Chapter III

Agricultural Development

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I. INTRODUCTION

3.01 The performance of the agriculture sector during the Fifth Malaysia Plan period was crucial to the nation's economic development. Revitalizing the sector along the lines promulgated by the National Agriculture Policy (NAP), 1984 was important to ensure a diversified and balanced development of the overall economy. The sector has contributed significantly to the expansion of the Gross Domestic Product (GDP), employment and export earnings as well as improvements in rural development, particularly towards poverty eradication and preservation of the ecological system and environment. In 1990, the sector contributed more than a quarter of total export earnings, one fifth of GDP and nearly one third of total employment.

3.02 The decade of the nineties will present greater challenges in the development of the agriculture sector. The rapid growth in the manufacturing and services sectors and the rising importance of agro-based industries will require complementary growth in agriculture to ensure a reliable and sufficient supply of agricultural inputs to these sectors. In order to preserve the ecological balance and ensure continuing contribution of agriculture in the future, appropriate policies will be required to promote sustainable development and improvements in income for those remaining in the agriculture sector. The growth in agriculture will have to come from a more commercial approach that emphasizes efficient utilization of resources. Such an approach will have to be based on private sector initiatives rather than through large-scale involvement of the public sector.

II. PROGRESS, 1986-90

3.03 During the Fifth Plan period, the agriculture sector grew by 4.6 per cent per annum, higher than 3.1 per cent growth attained during the

Fourth Malaysia Plan period. This achievement was significant given the difficult years during the period, marked by fluctuating commodity prices, rising protectionism from developed countries as well as the emergence of production constraints, particularly due to the scarcity of labour and increasing pressure on wages.

Commodity Performance

3.04 Most agricultural commodities recorded significant increases in production during the Fifth Plan period, as shown in *Table 3-1.* The main sources of growth came from cocoa, palm oil, timber, fisheries and livestock. However, the production of padi, coconut and rubber declined.

Major Commodities

3.05 The output of crude *palm oil* rose at an annual rate of 8.1 per cent to reach 6.1 million tonnes in 1990 while its value added increased by 7.9 per cent per annum to $5,300 million, enhancing its position as the single largest contributor to total value added in the agriculture sector. The total hectarage devoted to oil palm increased to 2.0 million hectares, surpassing that of rubber by 1990, as shown in *Table 3-2.* The increase was achieved through new land openings by public sector agencies as well as the planting and conversion of rubber areas into oil palm by the private sector. Estates accounted for 47 per cent of the total area, while the organized and unorganized smallholders accounted for the balance of 45 and 8 per cent, respectively. During the Fifth Plan, the exports of palm oil rose by 12 per cent per annum to 5.7 million tonnes in 1990 while export earnings amounted to $4,400 million. The bulk of the exports was in the form of processed palm oil. As a result, Malaysia remained as the world's largest producer and exporter of palm oil in 1990.

3.06 The production of *rubber* declined by 2.6 per cent per annum to 1.3 million tonnes in 1990, following sharp decline in prices from the high levels reached in the mid-years of the Fifth Plan. The decline was also due to the reduction in hectarage by 1.5 per cent per annum to 1.8 million hectares. The decline, however, was partly offset by increases in productivity from the continued adoption of high-yielding clones and better agronomic practices. The decline in prices and income consequently led to the neglect of smallholdings, while estates experienced difficulty in attracting workers. Production by estates

TABLE 3-1

PRODUCTION OF AGRICULTURAL COMMODITIES, 1985-95
('000 tonnes)

Items	*1985*	*1986*	*1987*	*1988*	*1989*	*1990*	*1995*	*Average Annual Growth Rate (%)*		
								5MP		*6MP*
								Target	*Achieved*	
Rubber	1,470	1,539	1,579	1,662	1,422	1,291	1,300	*0.8*	*-2.6*	*0.1*
Crude Palm Oil	4,133	4,544	4,533	5,030	6,055	6,095	7,600	*6.7*	*8.1*	*4.5*
Palm Kernel	1,212	1,336	1,311	1,413	1,794	1,845	2,190	*n.a*	*8.8*	*3.5*
Sawlogs[1]	30,956	29,869	36,149	37,728	39,709	41,000	29,000	*-2.0*	*5.8*	*-6.7*
Sawn Timber[1]	5,550	5,424	6,222	6,684	8,322	8,900	9,100	*-0.9*	*9.9*	*0.4*
Cocoa	108	132	191	225	250	262	339	*11.5*	*19.4*	*5.3*
Padi	1,953	1,745	1,697	1,786	1,640	1,590	1,671	*n.a*	*-4.0*	*1.0*
Pepper	19	15	14	19	27	29	36	*5.6*	*8.7*	*4.4*
Pineapple	153	144	150	164	168	173	248	*n.a*	*2.6*	*7.5*
Tobacco	9	14	11	7	13	10	13	—	*1.6*	*5.0*
Fruits[2]	852	887	1,046	1,078	1,118	1,165	1,584	—	*6.4*	*6.3*
Vegetables[2]	184	239	232	229	226	224	256	—	*4.0*	*2.8*
Coconut[3]	1,826	1,374	1,590	1,579	1,568	1,557	1,572	—	*-3.1*	*0.2*
Fisheries										
Marine	575	562	859	826	822	830	984	*n.a*	*7.6*	*3.5*
Aquaculture	51	51	45	46	68	75	113	*n.a*	*7.9*	*8.4*
Livestock										
Beef	17	16	16	18	18	18	21	*n.a*	*1.9*	*3.2*
Mutton	0.6	0.6	0.5	0.5	0.6	0.7	1	*n.a*	*1.9*	*7.8*
Poultry	251	279	310	335	344	368	560	*n.a*	*7.9*	*8.8*
Eggs[3]	3,395	3,618	3,819	4,255	4,394	4,718	5,645	*n.a*	*6.8*	*3.7*
Pork	164	162	181	192	202	211	287	*n.a*	*5.1*	*6.3*
Milk[4]	24	27	28	29	31	34	68	*n.a*	*7.4*	*14.8*

Notes:

[1] Measured in thousand cubic metres
[2] Refers to Peninsular Malaysia
[3] Measured in million units
[4] Measured in million litres
n.a Not Available

TABLE 3-2

AGRICULTURAL LAND USE, 1985-95
(Hectares)

Items	*1985*	*1990*	*1995*	*Average Annual Growth Rate (%)*		
				5MP		*6MP*
				Target	*Achieved*	
Rubber	1,948,700	1,810,800	1,750,000	*-0.5*	*-1.5*	*-0.7*
Oil Palm	1,482,399	1,984,167	2,165,912	*3.7*	*6.0*	*1.8*
Cocoa	303,879	420,000	452,459	*5.9*	*6.7*	*1.5*
Padi	649,325	664,000	645,749	*n.a*	*0.4*	*-0.6*
Coconut	334,054	331,496	327,606	*n.a*	*-0.2*	*-0.2*
Pepper	5,243	9,400	10,050	*n.a*	*12.4*	*1.3*
Pineapple	10,007	9,000	12,000	*n.a*	*-2.1*	*5.9*
Vegetables	14,546	14,692	19,400	*n.a*	*0.2*	*5.7*
Fruits[1]	119,024	162,085	246,019	—	*6.4*	*8.7*
Tobacco	16,180	10,168	13,000	*n.a*	*-8.9*	*5.0*
Others	69,026	65,046	74,139	—	*-1.2*	*2.7*
Total	**4,952,383**	**5,480,854**	**5,716,334**		*2.0*	*0.8*

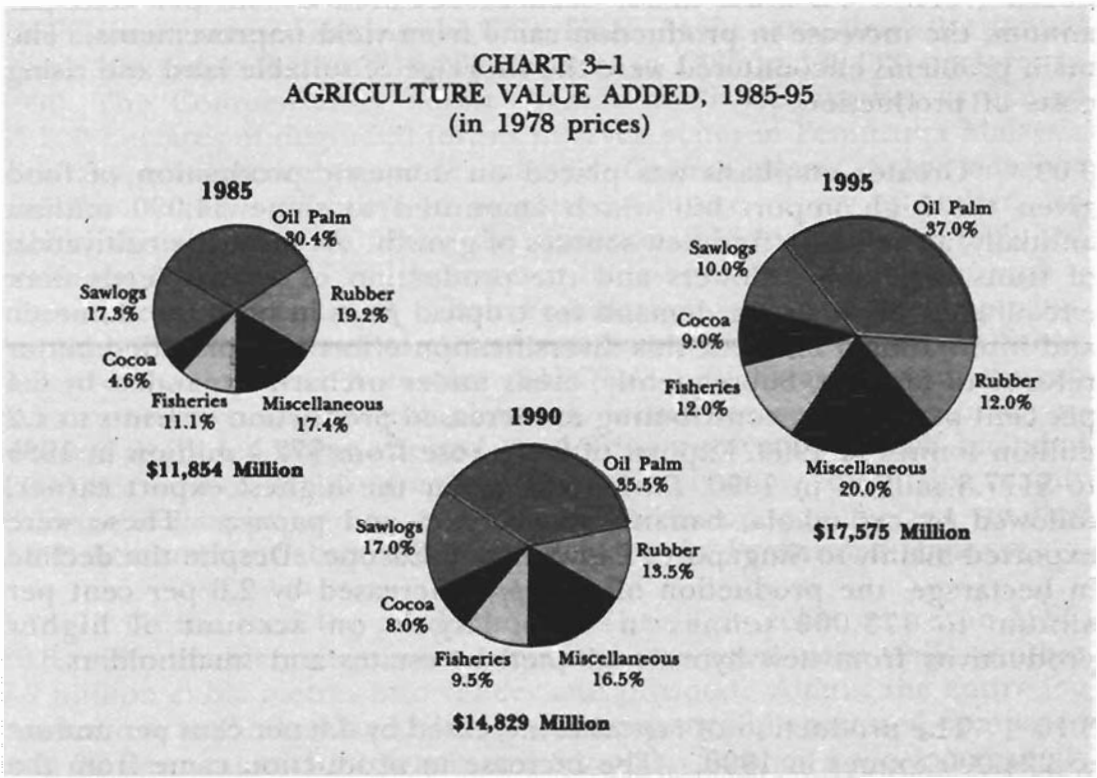
Notes:
[1] Peninsular Malaysia
n.a Not Available

stagnated, despite an increase in yield, as hectarage declined due to continued conversion into oil palm. The bulk of rubber was exported in unprocessed or semi-processed forms, while domestic processing by rubber-based industries amounted to only 181,000 tonnes in 1990. While the level of domestic processing was low, it increased significantly by 21 per cent per annum during the Fifth Plan period.

3.07 *Cocoa* production registered the highest rate of growth despite the large decline in prices of dry cocoa from $4.19 per kilogram in 1986 to $2.51 per kilogram in 1990. Its value added increased substantially by 16.8 per cent per annum during the Fifth Plan, constituting about

eight per cent of the total agriculture value added in 1990, as shown in *Chart 3-1*. Production increased by 19.4 per cent to 262,000 tonnes in 1990, placing Malaysia as the fourth largest producer in the world. Export earnings amounted to $448 million in 1990. The emphasis given to the quality of exports led to the introduction of the Standard Malaysian Cocoa grading by the Federal Agricultural Marketing Authority (FAMA) to establish a niche in the international market for Malaysian cocoa. The rapid increase in output was mainly derived from productivity improvements, with yields increasing from 659 kilograms per hectare in 1985 to 1,052 kilograms per hectare in 1990 for dry cocoa beans. Plantations, mainly in Sabah, constituted 55 per cent of the total hectarage, while the smallholdings, largely in Peninsular Malaysia, comprised about 45 per cent, involving inter-cropping with coconut. The establishment of the Malaysian Cocoa Board (MCB) in 1989 marked the growing importance given to cocoa production in the agricultural development of the country.

CHART 3–1
AGRICULTURE VALUE ADDED, 1985-95
(in 1978 prices)



Other Crops

3.08 The performance of other crops was mixed. *Padi* continued to be adversely affected by low returns, shortage of labour, poor management and occasional droughts in the non-granary areas of northern Peninsular Malaysia. Consequently, total padi production declined from 2.0 million tonnes in 1985 to 1.6 million tonnes in 1990. In addition, the quality of output deteriorated due to the lack of incentive pricing under the existing controlled price structure. As an *ad hoc* measure, the coupon subsidy was raised by 50 per cent in July 1990. Strong *pepper* prices in the early years of the Fifth Plan and the provision of assistance encouraged greater planting of pepper which led to a higher output in the latter half of the Plan period. Production remained strong despite the steep decline in prices from over $11,000 per tonne during 1986-87 to less than half of that in 1990. Planted areas were confined to Sarawak and several areas in Johor. *Coconut* production declined by 3.1 per cent per annum during 1986-90, as a result of low prices and low productivity due to old trees. Planted hectarage, mostly inter-cropped with cocoa, stagnated at around 332,000 hectares. To offset poor demand, the sale of young coconuts was promoted. The annual production of *tobacco* during the Fifth Plan fluctuated between 7,300-13,000 tonnes, in line with the production quota of the National Tobacco Board (NTB). As areas under tobacco declined by 8.9 per cent per annum, the increase in production came from yield improvements. The main problems encountered were the shortage of suitable land and rising costs of production.

3.09 Greater emphasis was placed on domestic production of food given the high import bill which amounted to some $4,000 million annually, as well as to find new sources of growth. As such, the cultivation of fruits, vegetables, flowers and the production of animal feeds were encouraged. With strong demand for tropical *fruits* in both the domestic and international markets, this diversification effort also provided better returns to farmers. Subsequently, areas under orchard expanded by 6.4 per cent per annum, contributing to increased production of fruits to 1.2 million tonnes in 1990. Exports of fruits rose from $72.1 million in 1985 to $177.8 million in 1990. *Durian* was by far the highest export earner, followed by carambola, banana, watermelon and papaya. These were exported mainly to Singapore, East Asia and Europe. Despite the decline in hectarage, the production of *pineapple* increased by 2.6 per cent per annum to 173,000 tonnes in 1990, largely on account of higher productivity from new hybrids adopted by estates and smallholders.

3.10 The production of *vegetables* increased by 4.0 per cent per annum to 224,000 tonnes in 1990. The increase in production came from the

greater intensity of cultivation rather than increases in hectarage. However, Malaysia is still a net importer of vegetables, with imports amounting to $257.5 million compared with an export value of $70 million in 1990.

Forestry Products and Management

3.11 The annual felling rate of *logs* increased by 5.8 per cent annually during the Fifth Plan to 41 million cubic metres in 1990 inspite of the conscious policy to sustain yield levels. Sabah and Sarawak contributed 73.2 per cent of the total production, with Sarawak accounting for 50 per cent or 20.5 million cubic metres. The output from Peninsular Malaysia also rose to 11 million cubic metres while that of Sabah fell to 9.5 million cubic metres with the decline in productive forest areas. The high overall rate of logging reflected the preference to export sawlogs rather than domestic downstream processing as state governments rely heavily on log royalty as their major source of revenue. Consequently, sawlog exports from Sabah and Sarawak remained high at 20.3 million cubic metres in 1990. The major markets were Japan, Taiwan and Korea.

3.12 In line with efforts to regenerate forests under the National Forestry Policy, 959,800 hectares of forest in Peninsular Malaysia were silviculturally treated during the Fifth Plan. At the same time, the annual coupe was reduced from 216,000 hectares in 1985 to 189,000 hectares in 1990. The Compensatory Forest Plantation Project further replanted 35,200 hectares of degraded forests in seven states in Peninsular Malaysia with fast- growing timber species, namely, *Gmelina arborea, Acacia mangium* and *Paraserianthes falcataria* to supplement future supply of timber. In Sabah, initial efforts to arrest the unsustainable logging rate included reafforesting about 27,700 hectares with fast-growing species through a joint-venture between the Sabah Foundation and a private company. Another 13,000 hectares of *Acacia mangium* were planted by the Sabah Forestry Development Authority (SAFODA). In Sarawak, even though forestry resources were still plentiful, initial measures were taken to reforest degraded areas affected by shifting cultivation, which included 4,000 hectares of *Acacia mangium.* Rattan cultivation, comprising mainly *Calamus manan* or manau and *Calamus caesius* or sega species, totalled 7,500 hectares in Sabah and 3,100 hectares in Peninsular Malaysia.

3.13 Of the total log production of 41 million cubic metres in 1990, 20.6 million cubic metres were converted into *sawn timber* while another 7.7 million cubic metres into veneer and plywood. Almost the entire log production in Peninsular Malaysia was domestically processed compared with 32 per cent each in Sabah and Sarawak. Rubber wood increasingly

contributed to wood supply. Of the total sawn timber production of 8.9 million cubic metres, 5.2 million cubic metres were exported and the balance was for domestic construction industry and downstream processing into moulding, joinery and furniture products.

Fisheries Output and Programmes

3.14 *Fisheries* production increased by 7.6 per cent for marine landings and 7.9 per cent for aquaculture. Deep-sea fishing and aquaculture contributed largely to the increase in production as a result of the promotional efforts under the Promotion of Investment Act (PIA), 1986. Landings from deep-sea fishing rose to 100,000 tonnes in 1990 from 18,300 tonnes in 1985 while the number of freshwater ponds rose to 20,900 from 18,600. At the same time, 125 artificial reefs to propagate fish concentration were established as part of the overall programme to conserve and enhance inshore resources.

3.15 The emphasis on support services included the establishment of the National Prawn Production and Research Centre in Pulau Sayak and the upgrading of the management production system of prawn rearing at the Gelang Patah Research Centre. The Malaysian Fisheries Development Authority (LKIM) and Department of Fisheries (DOF) undertook measures to modernize the sector. Credit facilities were provided for the building of large and well-equipped modern boats as well as for inshore fishermen to own boats. A greater involvement by fishermen associations in the marketing of fish and fish products was emphasized to promote private sector participation. The number of fishermen was estimated at 89,000 in 1990, a decline from the peak of 116,500 in the early eighties due to outmigration and the preference of fishermen to become farmers.

Livestock Development

3.16 Total *livestock* value added increased by 6.1 per cent per annum during the Fifth Plan to $606 million, with the non-ruminants being the major contributor to growth. *Mutton* production increased by 1.9 per cent per annum, partly the result of efforts to integrate sheep rearing in farming activities, particularly by large private sector oil palm plantations, the Federal Land Development Authority (FELDA) and Rubber Industry Smallholders Development Authority (RISDA). The production of beef grew by only 1.9 per cent per annum. A total of 19,500 cattle and buffaloes was distributed to 6,600 farmers under the Small-scale Rearing

Credit Scheme of the Department of Veterinary Services (DVS), while another 2,800 dairy cattle were distributed to 1,200 farmers under the dairy programme. During the same period, 25,500 goats and sheep were loaned to 1,300 farmers under the *pawah* scheme. The integration of ruminant animals with permanent crops in plantations continued to progress, involving an estimated 60,000 cattle. However, efforts at intensive feedlotting was negated by rising cost of inputs, particularly of palm kernel cake in the mid-years of the Fifth Plan. At the same time, the availability of cheaper imported beef under the countertrade arrangement with India confined the higher priced Malaysian beef to the middle-price market. The slow progress in generating indigenous breeds and breeding stocks also constrained the growth of beef and mutton production. To overcome this, DVS established nine Rearing Farm Centres for cattle and six for goats.

3.17 *Poultry* and *pork* were the main sources of increase of livestock output, rising by 7.9 per cent and 5.1 per cent per annum to reach 368,000 tonnes and 211,000 tonnes in 1990, respectively. Malaysia continued to be fully self-sufficient in these industries and was able to export its surplus to Singapore and nearby Asian markets. The widespread and uncontrolled small-scale rearing of pigs have given rise to issues of environmental pollution and religious sensitivity. Consequently, policies were instituted to restrict its expansion to certain designated areas.

3.18 The production of *eggs*, for which Malaysia is already self-sufficient, increased by 6.8 per cent annually to reach 4,700 million units in 1990. The production of *milk* was also higher at 34 million litres, increasing annually by 7.4 per cent. However; Malaysia is still not self-sufficient in milk production, accounting for only 10 per cent of national requirements. Under the dairy programme, 39 new Milk Collection Centres (MCCs) were established while others were consolidated with a view to be more cost-effective.

Land Development Programmes and Support Services

3.19 Land development programmes, both new and *in-situ*, have contributed significantly to increases in output and improvements in income of the agriculture sector. However, several constraints have emerged with respect to the availability of land, labour and rising cost of inputs during the period. While new land development accounted for the largest in terms of public sector development allocation, the *in-situ* approach constituted the main thrust of agricultural development programmes under the Fifth Plan.

In-situ Development

3.20 The *in-situ* thrust to redevelop existing villages and farms through the provision of infrastructure and replanting facilities as well as greater commercial orientation was aimed at raising the productivity of existing farms. A major *in-situ* component was the *Integrated Agricultural Development Programme* (IADP) which was designed to provide an integrated package of infrastructural and support facilities. This included the provision of drainage and irrigation systems, flood control, farm roads as well as agricultural support services to existing areas. Fifteen IADPs were implemented under the Fifth Plan, of which all the infrastructural components were completed for eight. These completed projects covered 3.5 million hectares of land and benefited 273,900 farm families. The project management units will continue to operate and maintain these projects in order to ensure that maximum benefits will be obtained from the heavy investment that has been ploughed in. The total expenditure on IADPs amounted to $1,020 million during the Fifth Plan, with *drainage and irrigation* infrastructure constituting about three-quarters of the expenditure.

3.21 Another major *in-situ* programme is *replanting.* The strong contribution to output and income growth by rubber, oil palm and commercial crops were made possible by effective replanting programmes continually pursued in the past. As shown in *Table 3-3,* RISDA replanted around 140,000 hectares of land in Peninsular Malaysia, involving 80,000 smallholders. The focus was on group replanting and mini estates to realize economies of scale in terms of production, maintenance and marketing. About 40,000 hectares were developed as mini estates. The Sabah Rubber Fund Board (SRFB) replanted 3,500 hectares of rubber, benefiting 5,000 smallholders. Another 3,600 hectares of pineapple were replanted by the Malaysian Pineapple Industry Board (MPIB), involving 2,700 farmers.

3.22 Programmes for the *consolidation and rehabilitation* of idle and uneconomic farms were aimed at increasing productivity through economic size operation, adoption of modern technology and the provision of improved infrastructural facilities. The Federal Land Consolidation and Rehabilitation Authority (FELCRA) under the Fifth Plan rehabilitated 117,800 hectares of land, surpassing its target of 110,000 hectares. This included the rehabilitation of 38,600 hectares of idle land since 1984. Of this, 69.8 per cent were planted with oil palm, 16.2 per cent with rubber and 7.4 per cent with cocoa and other crops. Programmes under the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) were mainly for oil palm, cocoa, rubber and tea, while the Sarawak Department of Agriculture (SDOA) rehabilitated an

TABLE 3-3

REPLANTING, LAND CONSOLIDATION AND REHABILITATION PROGRAMMES OF PUBLIC AGENCIES, 1986-95

(hectares)

Agency	*5MP Target*	*Area Involved*	*Types of Crop*						*5MP Achievement %*	*6MP*
			Rubber	*Oil Palm*	*Padi*	*Cocoa*	*Pineapple*	*Others*		
Replanting										
RISDA[1]	161,878	140,000	94,200	30,800	—	—	—	15,000	*86*	200,000
FELDA[2]	20,000	23,049	10,882	12,167	—	—	—	—	*115*	62,200
SRFB[3]	3,300	3,500	3,500	—	—	—	—	—	*106*	3,000
SDOA[4]	—	—	—	—	—	—	—	—	—	8,500
MPIB[5]	4,049	3,603	—	—	—	—	3,603	—	*89*	6,477
Sub-total	189,227	170,152	108,582	42,967	—	—	3,603	15,000	*90*	280,177
Land Consolidation and Rehabilitation										
FELCRA[6]	110,000	117,800	19,041	82,213	7,810	5,924	—	2,822	*107*	150,000
SALCRA[7]	14,051	9,850	2,500	4,000	—	3,000	—	350	*70*	8,500
MOA[8]	14,000	13,452	—	1,271	10,551	706	—	924	*96*	25,000
SDOA[4]	—	10,000	—	—	—	—	—	10,000	—	—
Sub-total	138,051	151,102	21,541	87,484	18,361	9,630	—	14,096	*109*	183,500
Total	**327,278**	**321,254**	**130,123**	**130,451**	**18,361**	**9,630**	**3,603**	**29,096**	*98*	**463,677**

Notes:

1 Rubber Industry Smallholders Development Authority
2 Federal Land Development Authority
3 Sabah Rubber Fund Board
4 Sarawak Department of Agriculture
5 Malaysian Pineapple Industry Board
6 Federal Land Consolidation and Rehabilitation Authority
7 Sarawak Land Consolidation and Rehabilitation Authority
8 Ministry of Agriculture

area of 10,000 hectares with fruits, vegetables and cash crops. A total of 15,500 hectares of coconut was inter-cropped with cocoa and coffee under the Coconut Replanting and Rehabilitation Project, which ended in 1988. In addition, about 7,800 hectares of abandoned padi land were rehabilitated partly through group farming management or as padi estates run by private companies.

New Land Development

3.23 New land development by public sector agencies exceeded the Fifth Plan target, as shown in *Table 3-4*. FELDA developed 49.7 per cent of the total 353,300 hectares, of which 88.3 per cent were planted with oil palm, 5.9 per cent with rubber and 1.3 per cent with cocoa. State land development agencies developed the balance of 45.3 per cent or 160,000 hectares. Under this programme, 26,100 families were resettled, bringing the total to 119,300 settler families comprising 715,800 people by the end of 1990. The average development cost of resettling a family was $40,500 for oil palm schemes and $57,400 for rubber schemes. The settlers' incomes from palm oil were severely affected by price decline in the early years of the Fifth Plan, but recovered during 1987-89. The average net monthly income of FELDA settlers ranged from $410 to $720 and from $380 to $870 under rubber and oil palm schemes, respectively.

TABLE 3-4

NEW LAND DEVELOPMENT, 1986-95

(Hectares)

Agency/Programmes	*5MP*		*6MP*
	Target	*Achieved*	
FELDA[1]	175,500	175,745	—
State Programmes	93,700	160,000	4,012[2]
Joint-ventures/private sector	17,500	17,551	158,696[3]
Total	**286,700**	**353,296**	**162,708**

Notes:

[1] During the Sixth Plan, no new land development will be undertaken by FELDA.

[2] Refers only to development in areas under the Sarawak Land Development Board and Ladang Rakyat of the Perak State Agriculture Development Corporation.

[3] Refers to land development in areas under Regional Development Authorities and state agencies on a commercial basis.

3.24 The development of new land by the private sector was confined mainly to areas under the Regional Development Authorities (RDAs). Of the 17,550 hectares of new land developed in RDA areas, 98 per cent were by the private sector and the balance, on a joint-venture basis. The main objective of the RDA's land development is to improve the living standard of the people through the creation of economic opportunities via the provision of physical and social infrastructures and coordinated support services to the people. The development programmes of the Pahang Tenggara Regional Development Authority (DARA), Jengka Regional Development Authority (JENGKA), Johor Tenggara Regional Development Authority (KEJORA), South Kelantan Regional Development Authority (KESEDAR) and Terengganu Tengah Regional Development Authority (KETENGAH) were on new land development for agricultural purposes. The Kedah Regional Development Authority (KEDA) and Penang Regional Development Authority (PERDA) placed emphasis on *in-situ* development, with the latter focussing on the development of small-scale industries. The progress made by the RDAs under the Fifth Plan was mainly in agriculture, while township and industrial development lagged behind, except in the case of KEJORA.

Support Services

3.25 The adequate provision of support services was one of the key factors contributing to the expansion of the agriculture sector under the Fifth Plan. The attainment of a higher level of productivity is highly dependent upon human resource capability to adopt better farm management methods and new technologies. In this regard, the provision of *training and extension services* was extended by the Department of Agriculture (DOA), DOF, DVS, FAMA, FELDA, FELCRA, Farmers Organization Authority (FOA), LKIM, RISDA and SDOA, benefiting about 572,800 farmers.

3.26 Adequate *credit and incentives* were also provided to facilitate the growth of the agriculture sector. The greater financing requirements were met partly through an increase in loans, largely from the banking system, estimated at $9,900 million by 1990. The bulk of the loans was for the cultivation of oil palm, cocoa as well as forestry activities. The smallholder subsector obtained its financing mainly from the Centralized Agriculture Credit Scheme (SPKP) under *Bank Pertanian Malaysia* (BPM). The SPKP loans which totalled $78 million, benefited 6,700 farmers and fishermen. The Development of Sarawak Smallholders Agriculture (DESSA) scheme, launched in 1988 to assist poor smallholders, disbursed another $8 million. BPM also provided interest-free loans to the hard-core poor to venture into viable agricultural projects, with each loan not

exceeding $5,000. A total of 28 loans was approved under this scheme for the cultivation of crops and sheep rearing. The small farmers also had access to credit facilities provided by *Amanah Ikhtiar Malaysia* (AIM).

3.27 The provision of various forms of *incentives* for crop production such as padi, rubber, pepper, sago, fruits and livestock rearing amounted to $525.3 million and benefited 611,800 farm families, as indicated in *Table 3-5*. The padi subsector was supported by the guaranteed minimum price programme, amounting to $1,193 million during the Fifth Plan. About $27.0 million were spent by DOA for the provision of seeds and seedlings to smallholders. The inclusion of non-traditional agricultural activities in the PIA, 1986 provided a boost for private sector involvement, particularly in horticulture, forestry, fisheries, livestock and floriculture.

3.28 The farmers' involvement in direct *marketing* was promoted with the creation of 132 farmers markets by FAMA with the participation of 4,900 farmers, and 37 *segaria* stalls as outlets for fresh milk. FAMA, in close collaboration with private companies, successfully pursued the international marketing of Malaysian fruits namely, papaya and carambola to East Asia, Europe and Middle East markets. The emphasis on the quality of exports led to an increase in the volume of graded cocoa from 20,900 tonnes in 1986 to 36,200 tonnes in 1990 and that of pepper from 15,000 tonnes to 25,500 tonnes. In order to strengthen the fisheries marketing system, LKIM established seven fisheries complexes equipped with freezer and ice facilities. The fish auction system was also launched to maximize returns to fishermen. To improve the marketability of agricultural output, further *processing* of agriculture produce was promoted. Public sector agencies such as the Malaysian Rubber Development Corporation (MARDEC), FELDA, National Padi and Rice Authority (LPN) and Food Industries of Malaysia were involved with the processing of agricultural produce to enhance value added. FOAs were also involved in broadening the income base of farmers by gradually extending its scope of operation into off-farm activities in consonance with the policy of rural industrialization.

3.29 The public sector programmes on *research and development* (R&D) further contributed to the growth of agriculture by developing improved technologies at the production as well as consumption levels for commercial crops and foodcrops. The relevant institutions, including cess-funded research agencies, received 49 per cent of the total R&D allocation. The emphasis of R&D had been on improving productivity, securing new sources and achieving sustainability in the growth of the agriculture sector.

TABLE 3-5

AGRICULTURAL PRODUCTION INCENTIVES, 1986-95
($ million)

Types of Incentive According to Crop	*5MP*				*6MP*
	Allocation $	*Expenditure* $	%	*Number of Beneficiaries*	*Allocation* $
1. Padi Fertilizer	396.8	396.8	*100*	424,195	400.0
2. Rubber (chemical and fertilizer, cover crops, stimulant, rainshield, and bulk processing centers)[1]	93.4	74.9	*80*	140,000	60.6
3. Pepper (post, cutting and fertilizer)	16.5	15.8	*96*	42,500	25.0
4. Sago (transporting channel and planting materials)	7.0	6.9	*99*	4,000	8.6
5. Fruits and crops production (planting materials and certified seedling for padi)	27.4	27.0	*99*	n.a	46.7
6. Livestock (*pawah* schemes)[2]	3.5	3.9	*110*	1,116	14.0
Total	**544.6**	**525.3**	*96*	**611,811**	**554.9**

Notes:

[1] Provided by RISDA

[2] Refers to Department of Veterinary Services in Peninsular Malaysia

n.a Not Available

III. PROSPECTS, 1991-95

Growth, Constraints and Policy Issues

3.30 The agriculture sector is targeted to grow at an average rate of 3.5 per cent per annum during the Sixth Malaysia Plan compared with 4.6 per cent attained in the Fifth Plan period. The achievement of this target will be dependent on external demand for the major commodities such as oil palm, rubber, cocoa and timber as well as efficiency and productivity improvements. Efforts will be made to resolve constraints in the sector such as labour as well as create and develop greater linkages between the agriculture and other sectors in the economy.

3.31 Priority will be given to further reorientate the smallholding sector towards greater commercial operation to realize economies of scale and be internationally competitive over the long run. A major policy concern will be to ensure that agriculture remains competitive in the international market and, therefore, only economically viable new crops will be explored to their potential. For products that are currently not competitive, R&D will be emphasized towards enhancing their competitiveness.

3.32 As the growth of agriculture will continue to be affected by the availability of labour, productivity increases will be emphasized so that wage differentials in favour of the urban industrialized sector will be reduced to attract domestic labour to agriculture. While continuous efforts by the Government to develop and modernize rural areas will assist in retaining labour force in the smallholders subsector, the private sector will have to support these efforts through the upgrading of facilities to improve the living standards of workers in the plantation sector. These will ease labour shortages in the agriculture sector. Unless this is forthcoming, the realization of agricultural output on a competitive basis will require the importation of low-cost labour from abroad. For the longer term, R&D efforts will be focussed on increasing productivity through higher-yielding varieties, producing tree height amenable to labour and increasing the mechanization of production, especially in planting, fertilizer application, harvesting and handling of output. At the same time, a more effective management system will be designed so that the agriculture sector will be cost competitive and able to sustain its presence in the world market.

3.33 Overcoming the constraints faced by the agriculture sector will also require a change of emphasis in the strategies promulgated by NAP. The low returns to agriculture were due to structural constraints affecting the efficient operation of holdings, leakages in the delivery of support programmes and relative price changes, arising from protective industrial policies that favour other sectors of the economy. Policies will be formulated to increase the dynamism of the sector, largely through raising productivity and returns to agricultural activities. Given the constraint in terms of availability of potential new agricultural land, except in Sabah and Sarawak, focus will be placed on *in-situ* development through consolidation and utilization of the land base in a more dynamic, efficient and income maximizing manner.

3.34 Concern for the environment and the issue of sustainability of growth will necessitate efforts to sustain the level of forestry extraction. It will also require protecting fisheries resources in the inshore zones from indiscriminate trawlings.

3.35 The growth prospects of the agriculture sector will increasingly rely not only on increasing the primary level of production but also on downstream processing and marketing of agricultural produce. Policies and strategies towards the development and promotion of the agro-based industry will be further strengthened with the objective of transforming the agriculture sector towards greater commercial orientation. The focus will be towards ensuring that the local supply of raw materials will be reliable and sufficient, maximizing the uses of raw materials, extending the range of products, including import subtitution, as well as developing new product lines through effective R&D activities and promoting and developing large-scale integrated agro-based projects.

3.36 The commercial approach of NAP will place a greater requirement on the supply of trained personnel, management skills as well as organizational support. While the public sector will continue to provide such facilities, the contribution of the private sector will have to be enhanced, especially by private plantation companies, preferably through contract-related farming as well as by farmers cooperatives and fishermen associations. Through human resource and institutional development, farmers and fishermen's organizations will also enhance their roles in commercial ventures and increase their market shares.

3.37 Under PIA, 1986 and Income Tax Act, 1967 the Government has provided various forms of incentives to those intending to establish or participate in agricultural activities. In addition to these, special rebate schemes for rubber and additional incentives for wood-based industries were introduced. During the Sixth Plan, the Government will further formulate supportive policies to strengthen existing incentives through the provision of the necessary infrastructure, selective support financing for adoption of new technology, market pricing policies that reward quality output and efforts as well as the provision of extension services, R&D and training. The Sixth Plan will constitute a watershed in agricultural development. In contrast to the previous Plans when agricultural development was largely public-sector driven, the emphasis will be on the important role of the private sector in revitalizing the agriculture sector.

Prospects for Agricultural Commodities, Forestry, Fisheries and Livestock

3.38 Oil palm, rubber and cocoa will continue to be the mainstay of agriculture. At the same time, new sources of growth will be sought from land-intensive cultivation of high value food crops, particularly fruits and vegetables, floriculture, fisheries and livestock. The emphasis on

achieving self-sufficiency in food production will be pursued. The production of fish, meat, fruits and vegetables will, therefore, be promoted in the Sixth Plan.

Continued Growth of the Major Commodities

3.39 The output of *palm oil* is projected to expand moderately at an annual rate of 4.5 per cent to reach 7.6 million tonnes in 1995, in response to the expected recovery in price, slower pace of new land development and marginal conversion of idle rubber and abandoned land under the *in-situ* development programmes. The expansion of new hectarage will be concentrated in Sabah and Sarawak given the shortage of suitable land in Peninsular Malaysia. The replanting of oil palm by estates and FELDA schemes will be continued during the period, while a replanting financing facility will be arranged for the unorganized smallholding subsector. During the period, the area under oil palm will grow at a slower rate of 1.8 per cent annually from 2.0 million hectares in 1990 to 2.2 million hectares in 1995. The growth in palm oil production will come from increases in average yield, through maturity of new clones and better agronomic practices in the estates and the organized smallholder subsector. Demand for palm oil will remain high inspite of increased competition and the share of palm oil in the oils and fats market will continue to rise on account of its competitive price and technical versatility. The challenge for Malaysian palm oil will be to maintain its cost competitiveness in the face of rising scarcity of labour.

3.40 The area under *rubber* is expected to level off at 1.8 million hectares. The conversion of rubber areas into oil palm that occurred during the past two decades will decelerate as rates of return between the two crops tend to equalize and the benefit of having a balanced crop portfolio becomes increasingly important for farm income stability. Further, rubber prices are expected to be remunerative during the Plan period with the anticipated strong demand by developed economies and a deficit of 30,000 tonnes annually in the world natural rubber supply. This expectation will encourage the private sector to partially reinvest in the rubber industry. Despite the anticipated decline in rubber hectarage, production is expected to increase marginally at the rate of 0.1 per cent per annum to reach around 1.3 million tonnes in 1995 on account of increases in yield from high-yielding clones, better agronomic practices and the adoption of more effective tapping techniques. A phased programme of replanting and the consolidation and rehabilitation of smallholdings with high-yielding clones will be undertaken by RISDA.

3.41 An excess supply of about 1.3 million tonnes of *cocoa* is expected to prevail in the international market in the early years of the Sixth Plan. Export unit values of cocoa beans are expected to hover above the cost of production, in the range of $3.00 to $4.30 per kilogram. Cocoa prices are not expected to remain high. As such, profits will have to be realized through cost reductions and increases in productivity. Cocoa production will grow at a slower rate of 5.3 per cent compared with 19.4 per cent under the Fifth Plan, to reach 339,000 tonnes in 1995 from 262,000 tonnes in 1990. These increases will be from higher hectarage as well as yield. The area under cocoa will increase by 1.5 per cent per annum to reach 452,500 hectares in 1995 and will be undertaken mainly by the more efficient estate sector, largely in Sabah.

3.42 The export of cocoa is projected to expand annually by 8.7 per cent from 163,000 tonnes in 1990 to 247,000 tonnes in 1995. With progress in downstream processing, domestic grinding of cocoa will absorb about 110,000 tonnes in 1995. The accessibility of Malaysian cocoa in the international market will need to be expanded in order to strengthen its position. The Standard Malaysian Cocoa grading will be further pursued to establish a reputable quality product in the international market.

Other Crops - Greater Role for Horticulture

3.43 The performance of minor crops will be mixed. The traditional food crops of rice and coconut will grow marginally while that of horticulture and other annual commercial crops will register strong growth. Horticulture will feature significantly in the Sixth Plan as a new source of growth in the agriculture sector.

3.44 *Padi* production in the present eight granary areas will continue while padi areas outside the granary will be converted gradually into other crops to provide better returns to farmers. The cultivated area for padi will, therefore, decline slightly at an annual rate of 0.6 per cent to 645,700 hectares in 1995. Padi yield, however, is expected to improve by 1.0 per cent per annum. Consequently, its production will increase from 1.59 million tonnes in 1990 to 1.67 million tonnes in 1995. Group farming will continue to be promoted to reap economies of scale in production and optimize farm returns. The fertilizer support programme will be continued but a comprehensive review of the padi price structure will be undertaken to create better incentives for farmers to produce high quality padi.

3.45 The production of *pepper* is forecast to grow at a slower rate of 4.4 per cent annually compared with 8.7 per cent under the Fifth Plan, to reach 36,000 tonnes in 1995 in response to expected lower prices of between $5.00 to $7.00 per kilogram. Pepper cultivation, which is highly labour-intensive, will be concentrated in Sarawak, with almost all its production catering for the export market.

3.46 *Pineapple* production is targeted to increase by 7.5 per cent per annum from 173,300 tonnes in 1990 to 248,300 tonnes in 1995. Growth will come both from increased hectarage and yield improvement from new hybrids and better cultivation techniques. Pineapple cultivation will remain viable, particularly when integrated with downstream processing or livestock rearing that used pineapple byproducts as feed meals. The total cultivated area is projected to increase from 9,000 hectares in 1990 to 12,000 hectares in 1995, a growth of 5.9 per cent per annum. An aggressive promotional drive will be pursued during the Sixth Plan to strengthen and expand the Malaysian canned pineapple market. Extension services will aim at ensuring improvements in yield and quality of pineapple, especially under nucleus and mini-estate farming. The consolidation of smallholdings into bigger and more economic working areas will be pursued to improve the incomes of farmers.

3.47 The production of *tobacco,* which will continue to be subjected to production quotas set by NTB, is forecast to increase at an annual rate of 5.0 per cent from 10,000 tonnes in 1990 to 13,000 tonnes in 1995. The quality of the Malaysian flue-cured virginia tobacco will continue to be improved under MARDI's R&D programmes as a strategy to secure a higher blending rate for Malaysian tobacco.

3.48 Greater competition from other oils in the world market will confine the cultivation of *coconut* to meet domestic requirements, both for fresh and young coconut, and as a shade crop for cocoa cultivation. Coconut hectarage will decline marginally by 0.2 per cent per annum. However, production is expected to increase to 1,570 million coconuts in 1995 through improvement in yield from the adoption of the high-yielding *Mawa* variety. As part of marketing strategy, R&D will focus on diversifying the end use of coconut.

3.49 The promotion of other crops including agro-forestry, especially on idle land and non-granary areas, will be undertaken wherever viable during the Sixth Plan. *Sago* production in Sarawak will continue to be supported to meet domestic and export demand for food and industrial use.

3.50 As the growth of major commercial crops is likely to face serious constraints arising from limited availability of new land and markets, the source of growth for the agriculture sector in the Sixth Plan will be from the development of land-intensive high-value horticultural crops, especially fruits, vegetables and flowers. The contribution to value added growth from horticulture is thus, targeted to increase by 13.6 per cent per annum during the Sixth Plan, the highest compared with other crops.

3.51 With the utilization of idle land and some non-granary areas for alternative crop production, the area of *fruit* cultivation will expand by 8.7 per cent per annum from 162,100 hectares in 1990 to 246,000 hectares in 1995. Subsequently, the production of fruits is estimated to increase annually by 6.3 per cent to 1.58 million tonnes in 1995. Its development will concentrate on fruits with export potential such as carambola, Eksotika papaya, guava, *durian, rambutan* and *ciku.* The perishability and preservation of the quality of fruits are the main problems that will require R&D efforts to focus on an integrated package of technology for planting, harvesting, handling and transporting the fruits to export destinations. The high cost of air freight will preclude the adoption of air shipment on a large scale. As such, there is a need to strengthen R&D in post-harvest handling technology in sea transportation. Malaysian fruits will also need to overcome rigid specification requirements of importing countries.

3.52 The prospects for vegetable production are bright given the expected rising demand from population expansion. Vegetables as a cash crop also provide faster returns to investment. The production of vegetables is projected to increase from 224,000 tonnes in 1990 to 256,000 tonnes in 1995, an increase of 2.8 per cent annually. The main constraints, however, will be the availability of suitable land and labour. *In-situ* land, highlands as well as ex-mining land will be exploited for vegetable growing. To reap the opportunities offered by the international *flower* market, the production of flowers such as orchids, chrysanthemum and roses is expected to increase. Measures will be undertaken to address the problems of transportation to overseas market to ensure speedy delivery and quality of products.

Sustainable Management of Forestry Resources

3.53 The growth of the forestry sector in terms of value added is projected to decline by 6.7 per cent annually. The production of *sawlogs* will decline from 41 million cubic metres in 1990 to 29 million cubic metres in 1995. Production in Peninsular Malaysia will decline from 11 million cubic metres in 1990 to 8.5 million cubic metres in 1995. For

Sabah, with forestry resources becoming increasingly scarce, a more rapid decline is expected, from 9.5 million cubic metres in 1990 to 4.5 million cubic metres in 1995 compared with an average annual production of over 10 million cubic metres in the last two decades. The major source of sawlogs will continue to come from Sarawak with an estimated output of 16 million cubic metres in 1995 compared with the peak of 18.2 million cubic metres in 1989. It is crucial that the nation's forestry resources be strictly managed on a sustained yield basis in the Plan period and beyond, to ensure its continued contribution to the growth of the agriculture sector.

3.54 In line with the National Forestry Policy, intensive rehabilitation and reforestation of degraded forests will be implemented with emphasis on silvicultural treatment and compensatory forest plantation programmes. About 393,100 hectares of forest in Peninsular Malaysia will be enriched under the silvicultural treatment programme, while the compensatory forest plantation programme, which started in 1984, will reafforest another 42,000 hectares of cut-over degraded land in the seven states of Johor, Kelantan, Negeri Sembilan, Pahang, Perak, Selangor and Terengganu. This programme will partly compensate for the projected timber shortage in the nineties in order to meet future increases in domestic requirements. In Kedah and Perlis, about 750 hectares of forest plantation will be established with high quality timber such as *Tectona grandis*. Continuing R&D on the cultivation, processing, and end-use of rattan is expected to result in an increase in its hectarage from 3,300 hectares in the Fifth Plan to 5,400 hectares in the Sixth Plan. A multi-objective plantation development programme, combining the planting of rubber trees for latex as well as for rubber wood and rattan cultivation or sheep rearing under rubber trees, will be promoted. Furthermore, cultivation of rattan and bamboo will be promoted on a commercial basis to provide the raw materials required for the development of the agro-based industries. In Sabah, about 200,000 hectares of forest will be enriched and silviculturally treated. The establishment of large-scale commercial forest plantations with fast-growing species as well as high value indigeneous species will be accelerated. The programme on reafforestation of scattered wasteland which was started in the Third Plan, will be continued in the Sixth Plan. About 250,000 hectares of forest plantation will be established and 7,000 hectares of wasteland will be reforested. In Sarawak, about 20,000 hectares of forest plantation will be established under reforestation projects and 37,000 hectares of mixed dipterocarp forest will be silviculturally treated. However, these efforts to reafforest are relatively small in relation to the size of the forestry sector. It is, therefore, important that the rate of felling and deforestation be contained at sustained yield management levels for the compensatory measures to be adequate.

3.55 To ensure smooth adjustment of the industry into alternative higher value-added activities via downstream processing of the logs produced, the availability of logs for domestic processing will be maintained at around 19.1 million cubic metres during the Sixth Plan period or 61.9 per cent of total sawlog production. As a result, the anticipated decline in log production will lead to lower log exports from 20.4 million cubic metres in 1990 to 7.5 million cubic metres in 1995. Given that Peninsular Malaysia will face a shortage of supply of timber for its construction and downstream requirements, it will be necessary to reduce exports of logs from Sabah and Sarawak to meet the requirements in Peninsular Malaysia.

3.56 The production of *sawn timber* will be maintained at an annual level of 9.1 million cubic metres during the Plan period to ensure the adequate availability of logs for domestic processing requirements. Domestic usage of sawn timber for downstream processing is likely to increase from 3.9 million cubic metres in 1990 to 4.2 million cubic metres in 1995 while exports will take up the balance of 4.9 million cubic metres. The task ahead is to ensure the availability of supply of the various types of timber on a continuing and sustained basis to meet the needs of the moulding and furniture industries as well as the construction industry. In view of the need to streamline the overall development of the forestry sector, a nation-wide review will be undertaken in the Sixth Plan to provide a comprehensive assessment of available forestry resources, the efficacy of sustained yield management, institutional strengths and weaknesses as well as the problems and issues faced by the forestry sector.

Fisheries Growth from the Deepsea and Aquaculture

3.57 The potential of the fishing industry is bright given the strong demand, heavy support investments and keen private sector interests in deep-sea fishing and brackish-water fish culture. Fisheries value added is, therefore, projected to grow at a higher rate of 7.6 per cent per annum in the Sixth Plan compared with the 1.3 per cent per annum under the Fifth Plan. Due to the depletion of inshore resources, the future development of the fisheries sector will stress on deep-sea fishing and aquaculture in fresh and brackish water. The production of marine fish will, however, be affected by offshore catches that will grow at a slower rate of 3.5 per cent annually, to 984,000 tonnes in 1995, despite the expansion of deep-sea fishing activities. Meanwhile, aquaculture production is projected to grow at a higher rate of 8.4 per cent annually to reach 113,000 tonnes in 1995. The attainment of this production

target will necessitate the expansion of areas for aquaculture activities and will require state government support, effective extension and R&D programmes.

3.58 Programmes to conserve and enrich the inshore fish resources will be continued through the development of artificial reefs and the creation of marine parks. These fish aggregating and propagating devices will ensure continuous reproduction of fish. The efforts at promoting deep-sea fishing will concentrate on broadening its network with proper management and the provision of good support services, particularly infrastructure, which will enable its vast resources to be tapped. Dissemination of information on research findings and the viability of deep-sea fishing will be done through DOF training centres. The provision of infrastructure, such as landing centres for deep-sea fishing boats of 40 gross tonnage and above, will be implemented to facilitate the development of the industry. Most of these centres will be equipped with boat repairing facilities.

3.59 An efficient marketing and distribution system for fish will be set up to increase the incomes of fishermen and entrepreneurs and meet the requirements of consumers. Training will be provided in fish handling, storage, reduction of post-harvest losses and improvement of market network. Aquaculture will be commercialized to meet domestic and international demand. The rearing of aquarium fish, which offers a good potential for export earnings by the private sector, will also be encouraged. Downstream processing activities will be supported by R&D at MARDI to increase fisheries value added. The private sector will be encouraged to participate actively in these efforts.

Livestock Development

3.60 Total livestock value added is projected to increase at an annual rate of 7.7 per cent in the Sixth Plan, slightly higher than the 6.1 per cent growth in the Fifth Plan period. This is on account of an expected higher annual growth of 8.8 per cent in the largest subsector, *poultry*. High input and marketing costs to oversea markets will, however, constrain the expansion of the poultry industry which is highly dependent on imported feedmeals. Given that it will be more costly to produce the inputs domestically, the development of the animal feed industries will directly affect the viability of the livestock sector. The domestic production of animal feedmeals will continue to be experimented to achieve an economic scale of operation in commodities such as maize, tapioca and soya bean. Similar prospects are faced by the non-ruminant *pork* subsector which is expected to grow by 6.3 per cent annually. The

production of pork will be mainly to satisfy domestic consumption. Appropriate rearing areas will be identified to regulate its growth. The heavy pollution generated by this subsector and its impingement on religious sensitivity will mean that this subsector will not be a promoted industry, except for the domestic market. As such, the import tariff protection accorded to this subsector will be gradually reduced during the Sixth Plan.

3.61 The ruminant subsectors will record significant progress during the Sixth Plan period. The production of *beef* is projected to rise at an annual rate of 3.2 per cent, spurred mainly by rising demand. Imported beef, largely from India, will continue to cater for the lower rung of the market which constitutes nearly 60 per cent of the total demand, while, domestic beef will be targeted for the middle and upper market segment. The policy to encourage growth of the domestic beef industry will be to reduce gradually the importation of cheap beef until the requirements can be met from domestic supply.

3.62 The production of *mutton* will grow at an annual rate of 7.8 per cent during the Sixth Plan period, after declining marginally by 2.1 per cent during the last couple of decades. Significant inroad is expected to be made through increasing the integration of sheep rearing in agricultural projects by FELDA, FELCRA and RISDA as well as by private plantation companies during the Sixth Plan period. Currently about 60,000 heads of ruminants are being reared under this concept. The sheep and mutton programme will be geared towards achieving a total population of one million heads by the year 2000. This will be undertaken largely through domestic rearing and supplemented by imported breeds. Under the male breed programme, at least 20,000 heads of sheep will be bred by DVS in its six sheep farms to produce sufficient breeds. Mutton supply from domestic sources is projected to rise from 700 tonnes in 1990 to 1,000 tonnes in 1995.

3.63 In an effort to raise hygienic standard of slaughtering and to control environmental pollution, an additional 16 abattoirs will be established for ruminants. At the same time, steps to concentrate the pig industry in areas designated by state governments as pig farming areas will be pursued to effectively contain the growth of the industry. Quarantine and diagnostic facilities will be improved.

3.64 The production of *eggs* will rise at a slower annual rate of 3.7 per cent to 5,600 million units in 1995 compared with the high growth of 6.8 per cent during the Fifth Plan period. Market saturation and cost constraints will account for the slower growth. The supply of *milk* from domestic sources, on the other hand, will rise annually by an estimated

14.8 per cent, higher than the 7.4 per cent growth under the Fifth Plan, in response to rising demand and higher prices that are anticipated with the withdrawal of production subsidies in the European Economic Community. Consequently, production will increase from 34 million litres in 1990 to 68 million litres in 1995. Improving the efficiency and quality of fresh milk production will be the focus of the milk programme which will involve further consolidation of MCCs.

3.65 As a step to diversify further the sources of meat, a comprehensive programme to promote and develop the rabbit industry will be undertaken. Under this programme, 80,500 female breeds and 16,100 male breeds will be distributed to 3,400 farmers during the Sixth Plan period. As a start, DVS will import 1,000 male rabbit breeds and 5,000 female rabbit breeds in 1991. The rabbit industry is estimated to contribute 10,500 tonnes of meat annually.

Reorientation of the Agriculture Sector Programmes

3.66 The thrust of public sector involvement in the agriculture sector in the nineties will be oriented towards *in-situ* development rather than new land development, in view of the scarcity of suitable land and the high cost of developing new land in marginal areas of Peninsular Malaysia, Sabah and Sarawak. The development of land that does not involve settlers, especially in land-abundant States of Sabah and Sarawak, will be proposed for development by the private sector with Government facilitating it through the provision of infrastructural facilities. A lack of agricultural workers and the rise in cost of labour will require future progress of the sector to be secured increasingly through productivity improvements by moving towards a more optimal land-labour ratio and through R&D that aim at reducing production costs and maximizing returns.

3.67 The realization of the growth potential in agriculture is highly dependent on the provision of adequate supporting infrastructural facilities. The inadequacy of essential farm infrastructure such as farm roads, drainage and irrigation, storage, grading and marketing network facilities will discourage farmers from producing food items with marketable surplus. The need for adequate infrastructure to support the growth of the fisheries industry is also pressing. To minimize post-harvest spoilage, improved associated infrastructure such as fish landing jetties, ice making plants and slipways will be necessary. Similarly, access roads and power supply are needed to expand the fast growing aquaculture industry, especially in areas of Johor, Sabah and Sarawak. The provision of these infrastructure will induce the private sector to expand its participation in the sector.

Emphasis on In-situ Development

3.68 The *in-situ* approach will constitute the thrust of agricultural development strategies under the Sixth Plan for a more cost-effective option and wider distribution of benefits. The *in-situ* thrust will concentrate on existing farm lands and villages to upgrade the necessary infrastructure facilities, organize production and provide extension services to farmers on the appropriate technology to be adopted. This approach will provide for more effective implementation of projects in the sector.

3.69 The construction of infrastructural facilities in the seven on-going *IADPs* will be completed under the Sixth Plan. These include the IADPs in Perlis, Pulau Pinang, Pahang Barat, Johor Barat II, Kalaka Saribas, Samarahan and Semerak involving the development of 1.62 million hectares of agricultural land for the benefits of 135,500 farm families. Three new IADPs, the Terengganu Utara, Pahang Barat II, and Tumboh Block together with two mini IADPs, namely Selama and Hilir Perak will also be implemented. The five IADPs will benefit 37,300 farm families. The mini IADP concept will constitute the future thrust of this strategy in developing remote and scattered *in-situ* agricultural areas.

3.70 The institutional and human development aspects will constitute crucial components in all IADPs' organizational and extension efforts to inculcate a sense of dynamism and self-reliance among farmers in bringing them into the threshold of commercial agriculture. At the same time, environmental issues will be carefully addressed to achieve sustainable development and ecological balance.

3.71 *Irrigation* facilities for padi planting will be upgraded in the eight granary areas, covering about 211,400 hectares. Areas outside the granaries will be provided with suitable *drainage* facilities to enable the cultivation of more lucrative crops. Agricultural land with acid sulphate problems and ex-mining areas will be rehabilitated in phases through the provision of controlled drainage and suitable soil rehabilitation techniques. In order to overcome the problem of water shortage, medium-size dams will be built where feasible. At the same time, efficiency in farm water management will be further enhanced through irrigation extension and research into more effective methods of water conservation, including those of water recycling and water storage. The implementation of flood protection programmes in a number of states, including Kelantan, will protect agricultural and other areas from damages arising from floods. The anti-coastal erosion programme will protect critical areas along 1,300 kilometres of a total 4,800 kilometres coast line from wave inflicted damages.

3.72 The *replanting* of oil palm and rubber trees will continue to be undertaken during the Sixth Plan. RISDA's target will be to replant about 200,000 hectares of non-productive rubber areas, mainly with high-yielding rubber. This programme is expected to benefit about 80,000 families. RISDA will concentrate its replanting activities in the poorer states of Kedah, Kelantan, Perlis and Terengganu. Off-farm activities, such as sheep rearing under rubber trees and epiculture, will be promoted to broaden the income base of smallholders. FELDA will also replant about 35,000 hectares of oil palm and 27,200 hectares of rubber, involving 17,000 settlers. Unorganized oil palm smallholders, whose holdings constitute eight per cent of the total oil palm area and who have no replanting funds, will be provided with two financing arrangements to replant their oil palm. The first option is for the smallholders to participate in the consolidation and rehabilitation scheme of FELCRA. Alternatively, the smallholders can participate in the Area Farmers Organization to entitle them for a replanting loan facility from BPM.

3.73 The smallholders in Sabah and Sarawak will be encouraged to participate in the replanting programme through the provision of replanting grants. SRFB and the Rubber Replanting Unit of SDOA are expected to replant 7,500 hectares and 2,500 hectares of rubber, respectively, benefiting 3,600 smallholders.

3.74 Pineapple replanting by MPIB will cover 6,500 hectares which will benefit 4,100 smallholders. FELCRA will contribute to the supply of pineapples for processing into canned pineapples through the estatization approach by involving 100 smallholders in the replanting of 80 hectares of pineapple. Pineapple clones such as *Mas Merah* and *Gandul* which have proven to be successful in estates, will be adopted.

3.75 The *consolidation and rehabilitation* of idle padi or non-padi land will be given greater emphasis by FELCRA. An estimated 150,000 hectares of idle land equivalent to the areas developed in the Fifth Plan will be rehabilitated with oil palm, rubber and other crops based on the percentage ratio of 40:40:20, respectively. These constitute 40 per cent of the idle land identified for growing permanent crops. About half of the targeted areas to be rehabilitated will be located in Kedah, Kelantan, Pahang and Terengganu. In line with *Hala Cara Baru* approach, FELCRA's programmes will include infrastructural components for urbanization, rural industrialization and agricultural modernization. The aim is to facilitate the creation of off-farm job opportunities for underemployed farmers to improve their livelihood.

Slower New Land Development

3.76 As the availability of suitable new land becomes more scarce and ecological and environmental reasons demand the preservation of the remaining forest land, the pace of new land development will be further reduced under the Sixth Plan. In addition, the average cost of resettling a family in FELDA schemes will continue to rise, partly due to the marginal type of land left to be developed. The average cost of resettling a family had increased from $49,700 in 1986 to $55,000 in 1990 compared with only $26,500 in 1976. Thus, except for continuation projects, no new additional land will be developed by FELDA. In the future, new land development will be undertaken by the private sector. While focus will be placed on the formation of plantation companies, FELDA will continue to manage its existing land schemes under the individual ownership system to ensure continued growth and production. The continuation projects will be completed under the settlers' land ownership system, while under the plantation companies, land scheme will be managed as an estate company with the beneficiaries contributing labour and owning equity in lieu of land ownership. This new management concept will be implemented in all FELDA schemes which have yet to recruit settlers. Sabah will continue with the individual ownership system and Sarawak with the share system. The activities of plantation management under the equity ownership system will be implemented in 222 FELDA schemes, covering a total area of 300,000 hectares in the Peninsula.

3.77 The activities of FELDA in new land development will be complemented by the RDAs, State Agriculture Development Corporations (SADCs) and State Economic Development Corporations (SEDCs). Under the Sixth Plan, the private sector is expected to play the major role in the development of land in RDA areas, totalling 21,600 hectares with crops other than oil palm. In addition, 2,000 hectares will be developed on a joint-venture basis between RDAs and the private sector. The prospect of agricultural development in RDA areas is dependent on the available stock of land awaiting state approval. DARA has an area of 21,700 hectares, KEJORA 12,100 hectares, KETENGAH 22,500 hectares and KESEDAR 35,500 hectares which have not been allocated. In addition, DARA and KETENGAH have 16,700 and 21,200 hectares of land, respectively that have been allocated, half of which will be developed on a commercial basis under the Sixth Plan. The development of food crop plantations will be integrated with agro-based industries, in line with the rural industrialization policy. SADCs and SEDCs will develop 1,100 hectares and 135,000 hectares, respectively. In Sabah, about 7,000 hectares will be developed by the Sabah Land Development Board and SRFB.

Support Services to Facilitate Agricultural Development

3.78 The progress of agricultural development will be facilitated by the adequate provision of supporting services, involving human development, financing facilities, incentives, marketing network and R&D. These services will be included under the various support programmes for agriculture.

3.79 The future thrust on estatization of agricultural projects will call for adequate provision of *training and extension services*, which will require qualified extension workers, knowledgeable in the application of modern technology and farm management techniques. For this purpose, extension workers will have to be retrained and equipped with the required tools and technological know-how. Towards this end, DOA will also train the target group involving about 240,000 farmers, including women, while FAMA is expected to train 65,500 farmers, marketing agents and potential entrepreneurs. DOF will conduct its training programme on engine maintenance, sailing, processing and handling of sea products to about 15,000 fishermen. RISDA plans to train 235,000 smallholders in replanting, processing, marketing and farm maintenance. Three new RISDA training centres will be constructed. FELCRA will train 72,700 people, including its own personnel, and establish two additional training centres at Tebing Tinggi and Seberang Perak under the Sixth Plan. About 180,400 farmers will be trained under FOA's training programmes in agricultural entrepreneurship, farm management and leadership as well as in on-farm and off-farm technical skills. These programmes will assist farmers in diversifying into off-farm activities to supplement their income from other sources.

3.80 The adoption of a commercial approach by agricultural producers, particularly smallholders, will raise the demand for *credit.* The banking sector is expected to continue to provide the largest source of funds, particularly to the plantations. For the smallholders involved in cash-crop farming, livestock rearing, deep-sea fishing and aquaculture, BPM will continue to be the main source of funding. Loans disbursed by BPM will be based on the economic viability of projects and closely monitored to ensure success and repayments by borrowers. Lendings to the smallholders under the DESSA scheme in Sarawak and under the AIM scheme in Peninsular Malaysia are expected to increase significantly following the progress achieved in the Fifth Plan, while a greater number of the hard-core poor are expected to benefit from BPM's interest-free loan facility. The expanded AIM scheme will be mainly financed by the Government.

3.81 The thrust on market-oriented production will be backed by adequate *marketing* networks and programmes to realize better returns and improve the net incomes of farmers. To widen the marketing network under the Sixth Plan, 150 new farmers' markets will be created. FAMA will encourage the more established participants to ultimately manage the market with minimum supervision. Consultations with state and local governments will be pursued for the establishment of wholesale markets under FAMA's auspices, while a second wholesale market will be established in Kedah. FAMA will also strengthen its marketing information system to promote the international marketing of Malaysian fruits, vegetables and cut flowers. With respect to the marketing of rubber and palm oil, cooperation between FELCRA, FELDA, RISDA and MARDEC will rationalize the utilization of marketing and processing facilities, to achieve maximum returns for the benefit of smallholders. The task of marketing will be gradually passed on to the farmers themselves through the smallholder cooperatives, such as National Rubber Smallholder Cooperative and National Farmers Organization, as the main strategy for increasing private sector participation. The MCB will concentrate on improving the acceptance of Malaysian cocoa in existing market segments as well as in new potential markets. The LKIM, similarly, is expected to establish more marketing channels to assist the sale of fish by fishermen organizations at both the wholesale and retail levels.

3.82 The focus on increasing agricultural productivity and the promotion of a commercial approach to production will require continuing *R&D* in agriculture. Emphasis will be placed on high-yielding production materials, breeds, improved agronomic practices, mechanization and the development of technological innovations to widen end-use consumption. The mainstay of R&D will be to ensure the applicability of research findings and to shorten the time lag involved in the transfer of technology to the smallholders and other beneficiaries. Commercialization of research will feature prominently in the nineties as private companies are encouraged to participate in adopting the findings of the respective agricultural R&D institutions. Towards this end, the Government will consider the setting up of venture capital funds within the research institutions to enable them to provide equity financing for entering into commercial production on a joint-venture basis with the private sector.

3.83 The funding of agricultural R&D under the Sixth Plan will be made available under a special allocation in which agriculture is being allocated 47 per cent of the total. Palm Oil Research Institute of Malaysia

(PORIM) and Rubber Research Institute of Malaysia will constitute the additional agencies being included for funding by the Government. These agencies have until recently pursued their upstream and downstream research activities solely funded from the cess collection. However, the amount of cess collection has been fluctuating. On the other hand, the R&D demands placed on these agencies have continued to increase, particularly in downstream research besides maintaining the progress in upstream research on production. PORIM will also continue its research on consumption to counter the adverse campaigns overseas against palm oil. Adequate funding of these agencies will be necessary to sustain the leading position of Malaysian palm oil and rubber in the international market.

IV. ALLOCATION

3.84 With the shift in emphasis of strategies, the distribution of agriculture sector allocations will accordingly be aligned to meet the new thrust of policies. The breakdown by programmes is shown in *Table 3-6.* As new land development will be deemphasized, FELDA which in the past received the highest allocation, will be allocated about $1,304 million. The emphasis on *in-situ* development as a more cost-effective strategy is backed by an increased percentage of the allocation for *in-situ* programmes, particularly IADPs, replanting and rehabilitation, drainage and irrigation and flood mitigation projects. Support services will continue to receive a fair share of the allocation to facilitate agricultural development. Similarly, forestry, fisheries and livestock programmes will be provided with a higher allocation compared with the Fifth Plan.

V. CONCLUSION

3.85 The continued growth of the agriculture sector is crucial for the development of the rural sector in line with the objectives to reduce rural poverty and establish linkages with the other sectors of the economy. While the achievement of the targeted growth rate of 3.5 per cent per annum is within the capacity of the agriculture sector, its realization will depend on the adoption of appropriate policy prescriptions and the provision of necessary support facilities. The slower growth of the traditional agricultural crops will necessitate the search for new sources of growth in the agriculture sector.

TABLE 3-6

DEVELOPMENT ALLOCATION FOR AGRICULTURE AND RURAL DEVELOPMENT PROGRAMMES, 1986-95

($ million)

Programme	*5MP*		*6MP*
	Allocation	*Expenditure*	*Allocation*
In-situ Development	**2,739.3**	**2,693.2**	**4,117.3**
Integrated Agricultural Development Projects	1,030.6	1,021.8	1,439.4
Drainage and Irrigation	202.3	200.3	463.3
Rural Flood Mitigation and Coastal Protection	82.6	77.2	347.3
Replanting	595.8	581.2	905.0
Rehabilitation	828.0	812.7	962.3
Land and Regional Development	**2,801.4**	**2,774.6**	**2,383.3**
New Land Development	2,129.7	2,117.5	1,315.5
Regional Development	671.7	657.1	1,064.5
Forestry	**125.2**	**120.8**	**198.6**
Fishery	**270.1**	**264.4**	**375.8**
Livestock	**136.8**	**130.9**	**271.1**
Support Services	**1,028.8**	**1,011.8**	**1,081.0**
Input Subsidies for Padi	396.8	396.8	398.0
Agricultural Credit, Processing and Marketing	597.5	586.1	540.9
Extension and Other Services	34.4	28.9	142.1
Other Programmes of MOA	**325.5**	**329.3**	**591.9**
Total	**7,427.0**	**7,325.0**	**9,019.0**[1]

Note:

[1] Allocation for R&D will be catered under a separate fund of $600 million of which the Agriculture Sector is allocated a sum of $273.8 million.

3.86 In the light of scarcity of large plots of land, the NAP strategies will be reoriented to focus more on *in-situ* farm areas to raise land productivity and extend the benefits of agricultural development to a greater number of people. Growth of the agriculture sector in the Sixth Plan will depend crucially on a market orientation of policies to rejuvenate and commercialize the sector. In view of the implication on the requirements for management skills arising from this approach, which will be too costly for the public sector to shoulder, emphasis will, therefore, be given for a greater role by the private sector.