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IV. NATIONAL STUDY: MALAYSIA*

A. The role of agriculture and rural development in Malaysia

1. Contribution of agriculture to the national economy

The Malaysian economy has experienced significant structural changes in the last four and a half decades. After independence (1957), Malaysia inherited an economy largely based on the export of tin and rubber. After independence, Malaysia continued with large-scale planting (with some diversification) of export commodity cash crops. Labour was cheap, land was plentiful and the prices of primary products were high. For three decades after independence, the export agriculture sector was the main contributor to the national economy. It laid the foundation and financed the development of the country.

(a) Share of gross domestic product

The country has since moved rapidly towards industrialization. Manufacturing now surpasses agriculture's contribution to the Malaysian economy. The primary sector (agriculture, forestry and mining) contribution to GDP at the year of independence was 45 per cent in comparison to the secondary sector's (manufacturing and construction) 11 per cent. Diversification of the economy and industrialization has led to an expected and relative decline of agriculture's contribution (including forestry, livestock and fisheries) to GDP. In 2000, agriculture's contribution is projected to be 10.5 per cent compared with manufacturing at 37.5 per cent.

(b) Foreign exchange

Agriculture is an important foreign exchange earner. Export earnings increased from RM13.9 billion in 1985 to RM35.4 billion in 1995, registering an annual growth rate of 9.8 per cent. Total share in

Table 1. Share of gross domestic product by sector

Sector	1957 (%)	Sector	1985 (%)	1990 (%)	1995 (%)	*2000 (%)
Agriculture and mining	45	Agriculture	20.8	18.7	13.6	10.5
		Mining			7.4	5.7
Manufacturing and construction	11	Manufacturing			33.1	37.5
		Construction			4.4	4.6
Services	44	Services			44.2	45.7

Sources: Gomez and Jomo 1957: 15-16;
Third National Agricultural Policy, p. 5;
The Sun newspaper, 28 October 1995.

* Projected figures

* Prepared by Mr Ong Khun Wai, Humus Consultancy, Penang, Malaysia.

Table 2. Share of commodities in agricultural export, 1985-1995

Item	1985	1990	1995
Food	11.9 %	15.5 %	12.7 %
Palm oil	28.3 %	19.7 %	29.3 %
Rubber	20.6 %	13.6 %	11.4 %
Sawlogs	19.9 %	18.1 %	6.4 %
Sawn timber	8.2 %	13.8 %	10.8 %
Agriculture requisites and others	8.0 %	8.9 %	11.1 %
Total value (RM million)	13,937.7	22,283.7	35,427.4
% of total exports	36.7 %	28.0 %	19.2 %

Source: Department of Statistics, Third National Agricultural Policy, p. 7.

Table 3. Distribution of employment (in thousands), 1999

Total number	8837.8	Male	Female
Urban	4827.3	3081.8	1745.5
Rural	4010.5	2768.4	1241.1
Agriculture	1633.1	1231.8	401.3
Urban	145.0	119.4	25.5
Rural	1488.1	1112.4	375.8

Table 4. Employment in the various sectors (million), 1994-1997

	1994	%	1995	%	1996	%	1997	%	*1998	%
Total labour force	7.846		8.06		8.372		9.046		9.01	
Total employment	7.618	97.1	7.832	97.2	8.161	97.5	8.805	97.36	8.563	95.04
Agriculture	1.517	19.3	1.48	18.36	1.339	15.99	1.495	16.53	1.414	15.69
Manufacturing	1.878	23.9	1.997	24.78	2.178	26.02	2.39	26.42	2.321	25.76
Government	0.868	11.9	0.872	10.82	0.877	10.48	0.873	9.65	0.875	9.71
Unemployment rate		2.9		2.8		2.5		2.6		4.9

Sources: Economic Report 1995/96, 1997/98, 1998/99, Ministry of Finance, Malaysia;

Malaysian Agricultural Directory and Index, 1999/2000, p. 242.

* estimate

exports, however, declined from 36.7 to 19.2 per cent in the same period. The major export earning comes from palm oil exports.

Malaysia has a significant food import bill. Food imports rose to RM13 billion in 2000 from RM7.8 billion in 1995, owing to the depreciation of the Malaysian ringgit and changes in consumer taste.

(c) Employment and productivity

Of total employment in 1999, 45.38 per cent was rural based, of which 37 per cent was involved in agriculture. Agriculture was a major source of employment, providing 15.69 per cent of total employment, in 1998. While its share of total employment is declining, productivity is on an increasing trend, made possible with the introduction of farm mechanization and implementation of land consolidation and group farming programmes.

(d) Rural infrastructure (agriculture)

Fifteen integrated agricultural development programmes were started in the fifth Malaysian Plan (Yearbook 1992/93), covering 3.5 million hectares, benefiting 273,900 farm families and they were maintained under subsequent Malaysian Plans. They provide an integrated package of infrastructure and support facilities, including drainage, irrigation, flood control, roads and agricultural support services.

The Department of Agriculture 1990 statistics indicated that 90.23 per cent of farmers have electricity (1.89 per cent have generators), 64.57 per cent have portable water (4.21 per cent have water pumps), and 8.93 per cent have telephones.

2. Agro-ecological and biophysical characteristics

(a) Zones and climatic conditions

Malaysia is divided into two regions, West or Peninsular Malaysia and East Malaysia separated by about 640 kilometres of open sea (South China Sea). The climate is hot and humid throughout the year. Average temperature is 26 degrees Celsius and average humidity is 80 per cent. Daily temperature varies at 21-32 degrees Celsius in the coastal areas and

13-27 degrees Celsius in the highlands. Annual average rainfall is between 200-250 cm (higher for East than Peninsular Malaysia) with the north-east monsoon in October to March (wet period) and south-west monsoon in May to September (dry period).

(b) Agricultural land use

Malaysian agricultural production consists of commodity tree crops (mainly for export), rice and livestock (mainly for domestic consumption), and fruits and vegetables (both export and domestic consumption).

Table 5. Agriculture employment and productivity

Year	Employment ('000)	% of total	Productivity (RM in 1978 prices)	Employment total	Productivity (RM in 1978 prices)
1985	1796	31.3	6600	5737	9950
1990	1738	26.0	8530	6685	11870
1995	1524	19.0	10650	8024	14989
2000	1426	16.1	12514	8871	15686
2005	1200	11.9	16496	10053	20640
2010	980	8.8	22780	11099	28061

Source: Third National Agricultural Policy, p. 7, Economic Planning Unit and Department of Statistics.

Table 6. Zones and climatic conditions

Total area	33.03 million hectares (330,000 square kilometers)
Land masses x2	13.16 million hectares
Soils (Peninsular)	Heavily weathered, highly leached and acidic (ph 4.2-4.8), contains little organic matter and low plant nutrients
Suitable for agriculture	6.19 million hectares (West) 4.12 million hectares (East)
Location	Between Latitudes 0° and 8° North; Longitudes 99° and 120° East
Climate	Humid tropical, rain throughout the year with seasonal wet or dry periods
Average rainfall	Between 200-250 cm (higher for East than West Malaysia)
North-east monsoon	October to May, generally a wetter period
South-west monsoon	May to September, generally a drier period
Average temperature	26° Celsius
Coastal range	(21-32) ° Celsius
Highland range	13-27 ° Celsius
Average humidity	80% reaching highs of 94-100

(c) Predominant farming and production systems

The country's agriculture sector is oriented and structured for export. In 1995, rubber, oil palm and cocoa covered 76.6 per cent of cultivated land, paddy (rice) covered 11.6 per cent, vegetables took up less than 1 per cent and fruits 4.5 per cent. A higher percentage of land is held as smallholdings (60 per cent), but the more efficient larger estates (private and public) dominate production. Production systems largely follow the external input dependent monocropping model set in place during the British colonial period. This production model was further developed by successive post-independence Malaysian governments as part of the country's income generation and development.

The government is encouraging a shift of production to higher value crops. There will be a substantial reduction in rubber, paddy, coconut and cocoa, to be replaced by agroforestry, palm oil, fruits and vegetables. Group replanting of commodity crops has been undertaken to develop mini-estates to realize economies of scale. A minimum area will remain under paddy because of its strategic importance. The domestic rice self-sufficiency production target is set at 65 per cent.

No new land is projected to be open in the Peninsula although some will still be opened in East Malaysia. New growth sectors identified include floriculture, aquarium fish and biotechnology products, including plant cell tissue culture techniques for producing metabolites for pharmaceuticals, dyes, food additives; use of hormones to improve animal productivity; enzyme action in fermentation processes as well as genetically modified organisms. The

government does not see any contradiction in promoting biotechnology development as well as organic production.

(i) Use of agrochemicals

In 1997, RM326 million was spent on herbicides (75 per cent), insecticides (16 per cent), fungicides (5 per cent) and rodenticides (3.5 per cent), registering an overall growth of 8.3 per cent over 1996. Herbicides are mainly used in the plantation sector, hence the higher proportion. Rodenticides are also used in plantations, mainly for the control of rats in oil palm. Insecticides and fungicides are mainly used for fruit and vegetables.

The active ingredients are generally imported for reformulation and dilution locally. The import bill for pesticides in 1997 amounted to about RM172 million. Imports, however, are also used for exports/re-exports.

Fertilizer usage has also increased. Most of the fertilizers used are of non-organic origin and imported (except for a fair amount of urea). The import bill for fertilizers in 1997 was RM1.14 billion.

(ii) Integrated pest management (IPM)

IPM was first introduced in the 1960s for the control of bagworms (oil palm), and in the 1970s for the coconut leaf moth (*Artona catoxantha*). Major outbreaks of the brown plant hopper (*Nilaparvata lugens*) in 1978 and 1979, brought about IPM for rice. The government has since adopted IPM as the prime approach for crop protection. A pest surveillance and forecasting scheme was developed in 1979 and a

Table 7. Agricultural land use , 1985-1995 ('000 hectares)

Crop	1985	1990	1995	Average Annual Growth Rate (%)		
				1985-1990	1990-1995	1985-1995
Rubber	1 948.7	1 836.7	1 690.0	-1.2	-1.7	-1.4
Oil palm	1 482.4	2 029.5	2 540.0	6.5	4.6	5.5
Cocoa	303.9	419.1	190.0	6.6	-14.6	-4.6
Paddy	655.0	680.6	670.0	0.8	-0.3	0.2
Coconut	334.1	315.6	250.0	-1.1	-4.6	-2.9
Pepper	5.4	11.5	10.0	16.3	-2.8	6.4
Vegetables	31.8	35.2	42.0	2.1	3.6	2.8
Fruits	150.1	204.6	260.0	6.4	4.9	5.6
Tobacco	16.2	10.2	11.0	-8.8	1.5	-3.8
Others	94.3	94.8	106.0	0.1	2.3	1.2
Total	5 021.9	5 637.8	5 769.0	2.3	0.5	1.4

national IPM programme was established in the mid-1980s. In 1989, 240,000 hectares of paddy and 59,000 hectares of cocoa were covered under the pest surveillance and forecasting activity, benefiting 246,300 farmers.

The IPM programme is implemented through existing service structures and institutions, such as the Department of Agriculture and the Malaysian Agriculture and Development Institute. The Food and Agriculture Organization and the United Nations (FAO) recommended IPM Farmer Field Schools. However, these have not been generally adopted. Training of farmers has been carried out through the existing training and visit system of the Department of Agriculture.

(d) *Environmental impacts and problems*

(i) Burning

Burning for land clearing and burning of rice straw, a problem in the past, is now banned by the government.

(ii) Soil erosion

Given torrential rainfalls, high light and temperature exposure, soil erosion is a concern. Soil erosion is greatest during planting or replanting periods in plantations. Several months lapse when the site is cleared until ground cover is established and several years lapse before the tree canopy closes. The problem was greater in the past because of clean

Table 8. Consumption of crop care products in Malaysia (RM million)*, 1995-1997

Product	1995	Growth(%)	1996	Growth (%)	1997	Growth (%)
Herbicides	220	5	227	3	245	7.9
Insecticides	43	5	47	9	52	10.6
Fungicides	15	7	16	6	17.5	9.3
Rodenticides	11	-	11	-	11.5	4.5
Total	289	5	301	4	326	8.3

Table 9. Import, local production, export and re-exports of crop care products (RM '000), 1997

Product	Import	Local Production	Export/re-export
Herbicides	35220	370179	71419
Insecticides	98121	10032	26807
Fungicides	38657	4211	3009
Total	171998	384422	101235

Table 10. Quantities (tonnes) and values (RM '000) of Malaysia fertilizer imports, 1995-1997

Product	1995		1996		1997	
	Amt	Value	Amt	Value	Amt	Value
Organic	6012	6770	72928	7814	216532	6905
Nitrogenous	1277611	487032	1103739	506015	1691715	609585
Phosphatic	590392	108151	925960	143833	201065	139080
Potassic	1068785	348264	928655	309699	1088451	373238
Others	21,275	18,368	12,792	14,613	19,027	12,896
total		968,585		981,974		1,141,704

Source: Malaysian Agriculture Directory 1999/2000, p. 224.

weeding practices, i.e., removing all surface plants at the time of planting and continuously keeping the soil surface clean even after trees become established.

Soil loss from non-tree crops is more severe, reportedly more than 125 kg/ha/yr, at the Cameron Highlands catchment, a major production centre for vegetables and cut flowers. Extensive siltation shortened the lifespan of a hydroelectric power generator in the area to one third of projected estimates. The removal of forest has also caused an increase in the surrounding temperature by 1-2 degrees (Aminuddin, Chow and Ng 1990).

(iii) Run-offs and river pollution

Of the crops cultivated, the canopy of mature rubber plantations is closest to a natural forest. Run-offs, however, have been recorded to be twice as fast in a catchment largely converted to rubber and oil palm (Vincent and Hadi 1993). Land gradient plays a role in this.

Of the 119 major rivers monitored by government agencies, 52 are reportedly clean, 53 slightly polluted and 14 highly polluted. Agriculture contributed 27 per cent towards the pollution. Sewage is the major factor contributing 65 per cent and industry 8 per cent (Department of Statistics 1998).

(iv) Reduction of forest biodiversity

Fewer than 20 bird species of inland forests have effectively established themselves beyond the limits of their original habitat. Studies have recorded 50 per cent fewer bird species in rubber plantations than in neighbouring primary forests. Most forest dwelling mammals also cannot exist outside mature natural forests (Vincent and Hadi 1993).

(v) Agrochemical abuse, poisoning and contamination

Between 1982 and 1993, 550 cases against the Pesticides Act were taken to court. The impact of pesticides on health is a concern. In two granary areas surveyed, 51-71 per cent of the farmers experienced symptoms associated with pesticide poisoning. Studies done in 1989 indicate non-IPM rice farmers apply on average at least 2-4 applications of insecticides per season. Some farmers (3.38 per cent) dispense as much as 7-10 applications, once every 10 days or in between whenever they perceived a threat. Most are only aware of one method of pest control, i.e., pesticides (Ahmad, Ayob and Moi 1994). Women in the plantation sector face greater exposure risks as sprayers (Arumugam 1992).

While no comprehensive data on the effects of agrochemicals on the degradation of soil fertility and the poisoning of groundwater is available, preliminary studies have shown contamination of water and fish in rice ecosystems from pesticides use. Lindane and endosulfan are persistent in the environment. (Ahmad, Ayob and Moi 1994).

Newspaper accounts of high levels of residues in food crops are frequent. A two-year study completed in 1995 reportedly discovered pesticide residue in the breastmilk of seven samples taken from 31 women in the town of Ranau, Sabah (East Malaysia). In June 1999, the Singapore authorities announced they would impose a ban on producers whose products exceeded the allowed residue content in their produce sent to the Singapore market. The Third National Agricultural Policy (NAP3) took notice that indiscriminate use of pesticides, particularly by vegetable producers, has led to increasing concern over the safety of locally produced vegetables. It is a contributing factor in the government's interest in

Table 11. Employment in the agriculture sector ('000), 1999

Total	Employer	Employee	Self-employed	Unpaid family
1623.7	13.0	616.7	676.3	317.7

Table 12. Age groups in the agriculture sector, 1990

Age group	Less than 18	18-25	26-35	36-45	46-55	Above 55
%	0.63	1.55	11.96	21.73	27.10	37.02

Source: Department of Agriculture statistics 1990.

developing pesticide-free or organic produce to meet a niche market interest.

3. Socio-economic background

(a) Employment spread, age and literacy

About 42.5 per cent in the agriculture sector (1999) were self-employed or employers (0.8 per cent). Males constituted 75 per cent of the rural population working in agriculture. The Department of Agriculture 1990 statistics for Peninsular Malaysia indicated that the majority of farmers were above 55 years old. Twenty-five per cent had no schooling. Less than 13 per cent went beyond primary school. In addition, 31.78 per cent mentioned that agriculture was not their primary work (income).

(b) Women in agriculture

The number of women involved in agriculture declined from 34.4 per cent in 1990 to 25 per cent in 1999. The male member is traditionally the head of household. In general, women are engaged in most aspects of agriculture work, to varying degrees, except for machine-related activities, such as tractor driving, weed cutting machines. Work activities vary depending on the type of production, for example, tree crop, vegetables, animal husbandry or paddy. A study on women's participation in farm and housework among rubber farming households in two district of Perak found women were as active as their husbands in performing farm work. The women spent an average of 4.8 hours while the men spent 4.6 hours per day. Women generally did the collecting and processing while the men did the weeding and marketing. The men, however, did not participate in

housework. The women did an additional 8.9 hours per day of housework.

Gender bias against women is noted in plantations, where women workers are generally offered subordinate and more hazardous tasks such as pesticide spraying. Women's issues and concerns are reported to be ignored in the unions, where they have minimal representation in leadership levels. (Arumugam 1992).

(c) Land ownership and size of operations

A little above 84 per cent of smallholders own their own land. About 8 per cent, particularly the vegetable growers in the Cameron Highlands, work on temporary occupier's licenses. Land parcels under ownership or cultivation are small, 83 per cent own less than 2 hectares, and 26 per cent own less than 0.5 hectares. Similarly the average production size is below 2 hectares.

(d) Problems and challenges

Since the early 1990s, favourable policies towards industrialization created unattractive conditions for agricultural investment and led to an outflow of resources from agriculture. The agriculture sector has since experienced problems of labour shortages, rising wages, escalating cost of production, and increasing competition for land use. The more attractive urban employment resulted in labour shortages in the estates as well as in smallholdings. In 1994, 540,000 hectares of rubber smallholdings (30 per cent of the trees in the country) were left untapped because of the shortage of workers (*The Star*, 8 April 1994). Employment of foreign workers has been

Table 13. Farmer education levels, 1990

(percentage)

Education level	No schooling	Adult class	Primary school	Secondary school	Higher learning	Vocational school	College/ University
Farmers	24.78	7.95	54.33	12.14	0.57	0.22	
Children			16.65	38.77		0.68	1.78

Source: Department of Agriculture statistics 1990.

Table 14. Sources of income (RM), 1990

	Primary crop	Other agri-related	Total	Other income	Total
Income	1658	2371	2505	3396	4720

Source: Department of Agriculture statistics 1990.

legalized to alleviate the situation. Employment shortages and resource competition from other sectors of the economy persist today.

Unstable prices is the bane of the vegetable industry. Farmers produce for wholesalers under consignment. Prices are paid based on the market price during collection. Sometimes the produce is first sent to the wholesale market and the producer is informed of the price by the wholesaler after sales. There is lack of transparency in the pricing system. The situation is exacerbated by poor market information and cheap imports. Farmers often plant according to what their neighbours grow. Production planning is non-existent. Recent government calls for an increase in production to reduce food imports precipitated a market glut. Prices dropped to as low as RM0.04 per kilo (*The Sun*, 15 April 2001). Cooperation is hindered by the intense competition between growers, lack of labour and expertise. Getting producers to market their produce directly is not feasible with the lack of manpower and facilities.

Other problems cited by producers include pests and disease, land expansion, cost of agrochemicals, water sources and credit.

(e) *Income and poverty*

The eligible criterion for lower income households to seek aid is RM1,200 (approximately US \$300) a month and below. From 1995 to 1999, the incidence of poverty has dropped.

Of the estimated 420,000 smallholders in the country, 26 per cent reportedly live below the poverty level. For traditional farmers, the persistence of poverty is mainly due to the size of landholdings. The average gross income per hectare for the 1994/95 year of three farmers in the Seberang Perak irrigated rice growing scheme was given as RM2,535 (US\$1,014). This was based on two croppings per year with an average yield of 3.40 tons per hectare.

Plantation wages have increased above the sector's annual percentage growth. Wages, however, are generally still low and insufficient to retain local workers. Although there is an increase in gross income, the buying power of plantation workers, workers, for example, rubber tappers, actually declined slightly over the past 20 years. It is difficult today, even from the combined income of both rubber tapping parents, to sustain a decent standard of living.

Table 15. Average size of production

Production	Average size (hectares)	Additional information
Rice	1.06	65% have less than 1 hectare, 4% more than 3 hectares
Fruits	0.67	
Vegetables	1.01	
Cocoa	1.07	
Coffee	1.07	
Coconut	0.93	
Oil palm	1.84	
Rubber	1.60	Smallholders occupy 78% of planted areas. 77% have less than 3 hectares.
Meat beef	4 animals	
Goats	6 animals	
Pigs	less than 1,000 animals	72% of producers

Table 16. Incidence of poverty

	1995		1999	
	Urban	Rural	Urban	Rural
Incidence of poverty	3.6	14.9	3.4	12.4
Poor households ('000)	838	281.8	86.8	264.3
Hard core poverty	0.9	3.6	0.5	2.4
Hard core poor households ('000)	21.1	68.3	13.5	50.6

4. National agricultural policy in relation to small farmers

The national strategy for agriculture development is contained in the Eighth Malaysian Plan (2001-2005) and the Third National Agricultural Policy (NAP3 1998-2010). Besides the Department of Agriculture, various other government departments and agencies under other ministries are also involve in implementation. The plantation sector, for example, comes under the Ministry of Primary Industries.

The government since independence has been committed to boosting the income of the rural population. The Green Revolution form of agriculture was consciously promoted to smallholders to increase yield and income. The government offered infrastructure and technical support (for example, irrigation, roads, high-yielding seeds) to smallholders for rice as well as tree crop cultivation through federal and state assisted programmes.

The attempt to increase income was, however, levelled off by the small size of the farmers' holdings. Subsequently, besides subsidies, credit incentives and extension services, the government also designated special crop cultivation zones to rationalize and enhance productivity. Farmers are also encouraged to group themselves into mini-estates or lease their idle land to the government for development. Farmers and landless producers can join organized schemes through federal agencies, such as the Federal Land Development Authority, the Federal Land Consolidation and Rehabilitation Authority and the Rubber Industry Smallholders' Development Authority.

(a) Rural-urban migration

The first National Agricultural Policy (NAP) formulated in 1984 was oriented towards stemming rural-urban migration. At the time, it was thought that there would not be sufficient urban jobs to absorb migrants. The transformation of the Malaysian economy in the late 1980s, with the marked expansion of the manufacturing sector, altered the relative importance of the agriculture sector and proved the opposite. Consequent to the rapid industrialization and economic growth, Malaysia experienced labour shortages in the manufacturing sector. The second NAP formulated in 1992 no longer aimed at

containing rural-urban migration. It in fact aimed at facilitating rural-urban migration. The policy focus is to intensify human resources development for rural youth so as to equip them to take on higher value added jobs in the manufacturing sector.

A decline in the farming population is synonymous with development. While the strategy to encourage the evolution of large farms and rural migration to higher value added jobs in other economic sectors offered better prospects of reducing rural poverty, the decline in the younger population's interest in agriculture is a concern. The aged and less educated who are left behind in the agricultural sector may not be well disposed to take up the required initiative or challenges to develop value added sustainable practices. As a group, they would tend to be risk averse, unaware and probably innovation shy.

(b) Third National Agricultural Policy (NAP3)

Challenging issues for the Malaysian agriculture sector highlighted in NAP3 include:

- Acute labour shortages
- Limited suitability of land
- Increasing cost of production arising from intersectoral competition for resources
- Intense competition in the global market resulting from trade liberalization
- Food security and vulnerability of the country's food supply to external factors

The overriding objective of NAP3 is to maximize income through the optimal utilization of resources in the sector. Strategies and action plans are aimed at:

- Increasing productivity and competitiveness of the sector
- Enhancing food security
- Deepening linkages with other sectors
- Laying foundations for the development of new sources of growth for new and frontier industries

Table 17. Reasons for children leaving the farm

Total Number	Number Left	Land programme	Schooling	Work	Marriage	Others
3079254	1009300	2.32%	6.73%	38.36%	51.15%	1.43%

Source: Department of Agriculture statistics 1990.

- Developing and managing natural resources on a sustainable basis with emphasis on the conservation of biodiversity and protection of the environment.

The growth forecast during the NAP3 period (1998-2010) is 2.1 per cent, with a projected proportionate decline in contribution to GDP from 13.6 per cent (1995) to 7.2 per cent (2010). The change is considered to be consistent with the experience of most developed economies.

(c) Support for organic agriculture

There is growing demand for organic produce in the country and in the international markets. While the government has not paid much attention to organic agriculture in the past, organic agriculture has been identified as a niche market opportunity, particularly for fruit and vegetables, in NAP3. The government is taking advantage of this to encourage small-scale producers in the country to venture into organic farming as part of its strategy to raise producers' income, overcome problems of chemical residues in food production, protect the environment, reduce food imports as well as enhance the export of high quality safe food.

The government plans to increase the organic production area by 250 hectares in the period 2001 to 2005. It will provide additional assistance of up to RM5,000 per hectare (US\$1,300), a once only provision, for infrastructure development, such as farm roads, irrigation, drainage, electricity and water. Organic producers will also be eligible for existing credit schemes as well as the 3F loan (special loan for agriculture enterprises). The government also plans to introduce an accreditation scheme for producers to promote and develop markets.

B. Organic farming in the national context

1. Historical development

(a) The pioneering years

There are two streams in the development of the organic sector in Malaysia, one led by non-governmental organizations (NGOs) and the other by the private sector. The involvement of NGOs in organic agriculture in Malaysia originated from work in environment and pesticides-related issues in plantation workers' rights (health), consumer awareness (food safety) as well as low-external-input sustainable agriculture. The practical involvement of Malaysian NGOs in organic agriculture may be traced back to the establishment of the Centre for Environment, Technology and Development, Malaysia (CETDEM) Community Farm in Sungai Buloh,

Subang New Village, near Kuala Lumpur (October (September 1986). It was a one acre experimental farm, growing lowland vegetables and fruits, coordinated by Tan Siew Luang of CETDEM. Over in East Malaysia, it was taken up by the Institute for Community Education in Sarawak, in their agroforestry and sustainable agriculture work with indigenous communities through the Three Pillars Farm in Sibu.

In 1987, when CETDEM Farm changed to "organic", organic agriculture began its foothold in Malaysia. On 1 May 1990, as an outcome of a Regional Organic Farming Workshop organized by CETDEM, the Malaysian Organic Farm Network was formed comprising the CETDEM organic farm, the Institute for Community Education, the Consumer's Association of Taiping, including interested members from the Department of Agriculture and the Malaysian Agriculture Research and Development Institute. The network was re-initiated in 1992 after being inactive in the intervening years.

During the early 1990s, many pioneering organic production/promotion initiatives started up, such as the Penang Organic Farm (1992), Sustainable Living Centre (Gopeng, Perak), Kuantan organic farm, Lifestyle farmhouse (Melaka), Ecofarm (Rompin, Negri Sembilan, 1991) and Nakim Farm (Seremban, Negri Sembilan, 1991).

Parallel to the above, consumer demand for organic products, primarily fueled by cancer patients' interest in diet therapies, began to catch on. One prominent promoter of healthy lifestyles and diet therapy for cancer is Dr. Lai Jiu Na, a Californian based researcher of Taiwanese origin. Her books and lectures drew a large following in Malaysia and the region. The Lapis Lazuli organization to promote her work in Malaysia was founded in the mid-1990s.

As organic produce was not easily available at the time, cancer patients on raw food/juicing regimes took to importing organic vegetables and fruits privately from Australia in the early 1990s. Imported organic products of limited selection were reportedly available as early as in 1985, carried by a retail shop in Bukit Bintang, Kuala Lumpur. But it was only in the mid-1990s that regular importation of organic products was organized for the market by healthy lifestyle based marketing organizations such as Reldex, DC Organics and FMC. As regular retailers and supermarkets were not too keen to stock organic products at the time, distribution channels were developed through informal home-based dealers, who were mostly consumers of organic products interested in promoting the consumption of organic products. Many of the early home-based distribution centres for organic products were run by advocates of natural/alternative health systems and diets.

(b) The breakthrough

The major breakthrough for the organic sector in Malaysia may be attributed to the work of Mr. Steven Leong. Steven Leong established the first dedicated manufacturing facility for organic compost and fertilizer in the country. With it, he was able to supply the input required to support the conversion of a number of commercial vegetable growers in the Cameron Highlands, a major vegetable production location in the country. The conversion to organic farming was based on the Shimamoto farming method. The Shimamoto method is named after the man who founded the system over 50 years ago in Japan. It emphasizes soil building using high grade enzyme enriched compost and fermented organic fertilizers. Steven Leong who learnt the technique in Japan adapted it to include local yeast and soil microbes.

The Shimamoto farms were able to produce a wide range of organic vegetables of comparable or better quality than conventional produce. At the time they were introduced into the market in 1995 by Premier Organic Produce, a marketing company Steven Leong co-founded with Mr. Woo. The produce looked so good, many disbelieved that they were produced organically.

Premier Organic Produce, the first organic marketing organization to be established in the country, established a number of milestones for the organic sector. It was the first dedicated commercial organic fresh produce wholesaler for a number of commercial organic growers in West as well as East Malaysia. It offered a wide selection of vegetable varieties (lowland and highland) of an equivalent or better quality than conventional produce, dispelling the perception that organic produce were full of holes and did not look good. It distributed the produce on a subscription system, based on the Japanese Teikei system, where subscribers pay a monthly fixed price in advance for their weekly pack of vegetables. It operated on a national scale, serving major cities (Penang, Ipoh, Kuala Lumpur) along the west coast of the Peninsular, reaching more than 500 families at its height.

The entry of Premier Organic Produce in the Malaysian market drew a lot of press attention. It was also featured in a segment of the Business Trends programme on national television. Its entry in the Malaysia market may be seen as the culmination of the pioneering phase of the organic sector in Malaysia. It signified the ability to produce a wide range of comparative or better quality than conventional vegetable produce, highlighted potential market opportunity, private-sector investment and the conversion of market producers.

Today, although small, the organic sector is a growing niche sector. The early NGO initiatives have

been largely taken over by more market-oriented progressive conventional producers. Many of the pioneer production initiatives mentioned above are no longer operating today. The CETDEM farm closed down in November 1996 to concentrate on advocacy. Premier Organic Produce ceased operations in 1998. The reasons are not known.

2. The Malaysian organic sector today

(a) Local production

In a response to a parliamentary question (2001), it was reported by the Department of Agriculture that there were 27 organic producers in the country with a total area of 131 hectares.

Table 18. Number and acreage of organic producers in the country, 2001

State	Number	Area (hectares)
Selangor	4	10.8
Negri Sembilan	10	90
Melaka	2	1.1
Johor	2	3.5
Pahang	6	11.6
Sabah	2	12
Sarawak	1	2
Total	27	131

The above figure does not necessary cover all conversion initiatives taking place in the country. Local production reported above is currently limited to vegetables and fruit. Some are exported to Singapore. The total number of farms shows a five-fold increase in the number of organic initiatives listed in the country report on sustainable/organic agriculture in 1996 by the Pesticides Action Network Asia and the Pacific.

Pioneer initiatives in the plantation sector are starting up. A palm oil company representative mentioned, at an organic seminar in 1999, that his company was doing trials in organic oil palm cultivation. It was also reported late last year, in an international organic trade newsletter, that a Malaysian company (different one) has embarked on organic oil palm production. No organic animal husbandry has started up yet.

(b) Local processing

There is a small emerging development of local food processing. A number of local retail bakeries are now using organic ingredients (imported). Small-scale processing initiatives using organic ingredients are

taking place for tofu, soy milk, soy sauce, tempeh, various sauces and pickles. Although sold through organic/health food shops, local processed products are generally not sold labelled as organic processed products. Some health food and vegetarian restaurants have also begun to use organic ingredients in their meals.

(c) Imports

A wide range and variety of imported organic processed products are available in the market. Imports consist of vegetables, fruits as well as processed products. Fresh produce is mainly imported from Australia and New Zealand. Processed products are also shipped from the United States of America and Europe. A few items are sourced from Thailand. The main import items are grains (wheat, beans), pasta, juices, cereals, beverages, fresh fruits and vegetables.

(d) Market and distribution

In the Pesticides Action Network's report on sustainable/organic agriculture in Malaysia (1996), the domestic market was reported to be undeveloped. Pioneering initiatives in the early 1990s faced the double challenge of developing organic practices from trial and error as well as devising means to establish their markets. Today there are reportedly over 60 dealers, ranging from home-based distributors, dedicated organic/health food shops, to supermarket chains carrying organic products.

The Klang valley (where the capital city Kuala Lumpur and surrounding suburbs are located) in the middle of the west coast of Peninsular Malaysia represents the main market in the country. Markets are also developing in other cities such as George Town (Penang), Ipoh (Perak), and Johore Baru (Johore). The major importers, distributors and more than half of the dealers are reportedly located in the Klang valley.

No reliable market statistics are available. Market volume was estimated to be about 1,526 million tons in 2000, based on market interviews. The year 2000 was mentioned as a benchmark year with a surge in retail dealerships opening up. While the

market is still growing, it has reportedly slowed down considerably in 2001. Not as many new dealers are opening up and some of the earlier dealers have since closed down.

The largest wholesaler/distributor of local fresh produce today is said to be Kenji Fresh Foods, a marketing organization based in Subang Jaya, a township outside Kuala Lumpur. It is estimated to handle about 50 per cent of locally produced organic vegetables in the Klang valley (market interview). The known importers/distributors include: DC Organics, Radiant Code, Country Farms, Organic Food (TOPS), Eco Organics, FMC and Raw & Living Organic. All are based in the Klang valley.

Organic products in general are handled separately. The majority of organic importers and distributors are new organizations (companies) set up to handle organic products. Conventional food importers and fresh produce wholesalers in general have not ventured to expand or integrate organic product lines into their operations.

Although they started off differently, local and imported products now largely share similar distribution channels. A number of producers run both a subscription scheme as well as supply retailers. With the uptake by retailers and supermarkets, subscription schemes have declined. The more prominent subscription scheme is the Organik Network subscription scheme operated by Kenji Fresh Foods.

Box 1. The Organik Network subscription system

The Organik Network subscription system offers a weekly pack of seasonal vegetables at a fixed price. The weekly menu includes at least seven different vegetable items at a minimum total net weight of 3 kilograms. Vegetable items include a mix of highland as well as lowland varieties, a combination of leafy, root, fruits, brassicas and beans.

Consumers may subscribe from any existing pick-up point. Pick-up points are usually the homes of active subscribers. Persons interested in organizing a group of subscribers may register as a pick-up point operator. They receive a service margin for their work. Subscription registration is an ongoing process. Advance payments are collected at the end of the month for the following month. Payment depends on the number of weekly deliveries made in the month. Payment is generally non-refundable. Subscribers are not obliged to continue their subscription regularly every month.

Table 19. Projected market volumes, 2000

Type	Tonnes
Imported processed products	200
Imported fruit and vegetables	240
Local fruit and vegetables	1086

(e) Promotion and awareness raising

The organic market has largely been developed through personal recommendations and word of mouth, with dealers cultivating their own group of consumers. Adverts on organic products are occasionally found in health-related magazines, but rarely in newspapers. At the time of the entry of Premier Organic Produce in the market and the government promotion of hydroponics, press coverage of organic agriculture was frequent. There was a weekly column on sustainable agriculture running for two years in one of the English dailies (*String Beans, The Sun*, 1996/97). Press coverage is now infrequent and incidental.

Besides dealer handouts, posters and newsletters, public seminars are held now and then, often in conjunction with events such as world food or environment days. An annual fair called the Organic Search has been staged by CETDEM for the past two years (1999 and 2000).

(f) Prices and consumers

Prices for imported as well as local organic products are generally high. Retail prices for fresh organic fruit and vegetables (local and import) range between the same to 4 times conventional produce prices. Price difference varies between local and imported varieties as well as between different points of sale, i.e., NGO, Health Food shop, local wet markets or supermarkets. With the participation of more importers and producers, price competition has recently started to take place.

While cancer patients were the early consumers, a wider group is now buying. The majority are Chinese. The general profile is one of professional background, medium to high income and families with young children. The main motivation is health-related concerns. Organic produce is selected primarily because it is not produced with pesticides rather than the environment or socio-economic benefits that organic agriculture may offer. Purchases are generally made by women, less so by men.

3. Institutional framework**(a) Labelling and certification**

There is currently no local organic certification body or specific regulation on the labelling of organic products in the country. Local produce is mostly sold directly by the producer to consumers or retailers, both loose as well as packed. Packed produce is generally labelled by the producers. Some are packed and labelled by the retail shop. Produce sold through the supermarkets is usually packed. Most processed

products are imported as finished packed products. Bulk items such as grains and dry food are repacked and re-labelled by importers under their own brands.

Fraud is not thought to be a serious problem for the present (market interviews). Retailers generally purchase from producers they trust and consumers buy from dealers they trust. Imported organic products are normally of certified origin, verified through copies of certificates or on the finished labelled product itself. As the market works based on trust, credibility is crucial for success, discouraging fraudulent behaviour. The number of producers and market players is still small and news spreads fast in the market place.

(i) Certified operations

There are two internationally certified domestic operators. Kenji Fresh Foods was the first operator to be certified, in April 1999. The certification of Kenji Fresh Foods was done by KRAV, an international certification body based in Sweden. Kenji Fresh Foods' certification for organic processing and wholesaling includes six registered supply farms, four in the Cameron Highlands and two in Sungkai, Perak, with a total registered organic production area of about 27 acres (10.8 hectares). The second operator, Radiant Code, an importer, was certified in 2001 by BioGro, a certification body based in New Zealand. The certification is for repacking of bulk imports.

(b) Support services**(i) Research**

Few studies have been made on organic farming. The experience of previous and current organic growers are largely undocumented. There are currently only a few organic agriculture-related papers listed on the AGRIM (Agriculture Malaysia) web-based database, a bibliographic database on Malaysian agriculture and related sciences published since 1990. Materials include monographs, journal articles, conference papers etc. Reliable productivity, crop losses, pests and diseases and cost data for organic agriculture are not available.

Research in organic production was earlier initiated by CETDEM. A number of papers on their work are available. Trials on the application of effective microorganisms (EM) and the effectiveness of organic composting have been done by universities and the Malaysian Agriculture Research and Development Institute. The Department of Agriculture indicated the formation of an organic agriculture research team at a seminar in 1999. It is currently not clear if there is a clear research agenda for organic agriculture within the NGO, government or private sector.

(ii) Training

There is no formal organic agriculture training available in the country. Technical development in the field came mainly from self-initiative and learning from experience. Few private sector, NGO activists as well as government personnel are trained in organic agriculture. An introduction to organic agriculture principles is available through the occasional seminar and workshop organized by NGOs and from Department of Agriculture exhibitions. Classes on organic kitchen gardening are being offered by CETDEM. Practical exposure to organic farming methods is only available on an ad hoc basis through working arrangement with existing organic farms.

(iii) Advisory services

Local professional advise on production, however, is available today from a number of persons, namely Ms Tan Siew Luang (CETDEM), Mr. Tay Cheng How and Mr. Steven Leong (Shimamoto Biotech). Mr. Steven Leong is the South East Asia contact person for Shimamoto, Japan. Advice on inspection/certification, international markets and policy is available through Humus Consultancy, the regional partner of Grolink, an international consultancy service for organic agriculture, based in Penang, Malaysia.

(c) Regulations (Malaysian organic standards)

In respond to repeated calls by some members of the organic community, the Malaysian government took up the work of setting organic standards in 2000, under the supervision of the Food and Agriculture Industry Standards Committee. The standards covering farm, preparation, storage, transport, labelling and marketing stages, are modeled after the International Federation of Organic Agriculture Movements (IFOAM) Basic Standards and Codex Organic guidelines. The final version is expected to be out soon. Implementation is not fully elaborated. It is not clear at the moment if the standards will be mandatory or only provide a reference for voluntary compliance. How inspections and certification will be carried out is also still unclear.

(d) Policy advocacy

NGO advocacy and campaigns for sustainable development and environment conservation regularly include sustainable agriculture-related issues. Although attempts have been made to bring members of the organic community together, for example, the Malaysian Organic Farm Network initiative (1990 and reinitiated 1992), a formal membership consensus based an advocacy platform for organic agriculture in the country has yet to be establish. Nevertheless, advocacy for government involvement taken up by CETDEM since 1998 has lead to the inclusion of

organic agriculture in the NAP3 and the setting of organic standards by the government.

CETDEM is the lead organization for the Malaysian Organic Farming Network, a network primarily for producers. Most of the organic producers, however, as well as private-sector market operators remain unaffiliated in any association. Beside the Malaysian Organic Farming Network, an initiative to establish a private-sector association, Organic Alliance Malaysia, is being set up by four private-sector organizations.

The NGO initiative to seek government intervention in standard setting in Malaysia differs from the sector development process in the more developed organic sectors in the European Union (EU) or the United States. There the private sector was first to define organic standards and continued to lead standard setting for that sector. Since the attempt by the United States Department of Agriculture to include sewage sludge, irradiation and genetic engineering in its earlier draft organic rules, it is currently the IFOAM position to promote private-sector leadership and its right to set the industry's standards to prevent potential erosion of organic integrity and market confidence.

4. International and domestic markets

(a) International market impulse

The average annual growth rate of the organic market is projected to be in the range of 20-30 per cent. Some expect it to grow from the current estimate of US\$11 billion to US\$100 billion in 2010. The EU, Japan and United States represent the major organic markets. Many organic conversions in developing countries are driven by export premiums to serve these markets, but not in the case of Malaysia. Conversion in the country, to date, has been driven mainly by the producers' personal interest and domestic market demand. Exports are minimal, just a small quantity of vegetables exported to Singapore. This may change with international market interest for organic palm oil and the government's interest in seeking new export market opportunities for local producers. Development of the domestic market, however, has been facilitated by the availability of imported organic products.

(i) International exposure and IFOAM relations

There are four Malaysian member organizations listed in the IFOAM directory. Members as well as government officials have attended IFOAM conferences held outside the country (IFOAM Asia Conference 1993). A number of persons participated in organic-related training courses held in Europe and Asia. IFOAM officers, (the World Board President and Vice President, IFOAM Asia coordinator), have

paid visits and given inputs in seminars in Malaysia. Two IFOAM accredited international certification bodies do certification work in the country.

A number of Malaysians are active contributors in the regional and international movement. Gurmit Singh and Tan Siew Luang (CETDEM) are members of IFOAM Asia action/project committees. Ong Kung Wai (then Pesticides Action Network Asia and the Pacific) was organizer of the second IFOAM Asia conference held in the Republic of Korea in 1995 and former IFOAM Asia regional project coordinator for certification and marketing. He is currently the Vice President of the International Organic Accreditation Service, the international accreditation body established by IFOAM. Kenji Fresh Foods and Humus Consultancy (IFOAM members) jointly made an unsuccessful bid to host the IFOAM 2005 Organic World Congress in Malaysia.

(b) Domestic developments, challenges and constraints

The Malaysian organic sector has been developed out of numerous singular NGO and private sector initiatives. It is a young growing sector and in many respects still lacks sector organization vis-à-vis the more developed movements, such as in the EU or United States. Although initiatives have been made and are taking place, there are as yet no clear private-sector standards and norms. Organic support services, such as research and training, organic producers associations, inspection/certification bodies, and trade associations have yet to be firmly established.

(i) Production/conversion issues

Although organic produce fetches high market prices, farm conversions are still minimal. This is because the risk and cost of conversion is high. To date, conversions have largely been motivated by the personal interest of producers rather than market returns. Conversion to organic production involves learning new knowledge and management methods. It may involve making some structural changes to the farm, as well as organizing and sourcing for new and different farm inputs, which are not easily available. Conventional producers are, by and large, unaware of the approach and view present initiatives as hobby farms for a niche market. Most perceive organic agriculture as traditional agriculture, outmoded and inadequate to address modern agriculture issues and problems.

Technical development is largely dependent on the producer's initiative and self-learning from practical experience. Training is not readily available. Most smallholders also cannot afford or are not in the habit of paying for private advisory support. Conversion support requires time and resources. Steven Leong took more than a year, offering advisory

and input support, to encourage the conversion of the Cameron Highland producers before launching Premier Organic Produce. Such support cannot be easily replicated or funded by NGOs or the private sector.

Overall, the level of commitment required of the producer is much higher than what is demanded from conventional agriculture. Moreover many vegetable producers work on rented or temporary occupier's licences. Farmers are reluctant to invest time and resources on soil improvement owing to insecurity of land tenure. One of Kenji Fresh Foods' supply farms, a 100-acre farm in Kundsan, Sabah, has recently withdrawn from certification (June 2001) as the landowner is taking back possession of the land.

Agriculture production in Malaysia is segregated. Crop cultivation and animal husbandry are normally farmed separately. As holdings are small, restructuring the farm to incorporate animals is not generally feasible. In addition, pig production, for example, can only be done at special designated areas. Animal manure and plant residues have to be brought and transported from outside the area for composting. Transporting and handling the bulk material are generally more expensive than applying chemicals.

Seeds, particularly for vegetables, are mostly imported. Most available seeds are treated according to quarantine regulations. There is no organic seed grower in the country. While farmers do save some seeds, most of the seeds cannot be saved, for example, temperate crops such as cabbages and lettuces.

(ii) Quality assurance and regulations

While fraud may not currently be a problem, the lack of clear references for organic production and processing standards is a concern. The general public perception and understanding of organic production is largely focused on the non-use of synthetic fertilizers and pesticides. Most producers, retailers and consumers are also not fully aware of the wider extent of organic production and processing standards applicable internationally. Some regard organic management as traditional agriculture. Many thought that organic production meant hydroponics, at the time when hydroponics was being promoted by the government. Given the lack of understanding and clear market definition of organic production and processing standards, producers and marketers may be unknowingly making incorrect claims. The lack of understanding can cause market confusion, diminish consumer confidence and stymie development of the sector.

A good example of a private-sector initiative in quality assurance is the Organik Network system operated by Kenji Fresh Foods. Production and handling standards are published and available to the

public. Supply farms are documented and monitoring visits are made at least twice a year. As Kenji Fresh Foods is certified by KRAV, the system is also evaluated during KRAV's inspection visits. The cost of operating the system, as well as the KRAV certification, is borne by Kenji Fresh Foods, not the producers. Single independent organic smallholders in the country are probably not able to pay the cost of certification. The daily fee rate for international organic inspectors ranges between US\$150 to US\$550. The full cost includes international travel, full board and accommodation as well as administrative and certification charges. Certification bodies normally also charge a licensing fee for logo use.

While the government standard setting initiative is generally appreciated, some producers and market players are concerned about the lack of consultation with and participation of the private sector in the standard setting process. In the recent public comment round, Organic Alliance Malaysia, a group of organic organizations, suggested that establishing mandatory standards would be premature as organic agriculture was in an early stage of development with only a small number of operators. Furthermore, the added cost implication of implementation to the sector might be prohibitive.

(iii) Pricing, selection and product development

Total market volume is relatively small. The high price tag for organic products is an impeding factor for wider market consumption. There is also a lack of selection. A number of items are still unavailable, for example, animal products. Local processing is in its infancy and available products do not always meet consumer taste preferences.

(iv) Sector organization

Sector development is also partly constrained by the absence of a common national platform to provide clear sector leadership and direction. Efforts to develop a common platform have yet to bear fruit. Although small, it seems difficult to unite the different initiatives in the country.

(c) Global developments, challenges and constraints

(i) International market scenario

The EU, Japan and the United States are the main international markets. While global figures point to a continuous growth trend, the organic sector as a whole is still a very small portion of the total agriculture sector. For example, while leading EU countries may have 10 to 13 per cent organic production, the EU market average is less than 5 per cent. Formerly based on fresh farm produce and simple processed products, the international market

now handles a wide and complete range of basic and processed food items, including wine and snack foods. Organic textiles are making inroads in the fashion world. New products under development include aquaculture, cut flowers and cosmetics.

Most organic exports from developing economies are made up of fresh produce, commodity crops, dry/processed raw ingredients, with little value added processing. While the market remains attractive for low cost producers, the international market has grown increasingly competitive with the increase in export production. Premium prices have fallen for many products. Retail premium prices for organic products, particularly in the supermarket chains, have already dropped considerably in the EU and United States. Discount supermarkets in the EU are beginning to stock organic product lines at similar prices to conventional products.

Although current growth of the EU, United States and Japanese organic markets is strong, they cannot in the long term absorb all intended organic production from the rest of the world. EU and Japanese producers are also beginning to show signs of concern about growing imports affecting their own survival. Non-tariff barriers to organic trade in the form of labelling regulations, standards, quality assurance and custom procedural rules are already making it harder to access the above markets.

The growing popularity and market share of organic products has also engendered resistance from conventional agriculture interests, primarily the agrochemical input and biotech industry. Negative attacks on organic agriculture are being made regarding product safety, environment conservation and organic agriculture's ability to feed the world.

(ii) International market access and recognition

Certification is crucial for export market access. The existence of national regulations, government or local private certification do not automatically imply international market acceptance. Exports have to meet the importing country's regulations (where applicable) as well as market requirements. Most buyers prefer private-sector certification, prominent in their respective markets. Exporters generally use the certification body of their buyer's preference.

There is no internationally recognized multilateral mutual recognition system in place at present. The EU, United States and Japanese regulations differ from each other. Mutual recognition at the regulatory level has to be painstakingly negotiated between governments bilaterally. Recognition between private-sector certification bodies is negotiated between the respective certification bodies. There are more than 100 certification bodies operating worldwide. Because of

the lack of mutual recognition, the exporter is some times faced with paying for up to three different certifications to service different markets.

The problem of international recognition was anticipated by IFOAM. An international accreditation, the IFOAM Accreditation Programme, was established in 1992 to address this. It is a voluntary programme operated by the International Organic Accreditation Service, an independent not-for-profit organization established by IFOAM and registered in the United States. It has currently about 27 accredited and applicant certification bodies. The IFOAM accredited certification bodies have signed a multilateral agreement to work towards mutual recognition. Although it is not officially recognized, many EU authorities use IOAS reports to decide on granting import permits. The Japanese authorities are allowing Japanese registered certification bodies to work with IFOAM accredited certification bodies for import re-certification.

(iii) Market development in the South

Needless to say, nurturing domestic demand for sustainable development is necessary. In this respect Malaysia is on the right track. Nevertheless, market development and certification initiatives in developing countries face enormous start-up challenges. Not surprisingly, there are few domestic markets even in the major export developing countries in Asia, such as China and India. South to South regional trade is also insignificant (Ong 2000).

Although the efficiency of biological (organic) systems may produce some savings in input costs, it will generally not reduce overall production cost. Management and labour input are expected to increase. During the learning period, productivity may drop. Farms may incur restructuring costs. Conversion costs can be prohibitive, particularly for smallholders or tenant farmers, who are poor. They need assistance and support services (training, credit, quality control and marketing). Organizing small producers is demanding and often not cost competitive. While input savings may be sufficient for the subsistence sector, market-oriented production will need greater profit margins to ensure the recovery of production and development costs.

Besides production, handling, marketing and certification costs also have to be factored in. Low market volumes and economies of scale add to the difficulty. High market prices will be necessary to finance sector development. The extent of sector development in general will depend on the economic development of the country. Tension may arise between the need for higher prices and consumers' ability to pay. Positioned as a value added up market product, organic produce may not be accessible to

everyone, who would like to consume high quality safe food. The situation is different in countries or regions where producers do not have access to or cannot afford the use of agrochemicals in their production. In such cases, for example, Cuba, or parts of Africa, organic production by default is predominant.

(iv) Market pricing

Organic agriculture is generally not price competitive, needing market support for development. The present regulatory environment, however, does not provide a level playing field for organic products. Externalized environmental, health and social costs make conventional agriculture products seemingly cheaper than organic agriculture products. Organic production and processing systems that attempt to internalize a higher proportion of social and environmental costs have to compete with those that are allowed to externalize them.

C. Conclusions and recommendations

1. Conclusions

In spite of declining economic significance, agriculture plays an important role in the country's economy and development, particularly in foreign exchange earnings, employment, the rural economy and supply of raw materials for agro- and resource-based industrial development. The sector is also strategically important as a provider of food.

While the agriculture sector is expected to grow in absolute terms, its contribution to GDP is expected to further decline in proportion to other major sectors of the economy, except for mining and quarrying. Agriculture maintains a higher proportion of employment relative to its GDP contribution. In 1995, agriculture provided for 18.36 per cent of employment on 13.6 per cent of GDP while manufacturing carried 24.78 per cent of employment with 33.1 per cent of GDP. A smaller piece of the pie is being shared over a larger portion of the working population.

Since the 1980s, Malaysia has moved rapidly towards industrialization. The strategy as adopted by the government, to encourage the evolution of larger farms and facilitate rural migration to higher value added jobs in other economic sectors, did result in lowering the incidence of poverty. Nevertheless there remains a sizeable portion of smallholders in poverty. The establishment of the World Trade Organization (WTO) and liberalization of the agriculture trade is expected to open the sector to increasing competition as well as new market opportunities. There is also the need to conserve and manage natural resources on a sustainable basis.

There is growing demand for organic produce in the country and in international markets. The government is taking the opportunity to encourage small-scale producers to venture into organic farming as part of its strategy to:

- Raise producers' income
- Overcome problems of chemical residues in food production
- Protect the environment
- Reduce food imports
- Enhance the export of high quality safe food

Does organic agriculture offer an opportunity for rural employment and higher income for producers in Malaysia? How does it fit in with the government's objectives for agriculture development and strategy for poverty alleviation?

(a) Scope of government support and opportunity

Production in Malaysian agriculture is divided between the self-employed smallholders and plantations. While the majority of land and employment lies with the smallholders, the plantation sector is the more dominant. Malaysia's production is mainly geared for export. The main export crops, oil palm, rubber, cocoa, including pineapple and pepper, cover over three quarters of cultivated land.

Modernization of Malaysian agriculture has increased the usage of agrochemicals incurring an import bill of over RM1 billion. Technically, all crops cultivated in the country can be converted to organic systems, with the above foreign exchange savings and reduction of associated environmental and health impact. It is, however, not clear if such a transformation will yield better returns in investment, higher income, or cost benefits to the sector or the national economy as a whole. No study on this could be identified.

The government's interest in the development of organic agriculture appears to be mainly derived from global and local market growing interest in organic products and price premiums. It intends to encourage the smallholding sector to position itself towards a niche market. The initiative does not reflect a policy shift from supporting the expansion and intensification of agrochemical-based agriculture in the country. Essentially the government has left it to market dynamics to determine the development and adoption of organic agriculture in the country.

(i) Potential market development

While the organic market in Malaysia has grown into a thriving niche sector, market volumes are still small. The market growth, although still expanding, has slowed down. The Malaysian economy, in general, is currently experiencing a downturn. At its present size and circumstance, the domestic market does offer some limited opportunities for a small number of enterprising producers. Local market demand is currently limited to food items. While food safety issues may be addressed, the impact of the local organic market on environment conservation and rural income, even in the long term, is projected to be limited. Food production constitutes only a small part of the agriculture sector, even if all the vegetable production in Malaysia were to be converted, it would only represent 1 per cent of cultivated land.

The expansion of organic food production is not expected to diminish food imports to any great extent, unless consumer food preferences change, as imports are generally of the types less competitively grown here, such as onions, garlic, pluses, or not of the same product type, such as apples and oranges, which cannot be grown here. Increases in market demand may in fact increase the import of processed organic food not produced in the country.

The international market for organic commodity crops that Malaysia produces has potentially a more significant impact. There is growing interest in organic palm oil. Smallholders, however, may not be able to position themselves for this market vis-à-vis the more organized and resourceful plantation sector. The export market for commodity crops is a competitive field. High labour cost is already affecting Malaysia's competitiveness. The same will apply in the organic market in the longer term. Commodity raw material also cannot expect similar price premiums for fresh food or finished processed products.

Some sections of the agriculture sector may not derive any benefit from the organic market, for example, rubber production used for the manufacture of tyres. Consumers and the motorcar industry are not likely to go for organic rubber tyres in the foreseeable future.

(ii) Beyond market benefits and supporting policies

Organic products do not have a level playing field vis-à-vis conventional agriculture products. As a value added niche market, its local and global impact is restrained. To fully derive all the benefits organic agriculture can offer, it is important for the Malaysian Government to look beyond market gains into environmental and social benefits, such as the conservation of agriculture production resources and

health-related impacts. The cost benefit of conversion to organic agriculture in the long term may be positive irrespective of premium prices. Besides exploring niche market opportunities, there is also a need to press on with policy development to reduce chemical-based agriculture.

2. Recommendations

While the projected opportunity for rural employment and higher income for producers in Malaysia is limited, it is nevertheless an important step to take in line with market trends as well as the need for the sustainable use and management of natural resources.

(a) Government–private sector institutional development

The organic sector worldwide has been developed out of NGO and private-sector initiatives. The Malaysian organic sector, developed out of numerous singular NGO and private-sector initiatives, is still young and weak in institutional development. Government support in institutional development will be a boost.

While NGOs and the private sector play an instrumental role in the development, government involvement is undoubtedly necessary for greater resource mobilization and the required policy environment for wider mainstream implementation/adoption. To successfully develop the sector, it is crucial that there be good government and private-sector collaboration. The concerns and constraints mentioned can be better addressed together than separately.

(b) Target producers

Organic agriculture is founded on different principles and values from conventional agriculture. As noted, conversion to organic production requires a high level of commitment on the part of the producer. An attempt to encourage smallholders to venture into organic agriculture is probably better targeted at the younger and more enterprising producers. Older generation producers with low education may not be up to the challenge.

(c) Rewards and incentives

Rising income differences between urban and rural employment, together with the low social status of being a farmer, has eroded the interest of the younger generation in agriculture. To encourage the uptake of organic agriculture, income and employment opportunities need to be commensurate with employment opportunities of other sectors of the economy. For the objective of higher income generation to be achieved, a higher farm gate price for

organic products needs to be maintained.

Higher prices need not necessarily be viewed as prohibitive or against consumer interest. Prices for organic produce should reflect added value with respect to the extra work required as well as the environmental and health benefits. It is important to note that present local market prices for agricultural produce are generally too low for farmers to work caring for the land and other natural resources.

(d) Conversion support, research, extension and training

Besides the infrastructure support of up to RM5,000 per hectare (US\$1,300) offered for conversion by the government, new producers will need advisory and training support. Existing organic production initiatives also need technical improvement.

To date, most of the country's organic production experiences have not been documented and training courses in organic agriculture are as yet undeveloped. Knowledge building and human resources development is a priority. Efforts to document existing experiences need to be made. In addition to what has been developed in recent years, new research, crop cultivation, pest, disease and fertility management, needs to be initiated.

Training, particularly for government extension officers, who are not conversant with organic agriculture but are expected to implement the government's organic programme, should be organized. There are a number of private-sector advisory and consultancy services operating in the country. A role for the organic private sector in implementation may help to address the competency gap. Organic agriculture modules should be included as part of the general training curriculum for agriculture as early as possible. Training courses developed and taught elsewhere can be adopted.

(e) Supply demand harmonization strategy

The government has set a conservative target of converting 250 hectares over the period 2001 to 2005. The modest target, nevertheless, represents an approximate tripling of the present total estimated area of organic production. Assumptions about market demand and premium prices should take into account changes affected by the increase in supply. Efforts in encouraging more conversions should be complemented with market development activities. Smart partnership between the government and the private sector in this regard is crucial. Care needs to be taken not to over supply and flood the market. An unmitigated supply push may diminish the niche market position and the premium prices producers hope to benefit from. This will also affect the existing

producers and market players.

Producers, particularly small producers, lack market information, compete between themselves and are often exploited. Reliable production and market data are generally difficult to collect and disseminate. The same situation can be expected in the organic sector. To avoid price fluctuations, shortages and gluts, as in the conventional market, there is a need to develop better supply demand dynamics to offer stability in prices and income in the organic sector.

Organizing producers into group production contracts with marketing organizations is one option to explore. Besides economies of scale, supply can be modulated through group production planning from market information supplied by the marketing organization (wholesaler). Technical and credit services, input support, and quality control also can be implemented more effectively.

The Organik Network system operated by Kenji Fresh Foods is one such example. Supply producers are offered a fixed purchase price for set volumes which are periodically revised in consultation between the parties in relation to market conditions. Producers under the Organik Network system reportedly receive up to 40 per cent of the recommended retail price. Conventional growers may receive as low as around 10 per cent.

(f) Consumer education

Organic production systems and support services cannot establish themselves without market support. While there is growing domestic market interest, consumer interest is primarily focused on their personal or family's health, not on environmental concerns, support for better producer livelihoods and sustainable development in general. Being relative new public concerns, environment and sustainable development issues still get the back seat. There is a need to educate and internalize new consumer values (environment and social development). While there is the ability to pay, consumers are used to cheap food, and therefore question why they should pay higher prices for organic food.

(g) Standards, certification and regulation

Parallel to the above, there is a need to deepen consensus and understanding of the definition of organic agriculture. This can be facilitated through wider consultation with NGOs, as well as the private sector, in standard development and setting. It should be noted that standards development is an ongoing dynamic process, in line with technical developments and market trends. Private-sector standard setting systems are generally more able to move in step with sector developments than government agencies. All organic regulations set so far, for example, in the EU,

United States and Japan, are generally done following earlier norms set by the private sector, as in their revision and addition of new areas, such as organic textiles and aquaculture.

While it is important for the government to legislate and protect the sector against fraud, it is recommended by IFOAM that standard setting and certification be handled by the private sector. Organic agriculture and markets are primarily a private-sector initiative and function. Most certification in the world is done by private certification bodies. Some governmental systems have changed to private systems. The Czech Republic recently dismantled its government certification system to rebuild a private one. The Danish Government is evaluating a similar move.

The increasing number of different governmental regulations is affecting international trade. IFOAM recommends that governments reference private-sector standards instead of developing duplicating and parallel sets to facilitate global harmonization in standards and conformity assessment systems for international trade in organic products. Private certification bodies under an international accreditation system, such as the IFOAM accreditation, could provide the global guarantee for an international system requiring only one inspection, one certification by numerous accredited certification bodies operating internationally, to meet market requirements.

There is currently no local private-sector certification body in Malaysia. Instead of developing a government accreditation system as indicated in NAP3, it may be more constructive, in view of the above, to support the development of a private-sector certification body in collaboration with private-sector bodies that are developing such systems, for example, Organic Alliance Malaysia, with the goal of achieving IFOAM accreditation to facilitate future exports.

(h) International lobbying

For large-scale organic conversion in the plantation sector to be implemented, value changes have to be promoted in international markets. As a major exporter of commodity crops, input for a change of market values at international levels should not be ignored. Malaysia is a signatory to Agenda 21. While the Malaysian Government cannot do it alone, it can nevertheless play an active role in supporting the adoption of organic agriculture at related international forums.

(i) Sector image building

While a relative decline in the agriculture sector is in line with the economic development plans of Malaysia, it is nevertheless important to improve the

image of employment in the agriculture sector to maintain innovation, productivity and competitiveness.

Organic agriculture offers a greater possibility than conventional agriculture to present a picture of a challenging and fulfilling human vocation in a contemporary progressive society. In addition to resolving the technical, human resources and institutional development requirements, attention should be paid to position a progressive image of organic agriculture and upgrade the image of agriculture employment in general, in the country. A vibrant organic agriculture sector cannot arise based on economic rewards alone, without a corresponding human cultural interest.

(j) Regional training and collaboration

Competency and capacity development mentioned above may also apply to other countries in the region interested in developing organic agriculture. Training in a number of areas particularly for inspection and certification can be done at a regional level. Training can be provided by a number of international consultants from the International Forum for Organic Consultants, a consultants' forum associated with IFOAM. IFOAM publications, such as *Building Trust in Organics* (a guide for setting certification programmes) and the international manual for organic inspection, are available as training reference material.

Interaction and exchange between professional trainees (from government as well as private bodies) at regional training will also provide a working platform for regional collaboration in the harmonization of standard setting, certification procedures and establishment of mutual recognition, necessary to facilitate regional trade. In addition to the harmonization of organic framework rules, phytosanitary, quarantine and customs rules, where they affect the handling and flow of organic products should also be reviewed and harmonized.

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E. Abbreviations

AGRIM	Agriculture Malaysia
CETDEM	Centre for Environment, Technology and Development, Malaysia
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
IFOAM	International Federation of Organic Agriculture Movements
IPM	integrated pest management
NAP	National Agricultural Policy
NAP3	Third National Agricultural Policy
NGOs	non-governmental organizations
WTO	World Trade Organization