

MALAYSIA



1. PRESENT SITUATION - WATER

- 1.1 Malaysia receives an annual average rainfall of more than 2500 mm, mainly due to the Southwest and Northeast monsoons. The country is therefore rich in water resources when compared to the other regions of the world. The average annual water resources on a total land mass of 330,000km² amount to 990 billion m³. Out of which, 360 billion m³, or 36% returns to the atmosphere as evapotranspiration, 566 billion m³, or 57% appear as surface runoff and the remaining 64 billion m³, or 7% go to the recharge of groundwater. Of the total 566 billion m³ of surface runoff, 147 billion m³ are found in Peninsular Malaysia, 113 billion m³ in Sabah and 306 billion m³ in Sarawak.
- 1.2. Water is used for a variety of purposes. Consumptive water use is largely for irrigation, industrial and domestic water supply and to a minor extent for mining and fisheries. Instream water uses which are non-consumptive in nature include hydropower, navigation, recreation and fisheries.
- 1.3 Irrigation water demand which totalled 9.0 billion m³ in 1990 accounted for about 78 % of the total consumptive use of water. Until 1960, irrigation schemes were designed for single crop rice production during the wet season as a supplementary source of water supply. Since then, irrigation development has rapidly expanded into the double cropping of paddy to meet the dual objectives of increasing food production and to raise the income levels of the farmers. There are some 564,000 hectares of wet paddy land in Malaysia, of which 322,000 hectares is capable of double cropping. Farmers in irrigation and drainage areas

are required to pay water rates ranging from RM 10-15 per ha which represent less than 10 % of the annual recurrent operation and maintenance cost.

- 1.4 The present domestic and industrial water use is estimated to be 2.6 billion m³/year accounting for about 20 % of the total water consumption in 1990. At this level of utilisation, about 78% of the total population are served by public water supply, with a service factor of 96% for urban areas and 66 % for rural areas. Due to the rapid population increase and the growth of industries, the annual water demand has been expanding at about 12%. In rural areas, the main problem of water supply is related to the availability of suitable sources in terms of quantity and quality. In urban areas, many water supply systems are overloaded due to rapid growth in demand. Generally, water tariffs (at about RM 1 per m³) are low and hence are unable to generate sufficient revenue to cover the full cost of capital investment and, operation and maintenance.
- 1.5 With accelerated urbanisation and industrialisation, the demand for power has been increasing rapidly. In 1993, the annual output of hydropower totalled some 4,500 Gwh accounting for about 16 % of the total power supply in the country. The total hydropower potential for the country has been estimated at 123,000 Gwh of which about 85% are found in the States of Sabah and Sarawak.
- 1.6 Mining and fisheries are minor water consumers. Navigation and fisheries are generally of local importance except in certain areas where rivers still form the major means of transportation. With rapid urbanisation and improvement in the standard of living, water for recreational purposes is in greater demand. Water quality is rapidly becoming an important concern as a direct consequence of accelerated economic development in the past two decades. In 1994, a survey by the Department of Environment revealed that out of 116 rivers monitored for pollution, 14 were found to be badly polluted, 73 slightly polluted and 38 rivers fall under the clean category. The overall trend of river water quality has shown a deterioration at a rate of 0.55 %.
- 1.7 The Government is primarily responsible for the planning, development and management of water resources projects in the country. For this purpose, there are a number of government departments and agencies each responsible for a particular component or function related to water resources but there is no single agency entrusted with the overall responsibility of holistic planning and management. For example, the Department of Irrigation and Drainage is responsible for the implementation of irrigation and drainage works, the Public Works Department for domestic and industrial water supply and Department of Environment for water pollution control. Conflicts in water resources management such as allocation of water rights, flood management, pollution control, environmental preservation, etc are resolved through inter-agency coordination and consultation. The primary role of water resources management is expected to come from the state governments and their agencies since ownership and administration of water is a state matter under the Federal Constitution. There are weaknesses in the current legal and institutional framework for the integrated planning and management of water resources both at the state and federal levels.

2. PRESENT SITUATION - FOOD

- 2.1 Prior to 1990, agriculture has been a major contributor to the economic growth of Malaysia. With the shift of economic policy towards industrialization since the mid 1980's, investors tend to invest more in industries rather than agriculture, resulting in the declining share of the agricultural sector in the GDP of the country. The agricultural sector also faces an acute shortage in labour due to the generally better incomes from working in factories and other industrial and commercial ventures. This has resulted in a gradual increase of non-planted or idle paddy land in many irrigation areas in the country.

- 2.2 As the nation develops, it is only natural that people look for better quality of life which includes amongst other things, higher quality and more nutritious food. The local production of food has increased at about 4.2 percent per annum during 1985-1995 period. But this could not meet the increasing local demand for food resulting in a steady increase in food import since 1990. In 1997, total food imports amounted to about RM10.0 billion, as compared to RM4.6 billion in 1990. However, as a result of the economic slowdown affecting the South East Asian nations, the Government of Malaysia has put a renewed emphasis on food production to cut down the outflow of foreign exchange for import of food. Major food imports include wheat, maize, sugar, rice, dairy products, fish, fruits and vegetable and meat products.
- 2.3 In Malaysia, there has been a long history of planting rice under rainfed conditions in pocket areas located along the flood plains of rivers. In the early 1900s, large scale irrigation systems were first introduced, notably in the Kerian Irrigation Scheme and the Wan Mat Saman Scheme. In 1932 the Department of Irrigation and Drainage (DID) was established and together with the Department of Agriculture (DOA), formed the prime movers of organized and systematic irrigation development in the country. These include the development of new areas as well as upgrading of existing schemes. In the 1960s, double cropping was widely introduced to meet the twin objectives of increasing food production and income levels of the rural poor. Water resources development became an important component of irrigation projects with the construction of storage dams, barrages and pumping stations, followed by extensive network of irrigation canals, drains and farm roads.
- 2.4 In the 1980s, the Government took a bold decision to confine further irrigation development works to the eight major granary areas of the country. Irrigation and drainage facilities were intensified and extended to the tertiary level to improve on-farm water management to enable the cultivation of high yielding varieties of rice. This period also saw the successful introduction of farm mechanization, and the rapid replacement of labour-intensive transplanting to direct seeding methods. In the 1990s, major efforts were made in the upgrading of infrastructures to support farm mechanization and direct seeding, including improvement to farm roads, field drainage and land levelling. Estate type management for more organized and economic operation as against individual farmer operation was promoted. At the same time, some of the smaller irrigation schemes which are unattractive for rice cultivation are encouraged to diversify into alternative non-paddy crops and aquaculture.
- 2.5 The total physical paddy area (covering irrigated and non-irrigated) in Malaysia is about 598,483 ha in 1993. About 322,000 hectares or 48 percent of the total paddy areas in the country are provided with extensive irrigation and drainage facilities while the remaining are rainfed areas (see Table 1) . Of the irrigated areas, 290,000 hectares are found in Peninsula Malaysia, 17,000 hectares in Sabah and 15,000 hectares in Sarawak. About 217,000 hectares of the irrigated paddy areas in Peninsular Malaysia have been designated as main granary areas while another 28,000 hectares located all over the country are classified as mini-granary areas (see Figure 1). The paddy growing area is expected to decline with time as a result of conversion of paddy land for other landuse including urbanisation. It is forecasted that paddy growing area will decline to about 475,000 ha in the year 2005 and 450,000 ha by the year 2010 (see Table 2).
- 2.6 The total paddy production increased from 1.7 million tonnes in 1985 to 2.1 million tonnes in 1995 while the average yield per hectare per season increased from 2.7 tonnes in 1985 to 3.2 tonnes in 1995. The eight main granary areas which accounted for 72 percent of the total paddy production recorded an increase in yield per hectare per season from 3.3 tonnes in 1985 to 4.0 tonnes in 1995. Over the 1985-1995 period, domestic production accounted for about 77 percent of the total domestic consumption. In 1995 the importation

of rice amounted to 427,570 tonnes valued at RM356.1 million. However, the per capita consumption of rice has declined from 102.2 kilogram in 1985 to 86.9 kilogram in 1995.

- 2.7 The cultivation of rice has always been accorded special emphasis based on the strategic importance of rice as a staple food. Massive public investments in infrastructure and support services were made and various price/income support measures were provided to sustain a reasonable level of profitability or income to the rice farmers. The Government sets a floor price for paddy in addition to price and fertiliser subsidies. As of January 1998, the floor prices for Grade I and Grade II paddy is RM555.00 and RM517.00 per tonne respectively. The price subsidy is set at RM248.10 per tonne irrespective of paddy grade. Finally, fertiliser subsidy at 300 kg per ha is available to farmers with farm holdings of less than 2.43 ha.
- 2.8 In Malaysia, paddy is produced mainly by small holders with an average farm size of about 1.06 hectares. There are approximately 296,000 paddy farmers of which 116,000 are full time farmers depending on paddy cultivation for their livelihood. Sixty five percent of the paddy farmers have farms of less than one hectare while only four percent have more than three hectares.
- 2.9 The fruit industry is a small holder based industry involving 270,000 farmers. In 1995, the area under fruits was 257,600 hectares out of which 86,210 hectares were planted on a commercial basis (see Table 3). For the 1985-1995 period, the production of fresh fruits increased at the rate of 4.8 percent per annum from 638,100 tonnes to 1,019,900 tonnes. Exports of fresh and processed fruits increased from RM182.4 million in 1985 to RM335.6 million in 1995, while imports of fresh and processed fruits also increased from RM257.2 million in 1985 to RM444.3 million in 1995. Overall, Malaysia is still a net importer of fruits and fruit products. Most of the raw materials required for processing are outsourced from other producing countries due to the lack of comparative advantage in producing fruits for processing.
- 2.10 The area under vegetables cultivation has increased from 31,840 hectares in 1985 to 42,240 hectares in 1995 (Table 3). The production of vegetables has increased from 540,700 tonnes in 1985 to 718,100 tonnes in 1995 at an average growth rate of about 2.9 percent per annum. The export of vegetables has increased at the rate of 15.2 percent per annum from RM39 million in 1985 to RM160 million in 1995 while the value of import has increased from RM276 million in 1985 to RM685 million in 1995. Hence, Malaysia is also a net importer of vegetables and vegetable products.

3. FUTURE SCENARIOS AND AIMS

- 3.1 The growth of population and the expansion of the industrial and manufacturing sector have led to a rapid increase in water demand in the country. The domestic and industrial water demand has increased from about 1.3 billion m³ in 1980 to 2.6 billion m³ in 1990 and is projected to reach 4.8 billion m³ by the year 2000. The irrigation water demand is increasing less rapidly from about 7.4 billion m³ in 1980 to 9.0 billion m³ in 1990 and is expected to reach 10.4 billion m³ by the year 2000. The aggregate total water demand is therefore estimated at 15.2 billion m³ by the year 2000 as compared to 11.6 billion m³ in 1990 with the domestic and industrial water supply sector registering the highest percentage increase.
- 3.2 The domestic consumption of rice is projected to increase from 1.8 million tonnes in 1995 to about 2.3 million tonnes in 2010 as a result of population increase despite the declining per capita consumption of rice. Under the National Agricultural Policy, the local production of rice is expected to meet about 65 % of the domestic demand. The increase in production is targeted to come from higher productivity in the existing granary areas since there is no

plan to increase the area under paddy cultivation. In fact, the MUDA granary area (97,257 ha) has experienced a loss of about 3 % of its irrigated area as a result of conversion to urban land use during the past 20 years and is projected to lose another 3 % by the year 2015. Greater emphasis will be given to increasing productivity of existing irrigation schemes through the adoption of the latest biotechnologies and promotion of local research and development efforts. For the above purpose, there is a need to strengthen research capacity and to provide incentives to encourage research and development efforts in the government as well as private sectors.

- 3.3 With the increase in income levels and higher standard of living, one could also expect a changing preference towards higher quality rice which are largely imported. Given the price premium for higher quality rice, there is potential for domestic production of this type of rice to meet the expanding local demand.
- 3.3 While the contribution of the agricultural sector to the Gross Domestic Product (GDP) is projected to decline from 13.5 % in 1995 to about 7.1 % by the year 2010, the absolute GDP value of the agricultural sector is expected to register an increase, i.e. from RM16.23 billion in 1995 to about RM 23 billion in 2010. The agricultural sector will continue to play a major role as a prime supplier of raw materials to the expanding resource-based industries. The work force in the agricultural sector is expected to decline from 1.43 million to 0.93 million by the year 2010. The annual productivity per worker will, however, increase from RM11,360.00 in 1995 to RM24,730.00 in 2010 (see Table 4), thus accounting for the positive growth of the GDP in this sector. The continued success and competitiveness of the agricultural sector to a large extent depends on the success of the various measures taken to reduce labour requirements and to increase productivity of the agricultural workers.
- 3.5 The prospect for fruit and vegetable production is also bright due to the expected increase in the demand for domestic food products. The per capita fruit consumption is expected to increase from 49.9 kg in 1995 to 65.1 kg in 2010 representing an annual increase of 1.8 %. The area under orchards is expected to increase from 257,000 ha in 1995 to 373,200 ha in 2010. Water resources development and on-farm irrigation and drainage infrastructure are essential to help to achieve the above output target for fruit production which is expected to reach 2.23 million tonnes by the year 2010 as compared to the 1995 output of 1.02 million tonnes. Similarly, for vegetables, the annual per capita consumption is expected to increase at a rate of 1.8 % per annum to reach 63.6 kg in 2010. To meet this demand, the area under vegetable production is expected to increase from 42,240 ha in 1995 to 86,200 ha in 2010 resulting in a projected output of 1.6 million tonnes of vegetables in 2010. The government will also promote the development of organic farming as well as large-scale estate approach in the cultivation of vegetables, following the success of the estate/plantation approach for cash crops such as rubber and oil palm.
- 3.6 The increase in food production as described above can only be achieved if there are adequate measures to develop and manage water resources to meet the present and future need of the sector. In this respect, there are already signs of water distress in some of the irrigation schemes which are even more apparent during the drought years such as the 1998 drought associated with the EL-Nino phenomena affecting the Asia Pacific region. There had been considerable investment by the government in the development of water resources for all the eight granary areas in the country during the period 1960-1990. Further capital investment will be required to provide additional storage regulation facilities in order to improve the reliability of the irrigation water supply in a number of the granary areas.
- 3.7 The irrigation sector is also expected to face mounting pressures from the domestic and industrial water supply sector over its share of the water resources in a river basin wide context. In water-stressed basin, there is a need to develop interbasin or even interstate

transfer of water subject to technical and economic feasibility. In practical situations, it is often found that many of these proposals can be cost prohibitive, even for domestic and industrial water supply projects under the present pricing policy and structure. Hence in the near future, many of the water allocation conflicts between agriculture and non-agriculture sectors may have to be resolved through a policy of reconciliation. Every effort should be made to improve water use efficiency or to cut down undue losses as compared to the construction of massive new capital works. Where the conditions are favourable, groundwater resources could also be developed to supplement surface water resources for agricultural and non-agricultural purposes.

- 3.8 The private sector is expected to play an increasingly larger role in the implementation of infrastructure development works in water resources. This will be particularly true in the utility services sector such as water supply and waste water treatment where there is a clear mechanism of cost recovery from the project beneficiaries. In the light of the privatisation policy advocated by the Government, the role of the government institutions in water resources is expected to undergo fundamental structural changes. It can be expected that the development role of the government departments/agencies will diminish with time while the planning, regulatory and enforcement capacities will have to be strengthened. This would require the establishment of high-level integrated and multi-disciplinary institutions at basin, state and national levels to ensure the systematic development and management of land and water resources based on the concepts of environmental preservation and sustainable development.
- 3.9 There is a pressing need to improve the water use efficiency of all irrigation projects in the country. At present, the irrigation efficiency is about 50 % for the larger schemes while some of the smaller schemes may be operating at an efficiency of less than 40 %. In water-stressed areas, such low efficiencies can no longer be tolerated. The improvement of irrigation water efficiency would involve a sustained programme of works and activities involving a combination of structural and non structural measures, with the latter playing a dominant role. On the former, there are plans to provide more efficient on-farm facilities and to introduce water recycling systems where they are technically and economically viable. On the latter, real-time monitoring system will be installed to operate the source and control facilities in these irrigation projects to cut down losses and to maximise the use of effective rainfall. The importance of stakeholder participation is also recognised and a major concerted effort is currently in progress to promote the establishment of Water Users Groups in all the granary areas. It is expected that by 2010, these Water Users Groups will be fully operational in all the granary areas of the country. Through these efforts, it is hoped that irrigation efficiency can be raised to a higher level of about 60-65 % by the year 2010.

4. CHALLENGES FOR THE FUTURE

- 4.1. While Malaysia is moving rapidly towards industrialisation, food production, particularly in the case of its staple food (rice) will continue to receive the attention of the economic planners and policy makers. Under the National Agricultural Policy, the production of rice has been set at 65 % self sufficiency level after taking into consideration that Malaysia is a high cost rice producer compared to her neighbours and the thin and volatile global trade of rice as a commodity. Rice production in Malaysia is facing a host of physical and operational constraints such as shortage of land and water resources, escalating prices of agricultural inputs, labour shortages, low water use efficiency, low adoption of technology, uneconomic land holdings, high post-harvesting losses, inadequacy of infrastructural facilities, etc. A clear long term vision supported by workable and comprehensive strategies will be required to achieve the above production target. The production of other food crops will be determined by market forces but suitable incentives should be provided to help increase production in order to cut down the hefty food import bill which has escalated over the years with the rise in population and general income levels of the people.

- 4.2 As the country develops, the total demand for water is expected to increase rapidly resulting in a gradual increase in the marginal economic cost of water, particularly in areas where water resources are in short supply as compared to the demand. The agriculture and food sector which is a major consumer for water will be under increasing pressure from the other competing water users who are able to offer higher economic return for the water consumed. There will be a tendency for both political decision makers and the farmers themselves to move away from agriculture in favour of higher-return economic activities despite that fact that very high investment has gone into the irrigation infrastructure. If this situation is not managed properly, it will have a great impact on self sufficiency level of food production in the country. In addition, the development cost of new irrigation projects can be rather high and suitable land for such development is also limited. In this respect, it is worthwhile to consider revitalising some of the idle paddy lands in existing irrigation schemes for paddy production by taking advantage of the sunk cost of the infrastructure. Irrigation and water managers must also implement the necessary measures to improve the water use efficiency (currently at a rather low level of about 50 %) and the production efficiency of water (currently at less than 0.2 kg of rice per cubic meter of water) of their existing and planned future irrigation schemes. This will contribute to higher economic return to sustain the viability of the irrigation or agricultural sector vis-a-vis the other non-agriculture economic activities.
- 4.3 It is necessary and timely to promote integrated water resources management at the basin or national level to ensure that water resources, in terms of quantity or quality will not become a constraint to the sustainability of future socio-economic development activities. This would required assessment and evaluation of the water resources potential of a river basin at an early stage and the formulation of a rational water resources allocation policy and a long term development and management master plan, to ensure the optimum use of resources and the sustainability of all existing and planned future development. . The country must also devote suitable and appropriate human and financial resources to implement the required water resources development and management master plan. In the light of the privatisation policy of the Government, there is a need to establish integrated and multi-disciplinary institutions to carry out the functions of planning and regulatory control of water resources and land use changes at basin, state and national level.
- 4.4 The agriculture sector should also address the issues of pollution from the use of pesticides, herbicides and fertilisers. Environmental concern should be an important consideration in project planning and subsequent operation of the works to ensure the sustainability of the agricultural sector. The Government should provide suitable incentives for the farmers to practice ecological and organic farming. The consumers should be made aware that the higher cost of organic foods is not just for food safety, but also for the intangible benefit resulting from the enhancement of the environment such as the reduction of air and water pollution.
- 4.5 It is also not uncommon to find that in the event of a drought, the agricultural water supply sector is often cut back or ceased all together to save water to meet human and industrial needs, a practice which is unfair and often detrimental to the welfare and livelihood of the farmers. It is necessary to address the issues of risk in farming due to natural disasters such as floods and droughts to promote the viability and sustainability of food production as an economic enterprise and a socio-political responsibility. Amongst other things, this may involve a clear policy and programme of disaster mitigation and assistance which could include elements of crop damage compensation, subsidy and crop insurance.
- 4.6 While irrigation development is a major contributor to the higher production of rice, it must be stressed that the full potential of irrigation can only be achieved when it is supported by modern agronomic practices which amongst other things include the use of improved genetic or planting material. There is a big variation in the average crop yields of irrigated

schemes in Malaysia ranging from 3.5 to 8 tonnes of paddy per hectare per planting season in the designated granary areas of the country where the soil and water conditions are fairly similar. The lower range of paddy yield in irrigated schemes is certainly rather depressing since some of the non-irrigated schemes are capable of producing about 2 tonnes per hectare per planting season. There is a need to promote closer cooperation between the engineering and non-engineering inputs of irrigation development projects to realise the full yield potential of irrigated agriculture to ensure the continual success, competitiveness and sustainability of these projects.

- 4.7 The success and continued existence of irrigation projects should be evaluated from a broader perspective of rural development and social well-being and not just from a narrow and simplistic viewpoint of crop yield and farm income increase. While the income improvement per household may not be outstanding, the overall improvement to the local economy can be tremendous since the number of beneficiaries is large. The uplifting of a local economy is often achieved through the development of related agrobased industries and other consumer-driven commercial activities offering off-farm employment opportunities which can eventually become a significant if not the major income of the farming communities. The improvement of accessibility through the provision of farm roads has led to greater mobility of the residents, thereby enabling them to avail themselves to the other lucrative economic activities in the vicinities. The quality of life has also improved with the provision of clean water supply, health care, school and welfare facilities. The transformation of a single-purpose irrigation project for increasing rice production into one offering the full benefits of rural/regional development requires careful planning and synergistic input of the other agencies. It is also a more effective and less disruptive long term solution to the rural-urban migration problem in the country.

Table 1. Distribution of Paddy Areas, 1993 (hectares)

State	Irrigated Areas	Non-Irrigated Areas*	Total
Perlis	22,039	3,648	25,687
Kedah	93,670	24,857	118,527
Pulau Pinang	14,895	225	15,120
Perak	49,029	4,225	53,284
Selangor	19,583	106	19,689
Negeri Sembilan	8,680	1,449	10,129
Melaka	6,183	3,435	9,618
Johor	3,055	746	3,801
Pahang	17,388	13,796	31,184
Terengganu	14,843	12,173	27,016
Kelantan	40,032	25,382	65,414
Sabah	17,163	33,639	50,802
Sarawak	15,136	153,076	168,212
Total	321,696	276,787	598,483

Source : Ministry of Agriculture

Note : * Includes dry paddy areas

Table 2. Forecast of Agricultural Land Use, 1995 – 2010 ('000 hectares)

Item	1995	2000	2005	2010	Average Annual Growth Rate (%)			
					1995–2000	2000–2005	2005–2010	1995–2010
Rubber	1,679.0	1,560.0	1,395.0	1,185.0	-1.5	-2.2	-3.2	-2.3
Oil Palm	2,539.9	3,131.0	3,461.0	3,637.0	4.3	2.0	1.0	2.4
Cocoa	190.7	163.8	160.0	160.0	-3.0	-0.5	0.0	-1.2
Paddy ¹	672.8	521.2	475.0	450.0	-5.0	-1.8	-1.1	-2.6
Coconut	248.9	213.8	193.2	175.5	-3.0	-2.0	-1.9	-2.3
Pepper	10.2	9.2	8.5	8.1	-2.0	-1.6	-1.0	-1.5
Vegetables ¹	42.2	48.3	63.7	86.2	2.7	5.7	6.2	4.9
Fruits	257.7	291.5	329.8	373.2	2.5	2.5	2.5	2.5
Tobacco ¹	10.5	9.3	7.8	6.2	-2.4	-3.5	-4.5	-3.5
Others ²	99.1	106.4	111.4	130.0	1.4	0.9	3.1	1.8
Total	5,751.0	6,054.5	6,205.4	6,211.20	1.0	0.5	0.0	0.5

Sources : Economic Planning Unit

Ministry Of Agriculture

Notes : ¹ Paddy, vegetables and tobacco are based on planted area

² Others include sugarcane, coffee, sago, tea and floriculture

Table 3. Agricultural Land Use, 1985 – 1995 ('000 hectares)

Item	1985	1990	1995	Average Annual Growth Rate (%)		
				1995–1990	1990–1995	1985–1995
Rubber	1,948.7	1,836.7	1,679.0	-1.2	-1.8	-1.5
Oil Palm	1,482.4	2,029.5	2,539.9	6.5	4.6	5.5
Cocoa	303.9	419.1	190.7	6.6	-14.6	-4.6
Paddy ¹	655.0	680.6	672.8	0.8	-0.2	0.3
Coconut	334.1	315.6	248.9	-1.1	-4.6	-2.9
Pepper	5.4	11.5	10.2	16.3	-2.4	6.6
Vegetables ¹	31.8	35.2	42.2	2.1	3.7	2.9
Fruits	150.1	204.6	257.7	6.4	4.7	5.6
Tobacco ¹	16.2	10.2	10.5	-8.8	0.6	-4.2
Others ²	94.3	94.8	99.1	0.1	0.9	0.5
Total	5,021.8	5,637.6	5,751.0	2.3	0.4	1.4

Sources : *Economic Planning Unit*

Department of Statistics

Notes : ¹ Paddy, vegetables and tobacco are based on planted area

² Others include sugarcane, coffee, sago, tea and floriculture

Table 4. Employment and Productivity In Agriculture, 1985 – 2010

Year	Agriculture			Total	
	Employment ('000)	% of Total Employment	Productivity Per Worker (RM in 1978 prices)	Employment ('000)	Productivity Per Worker (RM in 1978 prices)
1985	1,796	31.3	6,600	5,737	9,950
1990	1,738	26.0	8,530	6,685	11,870
1995	1,429	18.0	11,360	7,937	15,160
2000	1,280	14.1	14,450	9,066	17,460
2005	1,100	10.9	18,450	10,053	22,640
2010	930	8.4	24,730	11,099	29,060
Average Annual Growth Rate (%)					
1985 – 1995	-2.3		5.6	3.3	4.3
1995 – 2010	-2.8		5.3	2.3	4.4

Sources : *Economic Planning Unit*

Department of Statistics