

The Malaysian Palm Oil Cluster Final Report



Abbai Belai, Daniel Boakye,
John Vrakas, Hashim Wasswa



Microeconomics of Competitiveness
May, 2011

Table of Contents

Executive Summary	3
1.0 Economic and Social Performance of Malaysia	4
1.1.1 Economic history	4
1.1.2 Recent growth and Economic performance	5
1.1.3 Driver's of Economic Growth.....	7
1.2.1 SIPI Conditions.....	10
2.1 National Policy Recommendations.....	17
3.0 Palm Oil in a Global Context.....	19
3.1 Introduction to Palm Oil	19
3.2 The global market for palm oil.....	20
3.2 Malaysia Palm Oil Cluster	22
3.2.1 Recent history and competitive performance of the cluster	22
3.2.2 Value Added Chain and Industry Structure.....	23
3.2.3 IFCs in the Palm Oil Cluster	24
3.2.4 Innovations in the palm oil cluster	25
3.2.5 Malaysian palm oil cluster map.....	26
3.3 The Malaysian Palm Oil Cluster Diamond.....	28
Palm Oil Cluster Diamond.....	28
3.3.1 <i>Factor Conditions</i>	29
3.3.2 <i>Related and Supporting Industries</i>	30
3.3.3 <i>Demand conditions</i>	30
3.3.4 Context for firm strategy and rivalry.....	31
4.0 Risks and Recommendations for the Malaysian Palm Oil Cluster	31
4.1 <i>Factor conditions</i>	31
4.2 <i>Upstream Activities</i>	32
4.3 <i>Downstream</i>	32
Bibliography	33

Executive Summary

Malaysia has experienced tremendous economic transformation in the last 40 years, starting from a country with a GDP per capita of 394.07 in 1970, to GDP per capita of nearly \$7000 in 2010. This performance has been driven by both a strong government determination on driving economic development (especially in the 1970's and 80's) and an expansion in the private sector (in the 1990's and 2000's). Due to its openness however, recent global economic volatility has greatly affected Malaysia's economic performance, with particular declines in Exports performance and FDI inflows. In order to mitigate against these global threats, Malaysia needs to focus on improving particular issues in its business environment if it is to continue being a competitiveness destination for business. These include upgrading its innovation infrastructure, especially around investing in higher tertiary education and in specialized research and training institutions. Malaysia also needs to upgrade the efficiency of its labor force, including making changes in its labor laws to allow for labor market flexibility.

Palm oil has recently overtaken soybean oil as the most produced and consumed edible oil in the world. The recent growth in palm oil has been driven primarily due to increasing demand in edible oils globally, especially from the newly emerging markets, and the high efficiency it can be produced compared with other oils. Malaysia has until recently been the leading producer of palm oil, until it was overtaken by its neighbour Indonesia, primarily due to constraints on further land expansion of palm plantations. Malaysia has managed to expand the cluster to all parts of the Palm value chain, and must increase productivity through innovation to keep globally competitive, despite its constraints on its factor conditions. To remain competitive, our policy recommendations will focus on the following areas: improved productivity upstream, innovation in downstream products, and creation of new business opportunities

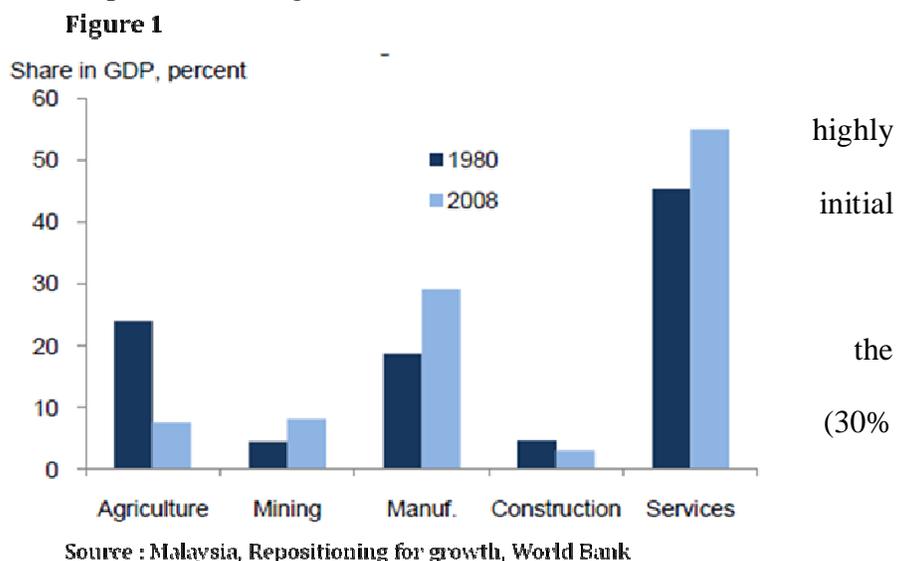
1.0 Economic and Social Performance of Malaysia

1.1.1 Economic history

Long before the Independence from the British in 1957, the Malay Peninsula was a centre of commerce and trade in the south East Asia region. In the 17th century, large Tin deposits were discovered in the Malay states, and as the British took over in the 18th century, they introduced Rubber and Palm oil trees for commercial purposes. Instead of relying on the local Malays as a source of labor, the British brought in Chinese and Indians to work in the mines and plantations and provide professional expertise. As many of them returned to their home countries after their tenure, many stayed- and thus begun the multi ethnic character of Malaysia's population. By independence, Malaysia was the world's largest producer of tin, rubber and Palm Oil, and these commodities set the foundation for Malaysia's economy into the 20th century.

After Independence, Malaysia continued to enjoy relative prosperity, initially as a commodity exporter of rubber, tin, palm oil then petroleum, with total income rising at 6-7 percent each year from 1970 until 2000. In the 1970's, the Malaysian government embarked on a state led industrialization process, with emphasis on export oriented manufacturing. The Government courted Japanese and American Multinational Corporation (MNCs) and provided financial incentives for investment especially in electronics and electrical appliances industries. In the 1980's though, the Malaysian government started to roll back its involvement in the economy through privatization, and an emphasis on expanding entrepreneurship and encourage new firms in the economy.

Coupled with government incentives to promote foreign direct investment, these efforts saw the transformation of the Malaysian economy from an economy dependent on agriculture in its stages to one which manufacturing and Services are biggest contributors to GDP in 2008, and 50% in 2008 respectively- Figure 1).



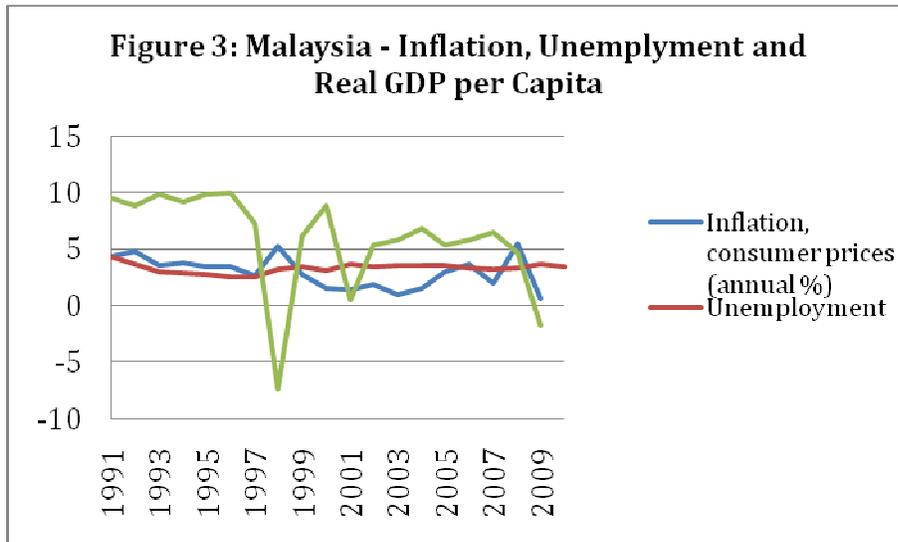
1.1.2 Recent growth and Economic performance

Malaysia's economic performance since the 1990's has been largely dependent of its export performance. It experienced an average GDP growth rate of 7.3% in the 1990s, which dramatically slowed down after the Asian financial crisis in 1998 to an average of 4.3%. Compared to its neighbors, Malaysia has recently performed quite favorably, with very low levels of inflation, and a GDP per capita higher than the ASEAN average. (Figure 2)

	Malaysia	Indonesia	Phillipines	Singapore	ASEAN
Population (2009)	27.9	240.27	97.98	4.99	575.1
Real GDP (\$ Billions-2009)	193.1	540.3	161.2	182.2	na
Real GDP per Capita (Current \$)	7,029.78	2,349.38	1,752.45	36,536.96	4,870
Inflation	0.6%	4.8%	3.2%	0.6%	3%
Unemployment	3.68	7.9	7.5	3%	5.9%
Labor costs (\$ per hr)	4.5	0.6	1	8.9	na

A) **Headline performance**

Malaysia has experienced some serious volatility in its GDP performance over the last 20 years. As Figure 3 shows, the most severe shock to Malaysia's economy came from the 1998 Asian financial crisis,

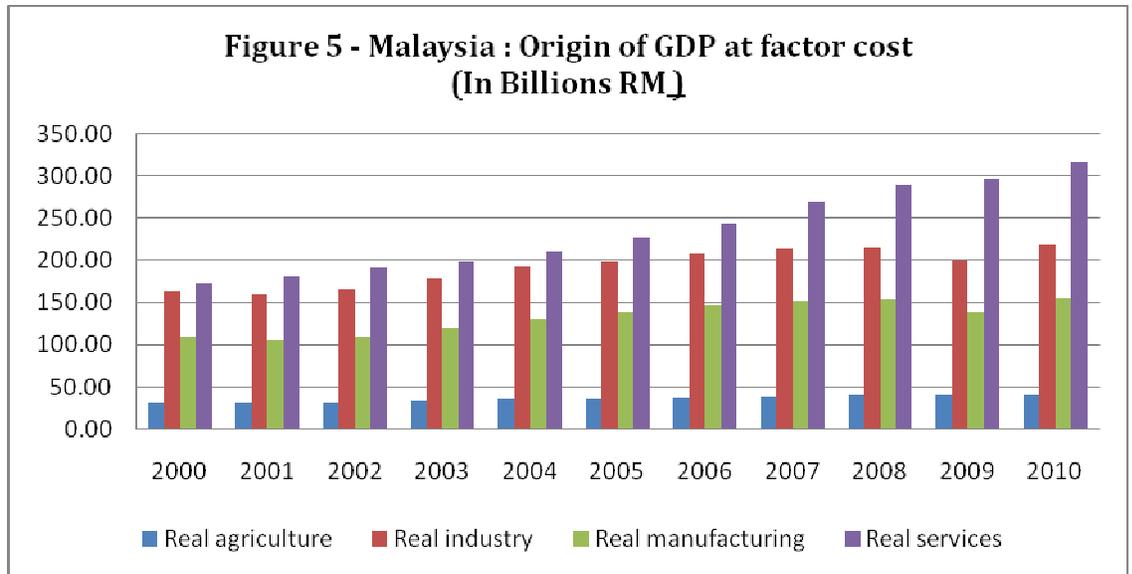


which made GDP growth contract to -7.8%. Given its strong electronic sector manufacturing base, the economy was once again hit by the 2001 dot com bubble and economic recession especially in its export markets in Europe and

Japan. However, the economy strongly rebounded after until the 2008 financial crisis hit. Malaysia has also maintained unemployment at its natural rate of about 3.5%, which is lower than its neighbors. 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.

B) **Economic Composition**

Malaysia has grown to become a predominantly serviced based economy. In 2009, the services sector



contributed about 57.3% of GDP, manufacturing 26.8% and Agriculture 13.9%. Employment in the services sector was 6.1 million jobs in 2009 (52.6% of total employment), while manufacturing employment was 3.3 million jobs in the same period (MIDA Report 2009). As Figure 5 shows, Services have provided the largest origin of GDP for many years.

1.1.3 Driver's of Economic Growth

i) Private Consumption: Private Consumption has been a pillar of Malaysia GDP growth for the last 10 years. Low tax rates have stimulated private sector consumption, and increased household incomes have contributed greatly to domestic demand over this period. Bank Negara Malaysia (BNM) expects the private sector will continue to drive the country's growth, with an expected private consumption growth of 5.5% in 2011. Coupled with a low unemployment level of about 3.0%, and descent salaries in the public and private sector, private consumption is expected to drive Malaysia growth in the medium term.

ii) Foreign Direct Investment: Although FDI inflows into Malaysia decreased in 2008, Malaysia continues to be a cost competitive location for FDI inflows into the manufacturing sector. FDI inflows into the manufacturing sector rose by 22.6 per cent from US\$3.1 billion in 2008 to US\$3.8 billion in 2009

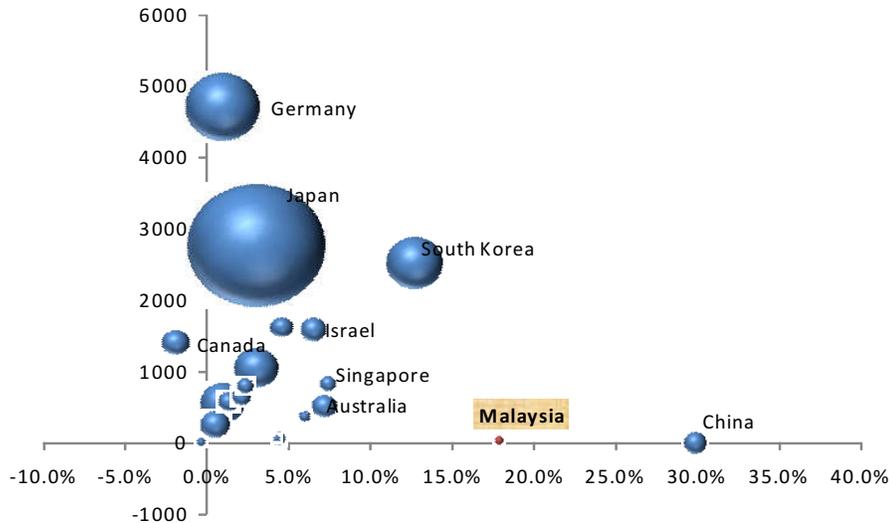
(MIDA 2009 Report). The significant increase in FDI inflows was largely due to expansion by the E&E industry, which upgraded their equipment and technology as well as the introduction of new production lines. There were also sizeable inflows of FDI into niche and higher value-added activities, particularly in solar cells, modules and panels as well as testing and measuring instruments.

iii) Productivity: Malaysia's innovation infrastructure is one of the biggest challenges to its economic competitiveness. In the year's fourth quarter, productivity grew by 2.3% supported by steady productivity growth in manufacturing (4.6%) and services (3.1%) sectors¹. For contribution towards GDP, TFP contributed 31.4% while capital and labor contributed 37.4% and 31.2% respectively. This shows that Malaysia's productivity is still mainly driven by factor inputs of capital and labor rather than innovation. Among its Asian competitors, China recorded the highest productivity growth of 8.4% followed by India (4.8%) and Indonesia (2.6%). Figure 5 shows Malaysia's innovation output is very low compared to other countries like South Korea, Singapore and China. Malaysia only has 40 patents per million people in this period.

¹ Malaysia Productivity report 2009

Figure 6 - Malaysia : Innovation Output – 2001-2010

Average US Utility patents per
1 Million Population, 2001-2010



Source : US Patent and Trade Mark Office (USPTO), World Bank Indicators

1.2 Social Performance

Endowments: As the 5th-largest country in Southeast Asia (329,847 sq km), Malaysia’s limited land area contains a remarkably diverse range of topographies and climates : Coastal, Crocker Mountains , and Rainforest, with 2/3 of land area as forest over 130 million yrs oldⁱ. Malaysia is one of world’s 17 “mega diverse” countries, containing 20% of world’s animal speciesⁱⁱ. While Malaysia has shifted to an export-manufacturing led economy over the last several decades, it still relies heavily on petroleum exports and sizeable exports in tin, rubber, and palm oilⁱⁱⁱ.

Malaysia’s Strategic Location In Southeast Asia

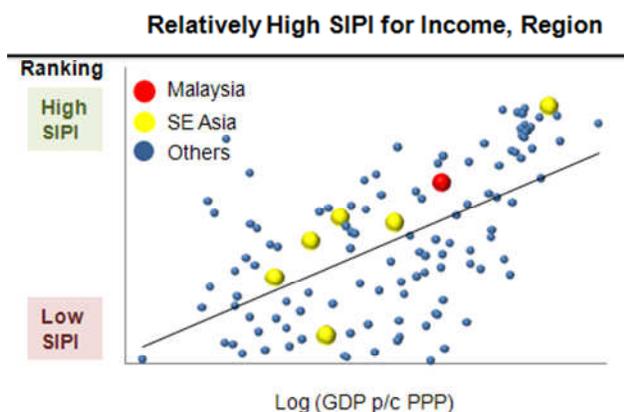


Location: Malaysia's location on the Pacific Ocean has facilitated its export-led economy, assisted by a growing transportation and logistics cluster. Port Klang and PTP in Johor retained their positions among the world's top 20 ports last year, with Malaysian ports showing a 12.7% increase in trade volume in Q1 2011 over Q1 2010^{iv}. Malaysia is a member of the Association of Southeast Asian Nations (ASEAN), a free trade area incorporating the 10 largest Southeast Asian economies providing access to a market of 600 million people with a combined nominal GDP of US\$1.8 trillion. Malaysia exported US\$13.8 billion to ASEAN members in Q1 2011, accounting for 24.2% of total exports^v. ASEAN's 6 bi-lateral free trade agreements with other nearby countries like China have benefited Malaysia, where exports have boosted from \$1.84 billion in 2007 to \$4.67 billion in 2010 to China alone^{vi}. Malaysia's intra-ASEAN FDI dropped to a net outflow of US\$269.7 million in 2009 compared to net inflows of US\$1.60 billion in 2008^{vii}.

Macroeconomic Conditions: In 2011 the International Country Risk Guide ranked Malaysia among countries with the 10 best socioeconomic conditions in the world^{viii}. The assessment of the government's

economic factors medical

1.2.1 SIPI



policies covered a broad spectrum of ranging from infant mortality and provision to housing and interest rates.

Conditions

Human

Development: Education: The quality of Malaysia's Primary Education is ranked 25th in the world (of 139).^{ix} Administered by the *Kementerian Pelajaran Malaysia* ('Ministry of Education'), it highlights 95% enrollment rates, with over 99.5% of its 2.9 million students attending public schools^x. Over 99% of students beginning primary school, typically at age 7, will complete the 5 year cycle, encouraging national adult literacy rates approaching 92%.

Malaysia has the highest public spending on education of the 11 largest Southeast Asian countries at 4.2% of GDP, and leads both Southeast Asia and the OECD in average primary student pupils/teacher at just 15.

Malaysia's history as a former British colony and socioeconomic tensions with Chinese Malaysians has been a source of public resistance toward moving toward a unified English-language based curriculum in Malaysia's ethnically and linguistically separate Chinese and Malay schools. A massive rally in Kuala Lumpur on 7 March 2009^{xi} pressured the government to announce reversal of a 2002 law requiring math and science classes be taught in English in order to keep pace with a rapidly globalizing world.

Health Care: Health care quality in Malaysia was ranked in the top 20% in the world in 2010^{xii}, with metrics indicative of overall quality, such as infant mortality and life expectancy, leading Southeast Asian countries and on par with the OECD average. Malaysia's five highest forms of disease were noncommunicable, with similar types and rates to developed countries^{xiii}. The World Health Organization lauded Malaysia's "remarkable progress" on all health related Millennium Development Goals, including advances safe water and sanitation, child immunization, nutrition, HIV spread prevention, and wide-spread access to their public health system.

Malaysia's tax-based public sector health care system is known for its remarkable equity and access. A high proportion of health expenditure comes from out-of-pocket expenditure, however, and the system faces an with an increasing demand for high cost medical technology.

In keeping with an overarching culture of innovation, the Ministry of Health has given research a priority, in collaboration with the National Institutes of Health. Malaysia's growing education and research capacity in the health sector is encouraged through both academic research and a focus on continuous professional development programs. It continues a long tradition of international collaboration through

public health institutions focused on research and education, including the 1953 founding of University of Malaysia's postgraduate Diploma of Public Health (D.P.H.) program through the support of the World Health Organization^{xiv}.

Malaysia's rapidly increasing urbanization, driven in large part by globalization, has brought an increased prevalence of non-communicable diseases. Globalization is also providing incentives for the emigration of skilled workers, leading to increasing 'brain drain'.

Political Institutions : Malaysia has an outstanding reputation for government effectiveness through continuing success in program development and implementation, with countless examples from infrastructure development, poverty and inequality reduction, increasing health care and education access and quality, and continuous tracking and implementation of short, medium, and long term economic development strategies. The government's effectiveness in addressing these critical social issues earned politicians a very high level of public trust. Institutionalizing their focus on effectiveness, via transparency law, has led to tremendously successful effort to decentralize economic policymaking, an element often critical to providing a holistic conception and implementation of economic development efforts, e.g. via Michael E. Porter's Microeconomics of Competiveness framework.

While Malaysia's political institutions have excelled at effectiveness, they have faltered on civil rights issues. Among the world's worst in the World Bank's measures of 'voice and accountability' and 'Freedom of the Press', Malaysian security forces make continued use of antiquated laws like the 1957 Internal Security Act and the 1967 Police Act, which allow arbitrary and indefinite arrest and detention without due process, to harass or ban peaceful public protests, marches, or meetings by opposition politicians and activists^{xv}.

Freedom of expression was also severely truncated, with authorities using laws like the Communication and Multimedia Act 1998 (CMA 1998) to crush critical opinion, with means including the arrest and criminal charging of bloggers who have covered political protests or criticized high ranking regional or national officials^{xvi}.

Rule of Law: Malaysia's former occupation has left it with many institutional benefits rooted in British colonialism, including an extremely efficient legal system. The country still struggles with corruption, however, including a public perception of corruption ranked at 5.0 out of 10^{xvii}, and a bleak assessment of business specific corruption in a ranking that slid from 4.00 in 1996 to 2.38 in 2006, where it has hovered through 2010^{xviii}. Corruption in Malaysia is deeply entrenched in the negotiation of contracts. Bribes were paid to government officials to speed up trade licenses, for police protection and for loan transactions^{xix}.

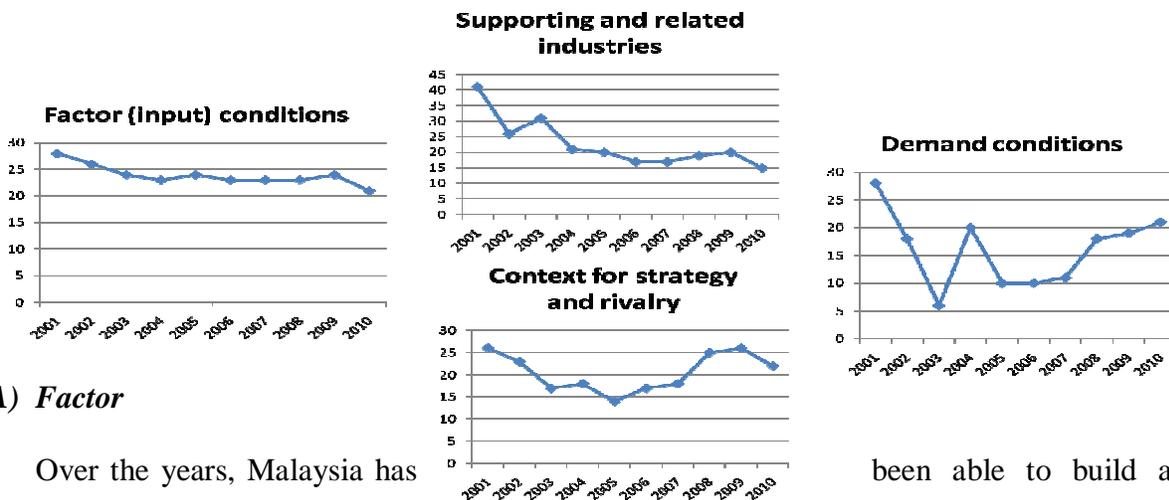
Fiscal Policy: Malaysia's continuously healthy foreign reserves (at \$98.02 billion in 2010) and strong regulatory regime buffered the effects of the 2008 global financial crisis, helping avoid a fiscal crisis at a time when most of the world's advanced economies were experiencing one. Malaysia's corporate tax rate of 25% is slightly higher than that of other Southeast Asian countries, but there is compensation in the fact that Malaysia does not charge withholding tax on dividend payments^{xx}. Malaysia's budget deficit has been reigned in to 5.5% GDP in 2010, after having shot from 3.1% GDP in 2008 to 7.4% of GDP in 2009 in part from a stimulus package designed to mitigate the effects of declining exports attributed to the global financial crisis.

Monetary Policy: Overall price levels in Malaysia remain low, although recent a 2.4% year-on-year increase in January, the fastest pace since mid-2009, has indicated that inflationary pressures may be rising. Yet central bank officials have stated that the current rate of 2.75% is accommodative of

Malaysia's expanding economic growth, while also helping to stem rising prices by curbing imported inflation. At consistently between 1.7 and 1.9 per USD in terms of PPP since 2005, the Malaysian Ringgit's expected rise against the dollar from its current 1.82 PPP rate will help buoy export growth^{xxi}.

2.0 National Business Environment

Overall, Malaysia's Business environment ranks 24th (GCR 2010). This performance is illustrated by the general diamond rankings shown below. Figure 7 shows that conditions in the supporting and related conditions have greatly improved over time, while Malaysia still struggles to create competitive factor and demand conditions as well as its Context and strategy rivalry. **Figure 7**



A) Factor

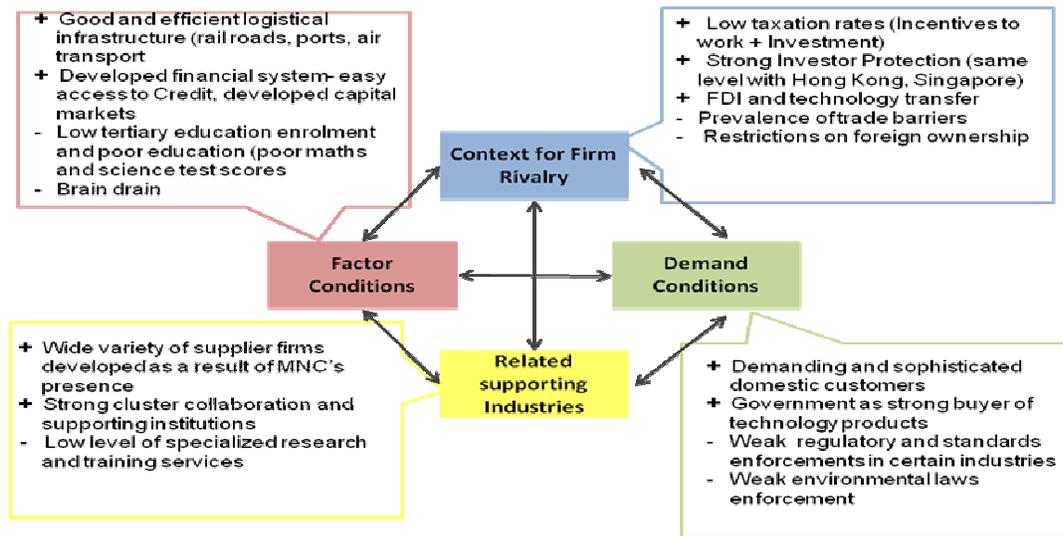
Over the years, Malaysia has

been able to build a strong and efficient logistical infrastructure as a large portion of public investment was directed at the building of strong road network, railroads, and airports. In addition, Malaysia has a highly developed and sophisticated financial sector, and one of the highest rankings on access to credit (rank 7th out of 139 countries – GCR 2010).

The biggest weaknesses that Malaysia has to address are its quality of tertiary education and training and labor market efficiency problems. Malaysia's female participation as a percentage of male participation in the labor force is only 58%, and its high redundancy costs equal to 75 weeks in wages gave it a very poor

ranking of 100 out of 139 (GRC 2010). In addition, difficulties in hiring and firing of workers in have also impeded labor market flexibility and wage determination.

Figure 8 Malaysia National Diamond



B) Context, Rivalry and Strategy: Malaysia's tax regime seems to be the strongest factor facilitating both foreign direct investment and increased (disposable) income levels for its people. The strongest challenge for Malaysia its continued restrictions on foreign ownership of investment in the country. While the law requiring 30% ethnic Malay ownership was changed in 2009 to allow for full foreign ownership of listed companies, the law still applies to all other companies especially those in "strategic industries" like Telecommunications, Water ports, and Energy. The second most important weakness in Malaysia CRS conditions is its trade barriers. Its average tariff was 8.56% between 2005-2009, mainly targeting for industrial products, textiles and footwear (World Bank 2009). Malaysia also continues to use non-tariff barriers like subsidies, and approved permits especially in the Automobile industry, restricting market entrance and competition in the industry.

C) *Related and supporting Industries:* As mentioned earlier, Malaysia's RSI performance has greatly improved over the past 10 years. The biggest weakness however is the quality of industry specialized and training institutions. Given its challenges around facilitating innovation, Malaysia should do more to incentivize firm to engage in R & D.

D) *Demand Conditions:* Improved incomes have facilitated the growth of a demanding and sophisticated domestic market for Malaysia. However, current weaknesses in the enforcement of regulatory standards continue to affect innovation and act as a dis-incentive for firms to invest in the creating new products.

E) *Impact of Government on the NBE:* The Malaysian government has and is still playing a big role in the economy. This has mainly been through national development plans² and strategic identification of key industries in which the government has been an active player. Though many Government linked enterprises have been privatized, the government still continues to play an active role in industries like Automobile, telecommunications and Agricultural processing (Palm Oil). Government involvement in these sectors will continue to crowd out the private sector and affect Malaysia's competitiveness.

² Like the Government National economic Transformation program that targets 12 key national economic areas. The 12 NKEAs selected are: Oil, Gas and Energy; Palm Oil; Financial Services; Tourism; Business Services; Electronics and Electrical; Wholesale and Retail; Education; Healthcare; Communications Content and Infrastructure; Agriculture. The Program has a goal of increasing Malaysia GDP per capital from \$6900 in 2009 to \$15,000 by 2020. .

2.1 National Policy Recommendations

A) Macro economy and Clusters.

The Figure below shows the issues that Malaysia needs to address to improve its performance at the macro level.

Policy Recommendations: Macroeconomic Factors

SIPi and Fiscal Issue Pockets Within Excellent Macroeconomic Picture

	<u>Challenge</u>	<u>Recommendation</u>
Fiscal Policy	<ul style="list-style-type: none">• Deficit spending combined with high debt, a legacy of global financial crisis stimulus	<ul style="list-style-type: none">• Tie deficit reduction and elimination to economic growth through formal policy
Rule of Law	<ul style="list-style-type: none">• High Business costs related to Organized crime• Control of Corruption Waning	<ul style="list-style-type: none">• Increase capacity building and training of Law enforcement• Improve the enforcement of government procurement rules
Political Institutions	<ul style="list-style-type: none">• Citizens' rights of participation and free expression severely curtailed• Press Freedom severely limited.	<ul style="list-style-type: none">• Increase Government Accountability Through Systemic Election Reform• Ban Government & Party ownership of and direct roles in press & media.
Human Development	<ul style="list-style-type: none">• Rising costs of health care unsustainable• Growing structural inefficiencies in health care system due to public-private competition.	<ul style="list-style-type: none">• Develop long term plan for sustainability defining a public-private partnership and scope of competition• Consult Professor Michael Porter for structural advice based on his health care initiative.

B) National Business Environment

Malaysia has got to address two critical key challenges in order to improve its business environment. The first one is the need to upgrade its innovation infrastructure, and this would include substantial investment in tertiary education and training, providing incentives (tax breaks, pioneer status incentives) for R & D investment. The second critical challenge that has to be addressed is the restrictions around foreign ownership of businesses (30% stake left for ethnic Malays). Given the fact that this policy has lost credibility (with claims that it benefits only a connected and corrupt minority in government), the Malaysian government needs to remove these restrictions just like it has for the financial sector. This would help the country to attract well needed investments in many of the strategic industries that have been protected by government.

Figure 9 provides detailed policy recommendations for each part of the Diamond.

Policy Recommendations: Business Environment

Government central to further improvements

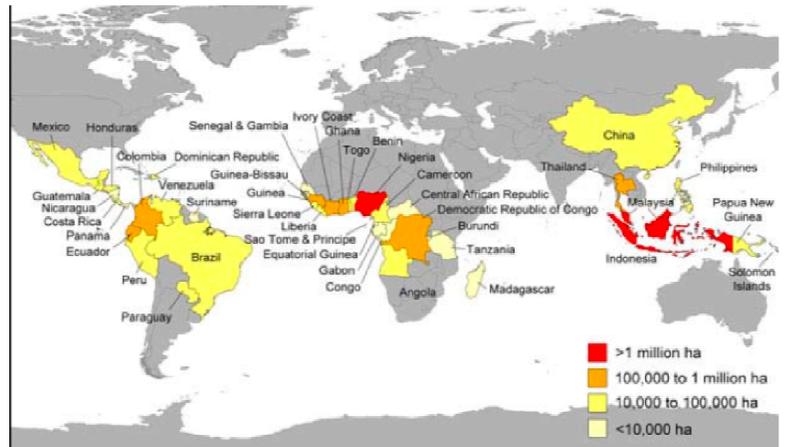
	Challenge	Recommendation
Factor (Input Conditions)	<ul style="list-style-type: none"> Poor Quality of tertiary education and Training Labor market inefficiencies 	<ul style="list-style-type: none"> Strategic fund for investment in tertiary education, training + R&D Tax incentives (Investment allowance, Pioneer status for R&D) R & D cooperation agreements with developed countries- Singapore, US
Context, Rivalry and Strategy	<ul style="list-style-type: none"> Foreign ownership controls Trade barriers 	<ul style="list-style-type: none"> Allow total foreign ownership across all industries in order to attract investment Speed up the process of trade liberalization according to WTO rules
Related Industries	<ul style="list-style-type: none"> Poor Quality of specialized and training institutions 	<ul style="list-style-type: none"> Tax incentives and tax breaks for investment in specialized institutions
Demand Conditions	<ul style="list-style-type: none"> Weak enforcement of regulatory standards 	<ul style="list-style-type: none"> Build capacity for Malaysian Standards and accreditation Council, especially for the medical and electronic industries which have a serious counterfeit problem

3.0 Palm Oil in a Global Context

3.1 Introduction to Palm Oil

Palm oil is a tropical vegetable oil fruit from the palm plant. The fruit was originally from West Africa and was introduced into Malaysia in 1917 by the British under colonial rule. Until the 1960s, Nigeria was the leading producer of palm and palm oil, but at that time innovations in technology and focus from the government in Malaysia allowed it to overcome Nigeria's dominance. Originally palm oil was exported from colonial territories such as Malaysia and Nigeria as crude palm oil (CPO), but post independence Malaysia and other producers began to produce refined palm oil gained independence in the 1950s, the government began efforts to move up the value chain by moving into refining and marketing abroad. As a result of falling prices of rubber and tin on the world market in the 1960s, Malaysia led other Asian countries to diversify its export base by developing the palm oil cluster.

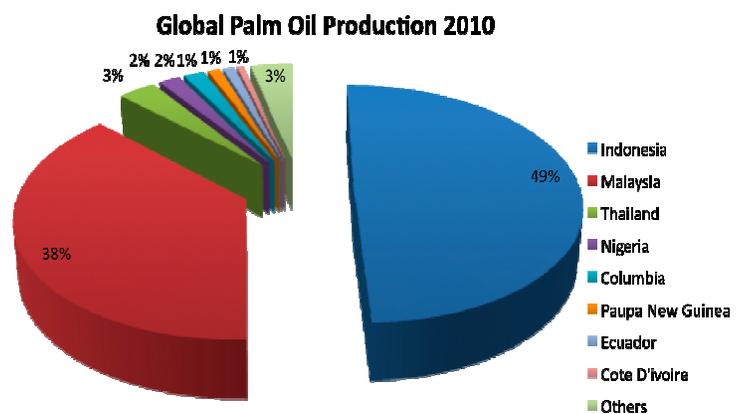
The palm oil plant grows within 10 degrees in latitude from the equator, however ideal growing conditions are within 5 degrees. Therefore from the map above, you can see most countries that are producers of palm located around the equator. Thus countries such as Malaysia are naturally endowed to produce palm, as long as land resources exist.



3.2 The global market for palm oil

Until recently, Malaysia has been the leading producer of palm oil, but was overtaken by Indonesia in the early 2000s as the leading producer. In 2010, together Malaysia and Indonesia produced 87% of the worlds supply, eclipsing the next largest producer, Thailand, at 3%. Nigeria, until the 1960s was the largest producer of palm oil, now is only 2% of the worlds supply. Since that time, Indonesia has further increased its production advantage over Malaysia. Interestingly, Malaysian firms own 25% of the acreage in Indonesia. A major reason for the slowdown in Malaysian growth was limitations on land available for development. Therefore, it was easier to expand plantations in Indonesia rather than diminishing returns in further development in Malaysia. Therefore part of the Indonesian successes story is due to Malaysia, and the neighbors now effectively manage the cluster together. Indonesia overtook Malaysia in terms of production in 2006, and exports in 2008. The main threat to the Malaysia palm cluster is the limitation on the availability of cultivable lands due to concerns of deforestation and environmental degradation. As a result other countries such as

Indonesia and Columbia could reduce the dominance of Malaysia in the global market in the near future. Columbia is the largest producer in the Americas, accounting for about 2% of world supply. Like many other agricultural products in the region, 35% of its production goes to bio fuels.



Global demand for palm oil has been on the rise over the past decade compared to other vegetable oils such as soya oil, rapeseed oil and sunflower oil. Palm oil exports grew at annual average 11% between 2003 and 2008, compared to rapeseed and sunflower oil, which grew at 3% and 8% respectively over the same period. In 2003, palm oil overtook corn oil as the top produced edible oil in the world. The key reasons for this were 1) efficiency advantages for growing palm oil versus other types of oil and 2) price convergence between palm oil and other main stream oils, reflecting increasing substitutability between the two, and 3) the overall price performance of palm oil and other edible oils this during the last decade. Palm oil has several advantages over other vegetable oils in that it is more durable, more resistant to pressure and high temperature, and is relatively stable. Further, there is a perceived health benefit to palm oil, as unlike many other cooking oils that are liquid at room temperature, it remains as a solid, and therefore does not need to be hydrogenated as other oils are, and thus does not contain trans fatty acids.³ Palm oil is used widely as feedstock in a number of food products such as cooking oil and margarine, and soap. The quality of palm oil is measured by its content free fatty acid. The higher the content of free fatty acid the lower the quality of the palm oil will be. Further, due to palm oil's lower melting point, it has tendency to stay solid at room temperatures. Further, environmental concerns, mainly due to deforestation as competition for land increases, has given palm oil some negative press in the last few years.

World food security issues coming from the emerging south drive much of the demand for palm oil. Of the largest 3 importers, two are in the emerging market category: China and India. The third is Europe, which has been an historically important processing center for palm oil since the colonial era, and many Malaysian firms have vertically integrated to own processing factories in Europe. The largest 3 importers control roughly 50% of the market, and demand has been increasing in recent years, and thus world trade

³ Chris James Interview

is expected to grow further. Malaysian firms have a stronger market presence in India, while Indonesian firms (such as Wilmar) have a stronger market presence in China.

3.2 Malaysia Palm Oil Cluster

3.2.1 Recent history and competitive performance of the cluster

The promotion of palm oil as a cash crop by the Malaysian government started in the late 1960s. This effort was aimed at reducing the over dependence on tin and rubber for exports at a time that the world prices for these commodities were on the decline. Malaysia overtook Nigeria as the world-leading exporter in 1966. Palm oil promotion of was also targeted initially at poverty reduction, driven by FELDA, a government institution which accumulated land banks for the rural poor for palm cultivation. By the mid 1980s, it was the leading agricultural export and the third largest export earner for Malaysia. Later developments focused on increasing value added exports through tax incentives, mainly through export subsidies of refined products, and export duties of CPO. More recently, efforts in the cluster have moved to research in downstream technologies, driven by both the industry players, government agencies such as Malaysia Palm Oil Board, and universities. The most recent trends have included vertical integration for large palm oil producers investing in both downstream assets abroad, including refining and research capacity, and large firms moving upstream, in countries such as Indonesia, Papua New Guinea, and most recently several countries in West Africa. Currently growth in the downstream sector has been limited due to land constraints. Malaysia has now roughly 4 million hectares under cultivation, and further cultivation will be limited to do land constrains and growing competition with cities for land resources. Thus main sources for growth in the cluster will come from upstream productivity efficiencies, increased downstream investment in R&D and branding, and upstream investment in countries with underused land resources, such as in Africa.

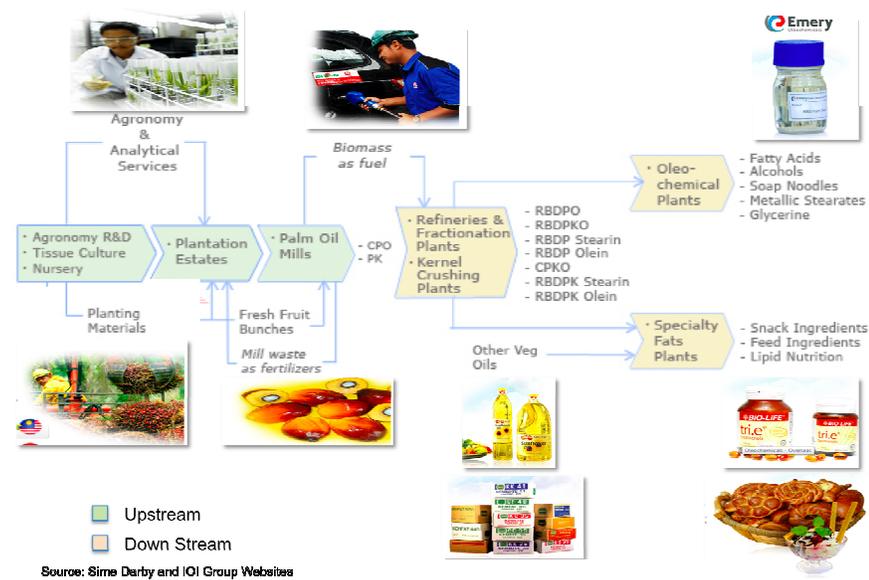
3.2.2 Value Added Chain and Industry Structure

The value added chain in Palm Oil production can be broken into two sections: upstream, and downstream. The main products from the upstream sector are CPO and effluent, which is currently a waste product. The current cost of production of CPO is roughly R2,100 per metric tonne, while the sales market prices is roughly R3,300 / MT. Therefore there are currently very good margins in the upstream market.⁴ This explains the rapid expansion in the upstream sector in the last decade. However a major externality currently is the effluent, which if not properly treated (which it generally is not) is released into the environment with negative effect. One solution to this is to convert the effluent into bio fuel, which his currently being researched.

On the downstream sector, margins are much tighter in producing refined oil, where gross margins are roughly R150 / MT, giving low returns on equity. Much of this capacity was build on to government incentives that

deterred exports of CPO, and gave subsidies to refined oil, and therefore margins may be understated. However for companies that get into the more value added parts of the chain, which is processed food

The Palm Oil Value Chain

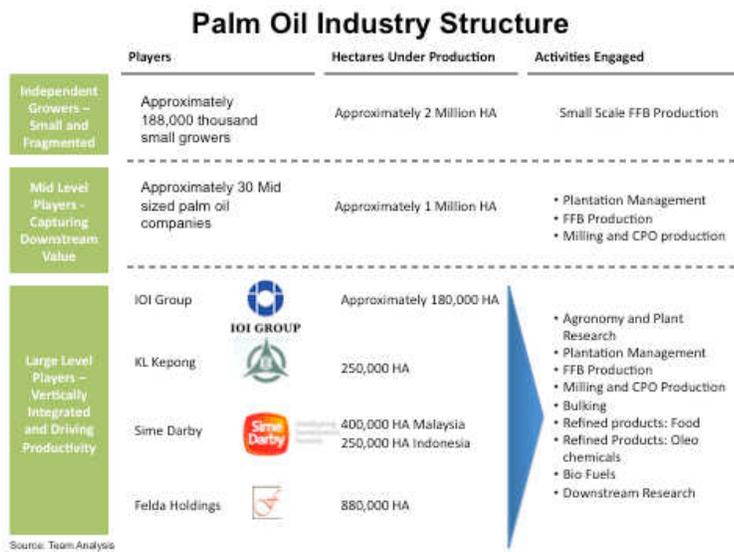


⁴ Interview, Vince Ng,

production, health foods, oleo chemicals, and branded products, margins go up significantly. Therefore there is an increased focus in Malaysia move from the general refined products to the more specialized high value added products to move up the value chain.

The industry structure is segmented into 3 parts; the small land holders,, the intermediate level producers, which are independent and most listed on Kuala Lumpur stock exchange, and finally the large vertically

integrated players. The smallholder only farm produce the FFBS, and to mill owners who make CPO. The independents farms as well as mills, therefore can sell CPO to large industry players. The largest players, which



and sell the own and the The

include the IOI group, KL Kepong, Sime Darby, and FELDA holdings (government owned), are vertically integrated across the value chain, and therefore do everything from planting and agronomy to value farming. It is mainly in these groups, along with the IFCs and university, where upstream and downstream research is conducted.

3.2.3 IFCs in the Palm Oil Cluster

IFCs can be broken out into two groups: private sector and public sector. In the private sector, key IFCs include Malaysia Palm Oil Producers association (MPOB), Oil Palm Growers Association (OPGA) , and Palm Oil Refiners Association of Malaysia (PORAM), and Kuala Lumpur Commodity Exchange

(KLCE). As the names suggest, they cover all parts of the value chain and work closely with government. The focus on land bank management (OPGA); collaboration among different growers and supply chain linkages for CPO (MPOPA); the refining process (PORAM); and risk management (KLCE). On the public side key agencies are Federal Land Development Agency (FELDA), Malaysia Palm Oil Board (MPOB), and Malaysia Palm Oil Promotion Council (MPOPC). Again, along with the Ministry of Trade and Industry, which is the central coordinating body for the cluster, these agencies look coordinate activities from land bank management for smallholder farmers (FELDA); research and market information (MPOB); and export promotion (MPOPC).

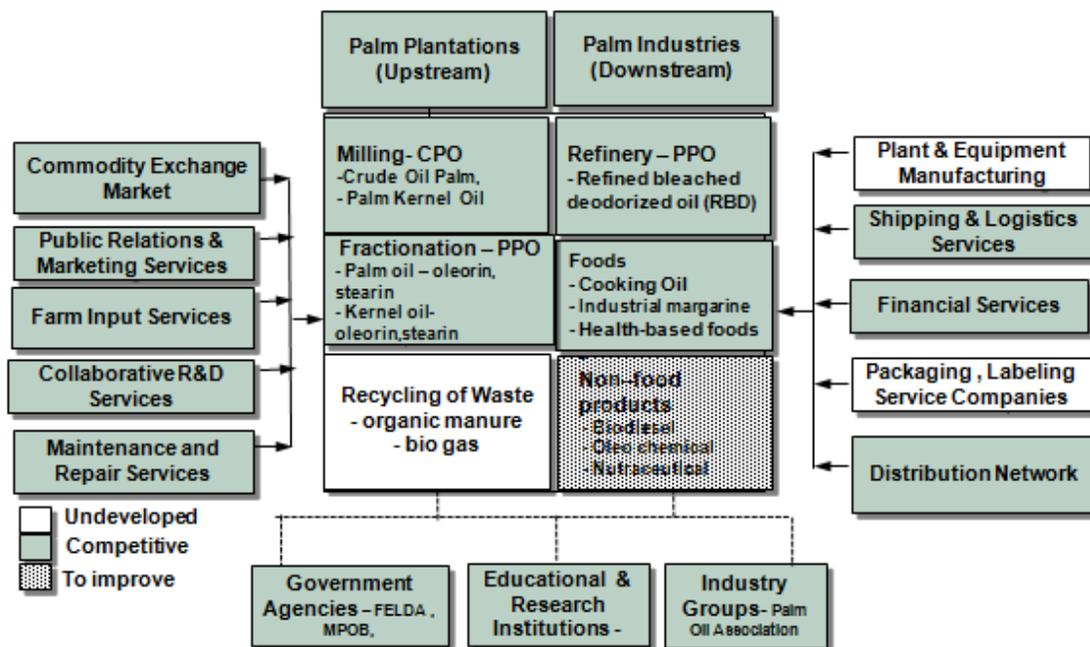
3.2.4 Innovations in the palm oil cluster

There are two sectors of innovation in the palm oil industry: upstream innovation, which is concerned with increasing output of CPO, and downstream innovations, which are concerned with increasing the value added chain of innovation via various value added uses in the sector. Innovation in upstream includes: agronomy and upstream research- improvement in plant yields, water conservation and disease control, and the Palm genome project, which is an university / industry initiative to map out the genetic structure of the Palm with the aim to improve yields. Spillovers in innovation come from general agronomy practices on the low technology side, and improvements of the genetic strains of the palm plant on the higher technology side. Malaysia was an early leader in the technological advancement in the 1960s from producing hybrids of existing palm varieties to produce higher yielding varieties. More recently, yields are being improved through more efficient farming techniques, and clustering smallholder farmers together for better use of resources such as mills. Malaysia has currently one of the highest efficiency ratios, producing roughly 21 MT FFB / hectare, yet smallholder farms can be significantly

below this average.⁵ 10% of cultivated palm in Malaysia is over 25 years old, and large efficiency gains can be made if these plots can be replanted.⁶ More recently, a number of firms, both in Malaysia and abroad, along side Malaysian universities, are looking at mapping the genome of the palm plant, to allow more productive strains to be created in the future.⁷

Innovation in downstream production is advanced through the establishment of R&D centers at both the firm and the industry level. These would include extraction of biodiesel, conversion of effluents and biomass into biogas and the production of health-based foods. This also looks at non-food uses of palm oil, which are called oleo-chemical products. Here, there is a high spillover affect from both the crude oil refining industry, as well as the food processing industry, which both use refined palm oil in their processes. Historically, advances in the downstream sector have been driven by the United States, Singapore, and Europe, as centers for refining, but more recently Malaysian firms have been moving into this space as they move up the value chain and devoting more R&D dollars in this area.

3.2.5 Malaysian palm oil cluster map



Source: MPOB Website and Team Analysis

The figure above shows that the Malaysian palm oil cluster is well-coordinated and strong network of institutions and inter-related industries at the local level. The core of the cluster map we have the two main activities, namely the downstream activities which comprise all entities that work directly or indirectly on the plantations. Secondly we have the upstream activities that comprise industries that add value to the primary output from the plantations. At the base of the cluster map are the institutions for collaboration (IFCs) such as FELDA⁸, which help the farmers have access to arable land and agricultural training institutions for capacity building. Industry associations such as OPGA⁹ also lobby government for policies on behalf of producers in the palm oil cluster.

The local suppliers and support institutions to the upstream activities are on the left. These include the commodity exchange market that is valuable source information to palm oil producers, farm input companies such seedling companies and research development support services. On the right side of the map are suppliers and support services to the downstream activities including manufactures of plant and equipment, logistics and port services, financial services, wholesaler and retailers in the distribution chain. Malaysia is however at the early stages of the manufacturing of plant and equipment which is shaded lightly to depict that the need for more improvements in terms of being competitive.

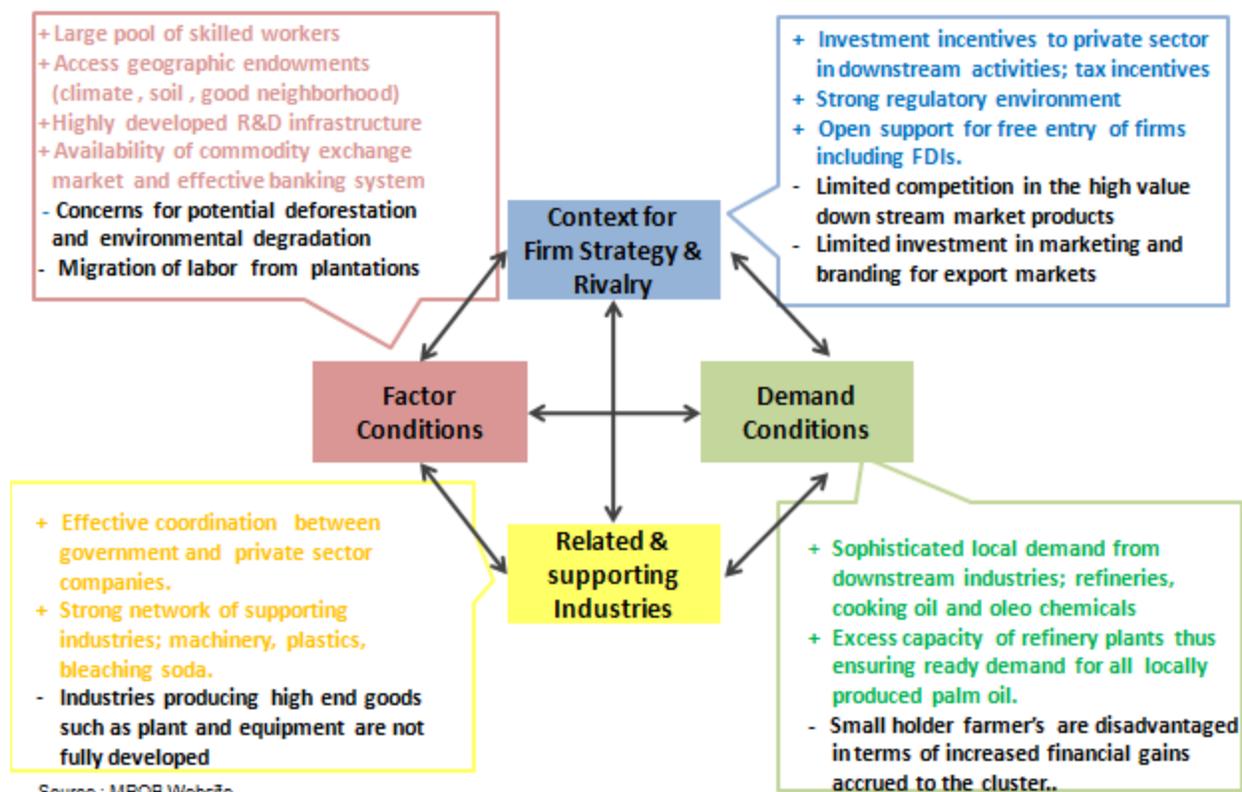
⁸ FELDA : Federal Land Development Authority. As a federal statutory body it operates with Ministry of Lands and Regional development. It had established 7 subsidiary corporations and entered into six joint ventures with the private sector.

⁹ OPGA – Oil Palm Growers Association

3.3 The Malaysian Palm Oil Cluster Diamond

The Malaysian Palm Oil cluster is strongly supported by all four components of the diamond. Overall the factor (input) conditions and related and supporting industries contributed significantly in providing the initial booster to the palm oil cluster but it was the unique interplay between the regulatory environments, the competition among firms and the local demand conditions that gave the cluster its phenomenal growth record over the past decade. Interestingly though, the good performance of the palm oil cluster as a whole has resulted in the loss of labor from the plantations to the refineries and other downstream activities which are located the urban centers.

Palm Oil Cluster Diamond



3.3.1 Factor Conditions

Large pool of skilled human resources in plantations management, easy access to geographic endowments, availability of scientific and technological support and a vibrant financial sector are the factors that have significantly contributed to creating the right factor conditions for the palm oil cluster.

The palm oil cluster is characterized by a large pool labor with skills that are tailored to specific needs of the palm oil industry. The availability of relevant skilled labor could be traced to Malaysia's colonial legacy of rubber plantations, some of which were converted into palm oil plantations in the 1960s. Secondly the skills of the labor force are constantly upgraded thanks to the training received from a number of agricultural training institutes that specialized in the palm oil industry. Today there are xxx specialized agricultural training institutions that work closely with the palm oil industry on issues such as agronomy, agribusiness and plant genetics.

As mentioned earlier, Malaysia is geographically located in the palm oil belt, with the appropriate climatic and soil conditions for the production of palm oil. Additionally, government enhanced access to these natural endowments by the creation of land banks through the setting up Federal Land and Crop Authority (FELCRA) and FELDA, thus making arable land available to all those who were willing and capable of farming within the guidelines of the palm oil cluster. These institutions created land banks made sure those potential farmers who otherwise did not have access to farmlands, especially the people of Bumiputera, were given priority in the allocation of land. Secondly, Malaysia's palm oil cluster was in a good neighborhood where countries such as Singapore, Indonesia and Thailand offered opportunities for collaboration and competition at the same time.

The palm oil is beset with labor shortage as economic improvement in farmer households has offered the younger generation with more education, hence the desire for the latter to migrate to the downstream

activities in the urban centers where terms and conditions are better. Secondly with increasing concerns for deforestation and environmental degradation the government had halted the acreage of farmlands available for palm oil cultivation. As of 2009, 4.7 million hectares of land representing 10% of total surface areas were under palm oil cultivation.

3.3.2 Related and Supporting Industries

Most of the organizations that support the downstream activities are government-linked companies or organizations. The Malaysia Palm oil cluster is supported by a very strong network of related and supporting Industries that help it through knowledge and skill transfer, demand generation and also through the enhancement of the Malaysian palm oil cluster. Most big companies such as Sime Darby have in-house research and development (R&D) departments. Government funded R&D however supports the entire cluster. The existence of an effective financial services sector and emergence of companies producing plant and equipment enhance the competitive advantage of Malaysia in the palm oil cluster.

There are high concentrations of research institutions, focused on the palm oil cluster contributed significantly to technological innovations and increased in productivity of the palm oil cluster. In the 1960s, research and development (R&D) in oil palm breeding began to expand after the Malaysian Department of Agriculture established an exchange program with West African economies and four private plantations formed the Oil Palm Genetics Laboratory (OPGL). This led to new and higher yielding strains of the palm. The University of Putra Malaysia (UPM) was established in 1970s, to provide training to agricultural and agro-industrial engineers and agro-business graduates to conduct research in the field. The Palm Oil Research Institute of Malaysia was also set up in 1979. By 2009, there were about 42 training and research institutions providing R&D support to the palm oil cluster.

3.3.3 Demand conditions

There is a sophisticated local market for Malaysia's palm oil at each stage of the value chain. This is in part so because of the requirements for high quality standard products by the palm oil regulatory authority, PORLA¹⁰. The regulatory authority required that any persons who move, sell, purchase, broker, export, import, store, survey or test any oil palm product must be licensed. In issuing the license, PORLA imposes conditions and restrictions to regulate the trade and to promote quality practices to ensure the products or services rendered is of the highest quality. Secondly most CPO from the upstream *activities is sold to downstream companies, which are characterized highly sophisticated demand.*

3.3.4 Context for firm strategy and rivalry

Differential tax regime favored the exports of processed palm oil and other downstream activities while discouraging export of crude palm oil. Through investment tax rebate and export tax waivers, private sector was encouraged to set refineries to process the crude palm oil (CPO) and to invest in downstream activities such as cooking oil and bio diesel production. By 2009, Malaysia had 4.7 million hectares of land under palm oil cultivation, 416 mills and 51 refineries (Malaysia Development Plan 2010). Malaysia capacity for refinery exceeded total production of CPO in the country. Secondly, Malaysia had a regulatory environment that permitted free entry of firms including foreign direct investment. Hence there is healthy competition among the firms. The palm oil industry is composed of private estate companies, most of which integrated vertically, followed by government-linked companies and smallholder farms.

4.0 Risks and Recommendations for the Malaysian Palm Oil Cluster

4.1 Factor conditions

¹⁰ PORLA stands for Palm Oil Industry (Licensing) Regulations (Amendments) which was set up in 1984.

Malaysia is constrained in terms of expanding its land use for the cultivation of palm oil, since continuous expansion in acreage of palm oil is considered environmentally unsustainable. Worse still, the migration labor from the plantation to the urban centers has necessitated the recruitment of foreign workers from Indonesia. We recommend that government provide sufficient incentives for companies to invest in offshore palm oil plantations in places such as Indonesia and elsewhere. The larger implication though is that as Indonesia overtakes Malaysia in terms supply of CPO, it would be important for Malaysia to invest more in the downstream activities in order to maintain its dominance in the cluster.

4.2 Upstream Activities

Upstream activities are also challenged by aging palm plantations, which is likely affect productivity in the coming years. Secondly, there are risks of increasing pollution and land pressure due to production externality. We recommend the government Increases incentives for small holders to replant their crops. This could be in the form of subsidies in lieu of farmer output. Secondly, there should be Incentives to promote bio-gas production through the use of mill effluent and FFB husks.

4.3 Downstream

Regarding downstream activities there is over capacity for food products, and under capacity of oleo chemicals and a growing concern about environmental degradation and sustainability. We recommend increased incentives for further activities downstream, especially into non-foods, via partnerships and additional innovations. Finally, there is the need to increase marketing budget to improve upon the health and environmental image of palm oil abroad.

Bibliography

2010 Annual Report on Malaysia, Amnesty International.

2010 Perception of Corruption Index, Transparency International

ASEAN General Statistics, Association of Southeast Asian Nations, 15 July 2010

Association of Southeast Asian Nations, Table 25, intra-ASEAN Foreign direct investments net inflow, ASEAN FDI Statistics, 15 July 2010

Boonyaprateeprat, W. "Thai Oil Palm Situation in Globalization" 2010

Deepak Bhattasali: Economic Growth and Development in Malaysia : Commission of Economist Intelligence Unit, Palm Oil Industry Report for Malaysia (Deepening Malaysia' advantage (Chapter 9)

EIU, Malaysia Country Report December 2010

FAOSTAT website, <http://faostat.fao.org/default.aspx>

Global Competitiveness Report (2010-2011)

Government of Malaysia (2010), Economic Transformation Program – A roadmap

Government of Malaysia (October 2010) , Performance Management and Transition Growth and Development, Working Paper no 27, 2008.

Human Rights Watch, World Report 2011

IFC (2008); Palm Oil Industry Report

Interview: Chris James, PHROPINES Group, United Kingdom, April 2011

Interview: Saravanan Desigamanie, Sime Darby, Malaysia, March 2008

Interview: Vince Ng, KAF Securities, Malaysia, March 2008

Malaysia Economic Monitor: Repositioning for Growth (November 2009). World Bank

Malaysia Implied Purchasing Power Parity (PPP) conversion rate 2010, The International Monetary Fund Indicators

Malaysia risk: Tax policy risk, The Economist Intelligence Unit, 6 January 2011

Malaysian Exports Reach New High, Malaysian National News Agency, 6 May 2011

Malaysia's corruption at critical level, Thompson's Financial News, June 12 2008

MIDA (2009) :Overcoming Competitive challenges by upholding transformation- Malaysia Productivity Commission.

MPOB Website, <http://www.mpoc.org.my/>

MSN News, "Malaysian police fire teargas at protesters: witnesses". AFP. MSN News. Retrieved 11 May 2011.

Porter, Michael E., Institute for Strategy and Competitiveness, Harvard Business School

Porter, Michael, Global Competitiveness Index

PRS Group, International Country Risk Guide Top and Bottom 10 Countries - April 2011; East Syracuse New York; USA

Rajah Rasiah et al (2004) , "Development of Palm Oil and Related Products in Malaysia and Indonesia

Required Disclosures

Sime Darby (2009), Palm Oil Industry Report

Sime Darby Website, <http://www.simedarby.com/>

Thai Oil Palm and Palm Oil Association (2010), Thai Oil Palm Situation in Globalization

The International Country Risk Guide, 2010

The Star Online, Malaysian ports register positive growth, 27 April 2011

Unctad , Regional Workshop on Commodity Export Diversification, Bangkok, 3-5 April

Unctad Report, Country Fact Paper , World Investment Report (2010)

UNESCO Institute for Statistics , Primary education enrollment rates, , <http://www.uis.unesco.org>, (UNESCO 2010)

United Nations Convention on Biological Diversity

United States Central Intelligence Agency, The World Factbook, May 2011

University of Malaysia Website

USGS mineral publication

World Bank Group (2010) Palm Oil Strategy 2010

World Economic forum: Global Competitiveness Report 2010-2011.

World Health Organization Country Cooperation Strategy (CCS) Briefing, May 2010

-
- ⁱ The World Factbook, the United States Central Intelligence Agency, May 2011
- ⁱⁱ United Nations Convention on Biological Diversity
- ⁱⁱⁱ USGS mineral publication
- ^{iv} *Malaysian ports register positive growth*, The Star Online, 27 April 2011
- ^v ASEAN General Statistics, Association of Southeast Asian Nations, 15 July 2010
- ^{vi} Malaysian Exports Reach New High, Malaysian National News Agency, 6 May 2011
- ^{vii} Table 25, intra-ASEAN Foreign direct investments net inflow, ASEAN FDI Statistics, Association of Southeast Asian Nations, 15 July 2010
- ^{viii} International Country Risk Guide Top and Bottom 10 Countries - April 2011, The PRS Group; East Syracuse New York; USA
- ^{ix} Michael E. Porter, Institute for Strategy and Competitiveness, Harvard Business School
- ^x Primary education enrollment rates, UNESCO Institute for Statistics, <http://www.uis.unesco.org>, (UNESCO 2010)
- ^{xi} **"[Malaysian police fire teargas at protesters: witnesses](#)". AFP. MSN News. Retrieved 11 May 2011.**
- ^{xii} Porter Competitiveness Index
- ^{xiii} World Health Organization Country Cooperation Strategy (CCS) Briefing, May 2010
- ^{xiv} University of Malaysia
- ^{xv} *World Report 2011*, Human Rights Watch
- ^{xvi} 2010 Annual Report on Malaysia, Amnesty International.
- ^{xvii} 2010 Perception of Corruption Index, Transparency International
- ^{xviii} the International Country Risk Guide, 2010
- ^{xix} *Malaysia's corruption at critical level*, Thompson's Financial News, June 12 2008
- ^{xx} Malaysia risk: Tax policy risk, The Economist Intelligence Unit, 6 January 2011
- ^{xxi} Malaysia Implied Purchasing Power Parity (PPP) conversion rate 2010, The International Monetary Fund Indicators