

**Chapter X**

**Agriculture and Rural  
Development**



## CHAPTER X

# Agriculture and Rural Development

### I. INTRODUCTION

Agriculture and rural development in the Malaysian context, as in other developing countries, are inextricably linked. Despite the inherent multisectoral nature of rural development, the agriculture sector continues to occupy a central position in the development of rural areas. The basic objective of rural development is to improve the economic and social wellbeing of the rural population and to redress the economic imbalance between the urban and rural areas. This is effected through agricultural development and the provision of a wide range of public services such as education, health, electricity, and water supply.

The agriculture sector, which includes livestock, fisheries, and forestry, continues to play an important role in the economy through its contribution to the Gross Domestic Product (GDP), foreign exchange earnings, and employment. The National Agricultural Policy (NAP), enunciated in January, 1984, provided the broad direction of the strategy for the agriculture sector as well as a long-term framework for its development up to the year 2000.

In order to realize the targetted growth rate of the national economy of 5.0 per cent per annum, the agriculture sector is expected to achieve a targetted growth rate of 2.6 per cent per annum during the Fifth Malaysia Plan period. The attainment of this growth will require the concerted effort of the public and private sectors in overcoming the structural rigidities inherent in the sector as well as stimulating growth in both the estate and smallholder subsectors.

### II. THE AGRICULTURE SECTOR AND THE NATIONAL AGRICULTURAL POLICY

#### Overview

Since late 1970s, there has been a downward trend in the performance of the sector. This has been viewed with concern, especially when taken together with the expected performance of, and linkages with, the other sectors of the economy. The major factors restraining the dynamic growth of the agriculture sector are

basically structural in nature. Agriculture continues to be characterized by the existence of dualism, with the presence of an efficient well-organized estate subsector engaged in export-oriented production of tree crops and a less efficient unorganized smallholder subsector. Nevertheless, this dichotomy is blurred by the emergence of an increasingly efficient organized smallholder subsector as a result of public sector programmes. The number of farmers and hectareage under the unorganized smallholder category, however, is still substantial. Dualism also exists in the livestock and fisheries subsectors, although the number of producers involved is smaller by comparison. The producers are differentiated between a very small number of modern specialized production units and a large number of traditional production units providing mainly supplementary incomes.

The main concern stemming from these dualisms is the sharp disparity in the level of efficiency, productivity, competitiveness, and hence income, resulting in a high incidence of poverty among the small farmers and fishermen. Some of the reasons for this phenomenon are uneconomic-sized holdings, low-return crops, traditional methods of production, low management resource base, inadequate access to assistance and support services, an ageing rural labour force, shortage of labour, and underutilization and abandonment of alienated arable land. Another area of concern is that the growth of the sector is dominated by a few tree crops, namely oil palm and rubber, whose prices are determined by external factors. In view of these underlying structural weaknesses, rigidities, and problems as well as the required role of the agriculture sector in national development, a series of analyses of policies, strategies, performance, and prospects of the sector were conducted in early 1980s. This concerted effort culminated in the formulation of the comprehensive long-term NAP.

#### **NAP and its implementation.**

The modernization and revitalization of the agriculture sector constitute the main theme of the NAP, which provides guidelines on the strategy for land development and the development of specific commodities including food and industrial crops, and forestry, fisheries, and livestock products. The objective of the NAP is to maximize income from agriculture through the efficient utilization of resources and the revitalization of the contribution of the sector to overall economic development. Income maximization refers to the maximization of both farm and national income, incorporating the distributive as well as growth aspects of economic development.

The thrust of the NAP is to increase productivity, efficiency, and competitiveness in the development of new resources as well as in the fuller utilization of existing resources. Development efforts will be geared mainly towards the modernization and commercialization of the unorganized smallholders and the revitalization of agriculture involving the increased participation of the private

sector. These efforts will be effectively directed on the basis of appropriate sector-wide planning and the rational use of the basic productive resources of land, labour, capital, and entrepreneurship.

In order to facilitate the implementation of the NAP, ministries and agencies concerned with agriculture formulated appropriate strategies and programmes. In addition, a detailed document will be jointly produced, translating the NAP into strategies and programmes with specific objectives and targets up to the year 2000. Measures and efforts taken so far, however, are expected to show their full impact only in the 1990s.

The various ministries formulated a number of programmes for the development of the crop, fisheries, and livestock subsectors, and took other related measures, such as the establishment of administrative mechanisms and committees, to implement specific programmes based on the NAP. The Ministry of Agriculture (MOA) and other agencies, such as the land development authorities and regional development authorities (RDAs), also adopted approaches identified in the NAP, particularly those relating to group farming and estatization.

Various models were developed in conjunction with the efforts in land consolidation and the rehabilitation of idle land. These models covered tree crops, cash crops, including tobacco and vegetables, and *padi*. Those on tree crops included the traditional village development projects at Kampung Kok in Kedah, Teratak Batu in Kelantan, and Ulu Berang in Terengganu, implemented by the Federal Land Consolidation and Rehabilitation Authority (FELCRA); the ministates of the Rubber Industry Smallholders Development Authority (RISDA), especially that at Parit Seraya, Johor; and the block projects on cocoa implemented jointly by the Department of Agriculture (DOA) and the Malaysian Agricultural Research and Development Institute (MARDI). Model projects on cash crops included the tobacco projects at Alor Ketitir, Terengganu and Kandis, Kelantan as well as various vegetable projects implemented under the Group Marketing Scheme (SPB). *Padi*-based models included the Assam Jawa project in Kedah, the various group farms operated by the Area Farmers' Organizations (PPK) under the Farmers' Organization Authority (FOA), and the various *padi* estates managed by co-operatives and companies in Kelantan, Pulau Pinang, and Perak.

The Agricultural Input and Diversification Programme (AIDP) of DOA, where planting materials and certain other inputs were provided free, was replaced in 1984 by a scheme where planting materials were provided for a nominal fee. Subsidies for crops, livestock, and fisheries with the exception of those for some crops, such as *padi*, pepper, and sago, were gradually reduced towards the end of the Fourth Malaysia Plan period. This was in line with the objective of reducing progressively the provision of subsidies and developing a strong and self-reliant farming community.

MOA privatized a number of projects to encourage increased private sector participation in agriculture. These included the aquaculture projects at Puchong, Selangor and Sungai Dangga, Johor; the hatchery centre at Mahang, Kelantan; and the pig section of the abattoirs at Ipoh, Johor Bahru, Kuantan, Melaka, Senawang, Shah Alam, and Taiping. Steps were also taken by MOA to privatize other projects, including ice factories operated by the Fisheries Development Authority of Malaysia (LKIM) at some fishing complexes and the tea factory operated by MARDI in the Cameron Highlands. MOA also set up a special one-stop investment advisory unit to assist potential investors in the agriculture sector.

### III. PROGRESS, 1981-85

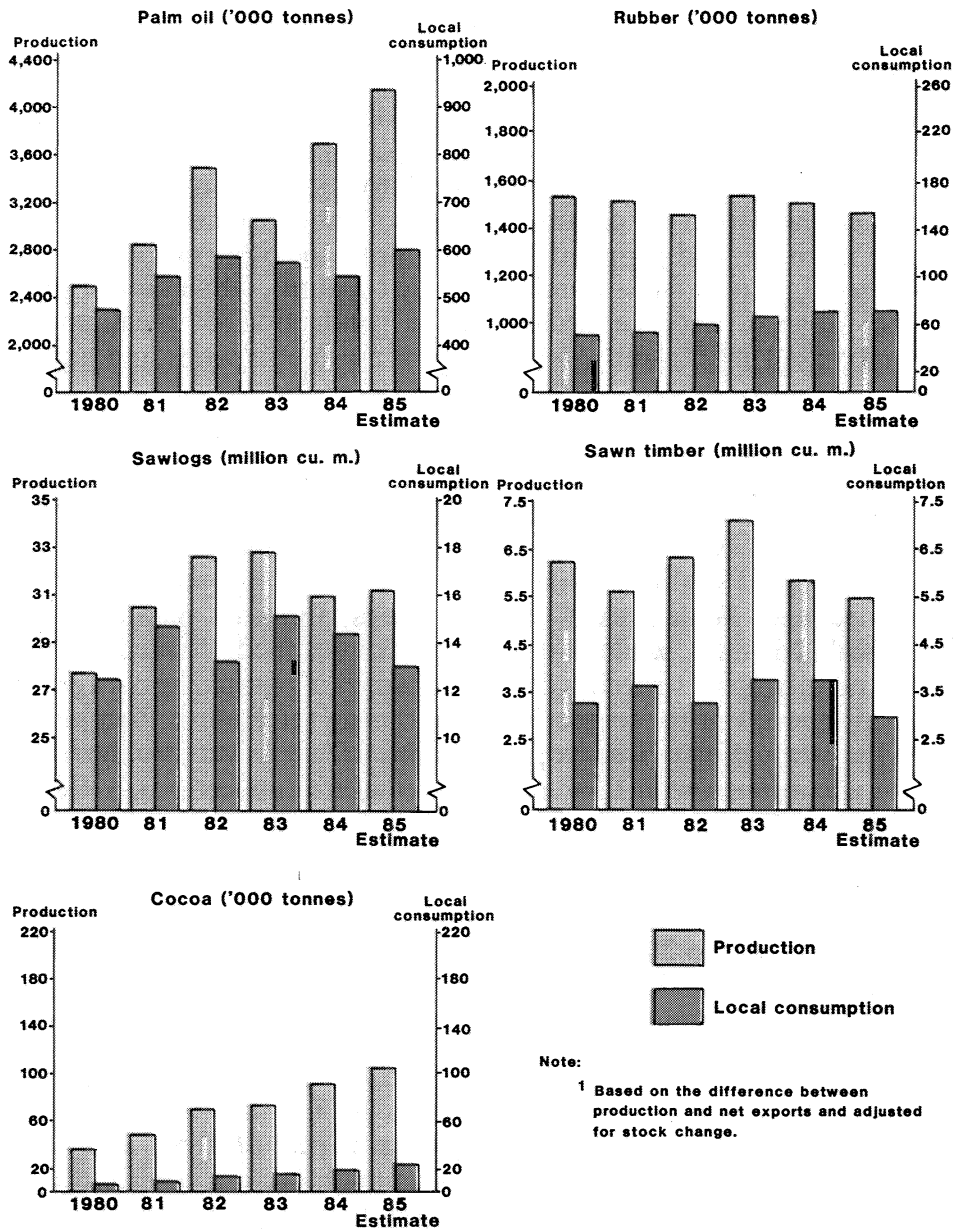
Value added in the agriculture sector grew by 3.4 per cent per annum during the period 1981-85 compared with the Fourth Plan target of 4.2 per cent per annum. This shortfall in performance was largely contributed by the prolonged global economic recession, lower commodity prices, and the emergence of structural constraints within the sector.

The increase in agricultural output contributed 12.7 per cent of the expansion in total GDP. Although its share in GDP declined from 22.8 per cent in 1980 to 20.3 per cent in 1985, the value of its output increased from \$10,190 million to \$12,050 million during the same period. Export earnings from the major agricultural commodities of palm oil, rubber, sawlogs and sawn timber, cocoa, and pepper accounted for 29.0 per cent of total export value or \$11,030 million in 1985 compared with 39.8 per cent or \$11,200 million in 1980. In terms of employment, the sector accounted for 1.95 million jobs or 35.7 per cent of total employment in 1985 compared with 1.91 million jobs or 39.7 per cent in 1980. During the period 1981-85, it generated about 42,300 jobs or 6.5 per cent of total new employment.

The sector also contributed indirectly to the overall economy through its linkages with other sectors, particularly manufacturing and services. Considerable progress, as shown in Chart 10-1, was made during the Fourth Plan period in the development of agro-based industries, particularly those involving rubber, palm oil, timber, and cocoa, as reflected by the growing local consumption of these commodities. This reflected the success of some of the policies and approaches undertaken to broaden the economic base through diversification as well as deepening through consolidation and integration.

The growth of the sector also contributed to the general improvement of the rural areas resulting in increased incomes and a decline in rural poverty. These improvements would have been more marked if not for the slowdown in the overall economy and the sharp decline in commodity prices, particularly in 1982 and 1985. The adverse effects of the economic slowdown and low commodity prices on income and employment levels were, to a large extent, cushioned by the buildup of agricultural support services as well as the provision of education,

CHART 10-1  
**MALAYSIA: PRODUCTION AND LOCAL CONSUMPTION<sup>1</sup> OF MAJOR AGRICULTURAL COMMODITIES, 1980-85**



health, electricity, water supply, and rural roads as well as the growing intersectoral linkages in the rural areas. Consequently, agricultural development programmes and projects were formulated and implemented with an increasing rural development orientation in order to exploit these linkages, the improved rural infrastructure, and the complementarity of agricultural and non-agricultural development efforts.

#### **Agricultural production**

The overall performance of the sector, as indicated in Table 10-1, was largely attributed to the strong increase in the output of palm oil and cocoa throughout the Fourth Plan period as well as the strong output growth in sawlogs during the earlier part of the period. In contrast, output of rubber almost stagnated, while that of *padi*, coconut, and pepper declined. Among the other crops, the output of coffee increased, that of fruits remained fairly constant, while that of pineapple, vegetables, tobacco, and tea declined. The production of meat and animal products increased significantly, while that of marine fisheries and aquaculture declined.

The hectares planted with the various crops, as shown in Table 10-2, changed in both absolute and relative terms during the Fourth Plan period. Among the major commodities, the area planted with oil palm and cocoa increased markedly, while that with rubber recorded a slight decline. The area under *padi* increased slightly, while in the case of coconut and pepper, planted hectareage declined. With regard to other crops, the area planted with fruits remained fairly constant, while that of vegetables declined. Planted hectarages of pineapple and tobacco also declined. These changes in planted hectarages affected the production levels of the respective crops during the Fourth Plan period. The effects on the production of tree crops, however, will spill over into the future Plan periods, in accordance with their respective maturation periods, yield profiles, and cropping cycles.

*Palm oil.* Palm oil overtook rubber as the single largest commodity in agriculture in the Fourth Plan period. Its share in agricultural output rose from 21.8 per cent in 1980 to 29.6 per cent in 1985. Although the agriculture sector grew at 3.4 per cent per annum during the Fourth Plan period, it expanded by only 1.4 per cent per annum if the contribution of palm oil was excluded.

Crude palm oil (CPO) production increased by 9.9 per cent per annum from 2,575,900 tonnes in 1980 to 4,130,000 tonnes in 1985. This was accompanied by a concurrent increase in the production of palm kernel oil from 222,300 tonnes to 501,900 tonnes over the same period. The main factors contributing to this significant growth were yield increases brought about by improved weather conditions, increased fertilizer application, and improved pollination technique; increased hectareage coming into production; and favourable export prices. Oil palm hectareage increased by 7.4 per cent per annum from 1,023,300 hectares in



**TABLE 10-1**  
**MALAYSIA : AGRICULTURAL PRODUCTION, 1980-85**  
(\*000 tonnes)

| Item                     | 1980     | 1981     | 1982     | 1983     | 1984     | 1985     | Percentage change, 1981-85 |
|--------------------------|----------|----------|----------|----------|----------|----------|----------------------------|
| Rubber                   | 1,530.0  | 1,510.2  | 1,494.2  | 1,563.7  | 1,529.2  | 1,450.0  | -5.2                       |
| Crude palm oil           | 2,575.9  | 2,824.5  | 3,514.2  | 3,018.3  | 3,715.7  | 4,130.0  | 60.3                       |
| Palm kernel oil          | 222.3    | 243.4    | 337.0    | 372.1    | 415.2    | 501.9    | 125.8                      |
| Sawlogs <sup>1</sup>     | 27,916.0 | 30,653.5 | 32,824.4 | 32,783.8 | 30,702.3 | 31,340.0 | 12.3                       |
| Sawn timber <sup>1</sup> | 6,238.0  | 5,564.0  | 6,293.0  | 7,139.0  | 5,807.6  | 5,500.0  | -11.8                      |
| Cocoa                    | 36.5     | 45.2     | 66.2     | 69.0     | 79.3     | 103.0    | 182.2                      |
| <i>Padi</i>              | 2,040.2  | 2,016.2  | 1,878.7  | 1,774.3  | 1,711.8  | 1,931.2  | -5.3                       |
| Copra                    | 787.5    | 255.0    | 257.0    | 264.1    | 265.1    | 250.0    | -68.3                      |
| Pepper                   | 31.6     | 28.8     | 25.3     | 24.5     | 15.0     | 19.0     | -39.9                      |
| Pineapple                | 185.3    | 153.6    | 153.0    | 148.2    | 144.3    | 147.0    | -20.7                      |
| Fisheries                | 743.7    | 766.6    | 693.6    | 742.1    | 670.2    | 697.1    | -6.3                       |
| Livestock:               |          |          |          |          |          |          |                            |
| Beef                     | 17.2     | 16.8     | 17.3     | 16.7     | 17.4     | 19.1     | 11.0                       |
| Mutton                   | 0.8      | 0.6      | 0.6      | 0.6      | 0.7      | 0.8      | 0                          |
| Poultry                  | 125.6    | 127.1    | 129.4    | 138.6    | 151.8    | 154.4    | 22.9                       |
| Eggs <sup>2</sup>        | 2,534.7  | 2,592.2  | 2,690.1  | 2,783.5  | 3,240.5  | 3,460.9  | 36.5                       |
| Pork                     | 135.9    | 144.4    | 143.0    | 141.5    | 154.6    | 158.8    | 16.9                       |
| Milk <sup>3</sup>        | 8,254.0  | 15,305.0 | 16,951.0 | 19,965.0 | 25,935.0 | 28,925.0 | 250.4                      |

Source : Various Government agencies.

Note :

<sup>1</sup> Measured in thousand cubic metres.

<sup>2</sup> Measured in million.

<sup>3</sup> Measured in thousand litres.

**TABLE 10-2**  
**MALAYSIA: CROPS BY HECTARAGE, 1980-85**  
(hectares)

| <i>Item</i>             | 1980      | 1981      | 1982      | 1983      | 1984      | 1985      |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| Rubber                  | 2,004,670 | 2,006,070 | 2,005,840 | 1,971,260 | 1,978,580 | 1,959,000 |
| Oil palm                | 1,023,300 | 1,117,900 | 1,182,800 | 1,253,000 | 1,349,200 | 1,464,900 |
| Cocoa                   | 123,800   | 158,800   | 193,500   | 215,100   | 242,000   | 258,000   |
| <i>Padi</i>             | 735,215   | 767,640   | 758,400   | 764,200   | 769,750   | 775,220   |
| Coconut                 | 349,400   | 318,000   | 319,000   | 324,000   | 298,000   | 274,000   |
| Pepper                  | 12,720    | 13,405    | 12,800    | 11,360    | 10,550    | 10,000    |
| Pineapple               | 12,180    | 11,600    | 10,610    | 11,050    | 10,620    | 10,250    |
| Vegetables <sup>1</sup> | 12,800    | 12,520    | 7,460     | 7,620     | 7,830     | 8,090     |
| Orchards <sup>2</sup>   | 93,000    | 87,800    | 89,000    | 90,000    | 92,000    | 94,000    |
| Tobacco                 | 12,450    | 14,290    | 9,570     | 9,440     | 9,310     | 9,190     |

Source : Various Government agencies.

Note.

<sup>1</sup> Refers to Peninsular Malaysia only and includes leafy, fruit, and root vegetables.

<sup>2</sup> Includes fruit trees, bananas, and watermelon but excludes pineapple.

1980 to 1,464,900 hectares in 1985. Private estates accounted for 51 per cent of this total. In addition, the Federal Land Development Authority (FELDA) accounted for about 30 per cent; other public agencies such as FELCRA, RISDA, and the federal and state corporations 12 per cent; and independent or unorganized smallholders 7 per cent. Of the total planted hectarage of 1,464,900 hectares, about 80 per cent matured by the end of the Fourth Plan period.

*Rubber.* The share of rubber in agricultural output declined from 23.4 per cent in 1980 to 18.7 per cent in 1985. Annual output of rubber stagnated at about 1.5 million tonnes during the period 1981-84 and decreased to 1,450,000 tonnes in 1985 compared with 1,530,000 tonnes in 1980. This was attributed mainly to depressed prices resulting from weak demand; declining estate hectarage resulting from conversion to other crops; and the continuing gap between estate and smallholder yields despite the increase in smallholder hectarage. Total rubber hectarage declined slightly from 2,004,700 hectares in 1980 to 1,959,000 hectares in 1985, while areas under estates declined more sharply from 507,100 hectares to 456,000 hectares over the same period. Estate yields increased from 1,300 kilogrammes per hectare to 1,540 kilogrammes per hectare, while smallholder yields increased from 900 kilogrammes per hectare to 1,020 kilogrammes per hectare between 1980 and 1985.

*Sawlogs.* Strong output growth in sawlogs during the earlier part of the Fourth Plan period was not sustained. Output growth of 9.8 per cent in 1981 decelerated markedly to 2.1 per cent in 1985. Sawlog production increased from 27.9 million cubic metres in 1980 to 32.8 million cubic metres in 1982, but declined to 31.3 million cubic metres in 1985. This deceleration in output growth was largely the result of a more stringent National Forestry Policy implemented in 1981, the depletion of easily accessible forest areas, and a relatively depressed export market. During the Fourth Plan period, Sabah accounted for about 35 per cent of total output, while Sarawak and Peninsular Malaysia accounted for 33 per cent and 32 per cent, respectively.

*Cocoa.* Output grew by 23.1 per cent per annum during the Fourth Plan period, registering the highest growth rate in the sector. Cocoa production increased steadily during the Fourth Plan period, except in 1983 when production stagnated due to the prolonged drought in the early part of the year and the lateness of the year-end crop. Production increased from 36,500 tonnes in 1980 to 103,000 tonnes in 1985 as a result of an increase in planted hectarage, the effects of mature budding as well as increased productivity, particularly in the estates. The production increase was also due to the recovery in the world cocoa market towards the later part of the Fourth Plan period. Total area under cocoa increased from 123,800 hectares in 1980 to 258,000 hectares in 1985. About 61 per cent of the total planted area were located in Sabah, while 33 per cent were in Peninsular Malaysia, with estates accounting for about 63 per cent of the total planted hectarage.

*Padi.* Production decreased by 1.1 per cent per annum from 2,040,200 tonnes in 1980 to 1,931,200 tonnes in 1985. This amounted to 76.5 per cent of domestic requirement compared with the self-sufficiency target of 80 to 85 per cent under the NAP. This decline in output was due largely to adverse weather conditions; pest and disease outbreaks, especially *Penyakit Merah Virus*; continuing instability in yields and cropping intensities, even in the major granary areas; and the increase in abandoned *padi* land. Steps taken to rehabilitate contiguous tracts of idle land in the irrigated areas of Kedah, Kelantan, Negeri Sembilan, Perak, and Pulau Pinang, through various forms of group farming and *padi* estates, however, were yet to realize their full impact on production. The recorded production level was also due to the fact that the new *padi* scheme of Trans-Perak and the rehabilitation programmes of Balik Pulau-Seberang Prai, Kedah Valley, and Kemasin were yet to come into full production as they were still under various stages of implementation.

*Coconut.* Production of copra decreased by 20.5 per cent per annum from 787,500 tonnes in 1980 to 250,000 tonnes in 1985. The low price of copra, the increased conversion of coconut cultivated land into other more remunerative crops as well as the increased intercropping with cocoa and coffee resulted in a decline in the total planted area under coconut in both the estate and smallholder subsectors. The total area under coconut declined by 4.7 per cent per annum from 349,400 hectares in 1980 to 274,000 hectares in 1985.

*Pepper.* Output of pepper registered a decline of 9.7 per cent per annum during the Fourth Plan period with production declining by more than one half from 31,600 tonnes in 1980 to 15,000 tonnes in 1984, and then recovering slightly to 19,000 tonnes in 1985. The depressed market conditions and the outbreak of the serious foot-rot disease in the early part of the Fourth Plan period resulted in farmers neglecting their farms and switching to more remunerative crops. With the recovery in world pepper prices since 1984, however, some farmers returned to pepper farming.

*Other crops.* Pineapple production dropped substantially from 185,300 tonnes in 1980 to 147,000 tonnes in 1985. Correspondingly, hectareage under pineapple also declined from 12,200 hectares in 1980 to 10,300 hectares in 1985. The production of vegetables in Peninsular Malaysia declined drastically from 202,100 tonnes in 1980 to 102,100 tonnes in 1982 and recovered gradually to 124,300 tonnes in 1985. This decline in production was largely due to adverse weather during 1982 and the changes in the hectareage as well as types of vegetables planted. During the Fourth Plan period, hectareage planted with vegetables decreased from 12,800 hectares in 1980 to 7,460 hectares in 1982, but increased subsequently to 8,090 hectares in 1985. The production of fruits remained fairly constant at 730,000 tonnes during the period, except in 1981 when production fell below 400,000 tonnes and area planted declined to 87,800 hectares compared with an average of 91,000 hectares during the period.

The production of tobacco declined by 5.9 per cent per annum during the period from 110,700 tonnes in 1980 to 81,700 tonnes in 1985, except in 1982 when production rose to 127,100 tonnes. Planted hectarage declined by 5.9 per cent per annum from 12,500 hectares in 1980 to 9,190 hectares in 1985. Production of coffee increased marginally from 4,300 tonnes in 1980 to 4,600 tonnes in 1985, while production of tea declined substantially from 3,800 tonnes to 2,000 tonnes.

*Fisheries.* Output of the fisheries subsector, which includes aquaculture, decreased from 743,700 tonnes in 1980 to 697,100 tonnes in 1985. During the same period, marine fish production, including cockles and other molluscs, decreased from 732,800 tonnes to 689,100 tonnes due to depleting fisheries resources, especially in the inshore areas of Peninsular Malaysia. The increase in aquaculture production from 10,900 tonnes in 1980 to 17,900 tonnes in 1983 was not sustained, but declined to 8,000 tonnes in 1985. The initial increase was due to the development of 179 fish ponds and the provision of 4,400 cages for cage culture by LKIM. The subsequent decline in output was largely due to the inadequacies of the marketing system for freshwater fish which culminated in the closing down of a large number of fish ponds.

*Livestock.* Beef production increased from 17,200 tonnes in 1980 to 19,100 tonnes in 1985 due to improvements in animal husbandry coupled with the intensification of the various production programmes, such as the *pawah*, animal fattening, and stud loan schemes. Peninsular Malaysia produced 55 per cent of its domestic requirement in 1985, while Sabah and Sarawak produced 13 and 23 per cent, respectively. The production of mutton declined from 800 tonnes in 1980 to 600 tonnes in 1981, but subsequently recovered to 800 tonnes in 1985, largely due to the rearing of sheep in rubber and coconut plantations and smallholdings. Production of poultry increased from 125,600 tonnes in 1980 to 154,400 tonnes in 1985, while egg production increased from 2,535 million eggs to 3,461 million eggs in the respective years, sufficient to more than meet the increasing domestic demand. Similarly, production of pork increased from 135,900 tonnes in 1980 to 158,800 tonnes in 1985. Milk production increased by more than three times from 8.3 million litres in 1980 to 28.9 million litres in 1985, largely as a result of the rearing of better breeds, an increase in the number of dairy farmers as well as improved dairy management, particularly in areas surrounding the milk collecting centres (MCCs).

#### **New land development**

*Public sector.* A total of 360,500 hectares of new land was developed by public sector agencies, as indicated in Table 10-3. This was 83.9 per cent of the Fourth Plan target of 429,700 hectares. FELDA developed 161,600 hectares, of which 68.3 per cent was planted with oil palm, 23.1 per cent rubber, 3.6 per cent cocoa, and the rest taken up by village settlement. The choice of crops was largely guided by the prevailing commodity outlook as well as soil suitability of the scheme areas.

During the same period, FELCRA and RISDA developed 31,100 hectares and 9,770 hectares, respectively, while the state public agencies developed about 158,000 hectares.

During the Fourth Plan period, FELDA resettled 30,000 families, bringing the total number of families resettled so far to 94,000 comprising 490,000 people. The average development cost of resettling a family in FELDA schemes increased from \$37,500 in 1980 to \$53,000 in 1985, due to rising costs of material inputs and labour, which were compounded by the increasing remoteness of the newer schemes. During the Fourth Plan period, the average annual income of FELDA settlers ranged from \$6,000 in rubber schemes to \$14,700 in oil palm schemes.

*Private sector.* In Peninsular Malaysia, the private sector was involved in the development of 57,100 hectares of new land in RDA areas during the Fourth Plan period, achieving 57.1 per cent of the Fourth Plan target. About 76 per cent of these areas were developed wholly by the private sector, while the balance was developed on a joint-venture basis between the private sector and the RDAs. In terms of land use, 68 per cent was planted with oil palm, 26 per cent fruits, 2 per cent cocoa, and the remainder other crops. In addition, the Food Industries of Malaysia (FIMA) developed a 300 hectare fruit plantation in Kedah.

#### *In situ* development

Efforts aimed at increasing productivity in existing agricultural areas were given greater emphasis during the Fourth Plan period. *In situ* development took

**TABLE 10-3**  
**MALAYSIA: PROGRESS IN LAND DEVELOPMENT, 1981-85**  
**AND TARGET, 1986-90**  
**(hectares)**

| <i>Agency/programme</i>                   | <i>Fourth Plan target, 1981-85</i> | <i>Achievement, 1981-85</i> | <i>Achievement (%)</i> | <i>Fifth Plan target, 1986-90</i> |
|---|------------------------------------|-----------------------------|------------------------|-----------------------------------|
| Federal programmes                        | 212,470                            | 202,470                     | 95.3                   | 175,500                           |
| FELDA                                     | 161,600                            | 161,600                     | 100.0                  | 175,500                           |
| FELCRA                                    | 41,100                             | 31,100                      | 75.7                   | -                                 |
| RISDA                                     | 9,770                              | 9,770                       | 100.0                  | -                                 |
| State programmes                          | 217,200                            | 158,000                     | 72.7                   | 93,700                            |
| Joint venture/private sector <sup>1</sup> | 100,000                            | 57,100                      | 57.1                   | 17,500                            |
| Total                                     | 529,670                            | 417,570                     | 78.8                   | 286,700                           |

*Source :* Various Government agencies.

*Note :*

<sup>1</sup>Refers only to land development in areas under regional development authorities.

two basic forms, namely, the integrated agricultural development project (IADP) approach and the normal departmental programmes. The IADP approach involved the concentrated, packaged, and synchronized implementation of inter-related agricultural development programmes and activities under various agencies, in line with the development objectives of identified existing agricultural areas.

*Integrated agricultural development projects.* In addition to the five IADPs under implementation, nine new ones were initiated during the Fourth Plan period. The nine new IADPs comprised the Negeri Sembilan Timur, Rompin-Endau, Kemasin, Melaka, Kedah Valley, Perlis, Balik Pulau - Seberang Prai, Pahang Barat, and Johor Barat II. These 14 IADPs together with the completed Besut, Kemubu, and Muda projects covered an area of about 4.5 million hectares and were expected to benefit 456,000 farm families.

While a time lag is involved before the full impact of IADPs is realized considering the long gestation period of agricultural projects, improvements were clearly discernible in the completed as well as ongoing projects. In the North Kelantan IADP, completed in 1983, production of *padi*, groundnut, maize, and vegetables increased significantly compared with pre-project production levels. Average annual farm income rose from \$1,330 in 1975 to between \$2,700 and \$3,400 in 1983, depending on the crop-mix of farmers. The Besut IADP recorded increases in *padi* yields from a pre-project average of 1.4 tonnes per hectare in 1971 to 4.0 tonnes in 1985. Field conditions also improved substantially in *padi* areas, enabling the adoption of direct seeding and other mechanized operations, thereby easing the problem of labour shortage. In the tree-crop based Johor Barat I IADP, the serious pre-project flood problem was largely abated while conversion to oil palm planting in the shallow peat areas was possible with improved drainage.

*Drainage and irrigation.* The agricultural drainage programme was designed to improve areas plagued by water problems, such as ingress of seawater, flooding, and water logging, so that the productivity of both existing and potential agricultural lands could be increased. Such improved drainage facilities enabled the planting and intercropping with more remunerative crops as well as improving tree crop output. A total of 53 projects was implemented during the Fourth Plan period. The majority of these projects were located in IADPs, such as Johor Barat I and North-West Selangor, while those located outside IADPs included Asajaya in Sarawak, Beruas in Perak, and Kuala Langat-Sepang in Selangor. These drainage projects covered a total area of 186,600 hectares, benefitting about 75,700 farm families.

A total of 274 irrigation projects was implemented to provide new or improved facilities in *padi* areas. The irrigation programme was largely directed towards the improvement and intensification of facilities in the existing large irrigation

projects within the Muda, Kemubu, Krian-Sungai Manik, and North-West Selangor IADPs, and the Trans-Perak Scheme. Various minor irrigation schemes were also covered. Irrigation facilities were improved for a total of 114,900 hectares, benefitting about 76,500 *padi* farm families. These facilities increased the double cropping of *padi* and improved farm productivity.

*Replanting and rehabilitation.* A total of about 131,800 hectares of old rubber was replanted in Peninsular Malaysia by RISDA, benefitting 77,000 smallholders. About 92,600 hectares were replanted with rubber, 27,800 hectares with oil palm, and 11,400 hectares with other crops. RISDA increasingly emphasized collective replanting through the ministate concept in order to realize economies of scale as well as to ensure proper planting, maintenance, and marketing. About 36,000 hectares of rubber were developed on ministates during the Fourth Plan period. In addition, 6,700 hectares of rubber were replanted in Sabah by the Sabah Rubber Fund Board and 3,480 hectares in Sarawak by the Sarawak Department of Agriculture, benefitting 4,140 and 2,830 smallholders, respectively. Under the Coconut Replanting and Rehabilitation Project, about 3,200 hectares of coconut areas were replanted. In addition, about 3,150 hectares of pineapple areas were replanted by the Malayan Pineapple Industry Board (MPIB), benefitting 2,180 farmers.

Rehabilitation programmes, aimed at increasing productivity through the adoption of modern technology and the provision of better infrastructural facilities, continued to be implemented. FELCRA rehabilitated a total of 59,110 hectares, of which 49,000 hectares were rehabilitated with oil palm, 9,240 hectares with rubber, 550 hectares with *padi*, 170 hectares with cocoa, and 150 hectares with pepper. A total of 38,700 hectares of the rehabilitated area was implemented under its idle land rehabilitation programme initiated in 1984. In Sarawak, the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA) rehabilitated 3,220 hectares with oil palm, 2,730 hectares with cocoa, 1,460 hectares with rubber, and 200 hectares with tea. A total of 12,500 hectares of coconut was rehabilitated with cocoa and coffee under the Coconut Replanting and Rehabilitation Project. DOA rehabilitated an additional 9,390 hectares with fruits, vegetables, and other crops.

During the Fourth Plan period, about 27,000 hectares of abandoned *padi* land were rehabilitated. A portion of this land was rehabilitated through group farming, with various forms of centralized management as well as those leased and developed as *padi* estates by private companies. Key organizational and consolidation aspects of these successful arrangements will form the basis for future rehabilitation of idle *padi* land.

#### **Livestock**

A total of about 38,000 heads of cattle and buffaloes was distributed to about 30,400 farmers under the beef programme of the Department of Veterinary



Services (DVS), the livestock component of IADPs, and the Coconut Replanting and Rehabilitation Project. In addition, about 10,600 heads of dairy cattle were distributed to 5,300 farmers under the dairy programme. About 5,170 goats and sheep were also distributed to 1,050 farmers under the *pawah* scheme.

A total of 26 MCCs was established during the Fourth Plan period, bringing the total number of MCCs to 43. This resulted in an increase in the amount of milk collected by the MCCs, from 2.7 million litres in 1980 to 11.7 million litres in 1985. Subsequent to the dissolution of the National Livestock Development Authority (MAJUTERNAK) in 1983, DVS rehabilitated about 400 hectares of land on seven former MAJUTERNAK farms. This facilitated the production of cattle for the dairy and beef programmes, the provision of training for departmental staff, and the undertaking of applied research. In order to upgrade the genetic stock of local cattle, DVS imported 20,800 heads of crossbred cattle and artificially inseminated 59,600 heads of cattle.

#### **Fisheries**

During the Fourth Plan period, 12 Fishermen Development Centres (FDCs) were established by LKIM to facilitate the provision of infrastructural facilities and amenities for improving the livelihood of the fishing community. The participation of fishermen in the development of the fisheries subsector was increased through the setting up of 10 additional Fishermen's Associations and the stepping up of the activities of the existing 58 Fishermen's Association and 42 Fishermen's Co-operative Societies. Between 1981 and 1983, LKIM provided fishermen with hire-purchase facilities enabling the purchase of 765 boats under its Boat Ownership Scheme as well as subsidies to upgrade their boats. Since 1983, however, the Financial Assistance Scheme was introduced to provide both credit and incentive facilities for the purchasing and upgrading of boats. Under this Scheme, about 50 boats were purchased by fishermen and 40 boats of 40 gross tonnes (GT) and above, belonging to fishermen, were upgraded.

During the period, 2,290 hectares were developed for aquaculture by LKIM, the aquaculture component of IADPs, and the Department of Fisheries (DOF). Of the total, 1,460 hectares were for the rearing of cockles, 610 hectares for fish ponds, and the remaining areas for cage-culture and hatcheries. In order to increase the depleting stocks in the inshore areas, DOF and LKIM developed artificial reefs to create more fish breeding and conservation areas. Other measures to increase fish landings included the introduction of the Exclusive Economic Zone (EEZ) Act, 1984, the Fisheries Act, 1985, and the territorial waters usage policy.

#### **Forestry**

In line with the National Forestry Policy, a total of 393,000 hectares of forest was rehabilitated through silvicultural treatment in Peninsular Malaysia. In

addition, the logging rates in Peninsular Malaysia were curtailed, resulting in a decline of logged areas from 242,900 hectares in 1980 to 176,000 hectares in 1985. A Compensatory Forest Project was implemented to ensure a continuous domestic supply of timber in the future. Under this Project, an area of 7,090 hectares was planted with fast-growing species like *Gmelina arborea*, *Acacia mangium*, and *Paraserianthes falcataria*. Of this hectarage, 43.6 per cent was in Negeri Sembilan, 40.3 per cent in Johor, 8.6 per cent in Selangor, and 7.5 per cent in Pahang.

In Sabah, about 10,000 hectares of forest plantation comprising fast growing species were developed through a joint venture between the Sabah Foundation and a private company. Another 11,800 hectares of *Acacia mangium* was planted by the Sabah Forestry Development Authority (SAFODA). In Sarawak, about 1,800 hectares of *Acacia mangium* forest plantation was established under the reforestation programme. A silviculture research station was also set up in Bintulu to undertake research in forestry.

Rattan cultivation received added attention, resulting in the planting of 6,430 hectares in Sabah and 400 hectares in Peninsular Malaysia. These comprised mainly *manan* or *manau* and *caesius* or *sega* species. In order to overcome the problem of inadequate supply of rattan seedlings, a 33 hectare nursery was identified for development in Kuala Lipis, Pahang. In addition, research in tissue culture was initiated.

The National Forestry Act was enacted in December, 1984, with the aim of updating and providing uniformity in the various existing state forest enactments. The Act would be adopted by the various states in Peninsular Malaysia as their respective state forest enactments.

#### **Support services**

*Training and extension.* Training was conducted at various levels by a number of institutions and agencies, as indicated in Table 10-4, to meet manpower requirements in the sector as well as to upgrade the skills of farmers and fishermen. The University of Agriculture Malaysia (UPM) continued to provide degree and diploma level courses in the various disciplines of agriculture. In addition, various agricultural agencies provided extension services, including training to their own staff as well as their respective target groups. FOA provided training in farming, post-harvest techniques, co-operative management, organization of rural institutions, and agribusiness. DOA expanded its training programme, with the establishment of a national-level Agricultural Extension Training Institute, two more regional extension training and development centres (RETDCs), and 28 extension subcentres, to complement its existing agricultural institutes. This facilitated the expansion and intensification of extension activities under DOA, especially the implementation of the training and visit (2L) system of extension.

**TABLE 10-4**  
**MALAYSIA: TYPE OF COURSES AND NUMBERS TRAINED BY**  
**VARIOUS AGENCIES, 1981-85**

| Agency                 | Training/extension   | Output, 1981-85    |                       |
|------------------------|--|--------------------|-----------------------|
|                        |  | Staff/<br>students | Farmers/<br>fishermen |
| UPM                    | Agriculture, forestry, veterinary science, fisheries, food technology, engineering, and agribusiness |                    |                       |
|                        | Degree   | 1,774              | n.a.                  |
|                        | Diploma  | 1,753              | n.a.                  |
| FOA                    | Farming and post-harvest technique, co-operative management, and organization of rural instructions  | 6,510              | 51,600                |
| DVS                    | Livestock management   | 659                | 7,703                 |
|                        | Extension, planning, and project management  | 590                | n.a.                  |
| DOF                    | Boat operation, basic helmsmanship, and maintenance  | 77                 | 397                   |
|                        | Management and harvesting technique in aquaculture   | 120                | 3,600                 |
|                        | Small-scale industries   | 50                 | 96                    |
| DOA                    | Training for agricultural technicians (Agricultural institutes)                                      | 1,769              | n.a.                  |
|                        | Agriculture machinery/farm mechanization   | 200                | 8,000                 |
|                        | Human development, farm management, and general agriculture  | 2,700              | 230,500 <sup>1</sup>  |
|                        | 2L system  | 793                | 690,000 <sup>1</sup>  |
| FELDA                  | Scheme supervision and management  | 300                | n.a.                  |
|                        | Automobile repair and small-scale business   | n.a.               | 989 <sup>2</sup>      |
| Department of Forestry | Forestry Management and logging  | 900 <sup>3</sup>   | n.a.                  |
| RISDA                  | Management, entrepreneurship, and community development  | 11,374             | 384,084 <sup>1</sup>  |
| LTN                    | Tobacco cultivation, harvesting, curing, and management  | n.a.               | 1,625                 |
| MPIB                   | Management of pineapple production   | 53                 | 1,205                 |

Source: Various Government agencies.

Note:

<sup>1</sup> Includes both formal and informal training.

<sup>2</sup> Refers to settlers and their dependants.

<sup>3</sup> Includes 548 trainees from the private sector.

n.a. Not applicable.

DVS continued to conduct courses in the management of poultry and beef production and other livestock enterprises. In addition, a Dairy Technology Centre was established at the Veterinary Institute at Kluang, Johor, to train farmers as well as dairy technologists in dairying techniques. DOF continued to provide training in marine fisheries and aquaculture. The Fisheries Training Institute (FTI) at Batu Maung, Pulau Pinang provided training in the operation of offshore fishing vessels. The Marine Fisheries Training Centres (MFTCs) at Gelugor, Pulau Pinang and Kuala Terengganu, Terengganu provided training to skippers and enginemen in basic helmsmanship and engine maintenance. Courses in aquaculture, covering pond management and harvesting technique as well as other aspects of fish and prawn rearing, were conducted for farmers and fishermen. In FDCs, training in small-scale industries was provided by LKIM, in conjunction with other relevant agencies.

The Institute of Land Development and Training Centre of FELDA at Trolak, Perak was expanded and a new training school was established at Keratong, Pahang to enable FELDA to intensify its training programme. In addition, FELDA provided training, ranging from automobile repair to other small businesses, in order to facilitate the setting up of small businesses in FELDA settlements. Such training was directed at the settlers and their dependants so that they would be encouraged to remain on the schemes. The Department of Forestry continued to organize training programmes for its staff as well as those from the private sector in forestry management and related fields.

*Credit and subsidies.* Agricultural credit for the smallholder subsector during the Fourth Plan period was mostly channelled through the Agriculture Bank of Malaysia (BPM), especially in support of agricultural activities emphasized in the NAP. Total credit amounting to \$1,012 million was disbursed by BPM for the production of *padi*, cocoa, oil palm, tobacco, livestock, and fisheries as well as for the purchase of machinery and fishing gears. A total of 216,000 farmers and fishermen benefitted from such credit schemes.

FOA also provided credit amounting to \$26.5 million for land preparation and the purchase of inputs such as seeds and fertilizers. FOA, however, began phasing out its credit facilities towards the end of the Fourth Plan period as BPM was to be made the sole agency disbursing agricultural credit from funds allocated to MOA beginning 1986. In addition, commercial banks provided credit amounting to about \$1,550 million to the agriculture sector.

In order to facilitate the eradication of poverty and the development of new enterprises as well as the adoption of technological innovations, a total of \$2,115 million in subsidies was provided to the smallholder subsector during the Fourth Plan period. The largest proportion went to *padi*, where \$850 million was spent on the *padi* price support scheme and \$430 million was provided through the *padi* fertilizer subsidy scheme. In line with the thrust towards greater com-

mercialization and self-reliance, however, the diesel fuel subsidy was withdrawn in 1983 and an extensive range of subsidies were gradually phased out towards the end of the Fourth Plan period.

*Processing and marketing.* Measures were taken by some agencies to encourage direct participation of farmers in the processing and marketing of their products. The Federal Agricultural Marketing Authority (FAMA), for example, promoted the concept of farmers' market, by organizing farmers' markets at places such as Batu Pahat, Cameron Highlands, Johor Bahru, and Shah Alam as a means of improving their income through direct selling. FAMA gradually moved itself out of direct domestic marketing activities and instead undertook to provide market intelligence as well as seek out and develop new markets overseas. Consequently, FAMA exported farm produce, such as bananas and vegetables, to Hong Kong, Japan, and Singapore.

Steps were also taken to upgrade farm produce to ensure that they are of acceptable quality for export. Under the Grading and Certification Scheme, aimed at upgrading and standardizing the quality of Malaysian cocoa, FAMA established cocoa grading centres at Pasir Gudang, Port Klang, and Seberang Prai. The Scheme covered Johor, Perak, Pulau Pinang, Sabah, Sarawak, and Selangor. During the Fourth Plan period, FAMA undertook the marketing of almost half of the cocoa output of smallholders in Peninsular Malaysia. Similarly, the Malaysian Pepper Marketing Board stepped up the processing and grading of pepper before export. During the Fourth Plan period, the Board graded about 109,000 tonnes of pepper worth \$404.5 million. The Malaysian Rubber Development Corporation (MARDEC) also processed 649,000 tonnes of rubber produced by smallholders valued at about \$1,550 million, for export. This amounted to 13.7 per cent of total rubber produced by smallholders during the Fourth Plan period.

FELDA continued to undertake direct marketing of primary commodities, especially palm oil and rubber, from its land schemes in both raw and semi-processed forms. During the Fourth Plan period, FELDA sold 3.5 million tonnes of palm oil and 367,800 tonnes of rubber amounting to \$3,500 million and \$853.9 million, respectively. RISDA continued to market rubber from smallholders covered by its programmes and marketed \$194.3 million worth of rubber. FOA also marketed \$72.1 million worth of farm produce which included tobacco, *padi*, rice, rubber, and coconut. LKIM built seven fishing complexes and improved existing ones to assist in the marketing of fish.

*Research.* During the Fourth Plan period, besides a continuation of conventional production-oriented research, added emphasis was given to tissue culture, biotechnology, breeding, marketing, and end-use research. MARDI developed various high-yielding and disease-resistant varieties of *padi* including *Seberang*, *Muda*, *Manik*, *Makmur*, and MR-75. Five new clones of cocoa capable of

producing 1,600 kilogrammes per hectare to 4,100 kilogrammes per hectare were also introduced by MARDI in 1983. In the area of processing, research by MARDI has ascertained that fermentation of cocoa beans using shallow boxes could reduce the acidity of beans. A new pineapple hybrid named *Nanas Johor*, with improved yield potential and canning qualities, was also introduced. In food technology, significant advances were made in developing and introducing new technology, resulting in improved nutrition in processed food as well as more hygienic, tastier, and more appealing local foodstuffs. These included sauces, juices, preserved fruits and food, instant snacks, and instant *santan*.

The Palm Oil Research Institute of Malaysia (PORIM) extended its research efforts beyond that of increasing productivity, efficiency of production, and quality of palm oil to include food and non-food end-uses of palm oil and by-products. PORIM successfully produced diesel palm oil and subsequently launched a palm diesel plant in November 1985. This is expected to provide an alternative economic use of palm oil as a renewable source of energy. Research was also conducted on the extraction of vitamins from palm fronds and palm oil, the use of oil palm waste as animal feed, and the potential use of oil palm trunks.

RRIM focussed its research on modernizing the rubber industry, end-uses of rubber as well as the utilization of by-products. A new form of rubber, the epoxidized natural rubber, which possessed the desired properties of oil resistance, gas impermeability, wet-grip, and rolling resistance, was being developed and tested. A major breakthrough was made in the use of natural rubber-steel laminated bearings to protect buildings against earthquake damage, which represented a completely new and significant application of natural rubber. Significant advances were made in the utilization of rubber wood. Special emphasis was given to different aspects of stimulation, new labour-saving tapping systems, and better tapping tools and collection devices, in order to resolve the problem of the shortage of labour as well as to ensure the competitiveness of the industry.

DVS concentrated its research activities in controlling livestock diseases at its Veterinary Research Institute (VRI) in Ipoh. The Fisheries Research Institute in Pulau Pinang focussed its research on identifying new species of fish and prawns in relation to aquaculture development. Research in deep sea fishing, especially in the EEZ, was undertaken in late 1985 to assess fisheries resources. The results are expected to facilitate and guide the future development of offshore fishing. The Forest Research Institute, while continuing research on forest management and improved logging practices, also began research on rattan as well as end-use of rubber wood and oil palm trunks.

#### **Social and institutional development**

The NAP recognizes the importance of social as well as institutional development in the future development of the agriculture sector. Accordingly, additional

focus was given to human development aspects of the agricultural programmes. Extension programmes and training courses were geared to inculcate values such as self-reliance, good work ethics, and entrepreneurship among farmers and fishermen as well as staff of implementing agencies. This process of attitudinal change would facilitate the transfer of technology and new ideas to the farmers and fishermen in order to bring about their increased participation in agricultural development.

The Government also made efforts to strengthen rural development institutions including the Village Development and Security Committees (JKKK) and farmers' organizations. At the national level, the National Fishermen's Association was established in 1985 to co-ordinate the activities of fishermen's associations. The establishment of the Malaysian Cocoa Board was proposed in order to oversee and guide the development of cocoa and lead to faster and systematic expansion of the cocoa industry.

In the light of the increasing importance of research in the future development of forest resources, the Malaysian Forestry Research and Development Board Act was enacted in 1985 to establish the Malaysian Forest Research and Development Board. Consequently, the Forest Research Institute, which was formerly under the Department of Forestry, was renamed the Forest Research Institute of Malaysia (FRIM) and given statutory body status. This move was intended to enhance the role of research and development in the future management and development of forest resources and wood-based industries. It also provided for the participation of those involved in the timber industry in the formulation of research programmes and projects through their representation on the Board.

#### **IV. DEVELOPMENT THRUSTS, 1986-90**

The present stage and direction of overall development, intersectoral linkages as well as long-term national goals continue to impose demands on the agriculture sector. In cognizance of these demands, the Government has reoriented its overall strategy to give greater emphasis to agriculture and rural development. Accordingly, efforts to revitalize and modernize agriculture as well as to urbanize the rural areas will be continued during the Fifth Plan period. Given the inherent structural rigidities of the sector which have tended to impede growth in both the smallholder and estate subsectors, and the longer time required to stimulate growth, particularly in the sizeable smallholder subsector, the restructuring process during the Fifth Plan period is expected to pose many challenges. In order to meet these challenges, bold steps will be taken to galvanize the public and private sectors in exploiting the productive resources and opportunities available in the country.

In the case of agriculture, the emphasis in the Fifth Plan period will be to utilize the productive resources of the sector in order to ensure a sustained edge in productivity, efficiency, and competitiveness in selected crops and agricultural enterprises. This, in turn, will ensure that producers can deal with the increasing competition and related problems in international markets for their raw and finished products and, in so doing, maximize incomes from agriculture. Towards achieving these objectives, the major thrusts during the Fifth Plan period will be to continue the efforts towards modernizing and commercializing the smallholder subsector; rationalizing the extent of Government involvement; increasing private sector participation in agriculture; and improving sector-wide planning and policy analysis in order to guide the future development of the sector.

The thrust of rural development will concentrate on rural urbanization, involving the total development of the village and its surrounding areas. The dispersed nature of rural villages and townships has often hampered the provision of amenities and utilities as well as the fostering of intersectoral linkages, culminating in the slow progress in uplifting the rural standard of living. In order to overcome this, the new approach in rural development, introduced in 1984, will continue to be implemented. This involves the regrouping of villages to foster the development of rural growth centres as well as the promotion of village and small-scale industries and other non-agricultural economic activities to complement agricultural development efforts.

*Modernizing and commercializing the smallholder subsector.* This will be effected through the present approaches of new land development, *in situ* development, provision of support services, and social and institutional development, but with the necessary reorientation in emphasis and content. Some of these, which have been mentioned in the NAP and subsequently implemented during the Fourth Plan period, will be refined during the Fifth Plan period. Major emphasis will be given to human resources development, particularly through training, extension, and the further development of various rural institutions, including co-operatives, in order to stimulate creativeness, self-reliance, and entrepreneurship.

Continuing efforts will be directed at restructuring resource endowments, particularly that of land, in order to facilitate the development of economic holdings as well as the efficient utilization of available resources. In addition, the consolidation of productive resources, will continue to be emphasized through farm consolidation, group farming, and estatization.

*Rationalizing the extent of Government involvement.* Efforts to reduce the heavy reliance on the Government for assistance in promoting development and the predominance of direct involvement of public agencies in production and marketing will be stepped up. Where appropriate, subsidies will be gradually reduced and replaced by credit to meet financial cash-flow constraints in



agricultural activities. In order to reduce direct public sector involvement in production and marketing, efforts will be made to privatize specific projects and activities as well as encourage direct participation of the producers.

In the case of *padi*, the extent of Government involvement and investment will continue to be rationalized with production to be concentrated in granary areas. Other *padi* land will be gradually converted for the planting of other cash crops. The involvement of private companies in the rehabilitation of idle land will be encouraged.

*Increasing private sector participation.* The private sector will be increasingly encouraged to invest in agriculture, particularly in the production of food and the development of new land. The production of food is encouraged in view of the high food import bill, while the involvement in new land development is based on the need to exploit the expertise in management and other resources of plantation companies. Other areas identified for increased private sector participation include aquaculture and deep sea fishing. The implementation of the nucleus estate and out-grower systems, where the establishment of large-scale production units by the private sector will provide the technological backup, and processing and marketing facilities for surrounding smallholdings producing the same commodities, will be encouraged. Contract farming, where smallholders enter into contractual agreements with buyers and processors, will also be encouraged, especially in relation to food production as well as the nucleus estate and out-grower systems.

In order to stimulate increased private sector investment in agricultural development, the alienation of land, especially for plantation development, will be rationalized and streamlined together with the provision of a comprehensive set of incentives and other measures. Accordingly, the tax incentives for agriculture have been improved and will take effect from 1986. These improvements include the extension of pioneer status to activities and industries encouraged under the NAP, the granting of export allowance to certain agricultural exports, and the abolishment of import duties on certain agricultural and fisheries equipment. The launching of a billion *ringgit* New Investment Fund (NIF) in 1985 to provide cheaper finance for capital investment in agriculture, manufacturing, and tourism is another clear indication of the commitment of the Government to increase private sector participation.

*Improving sector-wide planning and policy analysis.* Sector-wide planning and policy analysis will be improved in view of the major structural adjustments and increasing complexity of the agriculture sector. Accordingly, it will go beyond the commodity approach and will ensure the continuing consistency of policies, strategies, and programmes as well as their subsequent modifications. Efforts will also be made to ensure that commodities are developed on the basis of their commercial viability and competitiveness, with a full consideration of the interlinkages in production, marketing, and consumption. Consequently, the development

of agriculture will be integrated with the other sectors, particularly manufacturing and services. Various steps will be taken to build up gradually the requisite mechanisms, capacity, and capability in sector-wide planning and policy analysis. The establishment of the Cabinet Committee on Agriculture in 1985 marked a major step towards facilitating improvements in this direction.

*Accelerating rural development through rural urbanization.* Rural urbanization encompasses three aspects, namely, agricultural development utilizing estate-type management for smallholders; promotion of village and small-scale industries or other non-agricultural economic activities; and regrouping of traditional villages to foster the development of rural growth centres. The first aspect involves the consolidation of smallholdings into larger farms of economic size suitable for modern and efficient management on a commercial basis. The second aspect aims at diversifying economic activities in the rural areas to supplement farm income by introducing small-scale industries based on locally available raw materials and skills. The third aspect takes into account the suitability of their physical locations and the aspirations of the people. The scope of agricultural development projects, such as IADPs and the rehabilitation programme of FELCRA, will be expanded to incorporate various aspects of rural urbanization. This approach is expected to facilitate larger scale organized and commercialized farming, generate additional employment and supplementary sources of income, and enable the provision of social services and amenities at lower costs.

## **V. PROSPECTS, 1986-90**

The current and proposed efforts to revitalize the sector constitute mainly long-term efforts which are expected to have their full impact on the output of the sector in the 1990s. Nevertheless, during the Fifth Plan period, the sector is still expected to grow at 2.6 per cent per annum compared with 3.4 per cent per annum during the Fourth Plan period. It is expected to contribute 10.3 per cent of the overall growth in the economy.

With this relatively slower growth compared with other sectors of the economy, the share of the sector in GDP, export earnings, and employment is expected to decline, although they are expected to increase in absolute terms. Its share in GDP is expected to decline from 20.3 per cent in 1985 to 18.1 per cent in 1990, while the value of output is expected to increase from \$12,050 million to \$13,710 million during the same period. Export earnings from the major agricultural commodities are expected to account for 28.4 per cent of total export value or \$12,010 million in 1990 compared with 29.0 per cent or \$11,030 million in 1985. In terms of employment, the sector is expected to account for 32.7 per cent or 2.0 million jobs in 1990 compared with 35.7 per cent or 1.95 million jobs in 1985, and will generate about 49,000 jobs or 7.6 per cent of total new employment during the Fifth Plan period.

### **Agricultural production**

A major thrust for the agriculture sector during the Fifth Plan period will be directed at increasing the production of palm oil and cocoa, while sustaining that of rubber and timber. Continuing efforts in diversification will emphasize the production of fruits and vegetables, and other food crops. Steps taken to increase food production will also include those for the expansion of poultry and egg production as well as aquaculture and deep sea fishing.

*Palm oil.* Palm oil is expected to play a prominent role in the expanding oils and fats market during the Fifth Plan period. The country is in a position to take advantage of the growing opportunities, given its strong leadership position, advancement in research and development, and favourable agro-climatic environment as well as the availability of extensive areas suitable for the development of this crop. Malaysia is also in a position to further expand its downstream processing activities in end-use production as well as in ancillary and related industries, including oleo-chemicals. Accordingly, production of palm oil is projected to grow by 6.7 per cent per annum during the period to reach 5,700,000 tonnes in 1990. This increase is expected to come from both an expansion in hectareage as well as improvements in yield. Planted hectareage is projected to increase by 3.8 per cent per annum to reach 1,764,900 hectares in 1990.

*Rubber.* Rubber still plays an important role in the economy. Consequently, the long-term consolidation and modernization of the industry will be continued, especially in the smallholder subsector. The focus, however, will be more on productivity increases rather than in the development of new areas. Rubber output is expected to increase marginally by 0.8 per cent per annum to 1,511,000 tonnes in 1990. This increase is expected to stem from yield increases which will more than offset the declining hectareage. Planted hectareage is projected to decline by 0.5 per cent per annum to about 1,908,000 hectares in 1990.

*Sawlogs.* The National Forestry Policy provides the basis for the rational development of the forestry subsector. Conservation of forest resources will continue to be stressed. Output of sawlogs is, therefore, projected to decline by about 2 per cent per annum from 31.3 million cubic metres in 1985 to 28.3 million cubic metres in 1990. Output of sawn timber is also projected to decline by 0.7 per cent per annum from 5.5 million cubic metres to 5.3 million cubic metres during the same period. In 1990, Sarawak is expected to account for about 40 per cent of total output, while Sabah and Peninsular Malaysia 33 per cent and 27 per cent, respectively.

*Cocoa.* Cocoa has emerged as the third most important crop in the country and is favourably positioned to continue its rapid growth. Its production, which accounted for 4.7 per cent of total agricultural output in 1985, is expected to register a rapid growth rate of 11.5 per cent per annum, increasing from 103,000

tonnes in 1985 to 177,200 tonnes in 1990. This high rate of growth is due to the expected expansion in hectareage, increased planting density in intercropped areas, and improvement in yield. Planted hectareage is projected to increase by 5.9 per cent per annum from 258,000 hectares in 1985 to 343,000 hectares in 1990. Its share in agricultural output is expected to increase to 6.9 per cent. Based on potential productivity levels and the availability of suitable land, Sabah is expected to be the major focal point in the development of the cocoa industry during the Fifth Plan period.

*Padi.* In the case of *padi*, future production efforts will be concentrated in the granary areas of Muda, Kemubu, Besut, North-West Selangor, Krian-Sungai Manik, Trans-Perak, Kemasin-Semerak, and Seberang Prai. The production of *padi* in the existing *padi* land outside these granary areas will be gradually phased out and replaced by other more remunerative crops. Consequently, the self-sufficiency level will mainly depend on the future output from the granary areas. The production from these granary areas is currently estimated to meet 55 to 60 per cent of domestic requirements.

*Coconut.* The current decreasing production trend is expected to continue, although at a slower rate, in view of continuing low prices forecast for copra as well as the conversion of coconut areas into the planting of intercrops and other crops. Coconut cultivation will increasingly be aimed at meeting the domestic requirement for fresh nuts, besides processing of *santan* and supporting the coconut coir industry.

*Pepper.* Malaysia will continue to be one of the leading producers and exporters of pepper in the world. In response to the improved price outlook, pepper production is expected to increase gradually to about 25,000 tonnes towards the end of the Fifth Plan period. Insignificant increase in planted hectareage is expected together with minimal change in the present distribution of planted hectareage of 96 per cent in Sarawak, 2 per cent in Sabah, and 2 per cent in Johor.

*Other crops.* A greater drive will be made through import substitution and export-oriented production in specific crops, especially fruits and vegetables, where agro-climatic conditions permit. Production of other minor crops, such as tea, coffee, and tobacco, are expected to increase marginally.

#### **New land development**

New land development will continue to be emphasized. FELDA will develop another 175,500 hectares of new land, an increase of 8.6 per cent over the Fourth Plan period. Major areas of concentration will be in Pahang, accounting for 36.3 per cent, Sabah 33.1 per cent, Johor 12.9 per cent, Kelantan 7.0 per cent, and Perak 5.0 per cent. In the efforts to stabilize income and reduce the differences

in returns among schemes planted with different crops, the share ownership system will be pursued. Under this system, each settler, irrespective of scheme, is given a share equivalent to about four hectares. This differs from the previous system where each settler was given ownership of land in a particular scheme planted with specified crop.

Of the targetted hectareage to be developed by FELDA, about 114,180 hectares or 65.1 per cent will be planted with oil palm, 27,370 hectares or 15.6 per cent with cocoa, 22,540 hectares or 12.8 per cent with rubber, while the remaining 11,410 hectares or 6.5 per cent will be utilized for village settlement. New land development under FELDA is expected to benefit 33,800 settlers.

The activities of FELDA in new land development will be complemented by those of the RDAs, state agricultural development corporations (SADCs), and the state economic development corporations (SEDCs). During the Plan period, RDAs will develop a total area of 41,100 hectares, SADCs 29,000 hectares, and SEDCs 14,000 hectares. In Sabah and Sarawak, about 9,600 hectares will be developed by the state land development boards and the Sabah Rubber Fund Board. Another 17,500 hectares will be developed on a joint-venture basis between RDAs and the private sector. In addition, the private sector is also expected to assume its former active role in new land development.

#### ***In situ* development**

*Integrated agricultural development projects.* The Johor Barat I, North-West Selangor, Krian-Sungai Manik, Muda II, Negeri Sembilan Timur, Melaka, Pahang Barat, and Kemasin IADPs will be completed, and bring about substantial increases in productivity and cultivated hectareage. The expected subsequent increases in income will be enjoyed by about 180,600 farm families. The other five IADPs will continue to be implemented, while the Rompin-Endau project will be reformulated for the cultivation of crops other than *padi* due to the recent revision in the rice policy. Six new IADPs, namely, Semerak, Sungai Golok, and Sungai Nal/Sungai Sokor in Kelantan, Tumbuh Block in Perak, and Kalaka-Saribas and Samarahan in Sarawak, will be implemented. These will cover an additional area of 524,800 hectares and serve 104,100 farm families.

Despite the gains in productivity and output in the completed IADPs and those nearing completion, certain problems and issues have emerged in the course of their implementation. These include the slow progress in poverty eradication, the dominance of physical infrastructure in total project cost, and co-ordination problems as IADPs get larger and more complex. Due to its inherent appeal as well as the availability of corrective measures, however, the IADP strategy for agricultural development will continue to be emphasized. Consequently, concerted efforts will be made to meet the emerging demands on management and co-ordination. Steps will also be taken to redress the bias towards physical in-

infrastructural development and give greater emphasis to the human and institutional aspects of development. In addition, commercial estate farming and group farming will be encouraged. Where appropriate, the regrouping of rural settlements into viable townships will be carried out in order to facilitate the provision of social amenities as well as the marketing of agricultural produce. Small-scale agro-based or village industries will also be established in these centres to increase value added and to generate employment.

*Drainage and irrigation.* A total of 169,100 hectares of agricultural land will be provided with drainage facilities, of which 88,000 hectares will be developed under the various IADPs, and the balance of 81,100 hectares outside the IADP areas. This will enable the rehabilitation of 111,100 hectares for oil palm and rubber, 49,900 hectares for cocoa and coconut, and 8,100 hectares for mixed-crop cultivation to be undertaken. With future *padi* production to be concentrated in the granary areas, the irrigation programme will accordingly focus on the intensification of irrigation facilities in these areas.

*Replanting and rehabilitation.* RISDA will gear its replanting efforts through the miniestate model with emphasis given to the planting of oil palm. RISDA will replant about 160,000 hectares of non-productive rubber areas with oil palm, high-yielding rubber, and other crops. This programme is expected to benefit about 70,000 families. Off-farm activities, such as retailing, food processing, and handicrafts, will also be undertaken by RISDA to supplement the incomes of smallholders. Efforts will also be made to fully utilize rubber wood in order to generate additional income to rubber smallholders during the replanting phase. In addition, FELDA will replant about 10,000 hectares in its existing oil palm schemes, involving about 3,500 settlers.

In order to encourage smallholders to participate in replanting, the replanting grants will continue to be provided. In addition, the Replanting Incentives Scheme (SEPENTAS) will be continued. Under this Scheme, participating smallholders owning four hectares and below are entitled to interest-free loans, ranging from \$60 to \$100 per month, from RISDA as a subsistence allowance during the replanting period. The Sabah Rubber Fund Board is expected to replant another 6,000 hectares with high-yielding rubber which will benefit about 3,000 families.

Pineapple replanting hectareage by MPIB will be increased to 4,050 hectares during the Fifth Plan period compared with 3,150 hectares during the Fourth Plan period. The present variety of Singapore Spanish or *Mas Merah* will be substituted with *Nanas Johor* to increase the yield of pineapple.

Rehabilitation efforts will continue to be geared towards the consolidation and rehabilitation of land, particularly idle land. FELCRA will rehabilitate about 110,000 hectares of idle land with oil palm, rubber, and cocoa, representing 19.5

per cent of the total 564,000 hectares of idle land identified for tree crops. About 62 per cent of the targetted areas are in Kedah, Kelantan, Perak, and Terengganu. In its consolidation efforts, FELCRA will adopt the rural urbanization concept involving the regrouping of villages, where at least 500 families will be grouped together to form new rural growth centres.

MOA will continue its efforts to rehabilitate abandoned *padi* land. The hectarage targetted to be rehabilitated during the Fifth Plan period is 51,000 hectares, representing 31.7 per cent of 161,000 hectares of idle *padi* land. Assistance, including those for land preparation, infrastructure, and agricultural inputs, will be provided. Efforts will be concentrated in the states of Kelantan, Perak, and Terengganu.

In view of the retrenchment of mine workers with the closure of tin mines, integrated farming of food crops on ex-mining land will be encouraged, wherever feasible, especially to assist retrenched mine workers to be absorbed into agriculture. This will form part of the overall effort to relocate retrenched mine workers in other sectors of the economy.

#### **Livestock**

Programmes to promote veterinary health as well as accelerate the growth of the livestock industry will be continued in order to meet the increasing demand for meat and animal products. In Peninsular Malaysia, part-time livestock enterprises will be encouraged to become commercial units. In Sabah and Sarawak, however, due to the slower pace of livestock development and their present level of stock, programmes to encourage rearing of livestock as a source of supplementary income will continue to be implemented.

The beef and dairy programmes will continue to be emphasized. Consequently, the importation of better breeds and provision of artificial insemination services will be continued. In order to cater for the expected increase of local fresh milk, facilities at the MCCs will be expanded and milk collection improved by the setting up of milk depots. In the case of poultry, a unit to monitor, control, and promote the development of the industry will be set up by DVS.

Integration of animals, especially sheep, in estates and smallholdings will be encouraged to maximize the utilization of land. In addition, the use of feedlot system will be encouraged in relation to raising ruminants using agricultural by-products, such as palm kernel cake (PKC) and oil palm sludge. An additional 3,500 hectares of pastures and fodder will be developed to increase animal feed production.

Emphasis will be given to pollution control in the establishment of abattoirs and the development of the pig industry. Another 28 abattoirs will be established for ruminants. The development of the pig industry will be concentrated in

designated areas which will be gazetted by the state governments. Quarantine and diagnostic facilities will be improved and expanded, especially to maintain the foot and mouth disease-free status of Sabah and Sarawak.

#### **Fisheries**

In view of the depleting fisheries resources and excess fishermen estimated at 30,000 in Peninsular Malaysia, LKIM and DOF, with the assistance of other supporting agencies, will carry out a fishermen resettlement programme. This programme will involve relocating, in phases, the excess fishermen to FELDA schemes, estates, and other agricultural and non-agricultural activities, subsequent to undergoing appropriate training. The remaining fishermen will be trained and encouraged to engage in modern fishing as well as downstream activities, through the provision of credit and other support services.

Fleet fishing involving joint ventures among the fishermen's associations, private companies, and individual fishermen will be encouraged. Infrastructural facilities will continue to be upgraded, particularly in Sabah and Sarawak. In order to ensure the safety of the increasing number of local fishermen engaged in deep sea fishing, additional enforcement boats will be deployed to patrol the areas within the EEZ.

Conservation of fisheries stocks in marine parks will be carried out at various locations, such as Pulau Babi and Pulau Rawa in Johor, Pulau Paya in Kedah, and Pulau Redang, Pulau Kapas, and Pulau Tengah in Terengganu. A total of 10,340 hectares will be developed for aquaculture. This will include the culture of oysters, cockles, and prawns as well as brackish and freshwater fish. Encouragement will be given for the development of aquaculture through private sector involvement using out-grower systems.

#### **Forestry**

In line with the National Forestry Policy, intensive rehabilitation and reforestation programmes will be implemented. Emphasis will be given to silvicultural treatment and compensatory forest plantation programmes. About 397,000 hectares of forest in Peninsular Malaysia will be rehabilitated under the silvicultural treatment programme. The compensatory forest plantation programme will establish 74,000 hectares of forest plantation on cut-over degraded forest lands. This is aimed at enhancing the productivity of degraded forest land by planting fast growing and high yielding general utility timber species such as *Acacia mangium*, *Gmelina arborea*, and *Paraserianthes falcataria* in order to compensate for the projected shortage and maintain future self-sufficiency in domestic timber requirements. In the states of Kedah and Perlis, about 1,500 hectares of forest plantation will be established with high quality timber such as *Tectona grandis*. Arising from research on the cultivation, processing, and end-use of rattan, and



other steps taken during the Fourth Plan period, an increase in the planted hectareage of rattan is expected.

In Sabah, the establishment of large-scale commercial forest plantations with fast-growing species and the reforestation of scattered wasteland will be continued. About 15,600 hectares of forest plantation will be established and 8,300 hectares of wasteland will be reforested. In Sarawak, about 5,850 hectares of forest plantation will be established under the reforestation project.

#### **Support services**

*Training and extension.* The orientation and content of the various types and levels of training will be modified to suit the types of manpower required by the agriculture sector. Formal training at the degree and diploma levels will be reoriented to emphasize agribusiness as well as applied and entrepreneurial aspects. Training and extension programmes carried out by Government agencies like FOA, FAMA, DOA, FELDA, FELCRA, and RISDA will be increasingly structured to impart commercial and financial management skills in order to make farmers more commercially-minded, self-reliant, and responsive to technological and organizational innovations. The focus will be on developing entrepreneurship and organizational abilities of existing as well as future farmers. Extension workers will be trained or retrained to take up the new tasks. FOA is expected to train 169,400 farmers in farm management, leadership, and other aspects of agriculture.

The training and extension programme of FAMA will focus on cocoa processing, post-harvest technology, and marketing. This is aimed at enhancing market-oriented production and the further involvement of farmers in marketing and processing activities. A total of 50,000 farmers is expected to benefit from this programme.

DVS is expected to train 8,600 farmers in general husbandry and dairy and poultry management. In addition, 5,040 DVS personnel will be given in-service training and specialized courses in various fields of animal husbandry. Courses will be geared towards establishing commercial farming units and increasing production efficiency.

About 245,500 farmers will receive training at the training centres of DOA in farm management as well as farming techniques. The 2L system will continue to emphasize the common grouping of farmers to facilitate the integrated delivery of support services and the development of self-reliance and a commercial outlook among them. In view of the increasing emphasis on group farming and estatization, the training and extension services of DOA as well as those of RISDA and FELCRA, will be reoriented accordingly to facilitate this development including the transfer of higher level technology.

DOF will align its training and extension programme to facilitate the transfer of excess fishermen to other economic activities as well as to overcome the problem of resource depletion. Consequently, training will continue to focus on aquaculture and deep sea fishing. In addition, training in other agricultural activities as well as rural industries will be conducted with the co-operation of other relevant agencies.

The Department of Forestry will continue to conduct forest management courses for its staff as well as those from the private sector. Courses will include forest inventory, operation and maintenance of heavy equipment, and logging. About 1,000 participants will be trained during the Fifth Plan period.

*Credit and subsidies.* Most subsidies will be converted into credit schemes, with the exception of those for crops such as *padi*, sago, and pepper. BPM will be the sole agency responsible for extending credit to the smallholder subsector for all activities under the purview of MOA. Credit amounting to \$1,700 million will be given out by BPM to farmers and fishermen.

In the fisheries subsector, the Fishermen Special Credit Scheme (SKKN) will be introduced in conjunction with the implementation of the fishermen resettlement programme. Under this Scheme, fishermen who are to be relocated out of the fishing industry will be provided with credit to enable them to venture into new fields. The Financial Assistance Scheme will be continued to enable fishermen to purchase as well as upgrade boats.

*Processing and marketing.* FAMA will continue to provide information regarding the demand for agricultural produce as well as find new markets in order to help farmers determine their crop-choice and subsequently receive remunerative and stable prices. Direct participation of farmers in marketing will be encouraged through the expansion of farmers' markets and the establishment of auction centres. Processing and grading facilities will continue to be improved for cocoa, coffee, vegetables, and fruits. Four more cocoa processing and grading centres will be established in Kota Kinabalu, Kuching, Pasir Gudang, and Tawau during the Fifth Plan period.

MARDEC will upgrade several of its factories to process rubber produced by smallholders into higher grade technically specified rubber for export. FELDA and RISDA will continue to process and market rubber and palm oil produced by smallholders covered by their programmes. The National Padi and Rice Authority (LPN) will expand its *padi* drying and rice milling and stockpiling facilities through the construction of 10 new integrated complexes and nine stockpile godowns.

*Research.* The existing activities of MARDI, PORIM, RRIM, FRIM, and other research agencies will be rationalized to support the development strategies and programmes of the Fifth Plan. MARDI will continue to undertake research in *padi*, fruits, vegetables, livestock, and other minor crops. A balanced approach covering the production-marketing-consumption continuum of each crop or enterprise will be adopted by MARDI, together with a farming system orientation in technology development and transfer. End-use research as well as research on post-harvest technology, including processing, storage, and transportation, will be intensified. In view of the emphasis on increasing food production, food technology research will also receive added attention. The technology generated will be increasingly aimed at production units arising from group farming, estatization, and rural urbanization.

PORIM will continue to conduct research on production, extraction, processing, storage, transportation, marketing, and end-uses of palm oil, its products, and by-products. Research and development activities will be directed at sustaining and improving the techno-economic competitive strength of palm oil. Research on tissue culture techniques for large-scale clonal multiplication of oil palm will continue to be actively pursued with the scaling up of its tissue culture laboratory. In order to alleviate the problems of labour shortage, particularly in the estate subsector, farm engineering research studies on the mechanization of harvesting and infield transportation of fruit bunches will be intensified. Research in enhancing the food and non-food end-uses of palm oil and its products as well as the pharmaceutical aspects of palm oil will also be undertaken. The utilization of by-products, such as trunks, fronds, empty bunches, and mill effluent, will continue to be researched and exploited.

RRIM will continue to undertake research on all aspects of natural rubber cultivation and latex production and the development of new forms of rubber to promote consumption in new end-uses, apart from providing advisory services to the rubber industry. The germplasm collection at the Sungai Buloh experimental station in Selangor will be upgraded to produce new types of rubber trees, with improved productivity and other desirable features. This will enable natural rubber to remain competitive in the elastomer market. In the light of continuing labour shortage, research will be intensified in developing improved systems of stimulation, tapping, and collection as well as new tapping tools and collection devices. Optimization of processing conditions, development of improved and modified forms of natural rubber, and guaranteeing the quality of natural rubber exports will also be emphasized.

Research on hill forest management and appropriate silvicultural practices will be given greater emphasis by FRIM during the Fifth Plan period. Research will also be focussed towards the fuller assessment of properties and characteristics associated with the growth and requirements of species suitable for forest plantation.

Research on the application and refinement of existing technologies of rubber wood will also be undertaken to improve efficiency in processing.

Research activities in the field of disease diagnosis and vaccine production will continue to be undertaken at VRI, Ipoh. In addition, research in nutritional values of feedstuff will be intensified. More active and systematic research activities in animal and pasture development will be undertaken in Sabah and Sarawak.

DOF will focus its research on deep sea fishing, particularly to assess the resource potential in the EEZ. Towards this end, a research vessel will be used to facilitate research to be undertaken jointly by local and foreign consultants. The National Prawn Fry Production and Research Centre established at Pulau Sayak, Kedah, in 1985, will expand its research activities to step up the production of prawn and fish fries.

#### **Social and institutional development**

Social and institutional development will form the cornerstone for agricultural and rural development. It will play a primary role in allocating resources productively and organizing production, processing, and marketing systems, apart from changing attitudes. Human resources development and increased participation of the rural populace in agricultural and rural development will be emphasized.

The delivery and recipient systems for support services as well as the development of rural institutions will be reoriented and streamlined. The present approaches of involving and organizing farmers, through co-operatives, farmers and fishermen development centres as well as JKKK, will be increasingly coordinated to supplement and reinforce each other. The programme will increasingly cater for the existing younger farmers as well as potential farmers. The JKKK will continue to be strengthened through the reorganization of its membership and function, in view of its potential in providing an effective communication channel, within the context of the rural urbanization strategy.

The Malaysian Cocoa Board will be operationalized during the Fifth Plan period. The Board is expected to provide a national focus and a more coordinated approach in research and development as well as processing and market promotion. It is also expected to undertake registration and licensing in order to bring about more orderly conduct and development of the cocoa industry.

#### **VI. ALLOCATION**

The development allocation and estimated expenditure for the period 1981-85 and the allocation for the period 1986-90 for agriculture and rural development are as shown in Table 10-5.

## VII. CONCLUSION

In view of the continuing importance of the agriculture sector and the economic imbalance between the urban and rural areas, efforts will continue to be directed at agricultural and rural development during the Fifth Plan period, particularly at improving the standard of living in the rural areas. The extent of Government involvement, however, will be rationalized in line with the structural changes to be implemented and these changes will be guided by improved sector-wide planning and policy analysis. Economic growth in agriculture will increasingly rely on private sector initiative and individual enterprise, particularly in research and development and marketing, for which appropriate policies will be provided.

**TABLE 10-5**  
**MALAYSIA: PUBLIC DEVELOPMENT EXPENDITURE FOR**  
**AGRICULTURE AND RURAL DEVELOPMENT PROGRAMMES<sup>1</sup>, 1981-90**  
**(\$ million)**

| <i>Programme</i>                                  | <i>Fourth Plan<br/>allocation,<br/>1981-85</i> | <i>Estimated<br/>expenditure,<br/>1981-85</i> | <i>Fifth Plan<br/>allocation,<sup>2</sup><br/>1986-90</i> |
|---|--|---|---|
| Land and regional development                     | 3,148.84                                       | 3,039.90                                      | 4,418.97  |
| New land development                              | 2,218.61                                       | 2,218.23                                      | 2,878.24  |
| Regional development                              | 930.23   | 821.67  | 1,540.73  |
| <i>In situ</i> development                        | 2,859.44                                       | 2,801.89                                      | 5,094.44  |
| Integrated agricultural<br>development projects   | 505.62   | 476.66  | 1,560.11  |
| Drainage and irrigation                           | 1,451.26                                       | 1,424.64                                      | 337.44  |
| Replanting  | 398.61   | 396.64  | 1,909.97  |
| Rehabilitation                                    | 503.95   | 503.95  | 1,286.92  |
| Forestry  | 20.96  | 20.94   | 264.22  |
| Fisheries   | 301.48   | 301.48  | 263.35  |
| Livestock   | 135.46   | 135.46  | 185.23  |
| Support services <sup>3</sup>                     | 1,111.60                                       | 1,082.18                                      | 1,273.35  |
| Input subsidy for padi                            | 430.16   | 430.16  | 505.95  |
| Agricultural credit, processing,<br>and machinery | 606.27   | 576.85  | 743.27  |
| Extension and other services                      | 75.17  | 75.17   | 24.13   |
| Other programmes of MOA                           | 310.42   | 289.49  | 300.39  |
| Total   | 7,888.20                                       | 7,671.34                                      | 11,799.95   |

*Note:*

<sup>1</sup> Figures do not cover some rural development programmes such as water supply, roads, and health services. The respective figures are reflected in the relevant chapters.

<sup>2</sup> Under the Fifth Plan, the public sector has been redefined to include the non-financial public enterprises (NEPEs) which previously were treated as belonging to the private sector.

<sup>3</sup> Allocation for agricultural research for the Fifth Plan period is reflected in Chapter VIII.

