Malaysian Palm Oil Industry at Crossroads and its Future Direction

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ABSTRACT

Palm oil accounts for 20% and 46% of the global oil and fats production and trade respectively. Malaysia is the world's largest producer and exporter of palm oil with a 50% share of world palm oil production and 61% of exports. This paper assesses the growth of the Malaysian palm oil industry and the limitations of land and labour on the future growth of the industry. The industry's competitive edge will continue to be a vital factor for its future development. Thus, in order to remain competitive, the industry needs to improve on productivity, explore opportunities to diversity the income base, widen the end-use base for palm oil, explore new marketing approaches and intensify vertical integration.

PLANTED AREA GROWTH

The expansion of oil palm plantings in Malaysia during the past 41 years has been phenomenal. From a mere 55 000 ha in 1960, the oil palm planted area had expanded to 3.5 million hectares by 2001, occupying 60% of the agricultural land in the country. About 60% of the planted area is in Peninsular Malaysia; 30% in Sabah and 10% in Sarawak *(Figure 1)*. In recent years, most of the expansion has been in the East Malaysian states of Sabah and Sarawak due to the declining availability of land in Peninsula Malaysia.

PRODUCTION GROWTH

The rapid expansion in oil palm cultivation resulted in a corresponding increase in palm oil production from less than 100 000 t in 1960 to 11.8 million tonnes in 2001 *(Figure 2)*. The largest palm oil producing state in Malaysia is Sabah which accounted for 31% of total production in 2001.

Palm oil is the second largest oils and fats produced after soyabean oil, accounting for 23.6 million tonnes or 20% of the world oils and fats production in 2001. Malaysia remains the largest producer of palm oil accounting for 50% of world production last year

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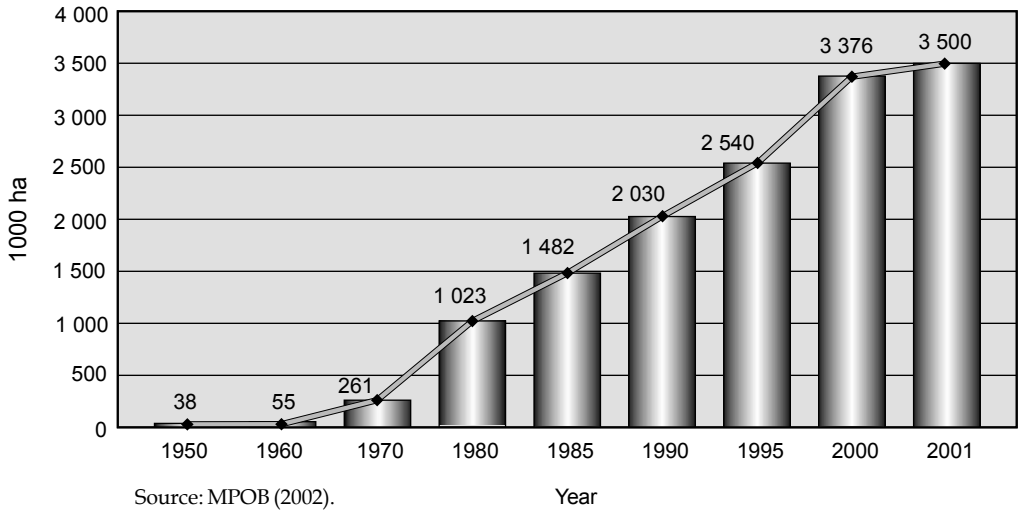


Figure 1. Expansion of oil palm planted area in Malaysia.

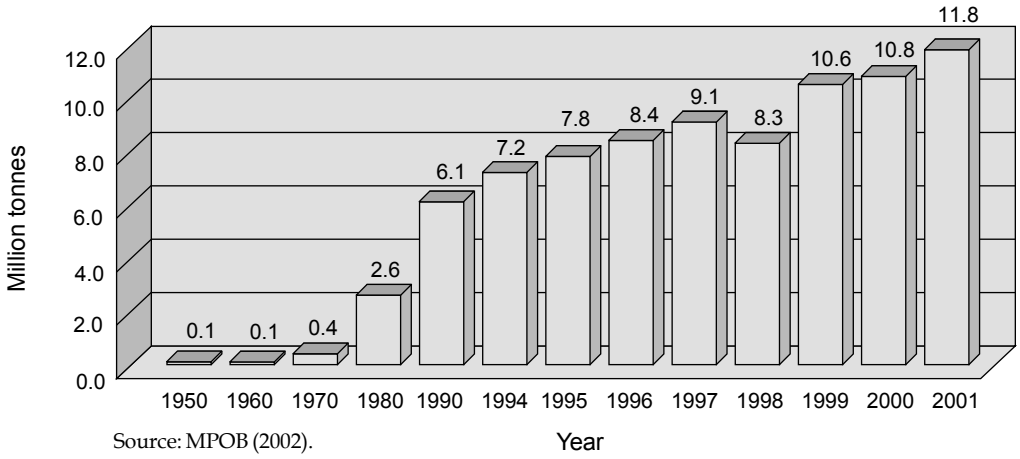


Figure 2. Growth of palm oil production in Malaysia.

(Figure 3). Malaysia's ability to supply 10% of the global oils and fats production is an achievement as only 3.5 million hectares is planted with oil palm. The status of palm oil today in the world market is without doubt due to the significant contribution and commitment by the Malaysian palm oil industry. Malaysia has also become a role model for many other palm oil producing countries in their plans to spur economic development and gain foreign exchange through exports of surplus production.

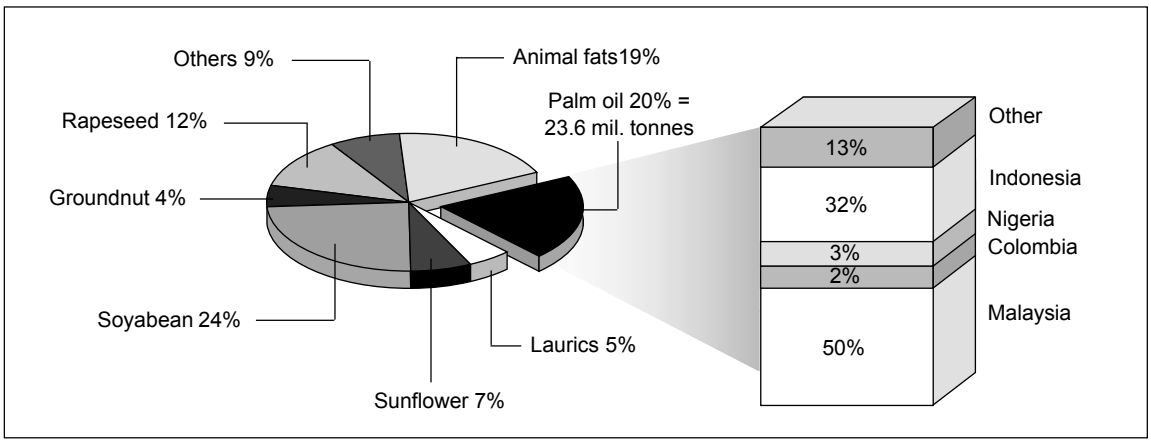
The oil palm is more productive than other oil-bearing crops and Malaysian oil palm currently yields an average 3.66 t/ha of oil per year, which is 7 and 2.5 times more than soyabean and rapeseed respectively (*Figure 4*).

Owing to the high yielding trait of oil palm, producing countries on the whole utilized only 7.0 million hectares of land to produce 23.6 million tonnes of palm oil in 2001 compared to soyabean producers which required 75.8 million hectares to produce 27.8 million tonnes of soyabean oil during the same year *(Table 1)*. This advantage makes oil palm the most productive and important source of edible oil to the growing world population - a point that cannot be overstressed as the world's available land for food production continues to diminish.

EXPORT GROWTH

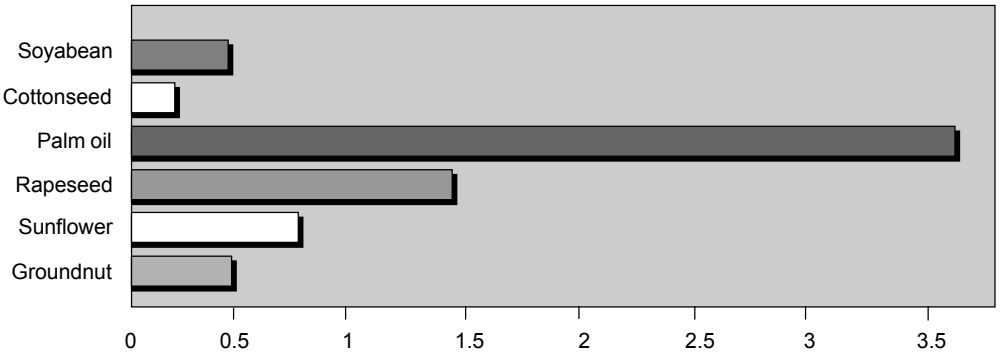
The Malaysian palm oil industry is basically export-oriented owing to the country's small population base. Annual exports, which account for 85% of our yearly production, reached 10.6 million tonnes in 2001 as compared to less than 100 000 t forty one years ago. Processed palm oil products accounted for 88% of the total exports. Although Malaysian palm oil is today exported to more than 100 countries in the world, it is still dependent on a few selected markets for the bulk of its exports. These markets are India, the European Union (EU), China P.R., Pakistan, Egypt and Japan, which together accounted for 65% or 6.9 million tonnes of our palm oil exports in 2001.

Palm oil has a dominant role in the export market. The ready availability and consistency of supply



Source: Oil World (2002).

Figure 3. World oils and fats production year 2001: 117.6 million tonnes.



Sources: Oil World (2002) and MPOB (2001).

Figure 4. Oil yeild comparison (year 2001).

TABLE 1. WORLD PLANTED AREA (million hectares) AND OIL PRODUCTION (million tonnes) OF SELECTED VEGETABLE OILS - YEAR 2001

	Area planted	Oil production
Soyabean	75.8	27.8
Rapeseed	24.8	13.7
Sunflower	19.5	8.2
Coconut	9.4	3.5
Palm Oil	7.0	23.6

Source: Oil World (2002).

of palm oil has been a factor in stabilizing global trade. In 2001, palm oil accounted for 46% or 17.5 million tonnes of the total world oils and fats exports. Soyabean oil is a distant second at 21%. Malaysia is still the largest exporter of palm oil in the world accounting for 61% of world exports last year. Indeed Malaysia alone contributed 30% to the global oils and fats exports last year, making it the largest oils and fats exporting country in the world.

INDUSTRY AT CROSSROADS

Despite the strong contribution to the country's development and its recognized position as a pillar of the economy, the Malaysian palm oil industry is at the crossroads. As a mature industry, its contribution to the national economy will stagnate unless it can achieve further growth and remain competitive. Expansion is however limited by the increasing scarcity of two essential inputs - land and labour.

Land

With 3.5 million hectares already planted with oil palm, the shortage of prime agricultural land for the cultivation of the crop and the strong pressure from non-governmental organizations against further clearing of tropical forestland, limits the land area for expansion.

In Peninsular Malaysia, most of the land alienated for oil palm cultivation have been allocated and planted. Further expansion of the area through the conversion of other crops has already been done. The remaining areas are mostly marginal for the cultivation of this

crop. Producers have been moving their operations from Peninsular Malaysia to Sabah and Sarawak, but there too, the best land have been delineated and mostly planted. 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. Besides, some of this marginal land is in sensitive eco-systems, which should best be preserved in their natural state. An example of such marginal land is the deep coastal peat lands of Sarawak.

The deep coastal peat basin of Sarawak (estimated at over one million hectares) is vast and there is growing pressure to clear them for oil palm cultivation. Consisting of raw peat with depths ranging from 5 m to more than 20 m, they require very skilled and careful management if cultivated. Specialized skills in water management and agronomic inputs are necessary to transform them into arable land.

Labour

The transition of the Malaysian economy from an agrarian agricultural primary commodities producer to a vibrant manufacturing-based developed nation has resulted in a strong migration of workers from the plantations to the manufacturing sector. Plantations are stripped of their most productive labour as the younger better-educated workers are enticed by the attractions of working in the modern controlled environment of new manufacturing plants. With a plummeting workforce against a rapidly expanding oil palm production area, plantation owners are faced with critical manpower shortages, which extend to this day. The oil palm industry is forced to look for other sources of manpower and to change its work methods.

The recruitment of migrant labour from neighbouring countries has provided a lifeline for the oil palm industry. The latest survey figures from Malayan Agricultural Producers Association (MAPA) show that out of a total of 108 000 workers in the private sector plantations in Peninsular Malaysia, 40 000 or 37% are foreign workers. In Sabah and Sarawak, dependence on foreign workers is higher at 80% (MAPA, pers. comm.).

The reliance on foreign workers has become a serious issue in the country. With an estimated 1.5 million foreign workers in Malaysia, the government have passed various legislations to control the in-flow and employment of foreign labour by the various industries. While the plantation industry has been given concessions by the government, the frequent abrupt changes in policy and inconsistent application of the laws by the various authorities have and continue to create confusion and difficulties to employers as well as to the foreign workers. This has caused the industry to face periods of severe labour shortages resulting in serious loss of crop. At the same time, recruitment and employment costs have been pushed up, adding to production costs. Given the high labour requirements of the industry, foreign labour availability will be a major factor determining the future viability and expansion of oil palm cultivated area, as local labour will continue to be scarce.

FUTURE DIRECTION OF THE MALAYSIAN PALM OIL INDUSTRY

As in the past, the competitive edge which was the driving force behind the dramatic growth of the industry will continue to be a vital factor for its future development. At the same time, other competing oils have over the years improved their cost competitiveness through new planting materials and processing technologies. Thus, in order to remain competitive in the market place, the industry needs to improve on productivity, explore opportunities to diversify the income base, widen the end-use base for palm oil and explore new marketing approaches.

Yield Improvement

An effective approach towards increasing the production of palm oil is by focusing on yield improvements from existing areas rather than on area expansion, bringing with it the added benefit of reducing production cost. Although the national average yield of palm oil is 3.66 t/ha, the better-managed estates in Malaysia are today achieving 4.5-6.0 t/ha/year. The gap between the low and the high yielders is expected to come down in the near future as the older lower yielding palms are replanted. In line with this, the industry has embarked on an aggressive replanting programme where for a start about 200 000 ha of palms exceeding 25 years old are targeted to be replanted with new planting materials. At the same time, expansion in less ideal areas or marginal lands such as hilly to steep terrain or deep peat can be discouraged.

If Malaysia can limit the oil palm area to 4.0 million hectares only on soils with suitable terrain and adequate rainfall so that palms can be nurtured to give an average yield of not less than 5.0 t/oil/ha, and assuming that 15% of the land is immature phase at any one time, then an area of 3.4 million hectares will be in harvest giving a potential production of 17 million tonnes of palm oil annually. This is an increase of 45% compared to the 11.8 million tonnes produced in 2001 (Khoo, 2001).

Mechanization

Much effort has been put in over the last decade to mechanize operations in oil palm plantations in order to alleviate the labour problem and contain rising labour costs. Barring the limitations of terrain, many operations have been successfully mechanized such as herbicide spraying, fertilizer application, draining, in-field evacuation of the crop from the palms to the roadside and the loading of crop onto mainline transport to the mills. Automation has also extended to the palm oil mills resulting in a 40% reduction in labour in the newer mills. This has helped reduce the labour requirement in oil palm estates from an average of one worker per 5 ha in 1990 to one worker per 10 ha in 2000.

However there are major limitations to the practice and the industry has been criticised for being slow in adopting mechanization. In Peninsular Malaysia, issues have arisen over the apportioning of harvesting wages arising from the changes in work methods and systems. Other problems include the physical terrain of the land and the lack of access in plantings of the 1970's and 1980's when the need to provide such infrastructure was not critical. Nevertheless, the more recent replantings and new plantings have all been prepared with mechanization in mind. The industry which is driven by economic forces and business needs, can be expected to mechanize at a faster pace as machines and equipment, developed or adapted to suit local requirements are increasingly becoming available.

Unfortunately, the core problem and the most labour intensive requirement in the entire work schedule is harvesting and as yet there has been no success in developing a machine which is as cost effective, efficient, and reliable as the human harvester. (On average, a harvester can harvest between 1.5- 2 ha of palms per day) The ability of the industry to achieve the target of one worker to 20 ha hinges on the successful mechanization of harvesting.

New Product Development

The Malaysian palm oil industry is also intensifying new product development and venturing into downstream activities with greater vigour. There are a lot of opportunities for the industry to explore in order to widen the demand base for palm oil. The minor components in palm oil, for example, can find their way into nutraceuticals, pharmaceuticals and food applications. The main ones are carotenoids, vitamin E (tocopherols and tocotrienols), sterols and squalene. At present, only palm-based carotenes and vitamin E are commercially produced in Malaysia. The promising potential for minor components in the health related industries is presenting opportunities to prospective investors to create value-added downstream industries to produce and market these products.

Biomass

Another potential revenue generator is the vast quantity of biomass available in the industry, which can be converted into value-added products. It is estimated that about 30 million tonnes of fibrous biomass can be generated from empty fruit bunches, palm press fibre, fronds and trunks. The fibrous biomass is a renewable natural resource that can be exploited. From the viewpoint of logistics and cost, the empty fruit bunch offers the best prospects for commercial exploitation as raw material, for example, in the pulp and paper industry. The empty fruit bunches, shell and fibre from the mills can also be used to fuel biomass power plants, which provide the mills' steam and power requirements and substantial surplus electricity to feed the national grid. The uses of biomass in these sectors will not only provide additional revenue to the industry but will also help in achieving our vision for a zero waste strategy in the long-term.

Non-food Applications

There is also an enormous potential for the industry to widen the demand base for palm oil in the non-food sector. Currently, 80% of palm oil goes into food and 20% is used in the non-food sector. The proportion going into the non-food sector – for making soaps and detergents, toiletries and cosmetics and other industrial uses - is expected to grow further in the near future. Oleochemical products have good potential for growth with the world demand expected to increase by 33% from 5.2 million tonnes in 2000 to 6.9 million tonnes in 2010.

Palm oil can also be successfully used to produce polyols, which in turn is used for the making of polyurethane (PU). PU is a very versatile plastic material with a multitude of applications in various industries such as building and construction, automotive, furniture, electrical and electronics, *etc.* Presently, most commercially available polyols are petrochemicals-based. The successful application of palm oil for polyols production creates opportunities for new applications and partial replacement of petrochemical-based polyols. The world demand for PU is expected to continue growing at a rate of 6% annually from the current 8.5 million tonnes. An exploitation of only 20% of the current world PU consumption is equal to 1.7 million tonnes of palm-based PU which represents more than 500 000 t or

4% of total annual palm oil produced in Malaysia, thus providing a new direction for the growth of palm oil consumption.

Green Fuel Alternative

Palm oil also offers the potential to be a sustainable alternative fuel that is environmentally friendly. Unlike fossil fuels, it is a renewable resource. MPOB has successfully blended crude palm oil with medium fuel oil as boiler fuel in power plants, and a blend of palm olein with diesel has been developed as fuel for motor vehicles. To spur the greater use of palm diesel in the country, Malaysia is embarking on a project to produce palm biodiesel to complement conventional diesel. This would provide a large potential market for palm oil in addition to its use in the food sector.

Export Liberalization

In consonance with the changing needs of our customers, our export duty structure for palm oil products has been liberalized. All exports of processed palm oil products are duty free and, since 1999, crude palm oil exports have also been liberalized on a selective basis, thus providing new market opportunities in overseas markets. India, for one, has been a major beneficiary of our new export policy shift with imports of crude palm oil and crude palm olein increasing since last year. However, the continued exports of crude palm oil in the long-term will depend on our ability to balance the local supply/demand situation in order to safeguard the interest of the huge refining business in Malaysia with the changing needs of manufacturers and consumers in the global market.

Counter-trade

Malaysia is also increasingly adopting counter-trade in its palm oil business today as an effective way of locking in palm exports to major destinations. The palm oil counter-trade negotiations are focused on government procurements such as aircraft, tanks, locomotives and infrastructure projects. For Malaysia, counter-trade creates smart partnerships between countries because, on the one hand, we have the palm oil that can be offered to meet the overseas edible oil demand, and, on the other, we require the technology and expertise from the other countries with which to develop our nation.

Vertical Integration

The Malaysian palm oil industry need to work towards a single agenda in marketing and selling our products rather than pursue separate and often conflicting agendas, which would make us less competitive in the market place compared to our Indonesian counterparts, who are usually more integrated and flexible in their marketing decisions. To achieve this, there has to be greater integration of growers, refiners and other sub-sectors of the industry in order for us to sustain our competitive edge in the global oils and fats market. Mergers among the sub-sectors of the industry will reduce the divergent agendas and increase our focus, flexibility, speed and reliability to meet any change in market conditions and needs. The integrated entities should be in a stronger position to work on longer term goals, marketing strategies and promotion programmes, to protect our long-term market share in our major markets and to open up access into new markets.

CONCLUSION

The palm oil industry is a Malaysian success story. To ensure that the industry continues to expand, sustaining its competitive edge remains the most important challenge for the industry. To achieve this, we need to improve on our efficiency and productivity to reduce cost, explore opportunities to diversify the income base and widen the demand base for Malaysian palm oil, create innovative marketing approaches as well as encourage greater integration among the sub-sectors of the industry.

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