Chapter 4

Population, Employment and Manpower Development

4 POPULATION, EMPLOYMENT AND MANPOWER DEVELOPMENT

I. INTRODUCTION

4.01 The thrust of human resource development in the Sixth Malaysia Plan was the creation of more productive employment and the enhancement of the skill level of the workforce in order to meet the requirements of the rapid growth of the economy. Employment expanded at an impressive rate due to the strong economic growth, particularly in the manufacturing and construction sectors. Consequently, the unemployment rate declined to 2.8 per cent in 1995, surpassing the Second Outline Perspective Plan (OPP2) target of full employment by the year 2000. In order to relieve some of the pressures in the labour market, several measures were undertaken.

4.02 The full employment situation is expected to continue into the Seventh Malaysia Plan. To sustain the level of economic growth anticipated during the Plan period, higher productivity levels will be required. The upgrading of labour force skills, the promotion of improved managerial competence and initiative as well as the advancement of scientific and technological expertise will become major initiatives towards realizing this objective. Increased levels of education and training towards the development of specialized and managerial skills will not only help to raise labour productivity but will also help the economy to move towards the forefront of new technologies which are knowledge intensive. The efficient utilization and continuous development of human resources will, therefore, be a major policy objective during the Plan period.

II. PROGRESS, 1991-95

4.03 The Sixth Plan marked a turning point in the Malaysian economy from a labour surplus to a labour shortage situation. The buoyancy of the economy during the late eighties and the Sixth Plan period created a strong demand for

manpower at all levels. This strong demand placed a heavy strain on labour supply, leading to a tightening of the labour market. The unemployment rate, which is an indicator of labour utilization, declined sharply from 5.1 per cent in 1990 to 2.8 per cent in 1995, the lowest level of unemployment ever recorded. There was also a high turnover of several categories of skilled and professional workers. The education and training system could not respond adequately to meet all the requirements for skilled manpower. Given Malaysia's relatively small labour supply base, rapid economic growth and its corresponding employment growth translated into skill shortages.

Population

4.04 Current estimates indicate that the Malaysian population increased at an average annual rate of 2.7 per cent during the period 1991-95, to reach 20.69 million in 1995, as shown in *Table 4-1*. This relatively high rate of population growth can be accounted for by the substantial increase, averaging 12.3 per cent per annum during the period, in the non-citizen population, reflecting the inflow of foreign workers into the country. If these workers were excluded, the growth of the domestic population during the period was 2.2 per cent per annum. In terms of age structure, about 35 per cent of the population were below the age of 15, while 3.7 per cent were in the age-group 65 and above. The remaining 61 per cent were in the working-age category, that is, the age-group 15-64, indicating the relatively large size of the economically-active population or potential labour force. The median age of the population at 22 years reflects a continuing young population.

4.05 In terms of ethnic composition of the Malaysian citizen population, the Bumiputera population increased from 10.73 million in 1991 to 11.95 million in 1995, or a growth of 2.7 per cent per annum. The Chinese and Indian population grew by 1.3 per cent and 1.5 per cent to reach 5.29 million and 1.5 million, respectively, in 1995.

4.06 The size of the urban population increased by 4.5 per cent per annum from 9.5 million in 1991 to 11.3 million in 1995. As a result, the proportion of the population residing in urban areas increased from 51 per cent in 1991 to 54.7 per cent in 1995. This trend towards greater urbanization of the population is indicative of the growing economic opportunities and better social amenities in these areas.

TABLE 4-1

POPULATION SIZE AND AGE-STRUCTURE, 1991-2000

(million persons)

				Average Annual Growth Rate (%)	
	1991	*1995*	*2000*	*6MP*	*7MP*
Total Population	**18.55**[1]	**20.69**	**23.26**	*2.7*	*2.3*
Malaysian Citizens	17.75	19.38	21.52	*2.2*	*2.1*
Bumiputera	10.73	11.95	13.61	*2.7*	*2.6*
Chinese	5.02	5.29	5.60	*1.3*	*1.1*
Indian	1.41	1.50	1.61	*1.5*	*1.4*
Others	0.59	0.64	0.70	*2.0*	*1.8*
Non-citizens	0.80	1.31	1.74	*12.3*	*5.7*
Age-Structure					
0-14	6.90	7.33	7.74	*1.5*	*1.1*
15-64	10.97	12.60	14.62	*3.5*	*3.0*
65 and above	0.68	0.76	0.90	*3.0*	*3.4*
Dependency Ratio (%)	*69*	*64*	*59*		
Median Age (years)	21.6	22.4	23.6		

Note: [1] This estimate has taken into account adjustment for under-reporting of the population in the ages 0-1 in the 1991 Census.

Analysis of the Population and Housing Census, 1991

4.07 The above estimates were based on past and current demographic trends as well as from analysis of the results of the Population and Housing Census, 1991. The Census, which was undertaken as part of the Government's efforts to monitor changes in population size, structure and the socio-economic characteristics of the population, provides a statistical base for development planning, policy formulation and implementation. The results of the Census showed that the population of Malaysia grew at an average annual rate of 2.7 per cent from 13.74 million in 1980 to 18.48 million in 1991. The 1991 estimate of the population in the Census has, however, not taken into account underenumeration of the population in the ages 0-1.

4.08 The dependency ratio, which is the ratio of dependents to every 100 persons of working-age, decreased from 76 in 1980 to 69 in 1991, showing a declining dependency burden. In 1995, the dependency ratio dropped further to 64. The relatively sharp drop in the dependency ratio can be explained largely by the reduction in the proportion of the population aged below 15 years brought about by continued declines in fertility. The dependency ratio is a measure of the relationship between those persons who bear the responsibility of support and those who depend on them for their well-being. A declining dependency ratio at the macro level implies a potential for increased national savings given the lower household expenditure on dependents.

4.09 All states in Malaysia registered increases in their population. There were, however, differentials in growth rates among the states. The states that registered the highest rates of population growth were Wilayah Persekutuan Labuan, Sabah and Selangor, while Perak, Melaka and Pulau Pinang experienced the lowest rates of growth during the period 1980-91. The high rates of population growth experienced by Wilayah Persekutuan Labuan and Sabah of 6.1 per cent and 5.5 per cent, respectively, were due to a combination of high rates of natural increase and international migration. In the case of Selangor, the high growth rate of 4.2 per cent per annum was largely due to an increased level of net in-migration from neighbouring states. The lower rates of population growth registered in Perak, Melaka and Pulau Pinang were attributed to low rates of natural increase and significant out-migration, particularly with respect to Perak.

4.10 On the basis of the ethnic classification used in the 1991 Census, 61.7 per cent of Malaysian citizens were Bumiputera, 27.3 per cent Chinese and 7.7 per cent Indians, while the rest were Others in 1995. About 4 per cent of the total population were non-citizens.

4.11 The Census also showed a significant increase in the number of external in-migrants[1] who came into the country during the period 1986-91. A total inflow of about 300,000 external in-migrants was recorded compared with 119,000 during the period 1975-80, an increase of 152 per cent. Of this total, three quarters were from the ASEAN countries of Indonesia, the Philippines and Thailand. The increase in the number of external in-migrants was mainly

[1] These are defined as persons currently residing in Malaysia but who reported themselves as having a usual place of residence outside Malaysia five years before Census day.

a result of the influx of migrant labour to meet the labour shortages which had begun to emerge in the early 1990s. In terms of state distribution of these external in-migrants, about 40 per cent were located in Sabah, 11 per cent in Selangor, 10.8 per cent in Johor and 7.6 per cent in Wilayah Persekutuan Kuala Lumpur. The balance of 30.6 per cent was spread over the remaining states. With the exception of Sabah which has traditionally been a receiving state for external in-migrants, the increase in Selangor, Johor and Wilayah Persekutuan Kuala Lumpur was essentially a reflection of tight labour markets as a result of high economic and employment growth in these states.

4.12 The 1991 Census recorded a total of 989,000 persons, or 6.0 per cent of the total population residing in the country, who were born outside Malaysia. Of this number, about 38 per cent were citizens. A comparison of the size of the foreign-born population between the Census years of 1980 and 1991 indicated an increase of 47 per cent. This sharp increase was primarily due to very significant increases in foreign-born population originating from Indonesia and the Philippines.

4.13 Urbanization is an important process of development that brings about changes in population. The 1991 Census showed that 51 per cent of the Malaysian population resided in urban areas in 1991 compared with 34 per cent in 1980, with the rate of urban growth at 5.1 per cent per annum. The higher level of urbanization in 1991 was essentially due to the inclusion of built-up areas in the definition of urban areas[2]. The high rate of urbanization was also due to natural increase and migration flows. Rural-urban movements made up 17 per cent of total inter-state migration during 1986-91 and 23 per cent of total inter-district or intra-state migration.

4.14 A good indicator of the quality of human resources is the literacy rate. Using the population aged 10 years and above who had ever attended school as a proxy for literacy, it was found that the rate of literacy in the country in 1991 was 85 per cent compared with 72 per cent in 1980. An interesting observation was the increasing literacy levels among females and the narrowing of the sex differential in the proportion of those ever been to school. While in 1980 only 64 per cent of the female population aged 10 and above had ever

[2] The 1991 Census defined urban areas as gazetted areas and their adjoining built-up areas with a combined population of 10,000 persons or more. This definition differed from that used in previous censuses where urban areas were restricted to gazetted areas with a population of 10,000 or more.

been to school, in 1991 it had increased to 80 per cent. For males, it improved from 80 per cent in 1980 to 90 per cent in 1991. Consequently, the literacy differential between the sexes was reduced to 10 percentage points by 1991 compared with 16 percentage points in 1980. The overall literacy rate further improved to 91 per cent in 1995 as a result of continuing efforts to expand educational opportunities to all Malaysians.

Labour Force

4.15 As a result of the continuing high growth of the working-age population, the increase in the labour force participation rate from 65.9 per cent in 1990 to 66.9 per cent in 1995 as well as large inflows of foreign labour, the labour force increased at an average annual rate of 2.9 per cent during the period. The male labour force participation rate increased from 86.3 per cent to 86.8 per cent, while the rate for females increased from 45.8 per cent to 47.1 per cent. There were slightly over one million additional entrants into the labour market over the Sixth Plan period, or about 220,000 persons per year. There was a gradual decline in the proportion of the labour force in the age group 15-24, both as a result of the continuing fertility decline as well as increases in the length of the schooling period. People were also generally entering the labour market at older ages. Analysis of data on active employment registration at the Manpower Department offices showed that the proportion of registrants in the age-group 15-24 declined from 78.4 per cent in 1985 to 71.3 per cent in 1994. However, registrants in the age-groups 25-29 and 30-39 increased from 12.2 per cent and 7.7 per cent in 1985 to 15.1 per cent and 9.9 per cent in 1994, respectively.

4.16 The educational profile of the labour force showed a progressively more educated workforce. About 55 per cent of the labour force had undergone secondary education in 1995 compared with 52 per cent in 1990. In addition, while 5.3 per cent had pursued college or university education in 1990, the proportion was 6.3 per cent in 1995. Despite this increase, the share was still relatively low, indicating the need to intensify efforts to increase the supply of highly-educated manpower.

4.17 A noticeable trend during the Sixth Plan period was the increasing utilization of foreign labour to augment labour force requirements. This followed the decision of the Government in 1991 to liberalize the policy on the employment of foreign labour given the emergence of labour shortages then. By the end of 1995, a total of 649,680 work permits was issued to migrant

workers. Of this, 76 per cent were issued in Wilayah Persekutuan Kuala Lumpur, Johor, Sabah and Selangor. About two-thirds of the temporary work permits were issued for work in the plantation and construction sectors and 11 per cent for work in the manufacturing sector. Work permits issued to domestic helpers accounted for 23 per cent.

Employment by Sector

4.18 Compared with labour force growth of 2.9 per cent, employment expanded at a much faster rate of 3.4 per cent per annum during 1991-95, as shown in *Table 4-2*. This impressive expansion in the demand for labour was due to buoyant economic conditions that were sustained throughout the period. On a net basis, a total of about 1.2 million new jobs was created, exceeding the 1.1 million jobs forecast in the Sixth Plan. Thus, although labour force growth remained high, the relatively stronger growth of employment resulted in labour shortages in most sectors of the economy.

4.19 The *manufacturing* sector, which registered rapid output growth, accounted for about one quarter of total employment and generated almost 60 per cent of net employment creation. The strong demand for labour in the sector, growing at 9.0 per cent per annum during the period, coupled with industrial restructuring towards higher value-added products and activities, resulted in labour shortages not only at the production level but also at the skilled and semi-skilled levels. There was increasing utilization of modern technology and labour-saving methods, such as computer-numerically-controlled machines, computer-aided design and manufacturing, and robotics, particularly among newer plants. However, the transition to greater capitalization was slow because of high capital costs, shortage of skilled manpower, especially in new technology areas, and unavailability of these machinery and equipment locally.

4.20 The *services* sector accounted for about one half of total employment and 47 per cent of total job creation during 1991-95. The major contributors to employment in the sector were the other services subsector; finance subsector; and the wholesale and retail trade, hotels and restaurants subsector, which together created 443,500 jobs.

4.21 Employment in the *construction* sector grew at an average rate of 9.2 per cent per annum and accounted for about 19 per cent of total job creation. This creditable growth arose from the massive investments in infrastructure

TABLE 4-2

EMPLOYMENT BY SECTOR, 1990-2000

('000 persons)

Industry	*1990*	*%*	*1995*	*%*	*2000*	*%*	*Average Annual Growth Rate (%)* *6MP*	*7MP*	*Net Job Creation* *6MP*	*%*	*7MP*	*%*
Agriculture, Forestry, Livestock & Fishing	1,738.0	*26.0*	1,428.7	*18.0*	1,187.7	*13.1*	*–3.8*	*–3.6*	–309.3	*–25.2*	–241.0	*–20.9*
Mining & Quarrying	37.0	*0.6*	40.7	*0.5*	44.5	*0.5*	*1.9*	*1.8*	3.7	*0.3*	3.8	*0.3*
Manufacturing	1,333.0	*19.9*	2,051.6	*25.9*	2,616.3	*28.9*	*9.0*	*5.0*	718.6	*58.5*	564.7	*49.1*
Construction	424.0	*6.3*	659.4	*8.3*	845.4	*9.3*	*9.2*	*5.1*	235.4	*19.1*	186.0	*16.2*
Electricity, Gas & Water	47.0	*0.7*	69.1	*0.9*	84.0	*0.9*	*8.0*	*4.0*	22.1	*1.8*	14.9	*1.3*
Transport, Storage & Communications	302.0	*4.5*	395.2	*5.0*	506.9	*5.6*	*5.5*	*5.1*	93.2	*7.6*	111.7	*9.7*
Wholesale & Retail Trade, Hotels & Restaurants	1,218.0	*18.2*	1,327.8	*16.8*	1,469.6	*16.2*	*1.7*	*2.1*	109.8	*8.9*	141.8	*12.3*
Finance, Insurance, Real Estate & Business Services	258.0	*3.9*	378.5	*4.8*	479.0	*5.3*	*8.0*	*4.8*	120.5	*9.8*	100.5	*8.7*
Government Services	850.0	*12.7*	872.2	*11.0*	894.2	*9.9*	*0.5*	*0.5*	22.2	*1.8*	22.0	*1.9*
Other Services	479.0	*7.2*	692.2	*8.7*	938.6	*10.4*	*7.6*	*6.3*	213.2	*17.3*	246.4	*21.4*
Total	**6,686.0**	***100.0***	**7,915.4**	***100.0***	**9,066.2**	***100.0***	***3.4***	***2.8***	**1,229.4**	***100.0***	**1,150.8**	***100.0***
Labour Force	7,042.0		8,140.0		9,327.1		*2.9*	*2.8*				
Local	6,752.0		7,490.0		8,546.1		*2.1*	*2.7*				
Foreign	290.0		650.0		781.0		*17.5*	*3.7*				
Unemployment	356.0		224.6		260.9							
Unemployment Rate (%)	*5.1*		*2.8*		*2.8*							

projects such as the Kuala Lumpur International Airport (KLIA) at Sepang, Kuala Lumpur City Centre, Kuala Lumpur Tower, the major port expansion at Port Klang and North Butterworth Container Terminal, and the *Keretapi Tanah Melayu* electrified double-tracking project. In addition, there was substantial development of residential and commercial property. With the strong growth of employment in this sector, its share to total employment increased from 6.3 per cent in 1990 to 8.3 per cent in 1995.

4.22 Employment in the *agriculture* sector declined by 3.6 per cent per annum as a result of a slower growth of output and increasing mechanization in the sector. In absolute terms, the decline in agricultural employment translates into a reduction of an estimated 309,300 jobs during the period. As a result, the share of agricultural employment to total employment fell from 26.0 per cent in 1990 to 18.0 per cent in 1995. On the labour supply side, the sector continued to face labour shortages as local labour moved into other economic sectors because of better prospects and wages. In order to address the shortage of labour, particularly in rubber and oil palm estates, employers upgraded housing and social amenities to retain and attract labour into the estate sector. During the period, 8,740 housing units were provided by plantations for their workers in line with the requirements of the Workers Minimum Standards of Housing and Amenities Act, 1990. In addition, the plantation sector increasingly resorted to the use of foreign labour.

4.23 During the Sixth Plan period, several measures were implemented to overcome the labour shortage problem. As a short-term measure, the Government allowed the employment of foreign workers in plantations, construction, manufacturing and selected services sectors. For the manufacturing sector, employers were permitted to apply for the recruitment of foreign workers at the skilled, semi-skilled, professional and technical levels on a case by case basis. As an additional measure, the Government exempted permanent residents from obtaining work permits under the Employment (Restriction) Act, 1968 and increased the overtime limit for a worker from 64 hours to 104 hours per month. These short-term measures were aimed at providing firms with alternative labour sources as well as time to adjust to labour-saving technology. The Government was also selective in its choice of investments towards more capital-intensive projects, partly intended to reduce the pressure on labour supply. In addition, various measures were undertaken to increase female participation in the labour market. These included the provision of tax exemptions to employers for the establishment of child-care centres or creches near or at workplaces as well as the provision of job-training, transport facilities and improved working conditions.

Employment by Occupation

4.24 Consistent with the high employment growth in the manufacturing and services sectors during the Plan period, the demand for workers in the professional and technical as well as administrative and managerial categories expanded rapidly. As shown in *Table 4-3*, the average annual rates of growth of jobs in the professional and technical, and administrative and managerial categories were 6.8 per cent and 5.5 per cent per annum, respectively, indicating the strong demand for manpower with tertiary education as well as technical and professional training. These two categories accounted for almost one quarter of the total number of jobs created during the period. There was also a strong demand for production workers, particularly as a result of the expansion of the manufacturing sector.

4.25 The *professional and technical* category accounted for 18.6 per cent of the total employment created or 228,900 jobs during the period 1991-95. The upgrading of production technology towards more sophisticated and automated processes generated a demand for about 36,350 engineers and 48,800 engineering assistants. The demand was highest in the civil, electrical and electronics, and mechanical engineering fields, as shown in *Table 4-4*. There was also a high demand for health professionals such as physicians and surgeons as well as for allied health professionals such as nurses, medical assistants and medical laboratory technologists, and dental paramedics. This was mainly due to the rapid growth in private hospitals and expansion in public health facilities, as a result of increased demand for more and better health services arising from substantial income growth in the economy. The net increase in the employment of medical and health professionals was about 5,200, while that of allied health professionals was 12,500.

4.26 For selected professional and technical occupations, such as those in engineering, health and teaching, the demand could not be adequately met by local public and private educational and training institutions as well as from overseas. This resulted in shortages which were particularly critical in the case of electrical and electronics and mechanical engineers, and engineering assistants. The current output of engineers from local tertiary institutions as well as those from overseas amounted to 13,100 compared with the demand of 36,350 during the Plan period. With regard to engineering assistants, the demand was higher than the supply of 26,600 from local tertiary institutions. Shortages were also reported in all fields of health specialization such as psychiatry, forensic

TABLE 4-3

EMPLOYMENT BY MAJOR OCCUPATIONAL GROUP, 1990-2000

('000 persons)

Occupational Group	*1990*	*%*	*1995*	*%*	*2000*	*%*	*Average Annual Growth Rate (%)* *6MP*	*7MP*	*Net Job Creation* *6MP*	*%*	*7MP*	*%*
Professional, Technical & Related Workers	586.4	*8.8*	815.3	*10.3*	1,097.0	*12.1*	*6.8*	*6.1*	228.9	*18.6*	281.7	*24.5*
Administrative & Managerial Workers	163.8	*2.4*	213.7	*2.7*	290.1	*3.2*	*5.5*	*6.3*	49.9	*4.1*	76.4	*6.6*
Clerical & Related Workers	652.6	*9.8*	799.5	*10.1*	933.8	*10.3*	*4.1*	*3.2*	146.9	*11.9*	134.4	*11.7*
Sales Workers	768.9	*11.5*	894.4	*11.3*	1,042.6	*11.5*	*3.1*	*3.1*	125.5	*10.2*	148.2	*12.9*
Service Workers	777.6	*11.6*	981.5	*12.4*	1,169.5	*12.9*	*4.8*	*3.6*	203.9	*16.6*	188.0	*16.3*
Production & Related Workers, Transport Equipment Operators & Labourers	1,846.0	*27.6*	2,548.8	*32.2*	3,046.2	*33.6*	*6.7*	*3.6*	702.8	*57.2*	497.5	*43.2*
Agricultural, Animal Husbandry & Forestry Workers, Fishermen & Hunters	1,890.7	*28.3*	1,662.2	*21.0*	1,486.9	*16.4*	*–2.5*	*–2.2*	–228.5	*–18.6*	–175.4	*–15.2*
Total	**6,686.0**	***100.0***	**7,915.4**	***100.0***	**9,066.2**	***100.0***	***3.4***	***2.8***	**1,229.4**	***100.0***	**1,150.8**	***100.0***

TABLE 4-4

EMPLOYMENT BY SELECTED OCCUPATION, 1990-2000

(persons)

Occupation	*6MP*			*7MP*			*Output*		*Demand - Supply Gap Shortage/Surplus*	
	Stock 1990	*Employment 1995*	*Net Increase*	*Stock 1995*	*Employment 2000*	*Net Increase*	*6MP*	*7MP*	*6MP*	*7MP*
Engineers[1]	**18,904**	**55,254**	**36,350**	**49,729**	**83,590**	**33,861**	**13,092**	**26,570**	**-23,258**	**-7,291**
Civil	6,429	16,695	10,266	15,026	24,051	9,025	1,707	4,110	-8,559	-4,915
Electrical & Electronics	6,151	15,759	9,608	14,183	24,566	10,383	2,696	7,123	-6,912	-3,260
Mechanical	2,989	12,583	9,594	11,325	19,488	8,163	2,367	5,904	-7,227	-2,259
Chemical	1,037	1,708	671	1,537	2,452	915	649	1,113	-22	198
Others	2,298	8,509	6,211	7,658	13,033	5,375	5,673	8,320	-538	2,945
Engineering Assistants	**43,276**	**92,082**	**48,806**	**78,269**	**151,844**	**73,575**	**26,581**	**41,899**	**-22,225**	**-31,676**
Civil	18,752	25,971	7,219	22,075	37,754	15,679	6,432	9,717	-787	-5,962
Electrical & Electronics	16,492	40,023	23,531	34,020	65,459	31,439	9,573	14,361	-13,958	-17,078
Mechanical	5,106	18,706	13,600	15,900	36,345	20,445	5,768	9,282	-7,832	-11,163
Chemical	333	1,425	1,092	1,211	2,641	1,430	239	440	-853	-990
Others	2,593	5,957	3,364	5,063	9,645	4,582	4,569	8,099	1,205	3,517
Medical & Health Professionals	**9,722**	**14,903**	**5,181**	**12,917**	**21,328**	**8,411**	**3,865**	**5,941**	**-1,316**	**-2,470**
Physicians & Surgeons	7,012	10,346	3,334	9,504	15,510	6,006	2,728	4,525	-606	-1,481
Dentists & Dental Surgeons	1,471	2,586	1,115	1,791	2,909	1,118	677	452	-438	-666
Pharmacists	1,239	1,971	732	1,622	2,909	1,287	460	964	-272	-323
Allied Health Professionals	**39,131**	**51,588**	**12,457**	**44,750**	**75,016**	**30,266**	**10,947**	**21,852**	**-1,510**	**-8,414**
Physiotherapists & Occupational Therapists	234	517	283	410	911	501	225	401	-58	-100
Radiographers	508	758	250	537	1,297	760	187	512	-63	-248
Health Inspectors	1,007	1,647	640	1,418	2,695	1,277	335	601	-305	-676
Med. Assts. & Med. Lab. Technologists	4,903	6,750	1,847	5,392	9,842	4,450	1,064	2,895	-783	-1,555
Dental Paramedics & Auxiliary	2,137	3,235	1,098	2,720	6,361	3,641	779	1,377	-319	-2,264
Pharmaceutical Assistants	1,410	2,172	762	1,872	3,359	1,487	497	655	-265	-832
Nurses[2]	28,932	36,509	7,577	32,401	50,551	18,150	7,860	15,411	283	-2,739
School Teachers	**172,164**	**244,188**	**72,024**	**222,890**	**322,807**	**99,917**	**66,771**	**99,917**	**-5,253**	**0**
Primary	104,098	144,191	40,093	135,790	197,835	62,045	38,268	62,045	-1,825	0
Secondary	68,066	99,997	31,931	87,100	124,972	37,872	28,503	37,872	-3,428	0

Notes:

[1] Output include graduates from local public and private tertiary institutions as well as overseas graduates privately sponsored, and those sponsored by the Government and major corporations.

[2] Nurses comprise staff nurses, community nurses, assistant nurses and midwives.

medicine, haematology, paediatrics, and obstetrics and gynaecology. In addition, there was a shortage of school teachers, particularly those teaching mathematics, Islamic education, living skills and technical subjects.

4.27 The demand for research and development (R&D) personnel became increasingly important during the Sixth Plan period as Malaysia strove to build up its scientific and technological capability and competence for sustained economic growth. In 1990, there were 13,600 research personnel including 5,600 research scientists. The number of research scientists increased to about 8,300 in 1995. This gave a ratio of 400 research scientists per million population in 1995 compared with ratios ranging from 1,800 to 2,200 per million in some newly industrializing economies, reflecting the need for greater efforts in increasing R&D personnel in Malaysia.

4.28 The demand for *administrative and managerial* manpower grew at an average annual rate of 5.5 per cent, accounting for 4.1 per cent of total job creation. Senior and experienced managers were in demand by the banking and other financial institutions, hotels and manufacturing firms.

4.29 Occupations in the *service workers* category grew at 4.8 per cent per annum and accounted for 16.6 per cent or 203,900 jobs created during the period 1991-95. About 40 per cent of these workers were employed in the tourism industry which comprises the accommodation subsector, travel agencies, airlines and non-travel organizations. The rapid expansion of hotels and increasing tourist arrivals led to the increased demand for tourism-related workers.

4.30 The largest number of jobs created was in the *production workers* category, totalling 702,800 jobs or 57.2 per cent of the total jobs created during the period. Demand for production workers, both skilled and unskilled, grew by 6.7 per cent per annum, mainly in the manufacturing sector.

4.31 The demand for *agricultural workers* declined by 2.5 per cent per annum due to the slower growth in output of the agriculture sector and the increased mechanization of agricultural activities. Despite the declining demand for agricultural workers, the sector still experienced a labour shortage due to the movement of workers to more remunerative jobs in the manufacturing and services sectors.

Wages and Productivity

4.32 The strong demand for labour during 1991-95 was accompanied by increases in labour productivity in all sectors. For the economy as a whole, labour productivity, as measured by Gross Domestic Product (GDP) per worker in constant 1978 prices, increased by 5.1 per cent per annum from RM11,870 in 1990 to an estimated RM15,200 in 1995. This rate of growth far exceeded the overall rate of labour productivity growth of 3.3 per cent during 1986-90. Output per worker in the manufacturing sector at RM19,410 in 1995, higher than that of the economy as a whole, reflected an average annual growth of 3.9 per cent. Labour productivity growth in the agriculture and services sectors were 6.1 per cent and 5.9 per cent, respectively, during the period. The growth of GDP per worker in the services sector at 5.9 per cent per annum compared with 1.8 per cent during 1986-90 was particularly impressive, indicating higher efficiency in the use of labour resources, including greater use of information technology.

4.33 The tight labour market resulted in upward pressure on wages during the Sixth Plan period. Data from the Monthly Survey of Manufacturing Industries showed that average nominal manufacturing wages increased by about 27 per cent between 1990 and 1994 or 6.2 per cent per annum. The growth of real product wage or nominal wage deflated by producer prices during this period was 13.8 per cent, while real sales value per worker, which is used as an indicator of productivity, experienced an increase of 7.3 per cent. With productivity growth lagging behind wage growth in the sector, there was pressure on unit labour costs. This phenomenon was particularly marked in 1990-92, where high wage growth unaccompanied by corresponding productivity growth resulted in rising unit labour costs. However, productivity growth in the manufacturing sector began to experience an upward trend, with growth at 4.6 per cent and 6.8 per cent in 1993 and 1994, respectively. With real wages stabilizing in 1994 and 1995, indicating the effects of labour market adjustments, unit labour costs in the manufacturing sector started to show a decline in the later part of the Sixth Plan.

4.34 From a comparative international perspective, Malaysian unit labour costs in the manufacturing sector experienced a declining trend during the period. A recent study covering 22 countries, which included both developed and developing countries, showed that with the relative decline in unit labour costs, the ranking of the Malaysian manufacturing sector in terms of unit labour costs had improved from number 10 in 1990 to number seven in 1993. This is indicative of a relative improvement in cost competitiveness during the period.

Manpower Development

4.35 With the investments in the economy becoming more capital intensive, the demand for higher-level manpower increased rapidly. In order to meet the manpower demand at the professional and sub-professional levels, intensified efforts were undertaken to increase the enrolment of science and technical students in local universities. These efforts included the establishment of new universities, namely *Universiti Malaysia Sarawak* and *Universiti Malaysia Sabah* and polytechnics in Dungun, Johor Bahru, Perai and Shah Alam as well as the expansion in capacities of existing institutions of higher learning. In addition, institutes managed by major corporations, namely *Petroliam Nasional Berhad* (PETRONAS) and *Tenaga Nasional Berhad* upgraded their training courses to degree levels, especially in the fields of engineering and applied sciences. Student enrolment in higher learning institutions in science and technical-related courses registered an annual increase of 10.6 per cent, from 21,580 in 1990 to 35,710 in 1995. Correspondingly, there was a decline in the proportion of students enrolled in arts courses, from 59 per cent in 1990 to 55 per cent in 1995.

4.36 The rapid growth of the manufacturing activities, especially towards higher value-added, led to an increasing demand for skilled and semi-skilled manpower. During the period 1991-95, about 149,580 skilled and semi-skilled manpower were produced by both the public and private education and training institutions. Total output increased from 21,170 in 1990 to 34,630 in 1995, registering a growth rate of 10.3 per cent per annum during the period, as shown in *Table 4-5*. Almost 82 per cent of the output in 1995 were in engineering trades, particularly mechanical and electrical engineering, reflecting the responsiveness of the skill formation system in meeting the increased demand for skilled and semi-skilled manpower in the manufacturing sector. Another 10 per cent of the output were in building trades to meet the needs of the buoyant construction sector. The supply of skilled and semi-skilled manpower was mainly from the public technical and vocational training institutions. The total output of public training institutions during the Plan period was 115,540 compared with the revised target of 105,610. Output from the private sector increased from about 3,300 in 1990 to 8,300 in 1995, with total output amounting to 31,970 during the period.

4.37 The high inflow of foreign investment into the country resulted in the introduction of new production processes and technologies, particularly by multinational companies. This necessitated the country to produce highly

TABLE 4-5

OUTPUT OF SKILLED AND SEMI-SKILLED MANPOWER BY COURSE[1], 1990 - 2000

(persons)

Course	1990			1995			2000			6MP	7MP	Average Annual Growth Rate (%)	
	Public	Private	Total	Public	Private	Total	Public	Private	Total			6MP	7MP
Engineering Trades	15,076	2,715	17,791	20,643	7,496	28,139	22,994	15,078	38,072	121,110	173,068	9.6	6.2
Mechanical	9,661	709	10,370	11,766	1,679	13,445	11,862	3,378	15,240	58,972	72,330	5.3	2.5
Electrical	5,230	1,936	7,166	8,647	5,743	14,390	10,896	11,551	22,447	60,701	99,012	15.0	9.3
Civil	185	70	255	230	74	304	236	149	385	1,437	1,726	3.6	4.8
Building Trades	2,686	110	2,796	3,405	205	3,610	3,954	412	4,366	16,845	17,838	5.2	0.0
Printing Trades	29	9	38	102	25	127	2,392	51	2,443	414	12,155	27.3	80.6
Others	18	429	447	1,478	576	2,054	4,984	1,158	6,142	7,711	29,387	35.7	24.5
Skill-Upgrading	97	n.a.	97	700	n.a.	700	960	n.a.	960	3,500	4,800	48.5	6.5
Total[2]	**17,906**	**3,263**	**21,169**	**26,328**	**8,302**	**34,630**	**35,284**	**16,699**	**51,983**	**149,580**	**237,248**	**10.3**	**8.5**

Notes:

[1] Includes local public and private training institutions.

[2] Does not include output from courses such as commerce, agriculture, home science and other soft skills.

n.a. Not available

competent manpower with advanced skills in specialized trades. In responding to these new industrial requirements, two advanced skill-training institutions were established during the period, namely the German-Malaysian Institute (GMI) in the areas of industrial electronics and production technology and the Malaysia-France Institute (MFI) in electrical equipment installation, welding technology and maintenance of automated systems. In addition, a Business and Advanced Technology Centre (BATC) under the management of *Universiti Teknologi Malaysia* was established in 1992 to produce more engineering managers who can integrate state-of-the-art technological knowledge with practical business management skills. Several state skill development centres were also established to upgrade the skill level of the workforce on a regional basis. These centres were in the States of Johor, Kedah, Melaka, Pahang, Perak, Sarawak, Selangor and Terengganu. The Penang Skill Development Centre, which was established in 1989, was expanded to provide increased and improved training facilities. During the Plan period, 17,630 personnel were trained by these state development centres.

4.38 As part of the measures to increase the supply of trained manpower, the Human Resources Development Fund (HRDF) was established in 1992, with a matching grant from the Government, to stimulate private sector involvement in training and retraining of their workers. Under this scheme, manufacturing firms employing 50 or more employees were required to contribute one per cent of the monthly wages of their employees to the Fund and after six months of contribution would be eligible for training grants to retrain and upgrade the skills of their employees. In 1995, the HRDF Scheme was extended to firms with 10 to 49 workers and a paid-up capital of RM2.5 million and more. The scheme was also extended to firms in selected services industries, namely the hotel industry, air transport, tour operating business and travel agency business, telecommunications, freight forwarders, shipping, postal and courier services, advertising and computer services.

4.39 As at the end of 1995, a total levy of RM229.9 million was collected by the HRDF. Of this, RM139.7 million or 60.8 per cent were disbursed during 1993-95 for post-employment training programmes approved by the Human Resources Development Council (HRDC). This involved the retraining and skill upgrading of 639,110 workers under the four training schemes, namely *Skim Bantuan Latihan* (SBL), *Skim Program Yang Diluluskan* (PROLUS), *Skim Pelan Latihan Tahunan* (PLT) and *Skim Perjanjian Dengan Penyedia Latihan* (PERLA). The SBL scheme which provides flexibility to the employers to conduct in-plant training had the largest number of trainees of about 76 per cent of the total

and the highest allocation or 80.8 per cent, indicating employers preferences for in-plant training over training offered by external training providers. More than 35 per cent of the workers received training in technical and quality-related courses, while the rest in computer-based and supervisory programmes.

4.40 A recent study on training undertaken by manufacturing firms revealed that about 27 per cent of eligible firms with 50 or more employees did not register and contribute to the HRDF. These were generally smaller firms involved in traditional and domestic-oriented industries such as food, wood and furniture, and glass and pottery. Further, over one third of the registered firms, mainly small firms, have not claimed reimbursements under any of the four HRDF schemes. The reasons cited for not utilizing the fund include the limited resources for training, use of mature technology with low skill requirements, adequacy of skills provided by training institutions and the relative ease in hiring skilled workers from other firms. The low utilization reduced the effectiveness of the HRDF in promoting enterprise-based training and preventing staff poaching among firms. The HRDC took steps in 1995 to simplify the administrative procedures for reimbursement with a view to stepping up the utilization rate of the fund.

4.41 The Government also introduced a number of tax incentives in 1995 in order to step up private sector involvement in technical and vocational training. These included an investment tax allowance of 100 per cent for 10 years for companies which established vocational and technical institutions or for existing training institutions which undertook additional investments. An additional incentive was the exemption from import duties, sales tax and excise duties on materials, machinery and equipment used for training.

III. PROSPECTS, 1996-2000

4.42 Human resource development will continue to be a major thrust in the Seventh Plan in the light of the anticipated strong economic growth during the period which will place a heavy demand for labour. The challenge for human resource development will be increasing the productivity and efficiency in the use of labour as well as expanding the domestic labour supply. The education and skill delivery system will be upgraded and expanded to produce the educated and trained manpower required by the economy. In this regard, attention will be given to the production of skills that keep pace with technological developments arising from the transformation of the economy towards an industrial-based production structure.

Population and Labour Force

4.43 The Malaysian population is estimated to grow at an average annual rate of 2.3 per cent during the Seventh Plan period to reach 23.26 million by the end of the decade. About 63 per cent of the total population are expected to be in the working-age group 15-64, indicating the continued availability of potential manpower resources. As a result of fertility decline, the 0-14 age group, which accounted for about 35 per cent of the population in 1995, is expected to decline to about 33 per cent by the year 2000. The median age of the population is estimated to be 24 years by the end of the decade. In terms of broad regional distribution, an estimated 79 per cent of the population are expected to be living in Peninsular Malaysia, 12 per cent in Sabah and 9 per cent in Sarawak. The rate of urban growth during the Seventh Plan period is projected at 3.8 per cent per annum compared with 4.5 per cent per annum during 1991-95. By the year 2000, Bumiputera is expected to comprise 63 per cent, Chinese 26 per cent and Indian 7.5 per cent of Malaysian citizens. About 7.5 per cent of the total population will be non-citizens. This component of the population is, however, expected to grow at a slower rate in view of the Government's intention to reduce the dependence on foreign labour during the period.

4.44 The labour force is expected to grow at a rate of 2.8 per cent per annum to reach about 9.3 million by the year 2000, as shown in *Table 4-2*. The labour force participation rate is expected to increase during the period from 66.9 per cent to 67.1 per cent, with the rate for females rising from 47.1 per cent to 47.5 per cent. With greater access to educational opportunities as well as increasing emphasis on human capital investment, the labour force is expected to be more educated and better trained. The labour force will also continue to have a young age profile, with about 60 per cent of the labour force in the 15-34 age group.

Employment by Sector

4.45 Based on the continued favourable economic outlook, employment is expected to grow at 2.8 per cent per annum during 1996-2000, with the creation of about 1.2 million additional jobs. The unemployment rate is expected to stabilize at around 2.8 per cent by the year 2000. The rate of employment growth, which is lower than the rate experienced during the Sixth Plan period, is premised on a progressive movement in the economy towards higher capital

intensity and increasing efficiency in the use of labour. The implementation of these measures is expected to form important components of firm-level adjustment to the labour shortage problem. As a result, the dependence on foreign labour will be progressively reduced.

4.46 With the exception of the agriculture sector, all sectors are expected to register positive employment growth. The manufacturing sector will lead in the creation of new jobs, followed by other services, construction and the wholesale and retail trade sectors, as shown in *Table 4-2*.

4.47 The Government will continue to promote capital-intensive, higher value-added and high technology-based activities in the *manufacturing* sector. This strategy, while enhancing industrial restructuring, will assist in reducing the demand for unskilled labour. The manufacturing sector is projected to create a total of 564,700 new jobs or 49 per cent of total new jobs created during the Seventh Plan period. At the estimated growth rate of 5.0 per cent per annum, it will represent one of the fastest growing sectors during the period. In terms of size, employment in manufacturing will account for more than two times the size of agricultural employment at the end of the decade.

4.48 Employment in the *services* sector is expected to experience a rate of growth of 3.2 per cent during 1996-2000, reflecting the general buoyancy of the economy as well as output growth in the services sector. Within the services sector, the other services subsector, which mainly comprises community, social and personal services, is expected to register the highest rate of growth at 6.3 per cent per annum and account for 21 per cent of total net job creation. The slow growth of employment in the Government services sector is consistent with the ongoing policy of consolidation of the public sector as well as the privatization programme.

4.49 With a slower growth of agricultural output expected during the Seventh Plan period, the demand for labour in the *agriculture* sector is projected to decline further to 1.2 million in the year 2000. The shortage of labour in the sector is expected to remain acute as other more dynamic sectors compete for labour. Despite these problems, the agriculture sector is still expected to play an important and strategic role in the economy with respect to export earnings, food security and the provision of raw materials to the agro-based industries. The growth prospects for agriculture will, therefore, hinge on the ability of the labour force to enhance its productivity. In the face of limited supplies of local labour, alternative ways of utilizing labour more optimally will

have to be identified. R&D efforts in labour-saving technology will be intensified to conserve on labour use and improve productivity. The employment of foreign labour on a limited and selective scale will be permitted in the agriculture sector. Alongside this, measures will be taken to retain labour, among others, through improving workers standard of living, particularly their living conditions in plantations and smallholdings. In further recognition of labour shortages in the sector, the Government will encourage Malaysian plantation companies to relocate their activities in neighbouring countries which enjoy the benefits of both land availability and labour surplus. This will enable existing plantations in Malaysia to be converted for industrial purposes.

Employment by Occupation

4.50 The demand for manpower in most occupational categories is expected to increase during 1996-2000, as shown in *Table 4-3*. While the administrative and managerial category is expected to register the highest growth rate, demand for manpower in the professional and technical category as well as for production workers will continue to dominate total manpower requirements. The demand for agricultural workers, however, is expected to continue to decline.

4.51 With an estimated average annual growth rate of 6.1 per cent during 1996-2000, occupations in the *professional and technical* category will account for 12.1 per cent of total employment by the year 2000. This level is comparable to that found in newly industrialized economies such as Hong Kong, Republic of Korea and Singapore. Demand for engineers and engineering assistants will continue to be high with the shift towards more capital-intensive industries such as machinery manufacture and engineering, manufacture of transportation equipment and construction materials, industrial chemicals and non-ferrous metals. While the demand for engineers and engineering assistants in electrical and electronics, mechanical and civil engineering will be substantial, there is also increasing demand for engineers in non-traditional fields such as electro-mechanical, industrial efficiency, instrumentation, materials and software engineering. During the Plan period, an additional 33,900 engineers and 73,600 engineering assistants will be required, as shown in *Table 4-4*. There will also be a high demand for physicians, surgeons, pharmacists and other health personnel in line with the greater demand for improved health services. Major specialist areas in high demand include general health, paediatrics, general surgery, obstetrics and gynaecology, anaesthesiology, psychiatry, pathology, haematology, forensic medicine, orthopaedics and cardiology. With regard to R&D personnel, the total

estimated number of scientists and technologists required by the year 2000 will be 23,300, based on the OPP2 target of 1,000 scientists and technologists per million population.

4.52 The *administrative and managerial* category is expected to register a growth of 6.3 per cent per annum during the Plan period, accounting for 6.6 per cent of the total jobs created. Within this category, managers and supervisors with a wide range of technical competence and computer literacy will be required. The *clerical and related workers* category is expected to increase at an annual average rate of 3.2 per cent and will account for 11.7 per cent of the new jobs created. With the increased use of information technology in office management and administration, the skill content of this category of workers is expected to shift towards more automated work procedures. There will be an increasing demand for workers trained in keyboard skills and software knowledge. Demand for *service workers* will be mainly in the tourism and hospitality services as well as in the personal services subsector. About 188,000 new jobs will be created, accounting for 16.3 per cent of the total new jobs. The increased use of computer-based technologies to increase front desk and administrative efficiency in hotels and travel agencies will require personnel trained in computer skills.

4.53 During the Plan period, *production workers* are estimated to account for 43.2 per cent of the incremental demand for manpower compared with 57.2 per cent in the Sixth Plan. With greater industrialization and restructuring towards automation and robotics, more skilled production workers with computer literacy and the ability to interface with automated machinery will be required.

4.54 With regard to the *agricultural workers* category, there will be a net reduction of employment of 175,400 during the Seventh Plan period. This occupational category comprises plantation managers and supervisors, farmers, agricultural and livestock workers, forestry workers, fishermen as well as nursery workers and gardeners. The number of plantation managers and supervisors and owner-operators of smallholdings are expected to decrease with declining acreage of plantation and food crops and the ageing labour force in the agriculture sector. However, enterprises or contractors providing farm labour and management services in crop production and harvesting will become increasingly important in maintaining the remaining agricultural or crop production areas. With increasing urbanization and the development of recreation parks and gardens, there will be a growing demand for skilled nursery workers and gardeners for landscaping and horticultural services required to enhance the beauty of public and commercial properties.

Human Resource Policy Thrusts for the Seventh Plan

4.55 The Malaysian economy is expected to register another period of strong growth during the Seventh Plan period and consequently, employment will expand further. Measures will be taken to address labour market constraints as well as build a strong human resource base for the future. The strategic policy thrusts for human resource development will, therefore, be the following:

- *encouraging greater capital intensity of production in order to save on the use of labour, thereby reducing the reliance on foreign labour;*
- *increasing the utilization of local labour, including raising female labour force participation;*
- *enhancing the productivity of labour through greater efforts at skill training and retraining;*
- *improving the education and skill delivery system as well as expanding education and training facilities with a view to increasing the supply of skilled and knowledge manpower;*
- *increasing the supply of R&D personnel, including scientists and technologists;*
- *promoting greater participation of the private sector in human resource development to complement Government efforts;*
- *promoting performance-related wage mechanisms that link wages to productivity;*
- *removing bottlenecks in the labour market through improved labour market information system;*
- *reviewing labour laws and legislation that are not consistent with the dynamic changes in the labour market;*
- *inculcating discipline and other universal positive values among the workforce; and*
- *reorienting societal and individual preferences towards skilled and other technical occupations.*

Increasing Capital Intensity

4.56 During the Seventh Plan period, firms will be further encouraged, as part of the adjustment process, to shift to capital-intensive production methods and processes as well as restructure their work organization to allow for greater flexibility and adaptability. To facilitate this adjustment within the manufacturing sector, the Government will introduce new measures in conjunction with the Post Industrial Master Plan Study. The further development of the local capital goods industry will also be actively promoted in order to ensure greater availability of capital goods domestically. At the same time, the Government will no longer encourage the establishment of labour-intensive industries with a capital investment per employee of less than RM55,000. However, exemptions will be given to industries which satisfy one of the following conditions, namely:

- *with value added exceeding 30 per cent;*
- *located in the eastern corridor of Peninsular Malaysia, Sabah and Sarawak;*
- *with managerial, technical and supervisory manpower exceeding 15 per cent of total employment; and*
- *undertaking technology- and knowledge-intensive activities promoted under the Promotion of Investment Act, 1986.*

The capital investment per employee and the conditions for exemption will be reviewed to take into account changing conditions and circumstances.

4.57 With increasing capital intensity, it is expected that there will be less reliance on unskilled foreign labour. A continued employment of such labour will, however, be necessary for sectors such as agriculture, construction and domestic services. For the other sectors, the Government will only permit a controlled and selective importation of labour. The implementation of the policy on the employment of foreign labour, which is currently based on sector needs, will be phased out as domestic labour supply adjusts to labour demand and as firms increasingly adopt labour-saving technology. In implementing this policy, the Government will ensure that priority is given to Malaysians so that locals are not deprived of income and employment opportunities. The policy on the employment of expatriates and other highly-skilled manpower, however, will still be continued.

Expanding the Supply of Local Labour

4.58 The greater utilization of local labour, including raising female labour force participation and utilizing more handicapped persons for appropriate jobs, will be encouraged. Retirees can also be reemployed, on a case-by-case basis, in certain categories of occupation in either the public or private sector provided they remain productive. The Government will set up a special unit to facilitate the reemployment of retirees with relevant expertise and experience to ease manpower shortages. The Government is currently reviewing the Employment Act, 1955, with a view to amending rules relating to part-time employment. This will permit women to be gainfully employed in part-time employment. To further raise the female participation rate, firms will be encouraged to adopt flexible work practices by introducing career breaks, job shares and flexi-time for full-time women workers. This family-friendly approach will provide women the flexibility to balance their time between work and family. Further, the greater use of information technology will provide opportunities to women to be gainfully employed from home. In addition, Malaysians working overseas will be encouraged to return to take up employment in Malaysia.

Enhancing Labour Productivity

4.59 In view of the shift towards a productivity-driven economy, a strategic thrust of human resource development efforts during the Seventh Plan period is increasing the efficiency of labour use through higher productivity. In this respect, the upgrading of labour force skills through training and retraining, the promotion of improved managerial competence and initiative as well as the advancement of scientific and technological know-how will be pursued actively during the period.

4.60 Efforts will be stepped up to restructure work organization and improve industrial relations practices with a view to increasing labour productivity. In this regard, firms will be encouraged to restructure their work practices to one that is based on decentralization, flexibility and greater employee participation in the production process. Firms should organize themselves to promote learning throughout the organization, to integrate thinking and doing within production and to encourage teamwork and innovation.

4.61 In view of the complexities involved in managing change that arise out of the introduction of new work systems and recognizing that the human resource component forms an integral part of such systems, a specialized

institution called the National Labour Institute will be set up during the Plan period. It will provide labour management-related courses to enhance the skill and level of professionalism among employee and employer representatives and Government officials in the fields of industrial relations and labour legislation.

Upgrading Education and Skill Delivery System

4.62 The education and skill delivery system will be upgraded and reoriented to meet the expanded skill requirements of the economy. In the light of this, the Government will continue with the education reform, initiated during the Sixth Plan period. This reform includes the gradual conversion of secondary vocational schools to secondary technical schools, the restructuring of institutions of higher learning, including corporatization, and the shortening of the duration of certain courses at the tertiary level. The teaching of English will be further emphasized to improve the proficiency in English, thus facilitating career progression. In addition, new incentives as well as changes to schemes of service will be introduced to attract and retain teachers and training instructors, especially for science and technical subjects. Qualitative improvements will also be made through changes in the curricula, development and usage of computer software for teaching, especially in the field of engineering, improved training facilities and the provision of better trained instructors and teachers. With respect to tertiary education, the Universities and University Colleges Act, 1971 (Amendments 1975) will be amended to enable universities to play a more dynamic role in the provision of higher education.

4.63 Alongside the improvements in the delivery system, more educational and training opportunities will be provided in order to increase the supply of educated and skilled manpower required by the rapidly expanding economy. This will be done through the expansion in the capacities of existing institutions, fuller utilization of training facilities, establishment of new educational and training institutions and expansion of distance learning programmes. Public sector institutions will continue to be the main source of educated and skilled manpower. The public educational institutions are expected to produce a total of 53,250 science and technical graduates as well as an equal number of arts graduates during the Plan period. About 80 per cent of the output of science and technical graduates will be in engineering disciplines, consistent with the requirements for advanced skilled manpower. To provide basic skills to those leaving the school system at an earlier age, the Government will set up 72 *Pusat Giat* MARA throughout the country in addition to the 123 centres already established.

Increasing Research and Development Personnel

4.64 The current low ratio of R&D scientists and technologists per million population will require intensified efforts to increase the supply of R&D personnel during the Plan period. In this respect, tertiary institutions will have a critical role to play in producing the required supply of scientists and technologists during the Plan period. The teaching and R&D capabilities of tertiary institutions will be strengthened through the allocation of increased resources. In this connection, the setting up of a Science and Technology Human Resource Fund of RM300 million to provide scholarships for post-graduate and post-doctoral studies as well as fellowships for graduate research will not only increase the pool of researchers and scientists, but will also create centres of excellence in research and technology. This facility will be made available to both the public and private sectors and appropriate guidelines for its implementation will be developed. In addition to the recruitment of foreign scientists, the Government will encourage Malaysian scientists abroad to return. The priority areas identified are advanced manufacturing, advanced materials, biotechnology, electronics, information technology, aerospace and energy as well as disciplines supporting them.

Increasing Private Sector Participation

4.65 While the Government will continue to be the main provider of education and skill training, it is envisaged that the private sector will play a more significant role in the creation of new skills and in the development of new training schemes in emerging technology areas. With the introduction of the Private Higher Educational Institutions Act, 1996, the private sector will be able during the Plan period to establish degree granting institutions. The Act will also enable foreign universities to set up branch campuses in the country. As a result, output of higher-level and knowledge manpower is expected to increase by the end of the decade.

4.66 Training and educational institutions managed by major corporations, such as PETRONAS, *Tenaga Nasional Berhad* and *Telekom Malaysia*, will have to expand their capacities, especially in engineering and technical fields. Other corporations with significant Government interests will also be encouraged to set up similar facilities. Recognizing that new technologies usually reside with multinational corporations, efforts will be stepped up to encourage the establishment of training institutions through the collaborative efforts of the Government, enterprises as well as foreign governments. Towards this end, a Japan-Malaysia

Technical Institute, which will focus on mechatronics, instrumentation, control systems and production engineering, will be established with assistance from the Japanese Government. This Institute, which will begin operation in early 1998, is expected to have an intake of 200 trainees. Another advanced skill training institute, the Japanese (NIPPON) Malaysia Institute is expected to be set up at the Kulim Hi-Tech Park to meet the needs for advanced skilled manpower, especially in high-technology areas.

4.67 Realizing the importance of on-the-job training, especially in industrial skills, a new apprenticeship scheme to be coordinated by HRDF will be implemented during the Plan period. Under the scheme, firms are expected to provide a structured on-the-job training programme for these students. Upon completion, firms will be encouraged to employ and subsequently send them for further training. Participating firms will be eligible for reimbursement from HRDF. To ensure a ready supply of candidates for the apprenticeship scheme, the Government has introduced a programme to provide exposure as well as encourage upper secondary school students to pursue careers in industrial and technical fields. It will also allow them to use their time productively while waiting for their *Sijil Pelajaran Malaysia* (SPM) results.

4.68 To complement pre-employment training, greater emphasis will be placed on encouraging enterprise-based training by firms. In this respect, the HRDF, which was set up during the Sixth Plan period, will expand its coverage and programmes to meet the skill requirements of a rapidly changing technology and growing international competition. To further support private sector initiatives in skill development, the Government will allocate RM100 million as well as provide other facilities. Guidelines on the utilization of this allocation will be developed.

Linking Wages to Productivity

4.69 With skill shortages persisting, wages can be expected to rise during the Plan period. While rising wages increase household incomes, wage increases that do not reflect productivity increases exert undue pressure on prices and erode real incomes. It will, therefore, be important that labour productivity be improved in order that the more competitive economy can support a higher level of wages. Arising from this, enhanced efforts will be taken during the Plan period to improve productivity levels. In this respect, skill development aimed at

improving the quality of the labour force, capital deepening, and greater utilization and upgrading of technology, will contribute towards raising individual and firm-level productivity.

4.70 At the same time, the private sector will need to promote with greater urgency wage schemes that link reward with worker productivity. This will help check inflation as well as strengthen competitiveness. A recent survey[3] showed that about 60 per cent of the collective agreements currently in force comprised components that were productivity or performance-related such as profit sharing, efficiency quality incentive bonus, skill incentives, non-contractual bonuses and merit increments. The Government, in collaboration with the private sector, will study various wage schemes with a view to identifying alternative schemes that enable firms to link wages to productivity, and encouraging wider application of productivity-linked wage schemes. In this respect, the Government will improve the statistical system in order to permit better monitoring of wages as well as productivity measurement. Clear definitions of productivity and transparency in its measurement are central to the wider acceptance of such wage schemes. Guidelines for the implementation of productivity-linked wage systems will also be introduced.

Improving Labour Market Mobility

4.71 In order to remove bottlenecks and improve labour market mobility, thus allowing manpower to move between states, occupations and skills, the labour market information infrastructure will be strengthened. The labour market information network will not only serve its traditional role as intermediary between employers and employees with respect to job search and placement activities, but will be more proactive in monitoring and disseminating labour market information to employers, employees and school leavers.

4.72 In this respect, a Vocational Training Information System (VOCATIONS) is being developed to provide a computerized and integrated information network linking all the major public training agencies involved in vocational training. The labour market information that will be made available through the system will include information about training agencies, training programmes as well as the requirements and output of skilled manpower. It is expected that the system will be extended to central agencies, state agencies and the private sector during the Plan period.

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[3] This survey, which was undertaken in 1994, involved 647 collective agreements covering all sectors.

Reviewing Labour Legislation

4.73 The Government will continue to review all labour legislation, where necessary, to ensure that provisions in the laws are consistent with the dynamic changes taking place in the labour market. In this respect, the Employment Act, 1955 is being amended to facilitate greater employment of part-time workers, such as housewives, the self-employed and students who require part-time or temporary employment. Provisions relating to wages will also be reviewed to permit employers to introduce incentive payments for productive employees. This will facilitate the progress towards the wider implementation of productivity-based wage schemes in the private sector. In addition, the Government is also reviewing the Workmen's Compensation Act, 1952 to provide better protection to workers.

Inculcating Positive Values

4.74 In the move towards an industrial-based economy, efforts to increase the supply of skilled manpower will be complemented by the inculcation of universal positive values, including good work habits, to build a high quality workforce. Malaysians need to be imbued with values that stress the pursuit of excellence, a high degree of discipline as well as other positive work ethics such as diligence, integrity and commitment. Other values that will be emphasized include tolerance, kindness, gratitude, caring and neighbourliness which are necessary to promote social harmony and cohesion. More motivational and attitudinal programmes will, therefore, be developed to strengthen value adoption and attitude formation among all Malaysians for nation building.

Reorienting Societal and Individual Preferences Towards Technical Occupations

4.75 Recognizing that the country will require an increasing number of technically competent manpower, more efforts at increasing public awareness towards the importance of vocational and technical education will be made. Currently, there is a low preference among students and parents towards skilled and other technical occupations. A major effort to reduce the bias against such occupations will be the development of a career path for skilled workers that is parallel to the existing academic-based career development. Towards this end, the National Vocational Training Council will develop the relevant accreditation standards to enable skilled workers to progress towards the master craftsman level. With this development, a master craftsman will be accorded similar

recognition and status to that of an academically-trained professional. Similar schemes with stringent accreditation standards will be developed for other professions to provide for career progression. Awareness programmes will also be conducted at schools and public places, and through the mass media in order to reorientate preferences towards vocational and technical occupations.

IV. CONCLUSION

4.76 The high economic growth during the Sixth Plan period was accompanied by increasing demand for labour, leading to manpower shortages. The Government implemented several measures to increase the supply of manpower, including introducing education reforms, enhancing skill delivery and promoting private sector involvement in education and skill training.

4.77 A major challenge for the economy in the Seventh Plan will be its capacity to increase the efficiency and productivity of labour. The long-term sustainability of economic growth and an improved quality of life for all Malaysians will hinge on the quality of human resources and, therefore, current and future investments in human capital formation. The country will commit itself to allocating more resources for human resource development in order to accelerate the country's development process. The fuller utilization of human resources will be achieved through proper matching of manpower demand and supply. While the private sector will increasingly play an important role in this process of training and education, the Government will cooperate in providing a dynamic labour market policy environment that enables a more effective utilization of available labour resources. This environment includes, among others, industrial harmony and the availability of good labour market information.