO).

5.4.3 Real Threat of Palm Oil

Communication on the socioeconomic benefit of palm oil vis-a-vis deforestation and treat to wildlife must be made available to the global through diplomatic channel and multilateral organization. Malaysian's commitment in balancing the development between economy, environment and social aspects should deserve merit. Global communities should be well informed about the real threat of palm oil sector. Malaysia has been involved in this industry for almost 100 years, and already being pioneered in this industry, both upstream and downstream sector. Most of the agriculture land has been converted to palm oil plantation; hence there is unavailable agriculture land for expansion.

To date, most attention has focused on the major palm oil producing countries in Southeast Asia, Malaysia and Indonesia, which contributed more than 80 per cent of world supply. However, there are still other producing countries showing gradual expansion including Thailand, Papua New Guinea and Brazil. Instead of agricultural zoning land, forest has been converted into plantation of this monoculture crop, building processing mills and construction of road for transportation. In Indonesia, palm oil expansion is still captured in line with aim to increase the area up to 45 million hectares by 2020, compared to current areas of 24 million hectares in 2009 (ScienceDaily, 2012). Brazil has announced its plan to scale up the palm oil plantation, an additional of 850,000 hectare in the Amazon forest. In Papua New Guinea, the palm oil is rapidly expanded from current area of 134,000 hectares in 2008 to propose 330,000 hectares in 2037.

However, in Malaysia, this practice has been stagnant due to limited land for expansion thus the government shifts the focus to replanting on existing land and enhancing the downstream sector. At this point of time, environmental impact from deforestation and land clearing activities will slowly decreasing. While at the same time due to increase in GDP and matured palm oil industry, more R&D activities had been conducted to mitigate the impact of environmental, therefore more policy and action has been in placed to ensure the sustainability.

This phenomenon is described by the explanation on the Environmental Kuznets Curve in the chapter 3. Inverted U-shape curve of EKC explained the possibility of environmental degradation that occurred during the initial stage of economy growth and slowly declining when the country reaches its certain level of economic progress. This implicitly suggests that environmental damage is inevitable in the initial stage of economic development and it should be tolerated until the inversion effect take place. In this regards, NGOs should increase their understanding about the relation between economic development and environment impact. For developed countries, they have moved from creating the mass to the environment since they have developed the economy up to acceptable levels, while developing countries are now in the process of developing the economy. Therefore environmental damages are unavoidable at this stage. NGOs are urged to stop attacking Malaysian's palm oil industry by distorting facts and figures to suit their arguments against economic development and poverty alleviation.

5.5 CONCLUSION

Oil palm is one of the agriculture sub sector, thus impact to environment is one of the obstacles for future development. Deforestation, soil erosion, emission of carbon dioxide is among the potential threats to the environment particularly when new area is needed for palm oil expansion. However, due to increasing awareness and pressures from stakeholders, palm oil producing countries are taking prompt decisions to ensure the development of palm oil in the country is within the boundary of sustainable development. Malaysia as one of the main palm oil producer and exporter is also considering various policies and regulation to control the level of environment degradation caused by this industry. Since early 1960s, laws and regulations have been imposed to this industry including upstream and downstream sectors to mitigate the negative impact. Malaysia is opts for a holistic approach in maintaining the development of the palm oil industry which taking into account the economy, environment and social well-being of people involved in this sector. Sustainability in the palm oil industry means ensure the growth to generate more income in order to create multiplier effect for the nation development and at the same time making minimal impact on the environment. However, although many actions have been taken to ensure the overall operation of this industry reduces the impact to environment; this industry is still being the global attentions and criticisms particularly from international NGOs.

Malaysia is always intended to balance the goals of socio-economic development and need to bring the benefits of development to a wide spectrum of population, keeping in mind the maintenance of sound environmental condition

(Shafari, APO 2000). Therefore, good existing laws and regulations had been imposed to cover palm oil as a prime agricultural commodity. Policies are typically more of combining different applicable instruments to regulate palm oil production and the industry as a whole. The National Biofuel Policy in Malaysia is an example of new policy decided upon through multi-stakeholder consultation. The Roundtable on Sustainable Palm Oil (RSPO) is new platform in forwarding new policy measures to ensure the sustainability of palm oil. As the Malaysian Palm Oil Council notes that the nation's oil palm industry has been "the backbone of Malaysia's social and economic development", thus to ensure that the industry continues to expand, sustaining its competitive edge remains the most important challenge for the industry in the future.

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