

# Chapter

# 1



## **PERFORMANCE AND CHALLENGES OF INDUSTRIAL DEVELOPMENT**





# PERFORMANCE AND CHALLENGES OF INDUSTRIAL DEVELOPMENT

## SECTION I OVERVIEW

- 1.01 The Government had formulated and implemented two Industrial Master Plans in the past two decades, which had contributed to the development and transformation of the manufacturing sector. While the First Industrial Master Plan, 1986-1995 laid the foundation for the manufacturing sector to become the leading growth sector of the economy, the Second Industrial Master Plan (IMP2), 1996-2005 contributed to the further development of the sector, by strengthening industrial linkages, increasing value-added activities and enhancing productivity.
- 1.02 In moving forward to achieve further progress, the sector needs to address new challenges, including intense competition for foreign investments, the need to develop innovative, creative and highly skilled human capital and the need to identify and develop new sources of growth, as well as the need to achieve industrial growth with equitable distribution. The new challenges require a more comprehensive approach in industrial planning. The experience gained in formulating and implementing the previous Industrial Master Plans has been beneficial in providing inputs to the Government in drawing up a new blueprint for greater industrial development.
- 1.03 This Chapter covers:
- the performance of the manufacturing and services sectors during the IMP2 period;
  - major global and regional developments and trends, including trade liberalisation, outsourcing in manufacturing and services and technological developments; and
  - challenges which need to be addressed to enable the manufacturing and services sectors to achieve further progress during the Third Industrial Master Plan (IMP3) period, 2006-2020.

## SECTION II PERFORMANCE AND TRENDS

### MANUFACTURING SECTOR

- 1.04 The manufacturing sector achieved progress in various aspects of development during the IMP2 period. The performance of the sector is indicated by:
- growth and contribution to Gross Domestic Product (GDP);

- share of total exports;
- investments in the sector;
- contribution to total employment;
- growth in productivity;
- shift towards higher technology and capital-intensive activities;
- development of industrial linkages;
- development of clusters; and
- development towards equitable distribution.

### **Growth and Contribution to Gross Domestic Product**

1.05 The manufacturing sector continued to be a major growth sector during the IMP2 period, expanding by 6.2 per cent (Table 1.1). The share of the sector to GDP increased from 29.1 per cent in 1996 to 31.4 per cent in 2005 (Table 1.2). The performance of the manufacturing sector was achieved, despite being affected by a number of factors. The Asian financial crisis resulted in the contraction of manufacturing output by 13.4 per cent in 1998. The sector was also affected by the cyclical downturn in the electronics sub-sector, as well as the global economic slowdown in 2001.

### **Share of Total Exports**

1.06 During the period, the average annual growth of manufactured exports was 11.2 per cent, similar to the average annual growth of total exports. Nevertheless, the share of manufactured exports to total exports declined slightly from 78.5 per cent in 1996 to 77.4 per cent in 2005. Most of the exports comprised non-resource based products, accounting for 82.4 per cent of the total exports of manufactured goods in 2005. Within the non-resource based industries, electrical and electronics (E&E) products were the main contributor, accounting for 64.1 per cent of the total exports of manufactured goods. Exports of resource based products contributed 15.3 per cent of the total exports of manufactured goods. Main export items were chemicals and chemical products, and wood products (Table 1.3).

### **Investments**

1.07 During the period, approved investments totalled RM269.7 billion (Table 1.4). The investments were concentrated in five industries, together accounting for RM177.3 billion or 65.7 per cent of the total investments. These industries were E&E, which accounted for RM84.3 billion or 31.3 per cent, petroleum products, including petrochemicals, RM31.2 billion (11.6 per cent), basic metal products, RM24.7 billion (9.2 per cent), paper, printing and publishing, RM19.5 billion (7.2 per cent) and chemicals and chemical products, RM17.6 billion (6.5 per cent).

TABLE 1.1  
GROWTH BY SECTOR

Sector	IMP2 Target <sup>1</sup>		Actual						
	1996-2005		1996		2000		2005		1996-2005
	Average Annual Growth (%)		Value-Added (RM million)	Growth (%)	Value-Added (RM million)	Growth (%)	Value-Added (RM million)	Growth (%)	Average Annual Growth (%)
Manufacturing	9.5		53,387	18.2	67,250	18.3	82,394	4.9	6.2
Services	8.8		92,962	8.9	113,408	6.7	152,205	6.5	6.0
Non-Government			80,958	10.1	99,077	7.4	132,374	6.2	6.1
Government			12,004	1.7	14,331	2.0	19,831	8.8	5.3
Agriculture, forestry and fishery	2.6		17,890	4.5	18,662	6.1	21,585	2.1	2.3
Mining <sup>2</sup> and quarrying	1.9		14,040	2.9	15,385	0.3	17,504	0.8	2.5
Construction	8.5		8,610	16.2	6,964	0.6	7,133	-1.6	-0.4
(-) Imputed bank service charges			10,954	23.2	15,832	6.3	23,876	2.9	10.4
(+) Import duties			7,356	7.8	4,721	-11.2	5,083	1.8	-2.9
<b>Real Gross Domestic Product<sup>3</sup></b>	<b>7.9</b>		<b>183,292</b>	<b>10.0</b>	<b>210,557</b>	<b>8.9</b>	<b>262,029</b>	<b>5.3</b>	<b>4.6</b>

Notes: <sup>1</sup> Recalculated, based on targets for two phases under IMP2, 1996-2000 and 2001-2005

<sup>2</sup> Comprising mainly crude oil and natural gas

<sup>3</sup> 1987 real prices

Sources: Ministry of International Trade and Industry, and Department of Statistics

TABLE 1.2

## CONTRIBUTION TO GROSS DOMESTIC PRODUCT BY SECTOR

Sector	IMP2 Target (%)	Actual (%)		
	2005	1996	2000	2005
Manufacturing	38.4	29.1	31.9	31.4
Services	48.4	50.7	53.9	58.1
Non-Government		44.2	47.1	50.5
Government		6.5	6.8	7.6
Agriculture, forestry and fishery	8.2	9.8	8.9	8.2
Mining <sup>1</sup> and quarrying	4.2	7.7	7.3	6.7
Construction	4.7	4.7	3.3	2.7
(-) Imputed bank service charges		6.0	7.5	9.1
(+) Import duties		4.0	2.2	1.9
<b>Real Gross Domestic Product<sup>2</sup></b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Note: <sup>1</sup> Mainly comprising crude oil and natural gas

<sup>2</sup> 1987 real prices

Sources: Ministry of International Trade and Industry, and Department of Statistics

1.08 Investments in non-resource based industries were valued at RM147.9 billion, accounting for 54.9 per cent of the total investments. Within the non-resource based industries, investments in E&E were the largest, accounting for 31.3 per cent of the total investments. Investments in resource based industries were valued at RM120.6 billion, or 44.7 per cent of the total investments, with investments in petroleum products (including petrochemicals) accounting for 11.6 per cent of the total investments.

### Contribution to Employment

1.09 The expansion of the manufacturing sector resulted in significant job creation during the IMP2 period. The sector was the second largest source of employment, after the services sector. Employment in manufacturing registered an average annual growth of 4.4 per cent during the period, increasing from 2.2 million workers in 1996 to 3.1 million in 2005. The share of the sector to the total employment increased from 26.2 per cent in 1996 to 28.7 per cent in 2005 (Table 1.5).

1.10 In 2005, the share of non-resource based industries to the total employment of the manufacturing sector was at 52 per cent, while the share of resource based industries was at 45.4 per cent. The non-resource based industries which contributed significantly to employment were E&E, at 26.8 per cent, and basic metals and metal products, at 9 per cent. In the resource based industries, major contributors were wood products, including furniture, at 11.9 per cent, and chemicals, fertilisers, plastics and petroleum products (10.4 per cent) (Table 1.6).

TABLE 1.3  
EXPORTS OF MANUFACTURED PRODUCTS

Industry	1996		2000		2005		1996-2005 Average Annual Growth (%)
	(RM million)	Share (%)	(RM million)	Share (%)	(RM million)	Share (%)	
<b>Total manufactured exports<sup>1</sup></b>	<b>154,664.7</b>	<b>100.0</b>	<b>309,427.4</b>	<b>100.0</b>	<b>413,132.7</b>	<b>100.0</b>	<b>11.2</b>
<b>Non-resource based</b>	<b>126,703.8</b>	<b>81.9</b>	<b>265,828.7</b>	<b>85.9</b>	<b>340,584.8</b>	<b>82.4</b>	<b>11.1</b>
Electrical and electronics products	96,800.6	62.6	219,583.0	71.0	264,698.9	64.1	11.4
Machinery, appliances and parts	7,471.4	4.8	10,825.9	3.5	18,120.6	4.4	9.9
Optical and scientific equipment	3,119.1	2.0	6,811.3	2.2	12,317.7	3.0	15.6
Manufactures of metals	3,738.9	2.4	6,870.5	2.2	10,847.9	2.6	11.7
Textiles and apparel	6,816.0	4.4	10,265.3	3.3	10,289.1	2.5	4.9
Iron and steel products	1,474.3	1.0	2,346.4	0.8	7,002.8	1.7	19.1
Transport equipment	4,658.0	3.0	2,975.2	1.0	6,997.9	1.7	2.9
Manufactures of plastics	1,531.3	1.0	3,829.8	1.2	6,696.3	1.6	16.8
Jewellery	1,094.2	0.7	2,321.3	0.8	3,613.6	0.9	11.8
<b>Resource based</b>	<b>23,246.0</b>	<b>15.0</b>	<b>38,505.3</b>	<b>12.4</b>	<b>63,378.8</b>	<b>15.3</b>	<b>11.8</b>
Chemicals and chemical products	5,829.1	3.8	12,918.6	4.2	26,301.3	6.4	17.4
Wood products	8,146.8	5.3	11,157.6	3.6	14,638.9	3.5	8.3
Rubber products	3,607.7	2.3	4,720.8	1.5	6,985.5	1.7	7.8
Processed food	2,333.4	1.5	3,408.4	1.1	6,529.9	1.6	10.8
Non-metallic mineral products	1,641.1	1.1	2,567.7	0.8	2,934.3	0.7	5.8
Petroleum products	413.4	0.3	1,128.9	0.4	2,214.4	0.5	21.2
Paper and pulp products	698.4	0.5	1,396.3	0.5	2,073.4	0.5	10.3
Beverages and tobacco	576.1	0.4	1,207.0	0.4	1,701.1	0.4	15.7
Other manufactures	4,714.9	3.0	5,093.4	1.6	9,169.1	2.2	9.0

Note: <sup>1</sup> The value of the total exports of manufactured products, compiled by Ministry of International Trade and Industry (MITI), differs from the value of the total exports of manufactured products contained in the Ninth Malaysia Plan, due to the difference in product groupings adopted by MITI and Economic Planning Unit (EPU). For example, in 2005, the figure by MITI was RM413.1 billion, while the figure by EPU was RM429.9 billion.

Source: Ministry of International Trade and Industry

TABLE 1.4  
APPROVED MANUFACTURING PROJECTS BY INDUSTRY

Industry	1996-2005					
	Total Capital Investments (RM million)	Share (%)	Foreign Investments (RM million)	Domestic Investments (RM million)	Number of Projects	Potential Employment ('000 persons)
<b>Total</b>	<b>269,688.3</b>	<b>100.0</b>	<b>150,867.6</b>	<b>118,820.7</b>	<b>8,727</b>	<b>837.6</b>
<b>Non-resource based</b>	<b>147,948.6</b>	<b>54.9</b>	<b>93,678.6</b>	<b>54,270.0</b>	<b>5,004</b>	<b>538.1</b>
Electrical and electronics products	84,285.4	31.3	65,466.1	18,819.3	2,054	310.6
Basic metal products	24,707.8	9.2	8,473.2	16,234.7	350	24.0
Transport equipment	16,714.7	6.2	7,009.9	9,704.7	590	52.1
Fabricated metal products	7,694.5	2.9	4,228.9	3,465.6	736	51.7
Machinery manufacturing	6,422.4	2.4	3,132.3	3,290.1	735	36.9
Textiles and textile products	4,945.5	1.8	2,848.5	2,097.0	396	46.9
Scientific and measuring equipment	3,027.0	1.1	2,470.9	556.2	117	13.5
Leather and leather products	151.2	0.1	48.9	102.3	26	2.4
<b>Resource based</b>	<b>120,587.4</b>	<b>44.7</b>	<b>56,844.5</b>	<b>63,742.8</b>	<b>3,564</b>	<b>290.5</b>
Petroleum products (including petrochemicals)	31,198.8	11.6	20,064.1	11,134.6	116	8.4
Paper, printing and publishing	19,484.1	7.2	8,466.5	11,017.6	244	20.7
Chemicals and chemical products	17,618.4	6.5	8,972.7	8,645.7	529	23.2
Non-metallic mineral products	12,855.8	4.8	6,029.6	6,826.3	367	21.2
Natural gas	9,521.4	3.5	1,477.9	8,043.5	5	1.2
Food manufacturing	8,969.0	3.3	3,785.4	5,183.6	602	39.9
Plastic products	6,314.3	2.3	2,807.1	3,507.2	583	39.0
Wood and wood products	6,170.0	2.3	1,676.7	4,493.3	385	53.2
Rubber products	4,209.4	1.6	1,858.6	2,350.8	260	31.9
Furniture and fixtures	2,840.4	1.1	640.3	2,200.1	413	48.0
Beverages and tobacco	1,405.9	0.5	1,065.7	340.2	60	3.6
Miscellaneous	1,152.3	0.4	344.4	807.9	159	9.0

Source: Malaysian Industrial Development Authority

TABLE 1.5  
EMPLOYMENT BY SECTOR

Sector	1996		2000		2005		1996-2005 Average Annual Growth (%)
	('000 persons)	Share (%)	('000 persons)	Share (%)	('000 persons)	Share (%)	
<b>Total employment</b>	<b>8,422.5</b>	<b>100.0</b>	<b>9,274.6</b>	<b>100.0</b>	<b>10,894.8</b>	<b>100.0</b>	<b>3.1</b>
Manufacturing	2,203.9	26.2	2,565.8	27.7	3,132.1	28.7	4.4
Services	3,890.0	46.2	4,491.9	48.4	5,554.7	51.0	4.1
Non-Government	2,985.9	35.5	3,510.9	37.9	4,501.9	41.3	4.7
Government	904.1	10.7	981.0	10.6	1,052.8	9.7	1.7
Agriculture, forestry and fishery	1,491.6	17.7	1,423.0	15.3	1,405.7	12.9	-0.6
Construction	796.0	9.5	752.2	8.1	759.6	7.0	0.6
Mining <sup>1</sup> and quarrying	41.0	0.5	41.7	0.4	42.7	0.4	0.5
<i>Workforce</i>	8,641.9		9,571.6		11,290.5		
<i>Unemployment</i>	219.4		297.0		395.7		

Note: <sup>1</sup> Comprising mainly crude oil and natural gas

Sources: Economic Planning Unit and Department of Statistics

TABLE 1.6

## EMPLOYMENT IN THE MANUFACTURING SECTOR

Industry	1996		2000		2005		1996-2005 Average Annual Growth (%)
	('000 persons)	Share (%)	('000 persons)	Share (%)	('000 persons)	Share (%)	
<b>Total</b>	<b>2,203.9</b>	<b>100.0</b>	<b>2,565.8</b>	<b>100.0</b>	<b>3,132.1</b>	<b>100.0</b>	<b>4.4</b>
<b>Non-resource based</b>	<b>1,227.6</b>	<b>55.7</b>	<b>1,317.6</b>	<b>51.4</b>	<b>1,628.3</b>	<b>52.0</b>	<b>3.7</b>
Electrical and electronics products	626.6	28.4	645.3	25.2	840.8	26.8	3.8
Basic metals and metal products	177.3	8.0	193.8	7.6	282.8	9.0	5.8
Textiles and textile products	208.7	9.5	215.8	8.4	214.8	6.9	0.8
Machinery and equipment	130.5	5.9	161.4	6.3	162.6	5.2	2.9
Transport equipment	84.5	3.8	101.3	3.9	127.4	4.1	5.2
<b>Resource based</b>	<b>922.8</b>	<b>41.9</b>	<b>1,186.6</b>	<b>46.2</b>	<b>1,423.7</b>	<b>45.4</b>	<b>5.4</b>
Wood products, including furniture	236.3	10.7	352.7	13.7	373.8	11.9	5.7
Chemicals, fertilisers, plastics and petroleum products	184.6	8.4	238.1	9.3	327.0	10.4	7.0
Food processing, beverages and tobacco	196.7	8.9	237.7	9.3	298.9	9.5	5.2
Rubber processing and products	124.0	5.6	132.0	5.1	171.5	5.5	4.1
Paper and paper products, printing and publishing	95.9	4.4	121.6	4.7	137.7	4.4	4.6
Non-metallic mineral products	85.3	3.9	104.5	4.1	114.9	3.7	3.8
Others	53.5	2.4	61.6	2.4	80.0	2.6	5.0

Sources: Economic Planning Unit and Department of Statistics

- 1.11 As industries shifted towards higher value-added products and activities, they faced a shortage of experts and specialists in specific areas. To overcome the shortage, companies engaged foreign experts and specialists. As at December 2005, there were 35,480 expatriates employed in Malaysia, with 14,406 (40.6 per cent) in the manufacturing sector.
- 1.12 Foreign labour in Malaysia was mainly employed in the unskilled category. As at December 2005, there were 1.8 million foreign workers, of whom 581,379 workers (32 per cent) were employed in the manufacturing sector, followed by 472,246 in the plantation sector (26.1 per cent), 281,780 in the construction sector (15.5 per cent) and 159,662 in the services sector (8.8 per cent). As a measure to reduce the dependence on foreign labour, industry initiated efforts in the automation of production processes, using labour saving technologies, such as robotics and computer integrated manufacturing systems.

### **Growth in Productivity**

- 1.13 During the period, productivity in the manufacturing sector, measured in terms of output per employee, registered an average annual growth of 3.9 per cent. In 2005, Malaysia's productivity growth was 3.8 per cent, higher than certain competing countries, such as Taiwan (2.9 per cent) and Singapore (2.6 per cent).
- 1.14 In terms of labour productivity, in 2005, the manufacturing sector recorded an improvement in labour cost competitiveness. This improvement was the result of the higher increase in productivity (measured by sales value per employee) of 13.9 per cent, compared with the increase of labour cost per employee of 4.1 per cent. The adoption of a performance-based remuneration system, for example, Productivity-Linked Wage System (PLWS), has partly contributed to the improvement in labour productivity. Such a system has enabled employers to develop a wage structure which is able to respond to economic and business changes, as well as provide a motivating factor to employees. During the period 2001-2005, from a total of 1,537 collective agreements signed, 747 or 48.6 per cent incorporated elements of the PLWS. The manufacturing sector accounted for 57.4 per cent of such collective agreements, followed by services (36.9 per cent) and agriculture (5.7 per cent).
- 1.15 In terms of total factor productivity (TFP), which measures the synergy and efficiency in the utilisation of both capital and human resources, the manufacturing sector recorded growth in the TFP of 3.4 per cent for the period. Growth in the TFP indicates more efficient management and utilisation of resources, materials and inputs in the production of goods.

## Shift Towards Higher Technology and Capital-Intensive Activities

1.16 The shift towards higher technology and capital-intensive activities in the manufacturing sector was indicated by:

- greater investments in higher technology and capital-intensive projects; and
- a greater proportion of skilled workers employed.

1.17 In respect of investments, during the period, high technology projects, such as wafer fabrication, with investments valued at RM15.9 billion, and photonics (RM452.1 million), were approved. Domestic investments in high technology projects accounted for 23.6 per cent of the total investments in such projects.

1.18 Capital intensity of investment projects is measured by the capital investment per employee (CIPE) ratio of projects approved. During the IMP2 period, industries which registered increases in the CIPE ratio included:

- rubber products, where the ratio increased by an average annual growth of 16.1 per cent, from RM131,907 in 1996 to RM373,640 in 2005;
- scientific and measuring equipment (by 10.4 per cent, from RM7,916 to RM651,835);
- E&E (by 6.9 per cent, from RM219,988 to RM684,443); and
- machinery manufacturing (by 6.2 per cent, from RM100,100 to RM226,638).

1.19 The employment pattern in the manufacturing sector also reflected the shift towards higher technology and capital-intensive activities, as indicated by the higher proportion of skilled and semi-skilled workers employed. In 1995, the percentage of workers classified under the skilled and semi-skilled category accounted for 43.5 per cent of the total employment in the manufacturing sector, compared with 33.8 per cent for the unskilled category. In 2005, the percentage of skilled workers increased to 60.7 per cent, while the percentage of unskilled workers declined to 4.7 per cent.

## Development of Industrial Linkages

1.20 The development of industrial linkages is indicated by Input-Output Tables, which assess the extent of backward and forward linkages between producers and consumers of products. Among results of the Input-Output Tables of 1991 and 2000 on 18 industry groups were:

- food and resource based industries, such as wood, petroleum and rubber products, revealed high backward linkages of more than 0.5, which meant that more than 50 per cent of their inputs were sourced from other industries; and

- domestic-oriented industries, such as paper and printing, chemicals, non-metallic mineral products, basic metals and fabricated metal products, registered the highest forward linkages, which meant that the bulk of the output of these industries were used as intermediate inputs by other industries.

## Development of Clusters

- 1.21 A major focus of development during the IMP2 period was the development of industrial clusters. The cluster-based approach emphasised the growth of the manufacturing sector, together with the growth of supporting industries, which incorporated the services sector. A number of industrial clusters were in various stages of development. The development of these clusters was mainly driven by market forces, as well as Government support and facilitation.
- 1.22 The E&E industry, located principally in Pulau Pinang, had the essential features of a semiconductor cluster. Within the cluster, apart from principal manufacturers, other supporting activities had also been established. These activities included suppliers of electronics components and providers of supporting business services. In respect of research and development (R&D), collaboration among industry, the Government and academia was established through the formation of the Collaborative Research and Resource Centre, based in *Universiti Sains Malaysia*. Initiative was also undertaken to link the cluster to the global supply chain, through the implementation of the RosettaNet standard messaging system.
- 1.23 Other clusters which were developing included:
- automotive - in Tanjung Malim (Perak), Gurun (Kedah) and Pekan (Pahang), where there were producers and suppliers of parts and components, and distribution networks had been established. Other areas with some clustering features included Bertam (Pulau Pinang), Serendah (Selangor) and Pego (Melaka);
  - petrochemicals - in Kerteh (Terengganu)-Gebeng (Pahang), where central utility facilities had been established to provide essential services for the petrochemical complex. Another petrochemical zone is located in Pasir Gudang-Tanjung Langsat, Johor;
  - furniture - in Muar (Johor);
  - textiles and apparel - in Batu Pahat (Johor); and
  - providers of maintenance, repair and overhaul services in the aerospace industry, located in Subang (Selangor), and the shipbuilding industry in Lumut (Perak).

- 1.24 Cluster development had assisted small and medium enterprises (SMEs) in building core competencies, to be part of the global production networks and supply chains. A number of SMEs in E&E, as well as precision stamping, tooling and machining activities, had progressed to become global suppliers to multinational corporations (MNCs).

## **Development Towards Equitable Distribution**

### **(a) Industrial Growth and Poverty Eradication**

- 1.25 Due to the increased economic activities and prosperity brought about through greater industrialisation, significant progress was achieved during the IMP2 period, in terms of increasing overall incomes and reducing poverty among all Malaysians and regions. There was a marked reduction in the overall incidence of poverty, from 12.5 per cent in 1995 to 5.7 per cent in 2004. Poverty continued to be primarily a rural phenomenon, with 70.6 per cent of the poor residing in rural areas. Nevertheless, urban poverty, while low and declining, remained a concern. Studies indicated that greater economic opportunities in industrialised and urban centres around the country, while generally raising the quality of life and economic prosperity, had also contributed to a rural-urban drift, which had increased pressure on urban areas, including in contributing to urban poverty.
- 1.26 During the IMP2 period, all ethnic groups experienced a reduction in the incidence of poverty. However, the incidence of poverty among the Bumiputera, despite decreasing from 17.8 per cent in 1995 to 8.3 per cent in 2004, remained by far the highest. The incidence of poverty among the Indians declined from 5.6 per cent in 1995 to 2.9 per cent, while among the Chinese, from 2.1 per cent to 0.6 per cent. High incidences of poverty were still recorded among the Orang Asli and Bumiputera in Sabah and Sarawak.

### **(b) Industrial Growth and Income Distribution**

- 1.27 In terms of gross household income, the average income among Malaysians increased from RM2,020 in 1995 to RM3,249 in 2004. In 2004, the mean gross monthly household income of the Bumiputera in the manufacturing sector, at RM2,905, was lower than that of the Chinese and Indian households, at RM4,689 and RM3,139, respectively (Table 1.7). Although ethnic income disparity narrowed in relative terms, the disparity continued to widen in absolute terms. The national Gini coefficient, a measure of income inequality, worsened from 0.456 in 1995 to 0.462 in 2004. The income disparity ratio among the ethnic groups revealed that, while the disparity ratio between the Bumiputera and the other ethnic groups improved, Bumiputera still lagged behind the other ethnic groups. The disparity ratio between Bumiputera to Chinese improved from 1:1.80 in 1995 to 1:1.64 in 2004, while between Bumiputera to Indians from 1:1.33 to 1:1.27 during the same period. In 2004, paid employment constituted two-third, or 68 per cent, of all household income, with paid employment for Indian households at 74.3 per

cent, Bumiputera (71.2 per cent) and Chinese (62.1 per cent). About 23 per cent of the income earned by the Chinese were generated from self-employment, compared with 14 per cent for the Bumiputera and 11 per cent for the Indians.

TABLE 1.7

**MEAN MONTHLY GROSS HOUSEHOLD INCOME IN THE MANUFACTURING SECTOR BY ETHNIC GROUP, 1995-2004**

<i>Ethnic Group</i>	1995	1997	1999	2002	2004
	(RM)				
<b>All</b>	<b>2,279</b>	<b>2,882</b>	<b>2,806</b>	<b>3,299</b>	<b>3,472</b>
Bumiputera	1,732	2,250	2,124	2,480	2,905
Chinese	3,249	3,992	4,070	4,951	4,689
Indian	2,183	2,758	2,537	3,017	3,139
Others	1,152	1,449	1,147	1,929	1,837

Source: Economic Planning Unit

**(c) Industrial Growth and Employment Restructuring**

- 1.28 The proportion of Bumiputera, as a percentage of total employment, increased from 51.4 per cent in 1995 to 56.5 per cent in 2004. However, Bumiputera representation in the managerial and professional occupations, such as managers, doctors, lawyers and architects, has been persistently below the target of reflecting the ethnic composition of the population. Excluding lecturers and pre-university and secondary school teachers, as well as writers and artists, the proportion of Bumiputera, as a percentage of the total number employed in the professionals category, was 47.5 per cent in 2005, compared with 77.6 per cent for the Chinese and 69.2 per cent for the Indians. The share of Bumiputera employed in the senior officials and managers category remained low, at 37.1 per cent in 2005.
- 1.29 In terms of participation in the manufacturing sector, 24.9 per cent of all employed Bumiputera were engaged in the sector in 1995, compared with 36.5 per cent for the Indians and 26 per cent for the Chinese. In 2005, the participation rate of all the ethnic groups increased - to 26.9 per cent for the Bumiputera, 37.3 per cent for the Indians and 28.8 per cent for the Chinese.

**(d) Industrial Growth and Ownership Restructuring**

- 1.30 In respect of ownership and control in the corporate sector, in 1995, the proportion of Bumiputera ownership of share capital (at par value) of limited companies was 20.6 per cent. However, due to the continuing adverse repercussions of the

Asian financial crisis, it declined to 18.7 per cent in 2002. By 2004, Bumiputera ownership had increased marginally to 18.9 per cent. The share capital of the Chinese decreased slightly to 40.6 per cent between 1995 and 2004, while that of the Indians declined from 1.5 per cent to 1.2 per cent. In comparison, foreign equity ownership increased from 27.7 per cent to 32.5 per cent during the same period (Table 1.8). Sectorally, in 2004, Bumiputera ownership in the non-manufacturing sector was higher, compared with the manufacturing sector. The highest proportion of equity controlled by Bumiputera was in construction, at 35.2 per cent, followed by transportation (26.7 per cent) and wholesale and retail trade (20.4 per cent). Bumiputera ownership in the manufacturing sector was at 8.1 per cent (Table 1.9). In respect of non-financial assets, Bumiputera ownership of commercial properties, such as commercial buildings and business premises, in all urban centres throughout the country remained low. In 2004, Bumiputera owned 14.3 per cent of hotels, 11.7 of business complexes, 4.8 per cent of industrial premises and 12.7 per cent of other types of commercial buildings.

TABLE 1.8

**OWNERSHIP OF SHARE CAPITAL (AT PAR VALUE) OF  
LIMITED COMPANIES<sup>1</sup> BY ETHNIC GROUP**

Ownership Group	1995	2000	2004	1995	2000	2004
	RM billion			% of Total		
<b>Total</b>	<b>179.8</b>	<b>332.4</b>	<b>529.8</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Bumiputera</b>	<b>37.0</b>	<b>63.0</b>	<b>100.0</b>	<b>20.6</b>	<b>18.9</b>	<b>18.9</b>
Individuals	33.4	47.3	79.4	18.6	14.2	15.0
Institutions <sup>2</sup>	n.a. <sup>4</sup>	9.8	11.9	n.a.	3.0	2.2
Trust agencies <sup>3</sup>	3.6	5.8	8.7	2.0	1.7	1.7
<b>Non-Bumiputera</b>	<b>78.0</b>	<b>137.4</b>	<b>215.0</b>	<b>43.4</b>	<b>41.3</b>	<b>40.6</b>
Chinese	73.6	129.3	206.7	40.9	38.9	39.0
Indians	2.7	5.1	6.4	1.5	1.5	1.2
Others	1.8	3.0	1.9	1.0	0.9	0.4
<b>Nominee Companies</b>	<b>15.0</b>	<b>28.1</b>	<b>42.5</b>	<b>8.3</b>	<b>8.5</b>	<b>8.0</b>
<b>Foreigners</b>	<b>50.0</b>	<b>104.0</b>	<b>172.3</b>	<b>27.7</b>	<b>31.3</b>	<b>32.5</b>

## Notes:

<sup>1</sup> Exclude shares held by Federal and State Governments

<sup>2</sup> Refer to shares held through institutions channelling Bumiputera funds, such as the PNB Unit Trust Schemes, ASM MARA, *Lembaga Tabung Haji*, *Lembaga Tabung Angkatan Tentera* and *Koperasi Polis*

<sup>3</sup> Refer to shares held through trust agencies, such as *Permodalan Nasional Berhad*, *Perbadanan Usahawan Nasional Berhad*, *Majlis Amanah Rakyat*, *Bank Pembangunan Malaysia Berhad* and States Economic Development Corporations

<sup>4</sup> Not available

Source: Companies Commission of Malaysia

TABLE 1.9

**OWNERSHIP OF SHARE CAPITAL (AT PAR VALUE) OF LIMITED COMPANIES<sup>1</sup>  
BY ETHNIC GROUP AND SECTOR, 2004 (PERCENTAGE)**

Ownership Group	Agriculture	Mining	Manufacturing	Utility	Construction	Wholesale & Retail Trade	Transportation	Finance	Services	Others	Total
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Bumiputera</b>	<b>16.4</b>	<b>12.3</b>	<b>8.1</b>	<b>6.3</b>	<b>35.2</b>	<b>20.4</b>	<b>26.7</b>	<b>12.5</b>	<b>18.7</b>	<b>24.3</b>	<b>18.9</b>
<b>Non-Bumiputera</b>	<b>54.0</b>	<b>39.8</b>	<b>25.3</b>	<b>9.2</b>	<b>44.0</b>	<b>53.3</b>	<b>30.6</b>	<b>10.5</b>	<b>40.9</b>	<b>48.6</b>	<b>40.6</b>
Chinese	52.9	39.5	24.5	8.9	42.6	50.7	27.7	10.2	39.5	45.7	39.0
Indians	0.8	0.2	0.6	0.2	1.1	2.0	2.5	0.3	1.1	1.8	1.2
Others	0.2	0.1	0.1	0.1	0.3	0.6	0.4	0.04	0.2	1.1	0.4
<b>Nominee Companies</b>	<b>6.6</b>	<b>25.4</b>	<b>1.9</b>	<b>17.2</b>	<b>5.9</b>	<b>0.7</b>	<b>11.4</b>	<b>17.5</b>	<b>10.9</b>	<b>3.9</b>	<b>8.0</b>
<b>Foreigners</b>	<b>23.0</b>	<b>22.5</b>	<b>64.7</b>	<b>67.3</b>	<b>14.9</b>	<b>25.6</b>	<b>31.3</b>	<b>59.5</b>	<b>29.5</b>	<b>23.2</b>	<b>32.5</b>

Note: <sup>1</sup> Exclude shares held by Federal and State Governments

Source: Companies Commission of Malaysia

**(e) Industrial Growth and the Creation of a Bumiputera Commercial and Industrial Community**

- 1.31 Various programmes were undertaken during the IMP2 period to develop Bumiputera entrepreneurs, as part of the efforts to create a viable and competitive Bumiputera Commercial and Industrial Community (BCIC). During the period 2000-2004, more than 100,000 Bumiputera entrepreneurs participated in training and business development programmes, such as the vendor development programme, franchise development programme, venture capital scheme and *Projek Usahawan Bumiputera Dalam Bidang Peruncitan* (PROSPER).
- 1.32 Government agencies and a number of Government-linked companies (GLCs) assisted in the development of support industries through their own vendor development programmes, which contributed to the development of many competent and competitive Bumiputera SMEs. During the IMP2 period, anchor companies, including Perusahaan Otomobil Nasional Berhad (PROTON), Petroliam Nasional Berhad (PETRONAS) and Tenaga Nasional Berhad (TNB), and a number of MNCs, created a large number of Tier-1 vendor companies involved in manufacturing and related activities. Between 2000-2004, the franchise development programme attracted 228 Bumiputera entrepreneurs as franchisees in various businesses, including food, child-learning centres and automotive service centres. A total of 114 new franchisers were registered, of which 29 were Bumiputera.
- 1.33 Measures were also undertaken to increase the participation of Bumiputera entrepreneurs in the distributive trade. The measures focused on a number of aspects, namely, business development, financing, entrepreneurial training and marketing and promotion, as well as the provision of assistance to acquire business premises in strategic locations. The *Perbadanan Usahawan Nasional Berhad* (PUNB) expanded the PROSPER scheme to create more viable SMEs in the retail sector. Apart from encouraging the establishment of more Bumiputera retailers in new townships and residential areas, the scheme promoted the development of Bumiputera entrepreneurs in businesses where Bumiputera participation was low, such as automotive service centres and hardware stores, as well as laundry and dry-cleaning. Measures were also undertaken to develop Bumiputera entrepreneurs in Sabah and Sarawak through the provision of various types of business and industrial premises.

**(f) Industrial Growth and Regional Balanced Development**

- 1.34 During the IMP2 period, the focus of regional development was to raise the standard of living and quality of life, as well as attain balanced social and economic development across regions and states. During the period, while all states recorded economic growth, development performance varied between states. Based on the Development Composite Index (DCI), in 2005, the central region (comprising Wilayah Persekutuan Kuala Lumpur, Selangor, Negeri Sembilan and Melaka),

was the most developed region. Sabah and the states in the Eastern region (comprising Kelantan, Terengganu and Pahang), were the least developed regions. The DCI ranked Wilayah Persekutuan Kuala Lumpur the highest, followed by Pulau Pinang, Melaka and Selangor. This was in tandem with the higher concentration of economic activities in these areas, including manufacturing, retail trade, hotels and restaurants and non-Government services.

- 1.35 The attractiveness of the states in bringing new investments in the manufacturing sector varied. During the period 2001-2005, the direction of investments was skewed towards the more developed states. Selangor, Johor, Pulau Pinang and Melaka remained the major preferred locations for both domestic and foreign investments, due to the availability of the required infrastructure, financial centres and support services and proximity to major air and sea ports. These four states accounted for 55.6 per cent of the total approved manufacturing projects. Among the less developed states, Sarawak was the exception, as it ranked third, after Selangor and Johor, in terms of new investments approved in the manufacturing sector.
- 1.36 Efforts were undertaken to develop a full range of basic and quality infrastructure and social services in the rural areas to create a more conducive environment to attract investments. The efforts included the implementation of land and regional development programmes, including the building of factories and low cost houses in villages and new townships, as well as the rehabilitation of land for industrialisation. Nevertheless, despite this emphasis on rural development, the rural-urban divide widened, with income disparity increasing from 1:1.81 in 1999 to 1: 2.11 in 2004.

## SERVICES SECTOR

- 1.37 The services sector is divided into Government and non-Government sub-sectors. The Government sub-sector consists of institutional units which, in addition to fulfilling their role in economic regulation, produce principally non-market services for individual or collective consumption and redistribute income and wealth. Main activities of the non-Government sub-sector consist of:
- finance, insurance, real estate and business services;
  - wholesale and retail trade;
  - hotels and restaurants;
  - transport, storage and communication; and
  - utilities (electricity, gas and water).
- 1.38 Major aspects of the development of the services sector during the IMP2 period included:
- growth and contribution to GDP;
  - trade in services;

- development of linkages; and
- share of employment.

### **Growth and Contribution to Gross Domestic Product**

1.39 During the IMP2 period, average annual growth of the services sector was 6 per cent (Table 1.1). In 1996, the sector contributed 50.7 per cent to GDP. By 2005, the contribution of the sector had increased to 58.1 per cent of GDP (Table 1.2). The non-Government services sub-sector recorded an average annual growth of 6.1 per cent. In 2005, the sub-sector contributed 50.5 per cent to GDP.

### **Trade in Services**

1.40 The services account of the balance of payments persistently registered deficits. This was mainly due to the large deficit recorded in the transportation component, particularly sea freight charges. Nevertheless, the travel services component had been able to record surpluses, which contributed towards reducing the overall deficit. In 1996, the deficit was RM18.4 billion, which narrowed to RM10.2 billion in 2005.

### **Share of Employment**

1.41 The contribution of the services sector to the total employment increased from 46.2 per cent in 1996 to 51 per cent in 2005 (Table 1.5). The non-Government sub-sector accounted for 41.3 per cent of the total employment in 2005. Within the non-Government sub-sector, wholesale and retail trade, and hotels and restaurants were major sources of employment, contributing 42.8 per cent of the total employment of the sub-sector.

### **Logistics Support**

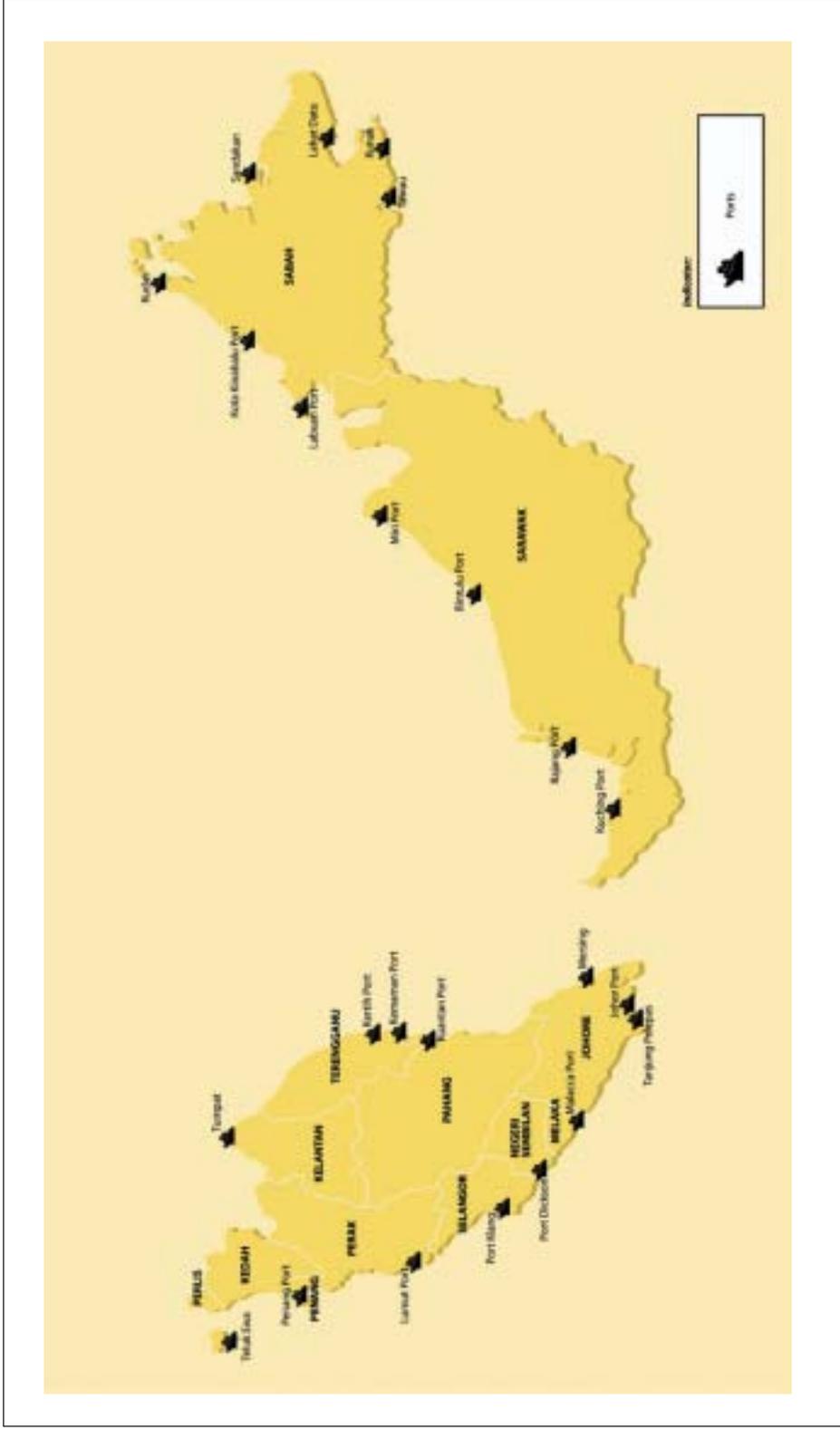
1.42 Main areas of logistics support include ports, airports and inland haulage services. More than 90 per cent of international trade is seaborne, with the ports providing the important interface between shipping and land transport. The airports provide services for specialised cargo. The inland haulage services are provided by container and general cargo haulage companies.

#### **(a) Ports**

1.43 In 2005, there were 24 main ports operating in the country (Map 1.1). In terms of overall throughput, the ports handled 252.6 million tonnes of cargo, representing an increase of 49 per cent of the volume handled in 1996 (169.5 million tonnes). More than 60 per cent of the throughput largely consisted of containerised cargo.

MAP 1.1

### PORTS IN MALAYSIA



Source: Ministry of Transport

### (b) Airports

- 1.44 In 2005, there were five international and 15 domestic airports in Malaysia (Map 1.2). The airports handled about 1 million tonnes of cargo. Air freight cargo mainly comprise high value and time sensitive cargo, such as electronics, information and communication technology (ICT), biotechnology and medical products, and perishable items, such as fresh fruits and flowers. Electronics and ICT products were mainly exported by air through the Pulau Pinang Airport (60 per cent) and the Kuala Lumpur International Airport - KLIA (40 per cent).
- 1.45 MASkargo, which operates dedicated and scheduled freighter services, accounted for the bulk of the cargo handled at Malaysian airports. The carrier handles an average monthly volume of about 60,000 tonnes of cargo. In its efforts to create a niche market in the transshipment trade, MASkargo launched the I-Port Transshipment initiative in 2002. I-Port is an airport within a seaport, allowing seamless movements of cargo from regional destinations to Malaysian ports via sea, and then delivered to worldwide destinations by air, through MASkargo's Advanced Cargo Centre at KLIA.

### (c) Inland Haulage

- 1.46 As at September 2005, there were 90 licensed container haulage companies, operating a total of 7,256 prime movers and 36,413 trailers. A total of 246,499 licences were issued to transport companies, which carried both containerised and general cargo. Companies carrying general cargo were larger in number and accounted for the movement of a wide range of general and break-bulk cargo, including heavy lifts and special cargo.

### Development of Linkages

- 1.47 In general, analysis of Input-Output Tables of 1991 and 2000 indicated that:
- intra-sectoral linkages (linkages within and among the sub-sectors of the services sector) had been strongest;
  - backward inter-sectoral linkages between the services sector and the manufacturing sector increased significantly from 1.3 per cent in 1991 to 9.8 per cent in 2000;
  - forward linkages with the manufacturing sector increased, indicating the rising importance of services inputs for manufacturing processes; and
  - in 2000, the wholesale and retail trade sub-sector registered the strongest forward inter-sectoral linkages with the manufacturing sector, where 57.6 per cent of its total output was used by the manufacturing sector.



## SECTION III MAJOR GLOBAL AND REGIONAL DEVELOPMENTS AND TRENDS

### Trade Liberalisation

- 1.48 The pace of trade liberalisation has accelerated, with concurrent initiatives taken at the multilateral, regional and bilateral levels. Apart from multilateral negotiations under the World Trade Organisation (WTO), there is an increasing trend for countries to engage in bilateral and regional trade arrangements. These arrangements enable countries to gain better market access for their products and services. The shift towards preferential trading arrangements at the regional and bilateral levels gained momentum in the last decade. Trade liberalisation under such arrangements, which involve a lesser number of countries, is expected to proceed at a faster pace than that under the WTO.
- 1.49 The use of regional and bilateral initiatives to promote free trade has resulted in a growing number of free trade agreements (FTAs) being negotiated by numerous countries and regions, including the United States of America (USA), Japan, the European Union (EU), ASEAN, the People's Republic of China, India, West Asia and Latin America. As at October 2004, more than 300 regional trade agreements had been notified to the WTO.
- 1.50 Malaysia has entered into several free trade arrangements, at both regional and bilateral levels. At the regional level, Malaysia's involvement is through ASEAN. Trade liberalisation initiatives by ASEAN are:
- the creation of ASEAN Free Trade Area (AFTA). Under AFTA, import duties on all products will be eliminated by 1 January 2010 for Brunei, Indonesia, Malaysia, the Philippines, Singapore and Thailand (ASEAN 6) and by 1 January 2015 for Cambodia, Lao PDR, Myanmar and Viet Nam, with flexibility for some products by 1 January 2018;
  - efforts in creating ASEAN Economic Community (AEC). AEC aims to realise free flow of goods, services and investments, freer flow of capital and greater mobility of professionals, talents and skilled labour by 2020. As an initial step, ASEAN agreed to integrate 11 priority sectors by 2010. The priority sectors are wood-based products, automotive, rubber-based products, textiles and apparel, agro-based products, fisheries, electronics, e-ASEAN, healthcare, air travel and tourism; and
  - FTAs with dialogue partners (the People's Republic of China, India, Japan, Republic of Korea, Australia and New Zealand). These FTAs are comprehensive and cover goods, services, investments and other areas of economic cooperation. The FTAs with the People's Republic of China and Republic of Korea will be realised in 2010, Japan (2012) and India (2011). The timeline for the other FTAs is being negotiated.

At the bilateral level, Malaysia has concluded Comprehensive Economic Partnership Agreement with Japan and Trade and Investment Framework Agreement (TIFA) with the USA, which provides for negotiations of a bilateral

FTA. Negotiations for the FTA with the USA commenced in mid-2006. Malaysia is negotiating FTAs with Pakistan, Australia and New Zealand, and has completed Joint Study on the possibility of an FTA with India.

- 1.51 With greater certainty, transparency and more liberal trade regimes provided under the FTAs, trade among Malaysia and FTA partners is likely to increase. These FTAs will create opportunities, as well as new challenges, for domestic manufacturers.
- 1.52 Although tariffs are rapidly being reduced under the various trade liberalisation initiatives, non-tariff measures continue to be maintained. In some countries, new measures are introduced, due to the growing demand for standards on safety, health and environment. These measures include requirements on labelling, certifications, technical standards, and sanitary and phytosanitary regulations. While most of these measures can be justified under international trade laws, they can inhibit or restrict trade for countries which are unable to meet or comply with such requirements.

### **International Trade**

- 1.53 Global trade patterns during the IMP2 period indicated that world merchandise trade was dominated by three major regions, namely, North America, comprising the USA, Canada and Mexico, the EU and East Asia. In 2005, these three regions collectively accounted for more than 76 per cent of the world merchandise trade.
- 1.54 In terms of trade and economic development, North East Asia, comprising the People's Republic of China, Japan, Republic of Korea, Taiwan and Hong Kong, was the fastest growing region in the world. The region's contribution to global trade expanded from 17.7 per cent in 1996 to 19 per cent in 2005. Other fast expanding global trading regions included ASEAN, South Asia, West Asia and Latin America.

### **Foreign Direct Investments**

- 1.55 In 2000, global foreign direct investment (FDI) flows reached the highest level of US\$1.4 trillion. FDI flows in subsequent years were lower. In 2005, the flows amounted to US\$896.7 billion. Global FDI flows are expected to expand in the near future. Between 2005 and 2008, the average annual growth of global FDI flows is projected at 11 per cent. The greater flows are expected from stronger growth in the global economy and an improvement in fixed capital spending, as well as improved confidence in cross-border mergers and acquisitions.
- 1.56 In 2005, among developing countries, the People's Republic of China attracted the highest FDI inflows, at US\$60.3 billion, followed by Hong Kong (US\$39.7 billion) and Mexico (US\$17.2 billion). Countries in Central and Eastern Europe were emerging as substantial recipients of FDIs, following the integration of some of these countries into the EU. In 2005, the EU attracted US\$445.3 billion in FDI inflows.

1.57 Global FDIs in the services sector have grown in importance. The sector accounted for 48.5 per cent of the global stock of FDIs in 1990, increasing to 58.8 per cent in 2004. The composition of FDIs in services had also changed. Until 1990, FDIs in services were concentrated in trade and finance. Since then, more dynamic growth in FDIs was registered by other services, including utilities, communication and business services. Investments in health and education services had also recorded rapid expansion. The high growth was attributed to an increase in demand, as well as greater privatisation and liberalisation of the health and education services.

### **Outsourcing in Manufacturing and Services**

- 1.58 The practice of outsourcing is becoming a trend in both the manufacturing and services sectors, as a means to realise operational efficiency and gain competitive advantage. An increasing number of companies are focusing more on their core competencies and processes and outsourcing other non-core activities to specialised companies. Outsourcing activities are being undertaken domestically or across borders (offshoring), through both single and multi-source arrangements. Outsourcing involves not only the contracting out of the production of parts and components, but also extends to services, such as management information systems, marketing, packaging and distribution. Business processes being outsourced include call centres; information technology; accounting, auditing and legal services; human resource management; and marketing related activities.
- 1.59 Malaysia is taking advantage of the growing information technology-enabled shared services and business process outsourcing. The Multimedia Development Corporation (MDeC) is positioning and promoting Malaysia and the Multimedia Super Corridor of Malaysia (MSC Malaysia) as a provider of and low cost location for high value shared services. Many international companies, such as those in the automotive, banking, and oil and gas activities, have established their shared services centres in Malaysia, indicating that the country is an attractive location for outsourcing. According to the A.T. Kearney Offshore Location Attractiveness Index, in 2004 and 2005, Malaysia ranked third for business process outsourcing, after India and the People's Republic of China.
- 1.60 In the E&E industry, efforts by MNCs to shift towards higher value-added activities in early 1990s had promoted the development of Malaysian-owned electronics manufacturing services companies. Outsourcing by the original equipment manufacturers (OEMs) also provides growth opportunities to local supporting firms, particularly those in plating, tooling and moulding activities. In the automotive industry, outsourcing is undertaken domestically, through local producers of parts and components, and regionally, through the ASEAN Industrial Cooperation (AICO) arrangement.

1.61 Outsourcing has created opportunities for SMEs to be involved in supplying products and services to large companies and MNCs in activities such as engineering, machining and assembly of high precision mechanical components and equipment. Industries where SMEs have benefited from outsourcing include the automotive, E&E and textiles.

### Technological Developments

1.62 The global economy is being transformed into a knowledge-based economy, where technology assumes a major role. New and emerging technologies will continue to have an impact on industrial and economic development. Advancements in technology include those in ICT, biotechnology, photonics and nanotechnology.

1.63 The convergence of technology has led to the creation of new and innovative products. In the ICT industry, digital technology enables both conventional and new communication services - voice, data and imaging - to be provided over different networks. This development will have an impact on business processes, as well as creating business opportunities in new applications, products and services.

1.64 To be able to take advantage of the technological developments, both newly industrialised economies and some developing economies are giving emphasis on R&D and design and development (D&D), including the development of indigenous technology through innovation and technopreneurship. Areas of priority in technological development which have been identified by some countries include communication and optoelectronic technologies, precision machinery, micro-electromechanical systems, nanotechnology and biotechnology. In the case of Malaysia, emerging technologies which offer potential benefits include biotechnology, nanotechnology, radio frequency identification (RFID), wireless technology, microelectromechanical systems, photonics, fuel cell and laser technology.

1.65 Malaysia is giving greater emphasis on R&D activities, as indicated by increases in:

- gross expenditures on R&D by both the public and private sectors, from RM549.2 million (0.2 per cent of GDP) in 1996 to RM4.3 billion (0.9 per cent of GDP) in 2005. Comparatively, expenditures on R&D by other countries in the region were higher. According to the World Competitiveness Yearbook 2006, published by International Institute for Management Development, Malaysia was ranked 44th out of 61 countries, in terms of total expenditures on R&D. In comparison, Japan was second, Republic of Korea (ninth), India (26th) and Singapore (30th); and
- the ratio of researchers to the workforce, from five researchers per 10,000 workforce in 1996 to 25 in 2005.

## SECTION IV CHALLENGES

### Competitiveness

1.66 Malaysia was able to maintain its global competitiveness during the IMP2 period, mainly due to the political stability, developed infrastructure, pro-business policies and availability of skilled workforce in major categories. Malaysia was also able to adjust to increasing competition, arising from progressive trade liberalisation. However, Malaysia's competitive position is being challenged by emerging economies, such as the People's Republic of China, India, Central European Economies and Latin America. To enhance its competitiveness, Malaysia needs to increase the availability of skilled and knowledge workers, strengthen R&D capabilities and improve technological readiness, telecommunications and Government delivery system.

### Investments

- 1.67 There will be intense competition for FDIs, especially from the emerging economies. It is important for Malaysia to maintain its position as an attractive and preferred location for investors, both foreign and domestic, particularly for quality investments in emerging and higher technology industries. All relevant agencies will need to adopt a more proactive, facilitative and coordinated approach in attracting investments.
- 1.68 MNCs are increasingly expanding and rationalising their regional production networks. To benefit from this trend, Malaysia will need to strengthen its position within the regional and global production networks and be part of the international supply chains. In respect of outward FDI flows from developing countries, including ASEAN, the trend has been increasing, in response to globalisation and growing competition. Encouraging and supporting Malaysia's investments overseas is important in building Malaysia's industrial competitiveness. Malaysian companies will need to expand overseas and take advantage of opportunities arising from regional investment agreements and bilateral FTAs.
- 1.69 Apart from efforts to attract FDIs, Malaysia will also need to give greater focus to the promotion of industrial development through domestic sources of investments. While the target for domestic investments vis-à-vis FDIs had been set at a ratio of 60:40, for the period 1996-2005, the ratio achieved was 44:56.
- 1.70 There is a need to encourage greater participation by domestic investors, manufacturers and service providers in industrial activities. Areas which need to be given greater focus in enhancing domestic investments include nurturing entrepreneurship, making SMEs more dynamic and vibrant, and forging linkages between domestic companies and MNCs, as well as between researchers and industry. This will also enable domestic manufacturers and service providers to progressively integrate into the production networks and supply chains of the MNCs, as well as become major regional producers of goods and providers of services themselves.

1.71 Apart from the manufacturing and services sectors, greater investments will also need to be channelled to the agriculture sector. The investments will contribute towards the greater development and transformation of the sector, through the introduction of new technologies, as well as improved management and marketing capabilities.

### **Productivity**

1.72 There is a need to provide greater focus on enhancing the contributions of the components of the TFP to the GDP:

- on the quality of labour, industries will need to continuously upgrade the levels of knowledge and skills of their workforce, to keep pace with technological advancements and enable them to undertake product improvements and innovations;
- on capital structure, industries will need to continue enhancing their technological capabilities and the application of ICT and capital-intensive processes to produce higher value-added products. In addition, industries will need to improve on their ability to rationalise and integrate work processes, as well as technology and management systems;
- on demand intensity, industries will need to increase their market shares through more effective marketing strategies, new product development and branding; and
- on technical progress, companies will need to regularly enhance their management skills, resources and systems to improve organisational effectiveness through various initiatives on productivity and quality improvement, such as quality assurance, standardisation, total quality management, benchmarking and sharing of best practices.

While progress has been achieved, further improvements are required to enable local industries to keep pace with advancements by competitors and sustain a competitive edge.

### **Development of Human Capital**

1.73 The need for knowledge workers and market-driven expertise will become more important, as industries shift towards higher value-added and knowledge-intensive activities. The mismatch between the supply of and the demand for skilled workforce will need to be addressed on a more comprehensive basis, through more structured academia-industry collaboration, in areas such as curriculum development and industrial training.

1.74 There is a need to nurture a culture of continuous innovation and creativity among the workforce. This will enable industries to continue improving their products, systems and processes. There is also a need for industry to allow for flexibility in employment conditions to attract a greater number of the skilled workforce presently not in the labour market, for example, housewives with relevant qualifications.

## Technology

- 1.75 Malaysia will need to undertake greater efforts in developing its technological capabilities to take advantage of new trends in technology. By applying existing technologies more intensively and adopting new technologies in their operations, local manufacturing companies will be able to build on their expertise to become own design manufacturers (ODMs) and own brand manufacturers (OBMs).
- 1.76 Presently, ICT is widely applied in various industries, including the services sector. Nevertheless, greater focus will need to be given to its application as a strategic tool to improve the management of supply chains. Manufacturers and service providers will also need to keep pace with the fast changing developments in ICT. The greater application of technology will also enable industry to reduce its dependence on foreign labour. Industry will need to rationalise processes and systems, as well as upgrade machinery and equipment, to achieve a higher level of automation.
- 1.77 There is a need to increase domestic investments in higher technology activities. This will enable Malaysian companies to forge greater links with MNCs in meeting the latter's requirements for high precision and high technology parts and components, as well as undertake exporting on their own.

## Research and Development

- 1.78 In general, local companies have not given adequate focus on R&D efforts to facilitate the shift towards higher value-added activities. Most of the R&D initiatives have been undertaken by the Government, as well as the MNCs and large companies. This lack of focus by local companies has placed them at a disadvantage vis-à-vis their competitors, in terms of quality, innovativeness and attractiveness of products and services.
- 1.79 Recognising the importance of R&D in supporting the long term competitiveness of industries, the Second National Science and Technology Policy has targeted that by 2010:
- expenditures on R&D be increased to at least 1.5 per cent of the GDP; and
  - a ratio of at least 60 researchers per 10,000 people be attained.
- 1.80 The Government has formulated relevant policies and developed the required institutional infrastructure to encourage the promotion and protection of innovations and new ideas. However, the response by industries has not been encouraging. For example, the registration of patents by Malaysians is low. For the period 1990-2005, out of 21,045 patents registered, only 480 (2.3 per cent) were by Malaysians. The private sector will need to devote more efforts and resources on innovation and creativity to enhance its technological and product development capabilities.

## More Balanced Regional Development of Industries

- 1.81 While the country has been able to achieve overall progress in its industrial development efforts, there is a need for a more balanced regional development of industries. Apart from mobilising potential domestic resources and developing new industrial areas, a more balanced development will contribute towards the long term sustainability in industrialisation.
- 1.82 An indicator of regional imbalance in economic development is the relative contribution of states to the national GDP. Four states, namely, Selangor, Wilayah Persekutuan Kuala Lumpur, Johor and Pulau Pinang, collectively contributed 55 per cent to the national GDP in 2005 (Table 1.10). Another indicator is the level of investments attained by the states. During the period 1996-2005, four states, namely, Selangor, Johor, Sarawak and Pulau Pinang, attracted 57.4 per cent of the total investments in the manufacturing sector (Table 1.11).
- 1.83 Programmes and incentives to encourage industrial activities are applicable to all states. In addition, special incentives have been provided for the Eastern Corridor of Peninsular Malaysia (covering Kelantan, Terengganu, Pahang and Mersing in Johor) and Sabah and Sarawak. However, these states have not been able to attract the required investments to generate the critical mass of industrial activities and progressively stimulate higher levels of industrial development.
- 1.84 There is potential to achieve greater balance in regional industrial development. States with vast land and rich natural resources and biodiversity as their comparative advantage offer viable development potential. Areas which can be developed include biotechnology, marine-based and aquaculture industries, resource-based industries (including oil and gas, cocoa, timber, palm oil and biofuel), pharmaceutical products and selected services activities (for example, eco-tourism). States more dependent on the agriculture sector for growth can enhance the competitiveness of the sector through the modernisation of farm production and marketing practices.
- 1.85 More efforts will be required to achieve greater regional balance in industrial development. Resources will need to be mobilised and coordinated to provide a more attractive and conducive environment for investments and business activities in the lesser developed states.

## Industrial Growth with Equitable Distribution

- 1.86 While greater industrialisation and economic growth have been driving forces for raising incomes and living standards over the years, nevertheless, they do not, by themselves, ensure that the benefits of growth are equitably shared among all in society. To be fully developed 'in Malaysia's own mould' by 2020 requires a full partnership and fair economic participation among all ethnic groups and regions in every sphere of development.

TABLE 1.10  
GROSS DOMESTIC PRODUCT BY STATE

State	2000		2005	
	(RM billion)	Share (%)	(RM billion)	Share (%)
<b>Total</b>	<b>210.5</b>	<b>100.0</b>	<b>262.0</b>	<b>100.0</b>
Selangor	46.8	22.2	60.2	23.0
Wilayah Persekutuan Kuala Lumpur	26.0	12.4	31.4	12.0
Johor	23.8	11.3	30.6	11.7
Pulau Pinang	17.0	8.1	21.7	8.3
Sarawak	16.9	8.0	21.1	8.1
Sabah	15.7	7.5	19.4	7.4
Perak	15.3	7.3	18.7	7.1
Terengganu	12.5	5.9	14.7	5.6
Kedah	9.0	4.3	11.0	4.2
Pahang	7.9	3.7	9.5	3.6
Negeri Sembilan	7.2	3.4	8.7	3.3
Melaka	6.1	2.9	7.5	2.9
Kelantan	5.1	2.4	6.0	2.3
Perlis	1.2	0.6	1.5	0.6

Source: Economic Planning Unit

TABLE 1.11  
APPROVED INVESTMENTS IN THE MANUFACTURING SECTOR BY STATE, 1996-2005

State	Value (RM billion)	Share (%)	Number of Projects
<b>Total</b>	<b>269.5</b>	<b>100.0</b>	<b>8,722</b>
Selangor	52.7	19.5	2,570
Johor	38.8	14.4	1,949
Sarawak	31.8	11.8	357
Pulau Pinang	31.6	11.7	1,181
Kedah	21.4	7.9	509
Terengganu	18.9	7.0	110
Melaka	17.1	6.3	369
Pahang	15.1	5.6	204
Perak	13.2	4.9	524
Negeri Sembilan	12.5	4.6	350
Sabah	10.6	3.9	270
Wilayah Persekutuan Kuala Lumpur	3.0	1.1	210
Perlis	1.7	0.6	26
Kelantan	1.0	0.4	84
Wilayah Persekutuan Labuan	0.1	neg. <sup>1</sup>	9

Note: <sup>1</sup> Negligible

Source: Malaysian Industrial Development Authority

1.87 Imperatives for pursuing industrial growth and equitable distribution include:

- maintaining sustainable economic growth, promoting human development and strengthening national unity. New evidence indicates that persistently high inequalities can negatively affect the sustainability of growth. Greater equity can also enhance economic growth and development, reduce poverty and create more opportunities to the poorest groups in society;
- meeting distribution targets which have not yet been fully met. The progress in moving towards the distribution targets set earlier has been slower than projected, due to the general economic slowdown arising from external shocks, as well as certain internal leakages. The targets for distribution, achievable by 2020, include:
  - the eradication of hard-core poverty by 2010 and massive reduction in overall poverty;
  - the income share of the bottom 40 per cent of households to be at least 20 per cent of the national income;
  - the reduction of the national Gini coefficient to 0.35;
  - the employment structure and hierarchy in the economy to reflect the full and fair participation of all groups in the population;
  - the mean income ratio of Bumiputera to Chinese to improve to 1 : 1.35, while the mean income ratio of Bumiputera to Indians to reach parity;
  - the gap between rural and urban incomes to be reduced to 1 : 1.70; and
  - the asset ownership of Bumiputera in residential and commercial properties, as well as intellectual property, to be raised significantly;
- adhering to the norms of good governance practices, particularly with respect to ensuring the effectiveness and optimum benefits of industrialisation policies, programmes and projects to society; and
- ensuring consistency with the growth with distribution development policy, which is being promoted by the United Nations, World Bank and other multilateral development agencies. This policy is viewed to be in line with the provisions of the Charter of the United Nations, free market regime, human rights, democracy, rule of law and civil society.

1.88 The fundamental challenge of pursuing industrial growth with equitable distribution includes the need to:

- formulate and implement a set of industrialisation policies which are integrated and mutually supportive of the growth and distribution thrusts, while taking into consideration the demands of globalisation and the country's commitments to the international community; and

- gain the confidence of and commitment from all development partners, including the private sector, foreign investors, non-governmental organisations (NGOs), social groups and individuals. All groups need to recognise and appreciate that distribution does not mean the redistribution of the existing wealth of the country, but rather, the gradual and incremental distribution of future growth, which all Malaysians will together contribute through genuine and active participation in wealth creation.

1.89 The pursuit of industrial growth with equitable distribution is necessary in the context of Malaysia's historical as well as multi-ethnic background. The past economic performance of the country has demonstrated that this development approach is realistic and possible. Nevertheless, in the context of optimising future industrial growth and well being, there is a need to emphasise measures which will improve capacity and enhance, not hinder, competitiveness.

### **Business Operating Environment**

1.90 The creation of a conducive business operating environment will enable industries to focus on business activities and enhance their levels of operating efficiency and productivity. Major areas of business operating environment of concern to industry include:

- Government delivery system;
- regulatory regime;
- quality and pricing of utilities;
- trends in crude oil prices;
- other costs; and
- currency management.

#### **(i) Government Delivery System**

1.91 Malaysia will need to ensure that its business and investment environment remains conducive. Inefficiencies in the public sector delivery system will need to be addressed to facilitate business operations and enable Malaysia to remain attractive to potential investors. Areas which need to be improved include simplification of systems, guidelines and procedures, and greater coordination among agencies at the Federal, State and Local Authority levels.

#### **(ii) Regulatory Regime**

1.92 There is a need to review the present business-related rules and regulations, in view of:

- some being outdated and irrelevant under the current business operating environment;

- new developments in technology, as well as business and trade practices, which may either necessitate modifications to existing rules and regulations or the formulation of new ones;
- the development of potential industries and services which may require different regulatory measures; and
- obligations and commitments under the WTO.

Areas where rules and regulations need to be reviewed include legislations on investments, employment and intellectual property rights (IPRs); policies on road and sea transportation; and guidelines on foreign participation in the services sector.

### ***(iii) Utilities***

- 1.93 The manufacturing and services sectors require efficient, reliable and cost-effective provision of utilities, in particular, electricity and telecommunications. These utilities will need to be of acceptable quality and provided on an uninterrupted basis. The issue of power interruption needs to be addressed, since it has adverse implications on industry operations and investment decisions. Standards will need to be set on the performance of utility providers, including quality, delivery, costs and reliability. Compensation will need to be considered for non-compliance.
- 1.94 Presently, 74 per cent of grid-connected electricity in Peninsular Malaysia is generated using natural gas. The price of natural gas is closely linked with the price movements of crude oil. With sharp increases in the oil price in the global market, it will be difficult to sustain the current gas price for electricity in the long run.
- 1.95 Efforts are being made to increase the share of renewable or alternative energy sources in the generation mix of the electricity sector, as well as the promotion of energy efficiency in the country. The Government has decided to increase the share of coal in the generation fuel mix from the present 7.9 per cent to 40 per cent by 2010.
- 1.96 To enable industries and services to adopt ICT and other enabling technologies more extensively in their operations, the required infrastructure, including for broadband services, will need to be adequately provided. The quality of services in telecommunications will also need to be enhanced.

### ***(iv) Trends in Crude Oil Prices***

- 1.97 Oil prices are expected to remain high in both the near and long terms. During the second half of the IMP2 period, international prices of crude oil were volatile, increasing from an average of US\$30.18 per barrel in 2000 to US\$46.80

in 2005. Factors which influence the near term prospects for oil prices include growing geopolitical vulnerability of major producing areas, global economic expansion and stocking of oil by oil importing countries. Factors which influence the long term prospects for oil prices include lack of large new discoveries, rising exploration and development costs and industry reluctance to invest.

- 1.98 Petroleum products will remain the leading source of energy, supplying 1,373 petajoules<sup>1</sup>, which will meet 61.9 per cent of the total commercial demand for energy in 2010. Transport and industrial sectors are expected to remain major consumers of petroleum products. Energy intensive industries, such as chemicals, cement, ceramics, and iron and steel, as well as food processing, will need to be more energy efficient.

**(v) Other Costs**

- 1.99 Other costs of concern to industry include costs related to intermediate and capital goods, labour and transportation. Increases in these costs will translate into higher costs of production and distribution. In particular, increases in the costs of labour may lead to certain components or operations being outsourced or relocated overseas.

**(vi) Currency Management**

- 1.100 There is a need to ensure the stability of the Ringgit and that the exchange rate fairly reflects the economic fundamentals. This will facilitate the implementation of Government development strategies and programmes. The private sector will also benefit, in terms of certainty in undertaking investment planning and business operations. Any misalignment in the exchange rate beyond the acceptable margins will need to be adjusted, to avoid undue difficulties in cross-border business transactions and operations.
- 1.101 The fixed exchange rate regime of US\$1 to RM3.80 was maintained between 2 September 1998 until 21 July 2005, when Malaysia shifted to a managed float regime. The policy shift was to place Malaysia in a better position to respond to and benefit from the structural changes occurring in the region. The countries in the region are becoming increasingly important trading partners to Malaysia. Their importance is expected to increase over time, in line with regional efforts to promote closer economic and financial inter-linkages.
- 1.102 The primary objective of the exchange rate policy will continue to be the promotion of exchange rate stability, against the currencies of major trading partners. Being a small and open economy, a stable exchange rate environment against major trading partners is important to achieve sustainable growth and price stability.

<sup>1</sup> One petajoule = 0.0239 million tonnes of oil equivalent (mtoe). One toe = 7.6 barrels.

- 1.103 Under the managed float system, the Ringgit exchange rate will be largely determined by the demand for and the supply of Ringgit in the foreign exchange market. *Bank Negara Malaysia* will refrain from managing and maintaining the exchange rate at any particular level. Economic fundamentals and market conditions will be the primary determinants of the level of the Ringgit exchange rate. *Bank Negara Malaysia* will intervene only to minimise volatility and ensure that the exchange rate remains fairly valued.
- 1.104 In the future, the exchange rate is not expected to deviate significantly from current levels, unless there are corresponding changes in fundamentals. Nevertheless, companies with foreign currency exposure will need to ensure that they adequately manage their risks against adverse currency movements. In this regard, hedging activities by the private sector are expected to increase over time, to cope with greater exchange rate flexibility.

# Chapter

# 2



## **MACRO-FRAMEWORK OF THE THIRD INDUSTRIAL MASTER PLAN**





# MACRO-FRAMEWORK OF THE THIRD INDUSTRIAL MASTER PLAN

## SECTION I OVERVIEW

- 2.01 The Third Industrial Master Plan (IMP3), 2006-2020 outlines the industrial strategies and policies which form part of the country's continuing efforts towards realising Malaysia's objective of becoming a fully developed nation by 2020, as stated in Vision 2020. The Plan leverages upon the strengths and capabilities of existing industries and the country's resources to enhance competitiveness and resilience. It also builds upon the experience and successes of the previous two Plans, with adjustments to reflect developments and opportunities in the global, regional and domestic environments.
- 2.02 The overriding objective of the IMP3 is to achieve global competitiveness through innovation and transformation of the manufacturing and services sectors, while contributing to the other development thrusts of the National Mission of the Ninth Malaysia Plan (RMK-9), 2006-2010. Emphasis is given to technological upgrading, attracting and generating quality investments, developing innovative and creative human capital, and integrating Malaysian industries and services into the regional and global networks and supply chains.
- 2.03 In implementing the IMP3, focus will be given on meeting the five development thrusts of the National Mission. The Mission is a new policy and implementation framework, aimed at achieving greater performance and impact from the country's development efforts, towards realising Vision 2020. The framework acknowledges that to attain developed nation status, formed in its own mould, Malaysia needs to pursue policies and programmes which enhance its capacity to compete globally, bring about a better distribution of income and wealth through meaningful participation of all groups in the competitive and productive growth process and improve national integration.
- 2.04 The IMP3 deals comprehensively with issues and challenges faced by the manufacturing and non-Government services sectors, including the provision of a highly skilled and knowledgeable workforce, creation of an efficient network of logistics services and application of advanced technologies. During the period of the IMP3, the manufacturing sector will continue to remain an important source of growth. At the same time, the services sector will assume a greater role in generating growth, broadening the economic base and contributing to exports. In line with the Government's efforts to revitalise the agriculture sector, its contributions to growth and exports will be further enhanced.

- 2.05 A more effective collaborative approach will be adopted by the Government and the private sector to ensure that necessary measures are undertaken in critical areas, in particular, industry restructuring and transformation, technological upgrading and innovation, and greater integration of domestic companies into regional and global networks and supply chains. A process of dialogue and cooperation with the private sector will continue to be undertaken to develop suitable and effective processes to implement and monitor strategies and policies in industrial growth and equitable distribution. Underpinning the strengths of the Plan is the enhancement of the business operating environment and institutional support.
- 2.06 The IMP3 spans a period of 15 years. Reviews of the Plan's overall policy directions and targets will be conducted every five years, in tandem with the five-year Malaysia plans, to take into consideration changes in the domestic and global business and economic environments.

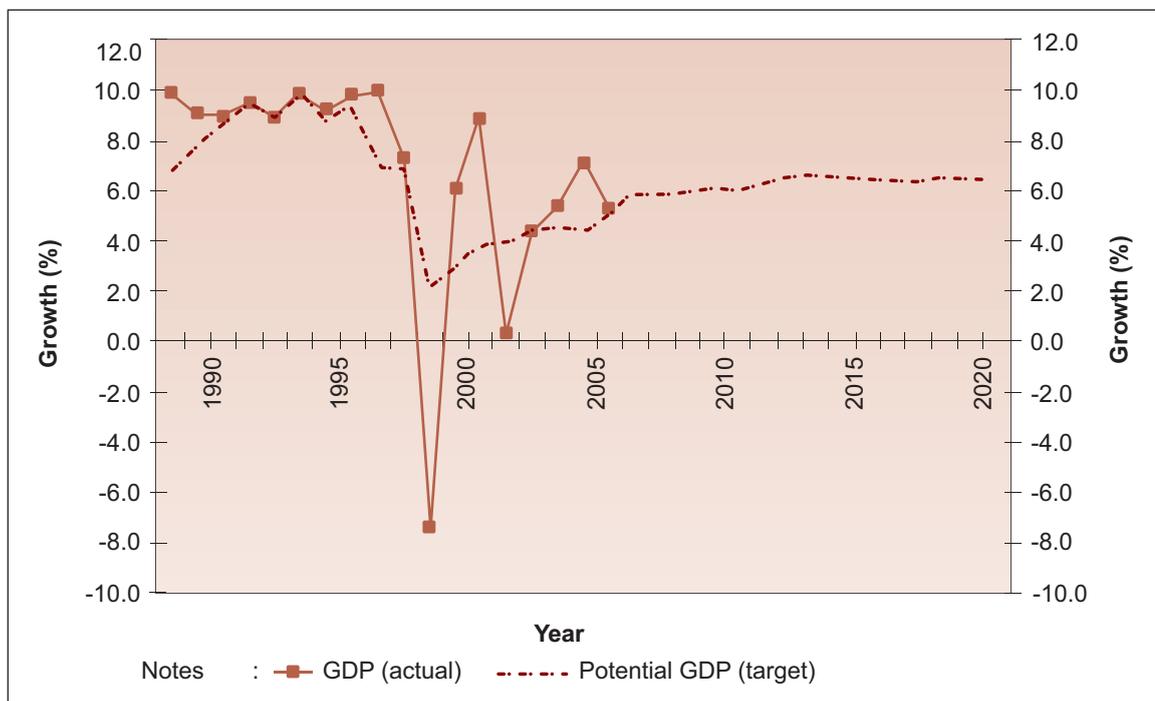
## SECTION II MACRO-TARGETS

### ECONOMIC GROWTH

- 2.07 The Malaysian economy is targeted to grow at 6.3 per cent during the entire IMP3 period (2006-2020). This target is premised on:
- the world economy registering an average growth of Gross Domestic Product (GDP) of 3.5 per cent during the entire Plan period;
  - the manufacturing sector sustaining its growth momentum;
  - the services sector becoming a major source of growth;
  - greater focus being given to developing the agriculture sector;
  - the private sector and Government-linked companies (GLCs) assuming a lead role in generating new investments; and
  - the public sector enhancing its delivery system.
- 2.08 After registering moderate expansion, at an average annual rate of 4.6 per cent during the Second Industrial Master Plan (IMP2) period, the economy is expected to grow higher at 6 per cent during 2006-2010. Subsequently, during the period 2011-2020, the economy is targeted to register an average annual growth of 6.5 per cent (Chart 2.1).
- 2.09 The manufacturing sector will continue to remain an important sector, growing at 5.6 per cent annually during the Plan period and contributing 28.5 per cent to the economy in 2020. It is expected that the non-Government services sector will assume a major role during the Plan period, growing at 7.5 per cent annually and contributing 59.7 per cent to the economy in 2020. Greater focus will also be given to the development of the agriculture sector (Table 2.1).

CHART 2.1

**GROWTH TARGET OF REAL GROSS DOMESTIC PRODUCT**



Sources: Ministry of International Trade and Industry, and Economic Planning Unit

TABLE 2.1

**GROWTH AND CONTRIBUTION TO GROSS DOMESTIC PRODUCT BY SECTOR**

Sector	2006-2020	2020
	Average Annual Growth (%)	Share of GDP <sup>2</sup> (%)
Manufacturing	5.6	28.5
Non-Government services	7.5	59.7
Government services	5.6	6.8
Agriculture, forestry and fishery	5.2	7.0
Mining <sup>1</sup> and quarrying	3.4	4.4
Construction	5.7	2.5
(-) Imputed bank service charges	7.0	10.0
(+) Import duties	2.5	1.1
<b>Real GDP</b>	<b>6.3</b>	<b>100.0</b>

Notes : <sup>1</sup> Comprising mainly crude oil and natural gas  
<sup>2</sup> 1987 real prices

Source: Ministry of International Trade and Industry

- 2.10 Total trade is targeted to grow almost three-fold from RM967.8 billion in 2005 to RM2.8 trillion by 2020. During the period, exports are targeted to increase 2.7 times from RM533.8 billion to RM1.4 trillion (Table 2.2). Major export items are expected to include:
- electrical products and electronics parts and components;
  - chemicals and chemical products;
  - machinery and equipment;
  - automotive parts and components;
  - information and communication technology (ICT) and multimedia products;
  - biotechnology products;
  - optical and scientific products;
  - medical devices; and
  - agro-based products.

TABLE 2.2  
EXTERNAL TRADE

	2005	2010	2020
	<i>(RM billion)</i>		
Total trade	967.8	1,459.7	2,792.4
Exports	533.8	803.9	1,444.3

Sources: Ministry of International Trade and Industry, and Economic Planning Unit

- 2.11 Major services sub-sectors targeted for greater development and export promotion include:
- business and professional services;
  - tourism;
  - education and training;
  - ICT and multimedia services;
  - health services; and
  - construction.
- 2.12 Total factor productivity (TFP) is a critical component for economic and industrial growth. Companies will be encouraged to take advantage of technological developments, as well as adopt better management and skills upgrading practices. In addition, the development in manufacturing-related services, logistics and ICT is expected to contribute to higher productivity of the manufacturing and services sectors.

2.13 With productivity initiatives being given greater emphasis during the Plan period, the contribution of TFP to economic growth is expected to be higher, compared with the contribution of labour and capital. During the IMP3 period, the contribution of TFP to the economy is targeted at 41.4 per cent. The contributions of labour and capital are targeted at 24.5 per cent and 34.1 per cent, respectively (Table 2.3).

TABLE 2.3

### CONTRIBUTIONS OF TOTAL FACTOR PRODUCTIVITY, LABOUR AND CAPITAL TO THE GROWTH TARGET OF REAL GROSS DOMESTIC PRODUCT

Period	Labour	Capital	TFP	Real GDP	Labour	Capital	TFP
	Average Annual Growth (%)				Contribution to Real Output Growth (% share)		
2006-2010	1.8	2.0	2.2	6.0	29.9	34.3	35.8
2011-2020	1.5	2.5	2.5	6.5	23.1	38.6	38.3
2006-2020	1.5	2.2	2.6	6.3	24.5	34.1	41.4

Sources: National Productivity Corporation and Economic Planning Unit

2.14 The contribution of TFP to the growth of the manufacturing sector during the IMP3 period is targeted at 43.2 per cent. The contributions of labour and capital are targeted at 23.7 per cent and 33.1 per cent, respectively (Table 2.4). The contribution of TFP is expected to remain at a high level, as industries rationalise their activities and enhance production processes.

2.15 For the non-Government services sector, the contribution of TFP is targeted at 36.2 per cent. The contributions of labour and capital are targeted at 23.2 per cent and 40.6 per cent, respectively (Table 2.5). With the greater focus being given to the services sector, including efforts in nurturing a higher level of professional and managerial capabilities, the contribution of TFP to the sector is expected to increase from 26.2 per cent during the first five years of the Plan period, 2006-2010, to 39.4 per cent during the remainder of the Plan period, 2011-2020.

## GROWTH BY SECTOR

### (a) Manufacturing Sector

2.16 During the IMP3 period, the average annual growth of the manufacturing sector, including agro-based industries, is targeted at 5.6 per cent. The contribution

of the sector to GDP is expected to increase to 32.4 per cent in 2010 from 31.4 per cent in 2005. The contribution of the sector is targeted to be sustained at 28.5 per cent in 2020 (Table 2.6).

TABLE 2.4

**CONTRIBUTIONS OF TOTAL FACTOR PRODUCTIVITY, LABOUR AND CAPITAL TO THE GROWTH OF THE MANUFACTURING SECTOR**

Period	Labour	Capital	TFP	Growth of Manufacturing Sector	Labour	Capital	TFP
	Average Annual Growth (%)				Contribution to Growth of Manufacturing Sector (% share)		
2006-2010	1.9	2.2	2.6	6.7	28.4	32.8	38.8
2011-2020	1.5	2.4	3.0	6.9	21.7	34.8	43.5
2006-2020	1.6	2.3	2.9	6.8	23.7	33.1	43.2

Sources: National Productivity Corporation and Economic Planning Unit

TABLE 2.5

**CONTRIBUTIONS OF TOTAL FACTOR PRODUCTIVITY, LABOUR AND CAPITAL TO THE GROWTH OF THE NON-GOVERNMENT SERVICES SECTOR**

Period	Labour	Capital	TFP	Growth of Non-Government Services Sector	Labour	Capital	TFP
	Average Annual Growth (%)				Contribution to Growth of Non-Government Services Sector (% share)		
2006-2010	1.9	2.9	1.7	6.5	29.2	44.6	26.2
2011-2020	1.6	2.7	2.8	7.1	22.7	37.9	39.4
2006-2020	1.6	2.8	2.5	6.9	23.2	40.6	36.2

Sources: National Productivity Corporation and Economic Planning Unit

TABLE 2.6

## GROSS DOMESTIC PRODUCT BY SECTOR

Sub-Sectors	2005	2010	2020	2006-2010	2011-2020	2006-2020	2005	2010	2020
	(RM million)			Average Annual Growth (%)			Share of GDP (%)		
Manufacturing	82,394	113,717	187,583	6.7	5.1	5.6	31.4	32.4	28.5
Services	152,205	208,086	437,563	6.5	7.7	7.3	58.1	59.2	66.5
<i>Business and other non-Government services</i>	132,374	183,327	392,806	6.7	7.9	7.5	50.5	52.2	59.7
<i>Finance, insurance, real estate and business services</i>	39,568	55,385	113,866	7.0	7.5	7.3	15.1	15.8	17.3
<i>Wholesale and retail trade, hotels and restaurants</i>	38,437	53,456	113,208	6.8	7.8	7.5	14.7	15.2	17.2
<i>Transport, storage and communication</i>	23,163	31,984	79,641	6.7	9.6	8.6	8.8	9.1	12.1
<i>Electricity, gas and water</i>	10,860	14,450	28,171	5.9	6.9	6.6	4.1	4.1	4.3
<i>Other services</i>	20,346	28,052	57,920	6.6	7.5	7.2	7.8	8.0	8.8
<i>Government services</i>	19,831	24,759	44,757	4.5	6.1	5.6	7.6	7.0	6.8
Agriculture, forestry and fishery	21,585	27,518	46,110	5.0	5.3	5.2	8.2	7.8	7.0
Mining <sup>1</sup> and quarrying	17,504	20,675	28,844	3.4	3.4	3.4	6.7	5.9	4.4
Construction	7,133	8,451	16,455	3.5	6.9	5.7	2.7	2.4	2.5
(-) <i>Imputed bank service charges</i>	23,876	32,707	65,781	6.5	7.2	7.0	9.1	9.3	10.0
(+) <i>Import duties</i>	5,083	5,556	7,377	1.8	2.9	2.5	1.9	1.6	1.1
<b>Real Gross Domestic Product<sup>2</sup></b>	<b>262,029</b>	<b>351,297</b>	<b>658,151</b>	<b>6.0</b>	<b>6.5</b>	<b>6.3</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Notes : <sup>1</sup> Comprising mainly crude oil and natural gas

<sup>2</sup> 1987 real prices

Sources: Ministry of International Trade and Industry, Economic Planning Unit and Department of Statistics

2.17 Twelve industries in the manufacturing sector have been targeted for further development and promotion. These industries are strategically important in contributing to the greater growth of the manufacturing sector, in terms of higher:

- value-added;
- technology;
- exports;
- knowledge content;
- multiplier and spin-off effects; and
- potential to be integrated regionally and globally.

2.18 The 12 industries consist of six, which are non-resource based, and six, resource based:

**Non-resource based**

- electrical and electronics (E&E);
- medical devices;
- textiles and apparel;
- machinery and equipment;
- metals; and
- transport equipment.

**Resource based**

- petrochemicals;
- pharmaceuticals;
- wood-based;
- rubber-based;
- oil palm-based; and
- food processing.

2.19 During the Plan period, the non-resource based industries are expected to continue to contribute substantively to the export of manufactured products. The exports of the industries are targeted to grow at an average annual rate of 7.1 per cent and contribute RM9.2 trillion to exports (Table 2.7). In 2020, exports of the non-resource based industries are expected to account for 80.6 per cent of the total manufactured exports of the twelve targeted industries. The resource based industries are targeted to grow at an average annual rate of 7.1 per cent and contribute RM2.2 trillion to exports. In terms of investments, the non-resource based industries are expected to attract RM232.8 billion in investments, while the resource based industries, RM129.7 billion.

TABLE 2.7

**EXPORT AND INVESTMENT TARGETS FOR THE  
TWELVE TARGETED INDUSTRIES**

Sub-Sector	Exports			Investments	
	2006-2020		2020	2006-2020	2020
	(RM billion)	Average Annual Growth (%)	Share (%)	(RM billion)	Share (%)
<b>Total</b>	<b>11,403.2</b>	<b>7.1</b>	<b>100.0</b>	<b>362.5</b>	<b>100.0</b>
<b>Non-resource based</b>	<b>9,202.5</b>	<b>7.1</b>	<b>80.6</b>	<b>232.8</b>	<b>65.3</b>
Electrical and electronics products	7,533.9	6.3	65.9	82.4	23.1
Metal products	514.6	7.6	4.5	44.2	13.6
Machinery and equipment	494.4	6.4	4.3	30.8	7.7
Textiles and apparel	248.8	7.8	2.1	13.7	3.1
Transport equipment	232.5	6.3	2.0	42.3	11.6
Medical devices	178.3	7.6	1.6	19.4	6.2
<b>Resource based</b>	<b>2,200.7</b>	<b>7.1</b>	<b>19.4</b>	<b>129.7</b>	<b>34.7</b>
Palm oil	781.7	7.6	7.0	26.1	7.6
Wood-based products	545.2	6.4	4.7	25.4	6.2
Petrochemical products	377.4	6.3	3.3	34.0	9.4
Food	244.6	7.8	2.2	24.6	6.2
Rubber products	239.0	7.6	2.1	12.9	3.0
Pharmaceuticals	12.8	6.3	0.1	6.7	2.3

Source: Ministry of International Trade and Industry

2.20 Potential products in the sub-sectors include:

- E&E products, such as semiconductors, smartphones, personal digital assistants, audio visual products and photovoltaic fabricated wafers;
- petrochemicals, such as alpha-olefins and fatty alcohols, vinyl acetate, ethylene dichloride, nylons and polyurethanes;
- pharmaceutical products, such as products derived from biopharmaceutical activities, niche pharmaceutical products, sterile products and oncology products;
- medical devices, such as coronary catheters, clean room medical gloves, in-vitro diagnostic devices, cardiovascular devices, orthopaedic devices, home-care and self care products, high-end diagnostic devices, medical imaging equipment, and high end hospital and laboratory equipment;

- textiles and apparel, including high quality fabrics, which have features such as fire resistant, anti-bacteria, wrinkle-free and ultraviolet protection, high-end apparel, such as those with quick dry and silky touch features, bridal gowns and blazers, and ethnic fabrics, such as *batik* and *songket*;
- machinery and equipment, such as metalworking machine tools, materials handling equipment, specialised machinery, packaging machinery and fuel cell power generators;
- metals and metal products, such as stainless steel plates, cold-rolled coils, wire products, welding wires and galvanised iron and sheets;
- wood products, such as speciality and high value-added products, and own design and brand furniture;
- rubber products, such as rubber engineering products, seismic bearings, automotive rubber-metal components, high pressure hoses, dock fenders, catheters and speciality gloves;
- transport equipment, such as passenger cars, speciality vehicles, engines, transmissions, automotive electronics components, vessels of 20,000 dead weight tonnes and below for coastal shipping, and aircraft parts and components;
- palm oil, such as oleochemical derivatives and preparations, bio-fuel and renewable energy, nutritional foods and ingredients, biotechnology-based products and biomass products; and
- foods, such as convenience foods, foods with functional claims, food ingredients and *halal* foods.

2.21 Initiatives will be undertaken to develop Malaysia as a major producer of *halal* products and services. Malaysia will leverage upon its international recognition as a modern and progressive Islamic country to gain access to the export markets for its *halal* products and services.

2.22 To achieve the targeted growth in the manufacturing sector, the size of investments required during the entire Plan period is estimated at RM412.2 billion, or average annual investments of RM27.5 billion. For the first five years of the Plan period (2006-2010), the investments required are estimated at RM101.1 billion. For the next ten years (2011-2020), the amount required will be RM311.1 billion. The focus of investments will be on higher value-added, and technology and knowledge-intensive activities. Reinvestments will also be encouraged to enable existing industries to enhance their technological capabilities, as well as expand and diversify their products and activities. Apart from the 12 targeted industries, the growth of other industries will continue to be encouraged. Support and facilities will continue to be extended to facilitate the development of the other industries.

2.23 In the face of greater competition for investments, both the public and private sectors will be encouraged to enhance their collaborative roles. While the Government will continue to make the investment environment more conducive, through enhancing the institutional and infrastructure support, regulatory regime and delivery system, private sector institutions will be encouraged to be more proactive in undertaking measures to enhance their productivity, efficiency and competitiveness.

**(b) Non-Government Services Sector**

2.24 The non-Government services sector is targeted to be the fastest growing sector. The development of the sector is expected to reduce Malaysia's dependence on imported services, such as insurance and ICT services, while increasing the export of services, such as construction services, education and training services and health services. The targets set for the sector are:

- 7.5 per cent for overall growth during the Plan period;
- increase in the contribution of the sector to GDP from 50.5 per cent in 2005 to 59.7 per cent in 2020 (Table 2.6); and
- total investment requirement of RM687.7 billion during the Plan period, or average annual investments of RM45.8 billion.

2.25 In services, eight services sub-sectors have been targeted for greater development and promotion. These sub-sectors have the potential to contribute to exports and strengthen inter-sectoral linkages, including facilitating and supporting the greater growth of the manufacturing sector. The eight targeted sub-sectors are:

- business and professional services;
- logistics;
- ICT services;
- distributive trade;
- construction;
- education and training;
- healthcare services; and
- tourism services.

2.26 The Government services sub-sector, which is targeted to grow at 5.6 per cent, will continue to assume its facilitating role. It is not expected that there will be a major expansion of its existing role. Greater focus will be given to enhancing the delivery system, including reviewing legislations and rationalising rules and regulations.

**(c) Agriculture Sector**

2.27 The agriculture sector has the potential to become another source of growth. The sector is expected to benefit from greater efforts at modernisation and transformation, including the application of technology and commercialisation of research and development (R&D) findings. The targets set for the sector include:

- average annual growth of 5.2 per cent during the Plan period; and
- total investment requirement of RM169 billion during the Plan period, or average annual investments of RM11.3 billion.

2.28 During the Plan period, the agriculture sector will be transformed into a more commercialised and technology-intensive sector. Farm mechanisation will be applied on a wider scale. More market-driven R&D activities will be undertaken to enhance the commercialisation of agriculture produce. Innovation in the sector will be encouraged through the application of technology, for example, biotechnology. Biotechnology applications in the sector include:

- food processing;
- seed development;
- health products;
- plant research;
- cell culture; and
- microbial pesticides and other micro-organisms.

## **HUMAN RESOURCE REQUIREMENTS**

2.29 During the first five years of the Plan period, overall employment in the economy is expected to increase by an average annual growth of 1.9 per cent, from 10.9 million in 2005 to 12 million in 2010 (Table 2.8). The services sector will continue to be the largest source of employment, accounting for 52.2 per cent of the total employment by 2010, while the manufacturing sector will account for 30 per cent. Within non-Government services, the majority of jobs to be created will be in sub-sectors such as distributive trade; tourism; and financial, insurance and business services.

TABLE 2.8

## EMPLOYMENT BY SECTOR

Sector	2005	2010	2006-2010	2005	2010
	('000 Persons)		Average Annual Growth (%)	Share of Total Employment (%)	
<b>Total employment</b>	<b>10,894.8</b>	<b>11,976.0</b>	<b>1.9</b>	<b>100.0</b>	<b>100.0</b>
Manufacturing	3,132.1	3,594.7	2.8	28.7	30.0
Services	5,554.7	6,248.1	2.4	51.0	52.2
Business and other non-Government services	4,501.9	5,138.3	2.7	41.3	42.9
Electricity, gas and water	93.0	103.5	2.2	0.8	0.9
Transport, storage and communication	631.2	701.5	2.1	5.8	5.9
Wholesale and retail trade, hotels and restaurants	1,927.2	2,171.0	2.4	17.7	18.0
Finance, real estate and business services	732.3	826.8	2.5	6.7	6.9
Other services	1,118.2	1,335.5	3.6	10.3	11.1
Government services	1,052.8	1,109.8	1.1	9.7	9.3
Agriculture, forestry and fishery	1,405.7	1,323.8	-1.2	12.9	11.1
Construction	759.6	764.7	0.1	7.0	6.4
Mining <sup>1</sup> and quarrying	42.7	44.7	0.9	0.4	0.4

Note: <sup>1</sup> Mainly comprising crude oil and natural gas

Source: Economic Planning Unit

2.30 The share of employment in the agriculture sector is estimated at 11.1 per cent of the total employment in 2010. There will be a greater need for a skilled workforce, as the sector is targeted to become more knowledge-intensive and commercially-driven. Among the categories of skilled workforce required are agriculture and soil scientists, botanists, herbalists, and aquaculture and organic farming specialists. The application of high technology planting methods and mechanisation will enhance the productivity of the sector and reduce the dependency on unskilled labour.

- 2.31 For the period 2011-2020, total employment is expected to register higher growth. This is in tandem with the anticipated expansion in the economy, particularly the manufacturing, services and construction sectors, which together, are expected to contribute more than 95 per cent of the GDP in 2020.
- 2.32 As industries adopt greater mechanisation and automation, as well as shift towards higher value-added activities, there will be a higher requirement for a knowledge-intensive workforce. This requirement is expected to be met by qualified Malaysians, as well as expatriates. Labour-intensive industries will be encouraged to plan their human resource requirements to progressively reduce their dependence on low-skilled labour, particularly foreign unskilled labour.

## FINANCING REQUIREMENTS

- 2.33 To support the growth and development of the manufacturing, non-Government services and agriculture sectors during the Plan period, it is estimated that RM1.3 trillion in overall investments, or RM84.6 billion annually, will be required. The banking sector will remain the most important source of financing, mainly catering for short- to medium-term loans, largely for working capital. Apart from banks, other sources of financing, including development finance institutions, capital markets, equity market and venture capital, are expected to assume a greater role in meeting the financial requirements. The longer-term capital requirements will be met by the issuance of private debt securities, as well as instruments of the capital market. For investments in new areas, more venture capital will be utilised.
- 2.34 Recognising the increasing role of small and medium enterprises (SMEs), the availability of financing, at reasonable costs, to the SMEs will be enhanced. Apart from the creation of special funds, SME Units have been established in banking institutions to improve the access to financing to SMEs. In addition to facilities provided by established banking institutions, the SME Bank, which is a specialised development finance institution to nurture and promote the development of SMEs, provides a broad range of financial and advisory services to SMEs. Alternative methods of financing, for example, the securitisation of loans by SMEs, will also provide greater flexibility to banking institutions in managing their SME loan portfolio and further enhance their financial capability to provide lending to SMEs.
- 2.35 Development finance institutions will continue to complement the banking institutions in meeting the financial requirements for economic development. These institutions will provide financing to companies involved in areas such as infrastructure development, agriculture and capital-intensive and high technology industries, as well as export-oriented industries.

2.36 With the focus on further developing the agriculture sector as a potential source of growth, the availability of and accessibility to financing are important in ensuring the sustainable growth of the sector. Banking institutions are expected to assume a greater role in supporting the entire supply chain of the agriculture sector, including agro-based industries, by ensuring the availability of credit, as well as innovative products and services, to meet the needs of the sector.

## SECTION III STRATEGIES AND POLICIES

### OVERALL PLANNING CONTEXT

2.37 The implementation period of the IMP3 coincides with the implementation period of the National Mission, which was introduced in the RMK-9. The National Mission, with its five key thrusts, will shape and drive the planning and implementation of economic development policies and programmes to achieve high performance and optimum impact from national development efforts. The five major thrusts of the National Mission are to:

- move the economy up the value chain;
- raise the capacity for knowledge and innovation and nurture ‘first class mentality’;
- address persistent socio-economic inequalities constructively and productively;
- improve the standard and sustainability of the quality of life; and
- strengthen the institutional and implementation capacity.

2.38 The IMP3 has been formulated, after having taken into consideration the development direction and strategic thrusts of the National Mission, as well as the relevant policies and economic projections in the RMK-9. The IMP3, with its focus on industrial development, is a key policy instrument to drive and implement the development goals of the National Mission to enable Malaysia to achieve the objective of developed nation status by 2020, in line with Vision 2020.

### THEME

2.39 The theme for the IMP3 is ‘**MALAYSIA - TOWARDS GLOBAL COMPETITIVENESS**’. This theme is important to ensure that the country is able to sustain a high level of performance in competitiveness, against the backdrop of a global trade and investment environment, which is increasingly influenced by the rising trend in liberalisation and globalisation.

- 2.40 In striving towards global competitiveness, Malaysia will need to enhance its industrial capabilities to meet global challenges. It is envisaged that, during the IMP3 period, Malaysia's competitiveness position will be further improved. In the World Competitiveness Yearbook 2006, Malaysia was ranked 8th among 30 economies in the category of populations above 20 million. In the Global Competitiveness Index of the Global Competitiveness Report 2005-2006, Malaysia was ranked 25th among 117 countries.

## STRATEGIC THRUSTS

- 2.41 To facilitate the achievement of the macro-targets of the IMP3, ten overall strategic thrusts have been set. The thrusts have been broadly categorised under development initiatives, promotion of growth areas and enhancing the enabling environment:

### Development Initiatives

- (1) enhancing Malaysia's position as a major trading nation;
- (2) generating investments in targeted growth areas;
- (3) integrating Malaysian companies into the regional and global networks; and
- (4) ensuring industrial growth contributes towards equitable distribution and more balanced regional development; and

### Promotion of Growth Areas

- (5) sustaining the manufacturing sector's contribution to growth; and
- (6) positioning the services sector as a major source of growth; and

### Enhancing the Enabling Environment

- (7) facilitating the development and application of knowledge-intensive technologies;
- (8) developing innovative and creative human capital;
- (9) strengthening the role of private sector institutions, including trade and industry associations; and
- (10) creating a more competitive business operating environment through effective institutional support and efficient Government delivery system.

## (1) ENHANCING MALAYSIA'S POSITION AS A MAJOR TRADING NATION

- 2.42 Strategies to be undertaken to position Malaysia as a major trading nation and address the challenges in international trade include:
- intensifying exports of products of the targeted growth areas. The products include:

- electrical products and electronics parts and components;
  - chemicals and chemical products;
  - machinery and equipment;
  - automotive parts and components;
  - ICT and multimedia products;
  - biotechnology products;
  - optical and scientific products;
  - medical devices; and
  - agro-based products;
- developing and promoting Malaysian brands;
  - supporting outsourcing activities;
  - enhancing exports through compliance to international standards;
  - nurturing domestic companies, including GLCs and SMEs, to become globally competitive;
  - enhancing the policy framework to facilitate trade; and
  - strengthening and expanding the institutional support for the exporting community.

## **(2) GENERATING INVESTMENTS IN THE TARGETED GROWTH AREAS**

2.43 The targeted growth areas in the manufacturing and services sectors are expected to become significant contributors to economic growth. Strategies to generate investments in the targeted growth areas include:

- promoting investments and exports of products and services with growth potential;
- assisting and facilitating domestic companies, including GLCs, which have the capacity to expand into the potential growth areas;
- developing specialised high technology parks, with the requisite physical infrastructure, workforce and support industries, to cater for the needs of high technology and capital-intensive industries and R&D activities;
- encouraging multinational corporations (MNCs) to establish and expand their operations in Malaysia;
- providing greater support to companies in the targeted growth areas; and

- ensuring that the investment environment remains conducive, particularly in terms of infrastructure, costs of doing business, availability of a skilled workforce and an efficient public service delivery system.

### (3) INTEGRATING MALAYSIAN COMPANIES INTO REGIONAL AND GLOBAL NETWORKS

2.44 Strategies to assist and facilitate Malaysian industries to take advantage of opportunities, arising from the growing trend towards economic integration at the regional and global levels, include:

- encouraging companies to focus on their core competencies and strengths within the regional and global networks;
- facilitating collaborations between Malaysian firms (including SMEs) with GLCs and MNCs in Malaysia, and Malaysian firms with MNCs operating outside Malaysia;
- encouraging outsourcing, off-shoring and other forms of business practices;
- promoting outward investments to gain market access and improve competitiveness;
- encouraging the formation of regional conglomerates;
- encouraging local port operators and those involved in providing related services to participate as global operators; and
- developing Malaysia as the regional hub for selected products and services, including *halal* products and services, biotechnology and automotive products.

### (4) ENSURING INDUSTRIAL GROWTH CONTRIBUTES TOWARDS EQUITABLE DISTRIBUTION AND BALANCED REGIONAL DEVELOPMENT

#### (a) EQUITABLE DISTRIBUTION

2.45 The strategies and policies for a more equitable distribution have been formulated within the overall strategies and policies of the IMP3. The growth which will be generated by industrial development will provide opportunities for the further alleviation of absolute poverty and raising the incomes of the lower income groups through employment, as well as contributing towards more equitable ownership and control of industrial wealth.

2.46 Nine major strategies have been set in the pursuit of growth with equitable distribution:

- (i) taking advantage of growth opportunities arising from global integration;
- (ii) taking advantage of increasing opportunities from the integration of domestic industries into the regional and global production networks;

- (iii) encouraging the Bumiputera Commercial and Industrial Community (BCIC) to take advantage of increasing opportunities from outward investments;
- (iv) taking advantage of opportunities from the new sources of growth in the manufacturing sector;
- (v) taking advantage of opportunities from the new sources of growth in the services sector;
- (vi) enhancing the development of Bumiputera human capital;
- (vii) utilising technology to enhance the total factor productivity (TFP) and competitiveness of Bumiputera enterprises;
- (viii) enhancing the growth and increasing the ownership of the BCIC through the development of small and medium enterprises (SMEs); and
- (ix) mobilising the potential growth of the BCIC through balanced regional development and the development of regional corridors.

2.47 These strategies cover the key areas of growth opportunities which arise from regional and global integration, including international production networks and cross border investments. These are the international dimensions of distribution for an open economy characteristic of Malaysia. The strategies for distribution also focus on the new sources of growth arising from the restructuring of the economy, as it moves up the manufacturing value chain and increasingly transforms into a services-based economy.

2.48 While the strategies provide the general framework for reducing inequalities, they will be supplemented by policy measures and instruments. Features of the key policy measures and instruments which are in place, and which will continue to be refined, are:

- recognition that Malaysia is an open economy which is undergoing progressive liberalisation;
- pursuance of a growth approach which takes into consideration the needs of the poor;
- application of supply-side and demand-side measures for the development and promotion of the BCIC;
- development of Bumiputera human capital and entrepreneurship;
- pursuance of measures in government procurement and other areas to attain distribution targets;
- utilisation of incentives and support;
- integration of Bumiputera into the industrial community in an effective and productive manner and raising their competitiveness; and
- encouraging joint-ventures and strategic alliances.

- 2.49 Policy measures and instruments will be continuously monitored, reviewed, refined and strengthened, taking into account new conditions, challenges and priorities. The effectiveness of the policy measures and instruments in promoting a more equitable distribution and reducing inequalities in the manufacturing and services sectors will be given greater focus.

**(i) Taking Advantage of Growth Opportunities Arising from Global Integration**

- 2.50 The overall strategy to enhance Malaysia's position as a major trading nation will provide new growth opportunities, as well as new challenges, for reducing inequalities arising from increasing integration and international commitments. Integration will be accelerated through international trade and capital flows. The economy is expected to become more integrated with the faster growing economies of East Asia. The process of integration into the regional and global economies will be enhanced during the period of the IMP3.

- 2.51 Historically, international trade has been an engine of growth, which in turn, has contributed to poverty alleviation. Greater openness has been associated with a falling level of absolute poverty. International trade has dynamic benefits through the provision of inputs into the production process and the knowledge spillovers which come from international trade. Poor households can benefit from international trade, if trade reforms lower the prices of imported products and if their wages rise, relative to the prices of the goods they consume.

- 2.52 The progressive liberalisation of the economy during the IMP3 period will take into consideration the impact of liberalisation on distribution within the economy. Progressive liberalisation will allow Malaysia to undertake a more structured and pragmatic approach which can minimise the costs of adjustments, including implications on low income groups. The impact of regional and global integration on the level of poverty and the distribution of incomes will be monitored and evaluated.

**(ii) Taking Advantage of Increasing Opportunities from the Integration of Domestic Industries into the Regional and Global Production Networks**

- 2.53 The strategies which will facilitate Malaysian industries to become more integrated into the regional and global production networks will open up growth opportunities and increase the participation of Malaysian, including Bumiputera, enterprises in the networks. The regional and global production networks will influence, as well as expand, trade and capital flows. In Asia, the development of global production networks has been largely driven by the MNCs in a number of key industries, especially E&E products and automobiles. The increase in the number of MNCs and their affiliates has been linked to the increase in international production. The competitive pressure to attract the MNCs and be integrated into the global production networks will create demands on human capital resources. The impact of this development on distribution and the opportunities which are created will be taken into consideration for increasing Malaysian, including Bumiputera, participation in the regional and global production networks.

**(iii) Encouraging the Bumiputera Commercial and Industrial Community to Take Advantage of Increasing Opportunities from Outward Investments**

2.54 To remain competitive and take advantage of growth opportunities regionally and globally, Malaysian, including Bumiputera, enterprises need to undertake greater outward investments. As the more labour-intensive activities have become less cost competitive, such activities need to be relocated offshore. Malaysia's outward stock of investments has been rising. As a share of the GDP, it has increased from 6.1 per cent in 1990 to 11.7 per cent in 2004. The Bumiputera outward stock, as a share of the GDP, will need to be increased, as a measure for the Bumiputera companies to remain competitive. In addition, Bumiputera outward investments will need to be diversified. Presently, outward investments which involve Bumiputera participation are mainly in oil and gas and services. Bumiputera outward investments in manufacturing will also need to be further increased.

**(iv) Taking Advantage of Opportunities from the New Sources of Growth in the Manufacturing Sector**

2.55 The IMP3 has identified opportunities for growth and increasing Bumiputera participation in the manufacturing sector, as well as poverty alleviation. The IMP3 has targeted total investments of RM412.2 billion in the sector for the entire Plan period. Therefore, the opportunities for Bumiputera investments are substantial. A share of 30 per cent of Bumiputera investments in the sector will require RM123.7 billion. The IMP3 has targeted 12 resource and non-resource based industries for further development and promotion, which will require total investments of RM362.5 billion. A share of 30 per cent of the investments in the targeted industries by Bumiputera will involve RM108.7 billion (Table 2.9). Bumiputera entrepreneurs will need to equip themselves to invest and be involved in the targeted industries. There is a need to mobilise Bumiputera financial resources to take advantage of these investment opportunities. The financing of these investments, which will include equity capital, will enhance Bumiputera ownership and control in the manufacturing industries.

**(v) Taking Advantage of Opportunities from the New Sources of Growth in the Services Sector**

2.56 The development and promotion of the non-Government services sector, as a source of growth in the IMP3, will provide opportunities for greater Bumiputera participation in the economy. The non-Government services sector, not including construction services, is targeted to grow at an average annual rate of 7.5 per cent. Construction services are estimated to grow at 5.7 per cent. Total private investments in the non-Government services are targeted to amount to RM687.7 billion during the Plan period. Based on a Bumiputera share of 30 per cent of the total investments, the amount required will be RM206.3 billion,

which is 1.7 times more than the size of the required Bumiputera investments in the manufacturing sector. The IMP3 has identified eight sub-sectors in services for further development, namely, business and professional services, logistics, ICT services, distributive trade, construction, education and training, healthcare services and tourism services. Bumiputera enterprises are expected to increase their participation in the targeted services, including being involved in the higher value-added services, such as innovative tourism services, outsourcing of business and professional services through shared service providers and the development of a new range of environmental services. Bumiputera service providers will be encouraged to collaborate with foreign investors in services through joint-ventures, franchising, management contracts and other forms of collaboration.

TABLE 2.9

**ESTIMATED TOTAL INVESTMENTS BY BUMIPUTERA  
IN THE TARGETED MANUFACTURING INDUSTRIES, 2006-2020**

<i>Industry</i>	<i>Total (RM billion)</i>	<i>30% Bumiputera Share (RM billion)</i>
<b>Total</b>	<b>362.5</b>	<b>108.7</b>
<b>Non-resource based industries</b>	<b>232.8</b>	<b>69.8</b>
Electrical and electronics	82.4	24.7
Medical devices	19.4	5.8
Textiles and apparel	13.7	4.1
Machinery and equipment	30.8	9.2
Metals	44.2	13.3
Transport equipment	42.3	12.7
<b>Resource based industries</b>	<b>129.7</b>	<b>38.9</b>
Petrochemicals	34.0	10.2
Pharmaceuticals	6.7	2.0
Wood-based products	25.4	7.6
Rubber-based products	12.9	3.9
Oil palm-based products	26.1	7.8
Food processing	24.6	7.4

Source: Ministry of International Trade and Industry

**(vi) Enhancing the Development of Bumiputera Human Capital**

- 2.57 The effectiveness of the efforts in increasing Bumiputera participation in the modern industrial sector, enhancing their competitiveness and raising their incomes depends, to a large extent, on the continuing development of the Bumiputera human capital. The progress in reducing the disparity in average incomes between the Bumiputera and non-Bumiputera will depend, on a significant degree, on accelerating the growth of Bumiputera employment in the high productivity manufacturing industries and services. Income from wage employment, on average, accounts for a much higher share of the total household income. Therefore, strategies to raise the income of Bumiputera need to focus on increasing the supply of highly trained and highly skilled Bumiputera and ensuring their gainful employment in high-productivity and high-income activities of the economy.
- 2.58 The development of Bumiputera human capital for industrial development can be approached from the demand and supply side. On the demand side, structural changes in the economy and the increasing reliance on the application of high technology have increased the demand for more highly skilled, and flexible and adaptable knowledge workers. On the supply side, the overall educational attainment of Bumiputera, compared with the non-Bumiputera, is lower, including enrolment in the science and technical disciplines. There is a need to review the present educational system, to take into account the changing needs of a rapidly industrialising economy, including the need to create a greater number of qualified Bumiputera in the relevant disciplines.
- 2.59 By 2010, there will be a demand for 12 million workers. Of this total, the services sector will require 6.2 million workers (52.2 per cent) and the manufacturing sector, 3.6 million (30 per cent). There is a need for more concerted efforts by private sector employers in the manufacturing and services sectors to increase the employment of Bumiputera at all occupational levels to reflect the ethnic composition of the population. Assistance will be provided to encourage employers to increase the employment of Bumiputera at all occupational levels.

**(vii) Utilising Technology to Enhance the Total Factor Productivity and Competitiveness of Bumiputera Enterprises**

- 2.60 Bumiputera enterprises will be encouraged to utilise more advanced technology and invest in R&D to enhance their TFP and competitiveness. Support will be provided for the acquisition of technologies such as biotechnology, nanotechnology and photonics. Emphasis has been given in the IMP3 and RMK-9 to raise the contribution of TFP to economic growth, particularly in the manufacturing and services sectors. Studies have indicated that Bumiputera enterprises have lower TFP. The Bumiputera enterprises will be encouraged to increase their level of TFP, through greater utilisation of the various incentives available for investing in R&D and applying advanced technology in their business operations.

**(viii) Enhancing the Growth of the Bumiputera Commercial and Industrial Community through the Development of Small and Medium Enterprises**

2.61 Most Bumiputera enterprises in the manufacturing and services sectors are SMEs. Therefore, a focus on developing more competitive SMEs will significantly increase Bumiputera participation in industry and commerce. A range of institutional support has been provided for the development of SMEs, including Bumiputera SMEs, to address their limitations in various areas, including technical, professional and managerial expertise, entrepreneurial skills and capabilities in exporting their products and services. The strategies and policies on the development of SMEs in the IMP3 are applicable to Bumiputera SMEs. The five strategic thrusts which have been set are:

- enhancing the competitiveness of SMEs;
- capitalising on outward investment opportunities;
- driving the growth of SMEs through technology, knowledge and innovation;
- instituting a more cohesive policy and supportive regulatory and institutional framework; and
- enhancing the growth and contribution of SMEs in the services sector.

**(ix) Mobilising the Potential Growth of the Bumiputera Commercial and Industrial Community through Balanced Regional Development**

2.62 While the country has been able to achieve overall progress in its industrial development efforts, there is a need for more balanced regional development. This approach will be able to sustain the country's industrialisation drive in the long-term and mobilise, to a greater extent, the potential Bumiputera resources, including their capabilities and entrepreneurship, which will contribute towards the further development of the BCIC. A more attractive and conducive environment will be created for investments and business activities in the lesser developed states, with a focus on promoting and enhancing the growth of the BCIC.

**(b) BALANCED REGIONAL DEVELOPMENT**

2.63 More efforts will be undertaken to achieve greater regional balance in industrial development. While programmes and incentives to encourage industrial activities are applicable to all states, special incentives have also been provided for the Eastern Corridor of Peninsular Malaysia, covering Kelantan, Terengganu, Pahang, as well as Mersing in Johor, and Sabah and Sarawak. In the past, these states have not been able to attract the required investments to generate the critical mass of industrial activities and stimulate progressively higher levels of industrial development.

2.64 Strategies towards more balanced regional industrial development and sustainable industrialisation include:

- improving the existing infrastructure in the lesser developed states, including growth centres and trans-border areas involving two or more states, and enhancing support to encourage industries to invest in those areas. Two transborder areas have been identified for development:
  - the Northern Terengganu-Southern Kelantan-Western Pahang Zone, which will be a new focus area of development for the Eastern Corridor states; and
  - the Northern Peninsular Development Zone of Kedah, Perlis, Seberang Prai in Pulau Pinang and northern Perak, which will accelerate the development of the food processing industry, including *halal* products.

Major development projects will also be undertaken in the Southern Johor Economic Region, encompassing a triangle which stretches from Kulai in the north to Johor Bahru in the south. This triangle incorporates Johor's logistics hub, which includes two international seaports and an international airport. Major projects in the development region will be largely driven by the private sector;

- encouraging the logistics industry to develop in the direction which will result in the country being served comprehensively and efficiently by the logistics providers in all the major modes;
- encouraging industries to adopt cleaner and environment-friendly technologies and practices;
- ensuring compliance by industries to standards, rules and regulations related to the conservation and protection of the environment; and
- encouraging industries and service providers to internalise Corporate Social Responsibility in their operations.

## (5) SUSTAINING THE CONTRIBUTION OF THE MANUFACTURING SECTOR TO GROWTH

2.65 The manufacturing sector will continue to be a major source of growth. Strategies to further develop the sector include:

- accelerating the shift towards higher value-added products and activities, and high technology and capital-intensive activities, through encouraging greater investments in those areas;
- encouraging the development and promotion of the growth areas in the targeted industries:

### Non-resource based industries

- E&E;
- medical devices;
- textiles and apparel;
- machinery and equipment;
- metals; and
- transport equipment;

### Resource based industries

- petrochemicals;
- pharmaceuticals;
- wood-based;
- rubber-based;
- oil palm-based; and
- food processing.

Selected products within the targeted industries will be identified for development and promotion as *halal* products, in line with the development and promotion of Malaysia as the international hub for *halal* products;

- facilitating and encouraging the development of domestic and regional clusters;
- supporting the application of advanced technologies by industry, including biotechnology, nanotechnology, radio frequency identification, wireless technology, micro-electro-mechanical systems, photonics, laser technology and fuel cells;
- enhancing the contribution of TFP to the growth of the sector;
- promoting knowledge-based activities, including research and design and development (D&D), in the sector; and
- encouraging mergers and acquisitions, consolidations and strategic partnerships among firms in the targeted industries to strengthen their capabilities and competitiveness.

## (6) POSITIONING THE SERVICES SECTOR AS A MAJOR SOURCE OF GROWTH

2.66 The non-Government services sector is targeted to assume a major role in contributing to economic growth. In developing and promoting the sector, areas of focus include:

- strengthening the efficiency and competitiveness of the sector;
- intensifying the development and promotion of selected services sub-sectors. A major focus of development is the promotion of exports, including positioning Malaysia to become a regional centre for selected services. The targeted sub-sectors are:
  - business and professional services;
  - integrated logistics services;
  - ICT services;
  - distributive trade;
  - construction services;
  - education and training;
  - health services; and
  - tourism services.

Of the eight targeted services sub-sectors, four have the potential to be developed as regional centres:

- tourism services;
- education;
- distribution; and
- health services;
- undertaking progressive liberalisation of the sector to promote competitiveness;
- creating greater linkages between the manufacturing sector and related support services to achieve higher levels of efficiency, productivity and competitiveness;
- encouraging collaborations with major foreign service providers;
- enhancing TFP and the application of technologies in the sector;
- promoting outsourcing activities in the sector; and
- promoting investments in the sector, including outward investments.

## **(7) FACILITATING THE DEVELOPMENT AND APPLICATION OF KNOWLEDGE-INTENSIVE TECHNOLOGIES**

2.67 Strategies to facilitate the development and application of knowledge-intensive technologies include:

- fostering collaborations among Government research institutes, institutions of higher learning, science and technology parks, GLCs and industries in developing higher technologies and higher value-added products and services;
- promoting research-based industrial cluster development;
- promoting the greater utilisation of ICT and other technologies in all areas along the value chain;
- improving the access to knowledge on ICT and other enabling technologies;
- promoting commercially-oriented R&D and innovation activities; and
- encouraging the growth of R&D activities by the private sector.

## **(8) DEVELOPING INNOVATIVE AND CREATIVE HUMAN CAPITAL**

2.68 The availability of the required talents and expertise by both the manufacturing and services sectors will become important, as industries and services move towards a more knowledge-based operating environment. Strategies to meet the required talents and expertise include:

- matching the supply of talents and expertise with market requirements;
- increasing the supply of technically-skilled, knowledge-intensive and ICT-trained workforce;
- encouraging greater collaboration between training institutes and industry to optimise the utilisation of available resources and facilities;
- emphasising on a higher level of creativity, innovation and other enabling skills in the educational, and technical and vocational training systems;
- creating a critical mass of local experts in scientific and engineering fields to meet R&D requirement; and
- rationalising laws and regulations to provide greater flexibility and mobility in employment.

## **(9) STRENGTHENING THE ROLE OF PRIVATE SECTOR INSTITUTIONS**

2.69 Strategies to strengthen the role of private sector institutions include:

- encouraging companies to become members of trade and industry associations;
- establishing Malaysian trade and industry associations overseas; and
- encouraging private sector institutions to undertake capacity building, and trade and investment promotion, and provide common-user facilities for members.

## **(10) CREATING A MORE COMPETITIVE BUSINESS OPERATING ENVIRONMENT**

2.70 The creation of a more conducive institutional support and business operating environment, including the Government delivery system, will contribute towards the overall competitiveness of the manufacturing and services sectors. Efforts in this area include:

- reviewing rules and regulations to facilitate the growth and expansion of existing and potential industries and services;
- ensuring greater transparency of policies, rules and regulations, as well as administrative procedures and decisions, affecting business operations;
- promoting greater observance of corporate governance practices;
- ensuring the efficiency and effectiveness of the delivery system, including the quality of services rendered, through measures such as simplification of rules and procedures, and timely decision making processes;
- instituting measures to ensure that utility providers adhere to standards to be set on performance, including quality, costs and reliability;
- instituting a more attractive and competitive incentive regime;
- improving the administration of registration and enforcement of intellectual property rights (IPRs);
- implementing an effective and paperless trade facilitation system;
- creating an efficient and competitive logistics industry to support Malaysia's industrialisation efforts;
- strengthening the institutional support, through inter-ministry/agency coordination, in the planning, implementation and monitoring of policies affecting the logistics industry; and
- improving the logistics services in the lesser developed states through measures such as the liberalisation of policies and the provision of adequate logistics support facilities and infrastructure.

## SECTION IV IMPLEMENTATION MECHANISM

2.71 An implementation mechanism will be established to ensure the effective implementation of the strategies and policies outlined in the IMP3. The mechanism will optimise the participation, collaboration and cooperation of relevant ministries, Government agencies and private sector institutions in the implementation of programmes and measures towards achieving the overall objectives and targets of the IMP3. The programmes and measures will be formulated by Technical Resource Groups, which will be established, with representatives from both the public and private sectors.

### ROLLING PLAN APPROACH

2.72 Taking into consideration the 15-year duration of the Plan, a pragmatic, rolling plan approach is adopted in implementing the Plan. This approach allows for adjustments and modifications of the Plan, to address issues and global challenges which may arise during the implementation process. The rolling plan approach also allows the incorporation of the overall policy directions and targets of future five-year Malaysia plans. The rolling plan approach comprises three iterative processes:

- formulation of action plans;
- implementation of action plans; and
- monitoring and evaluation of action plans.

#### (a) Formulation of Action Plans

2.73 To assist in the implementation of the IMP3, action plans will be drawn up. The action plans will outline programmes and measures to be undertaken immediately, as well as those in the short and medium terms.

#### (b) Implementation

2.74 Effective implementation of the IMP3 and action plans is important to achieve the targets set. Implementation involves effective coordination and collaboration among all the stakeholders.

#### (c) Monitoring and Evaluation

2.75 The progress of the IMP3 will be reviewed every five years. To facilitate the reviews, monitoring and evaluation will be undertaken on a regular basis. In this respect, a comprehensive information and data system, including key indicators on performance and benchmarking, will be established.

# Chapter

# 3



## EXTERNAL TRADE





## SECTION I OVERVIEW

- 3.01 The Government continued to progressively liberalise the economy during the Second Industrial Master Plan (IMP2), 1996-2005. As a result, Malaysia became increasingly integrated into the global economy, in terms of trade and investment flows. The extent of Malaysia's link with the global economy was reflected in its position as the 19th most globalised country in 2005, based on A.T. Kearney's globalisation index. The integration of Malaysia into the global economy has contributed towards the economic growth of the country. Total exports, as a percentage of Gross Domestic Product (GDP), increased from 77.7 per cent in 1996 to 107.9 per cent in 2005, while imports grew from 77.8 per cent to 87.8 per cent. At the same time, increasing global integration has also posed challenges to Malaysia. The trends in global trade during the IMP2 period revealed the emergence of strong competitors in global trade.
- 3.02 Malaysia will need to further enhance the competitiveness of its exports during the period of the Third Industrial Master Plan (IMP3), 2006-2020, to increase its share in global trade and improve its global position as a trading nation. Regional and bilateral initiatives will continue to be pursued to complement the multilateralisation under the World Trade Organisation (WTO). This will contribute towards improving market access and the overall trading environment for Malaysia's exports.
- 3.03 While the Government will continue to expand export opportunities through multilateral, regional and bilateral trade initiatives, the business sector will be encouraged to enhance the competitiveness of its exports and develop new export products, as well as explore new markets, to take advantage of the policy initiatives by the Government. At the same time, efforts will be undertaken to strengthen capacity building in areas such as product development, international marketing and distribution, and compliance to international standards.
- 3.04 Greater integration has also increased the influence of global governance on Malaysia's external trade and domestic policies. The trends in global governance reveal that the negotiations on rules and disciplines of global trade increasingly include proposals on trade conditionalities, such as on labour and environment. During the IMP3 period, Malaysia will continue to be vigilant in monitoring and managing such trade conditionalities.

## SECTION II GLOBAL TRADE PATTERNS

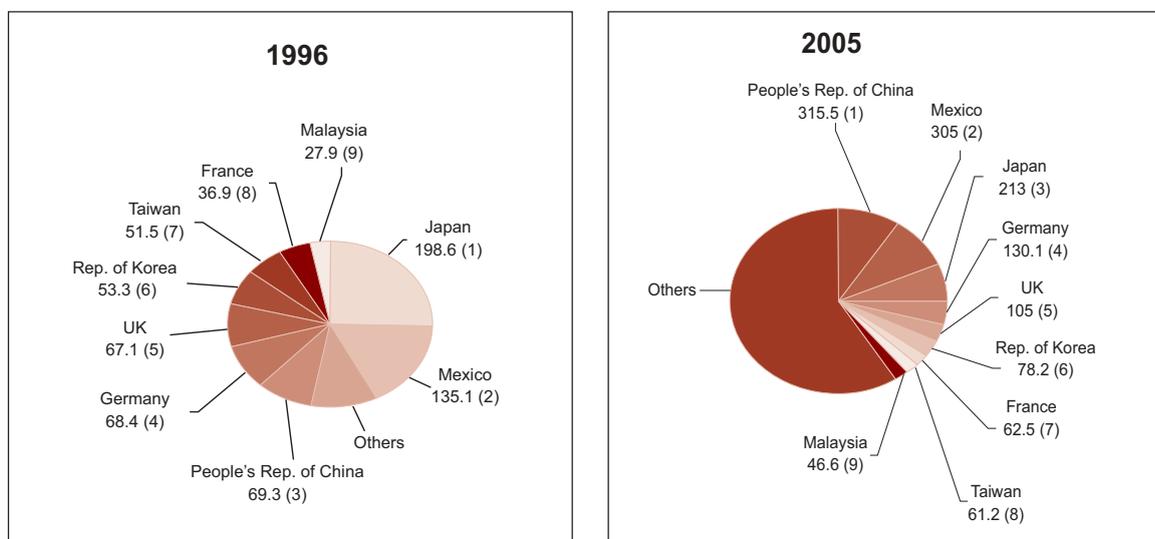
### (a) Traditional Markets of Malaysia

#### (i) North America

3.05 The North American region, consisting of the United States of America (USA) and Canada, was the world's second largest importer and third largest exporter in 1996 and 2005. Its share in world exports increased from 15.3 per cent in 1996 to 16.1 per cent in 2005. The People's Republic of China, Mexico and Japan were the top three trading partners of the North American region, accounting collectively for a quarter of the region's trade (Chart 3.1).

CHART 3.1

#### MAJOR TRADING PARTNERS OF NORTH AMERICA (US\$ BILLION)



Note: Numbers in parentheses indicate rankings

Source: World Trade Atlas

3.06 The People's Republic of China was the largest import source for North America, followed by Mexico, Japan, Germany and the United Kingdom (UK). Electrical and electronics (E&E) products, processed food products, optical and scientific products, textiles and apparel, wood products and rubber products constituted 28.3 per cent of the total exports of North America and 31.6 per cent of the total imports from this region in 2004. Of these products, E&E exports and imports constituted 16 per cent and 17.9 per cent, respectively, of the total exports and imports in 2004.

#### (ii) North East Asia

3.07 North East Asia, comprising the People's Republic of China, Japan, Republic of Korea, Taiwan and Hong Kong, recorded the fastest growth in the world, in terms of trade

and economic development. During the period 1996-2005, this region was the world's second largest trading partner and exporter. The region accounted for 19.6 per cent of the world's trade in 2005, compared with 17.7 per cent in 1996.

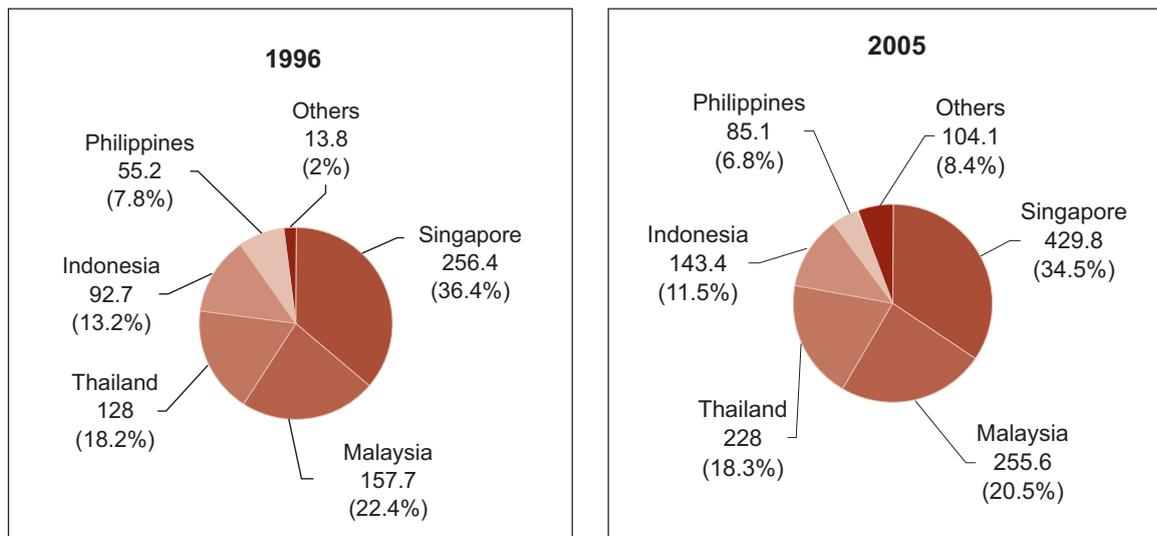
- 3.08 The People's Republic of China was the region's largest exporter and importer in 2005. It registered the highest average annual growth rate for trade in the region. This was followed by Republic of Korea, Taiwan, Hong Kong and Japan. With the rising importance of the People's Republic of China, Japan's share of the total exports of North East Asia declined from 41.6 per cent in 1996 to 28 per cent in 2005.
- 3.09 Intra-regional trade was of major significance to this region, accounting for about 40 per cent of its total trade. In particular, Japan's trade with the People's Republic of China grew rapidly. The People's Republic of China had moved up from the fifth largest export destination of Japan in 1996 to the second largest in 2005. The major extra-regional trade partners of North East Asia were the USA, Germany, Singapore, Malaysia and Thailand.

### ***(iii) Association of Southeast Asian Nations***

- 3.10 The bulk of trade within the Association of Southeast Asian Nations (ASEAN) continued to be undertaken by five ASEAN member countries, namely, Singapore, Malaysia, Thailand, Indonesia and the Philippines (ASEAN 5). Together, they contributed 91.6 per cent of the total trade of ASEAN in 2005. Singapore's share of ASEAN trade was the largest, at 34.5 per cent, in 2005, followed by Malaysia (20.5 per cent) (Chart 3.2). ASEAN's intra-regional trade grew from US\$145.2 billion in 1996 to US\$221.9 billion in 2004. This constituted 20.6 per cent of the total ASEAN trade in 1996 and 21.2 per cent in 2004. Singapore and Malaysia were the leading contributors to intra-ASEAN trade.
- 3.11 The USA, Japan and the People's Republic of China remained the top three trading partners of ASEAN during the period (Chart 3.3). Although both the USA and Japan maintained their rankings as the top two export markets and import sources for the region, their respective shares in ASEAN's imports registered changes during the period. Japan's share in total ASEAN imports declined from 16.8 per cent in 1996 to 12.8 per cent in 2005. The share for the USA also declined from 11.8 per cent to 9.8 per cent for the same period.
- 3.12 There were similarities in the profile of exports and imports within ASEAN 5. The main manufactured products traded were E&E products. They constituted 43.9 per cent of the region's exports and 36.9 per cent of the imports in 2004. Other major manufactured products were textiles and apparel, processed food, machinery, and optical and scientific equipment. They contributed 13.4 per cent of the exports and 17 per cent of the imports of ASEAN 5 in 2005. Malaysia was the second largest exporter of E&E and optical products among ASEAN 5, after Singapore, with shares of 27.5 per cent and 26.2 per cent, respectively, of the total exports of the products by ASEAN in 2005. It was the third largest exporter of machinery and textiles and apparel from the region.

CHART 3.2

## TOTAL TRADE BY ASEAN COUNTRIES (US\$ BILLION)

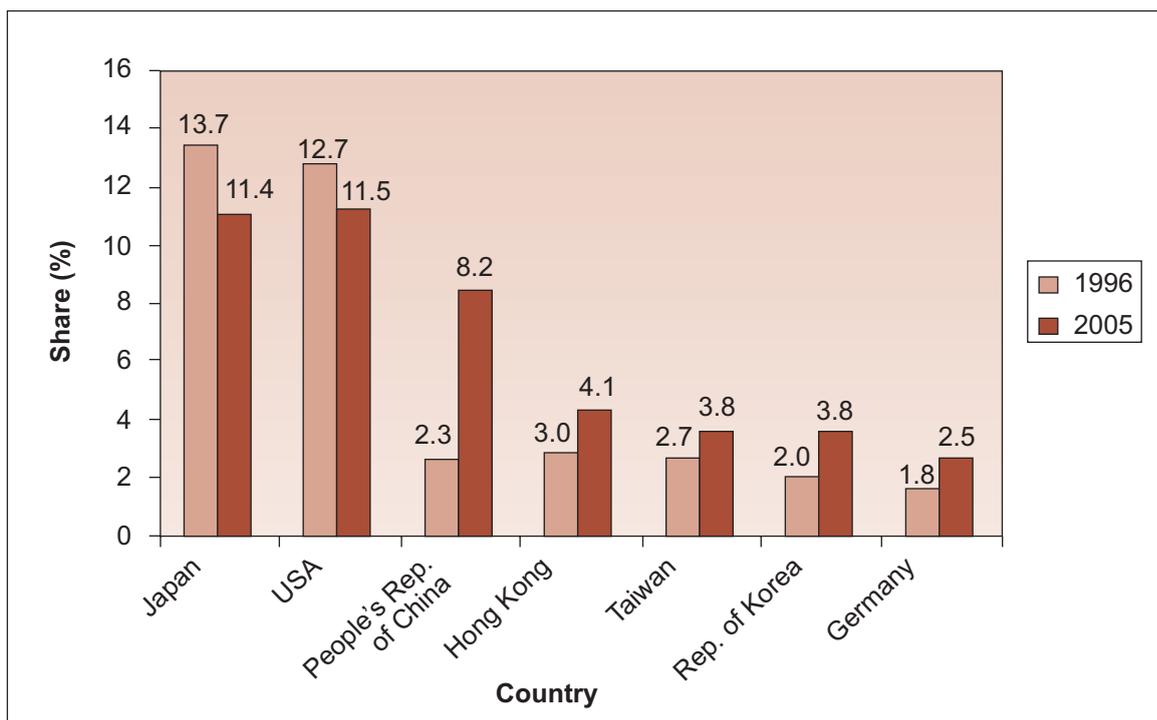


Note: Numbers in parentheses indicate percentage of total trade

Source: ASEAN Secretariat, World Trade Atlas

CHART 3.3

## MAJOR TRADING PARTNERS OF ASEAN

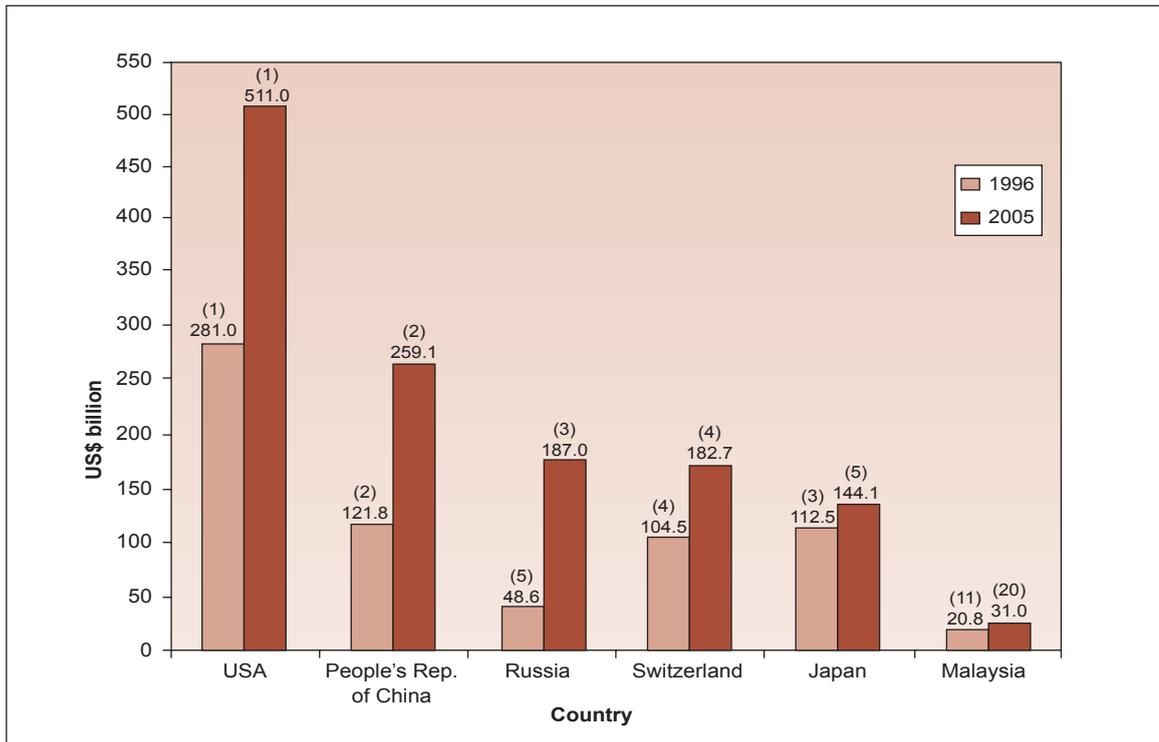


Source: World Trade Atlas

**(iv) European Union**

- 3.13 As a grouping, the European Union (EU) was the world's leading exporter and the second largest importer, indicating the importance of trade to the region, as well as its importance as an export market for the rest of the world. In 2005, intra-regional trade accounted for more than 74.4 per cent of the region's trade. Of the 25 member countries of the EU, Germany, France, the UK, Italy and the Netherlands accounted for 63.5 per cent of the total trade in the region. In terms of growth in trade within the grouping, Hungary's trade grew the fastest, at 16 per cent per annum, during the period 1996-2005. Its share in the region's trade expanded from 0.8 per cent in 1996 to 1.6 per cent in 2005. The significant growth in trade was due in part to the strong inflows of foreign direct investments (FDIs).
- 3.14 In 1996, the top three trading partners of the EU were the USA, the People's Republic of China and Japan (Chart 3.4). By 2005, Russia had replaced Japan as the third largest trading partner. Malaysia was the 11th largest trading partner in 1996, but declined to the 20th position in 2005. As an import source, Malaysia was the 19th largest in 2005.

CHART 3.4

**MAJOR TRADING PARTNERS OF THE EUROPEAN UNION - 25**

Note: Numbers in parentheses indicate rankings

Source: World Trade Atlas

3.15 In terms of imports, E&E products constituted the largest group, with a share of 17.6 per cent in 2005. Machinery, processed food, textiles and apparel, and optical and scientific products accounted for 20.6 per cent of the region's imports. The import share of rubber and wood products was 1.3 per cent.

## (b) High Growth Markets

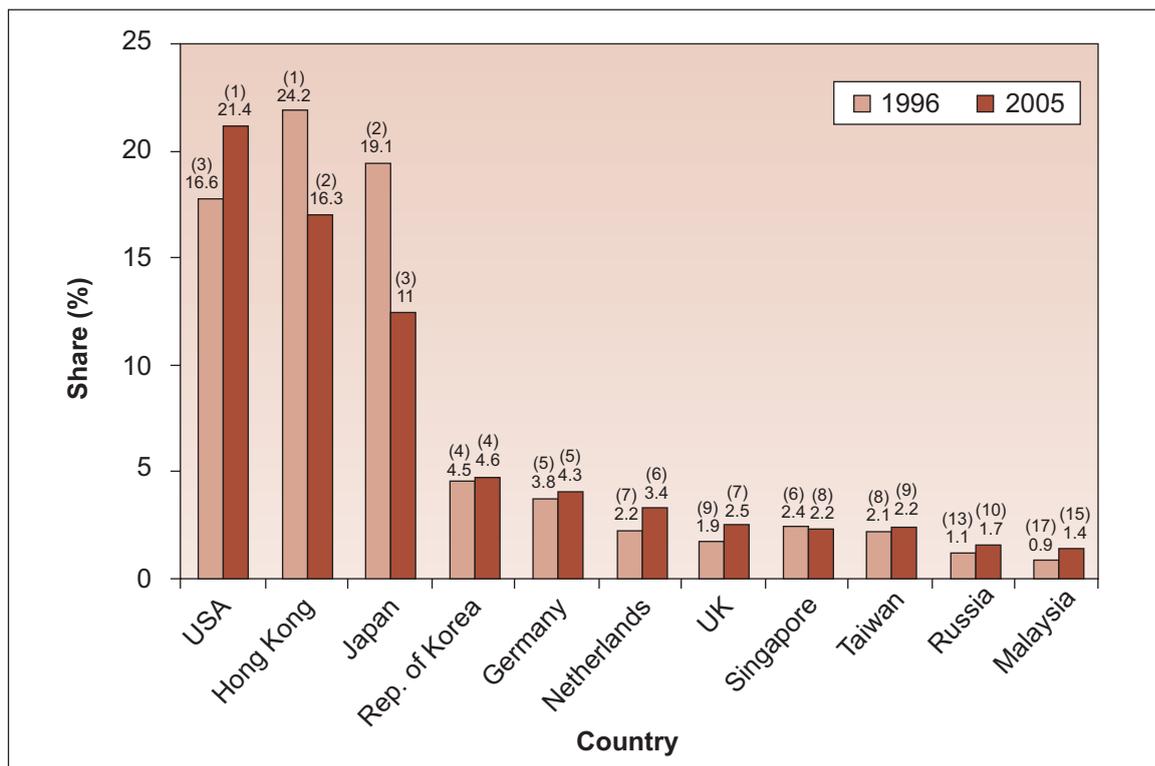
### (i) People's Republic of China

3.16 In 2005, the People's Republic of China became the third largest trading nation in the world. The country's rapid growth in trade had enabled it to become a major trading partner for most countries in the world. Its share in the East Asian trade grew from 11 per cent in 1996 to 26.9 per cent in 2005. By 2004, it had become the largest contributor to East Asian trade.

3.17 The country's exports to the USA, Hong Kong and Japan accounted for 48.7 per cent of its total exports in 2005 (Chart 3.5). The Republic of Korea and Germany remained the fourth and fifth largest export destinations of the People's Republic of China in 1996 and 2005. Malaysia moved up from its position as the 17th largest export destination of the People's Republic of China in 1996 to the 15th position in 2005.

CHART 3.5

### MAJOR EXPORT MARKETS FOR THE PEOPLE'S REPUBLIC OF CHINA



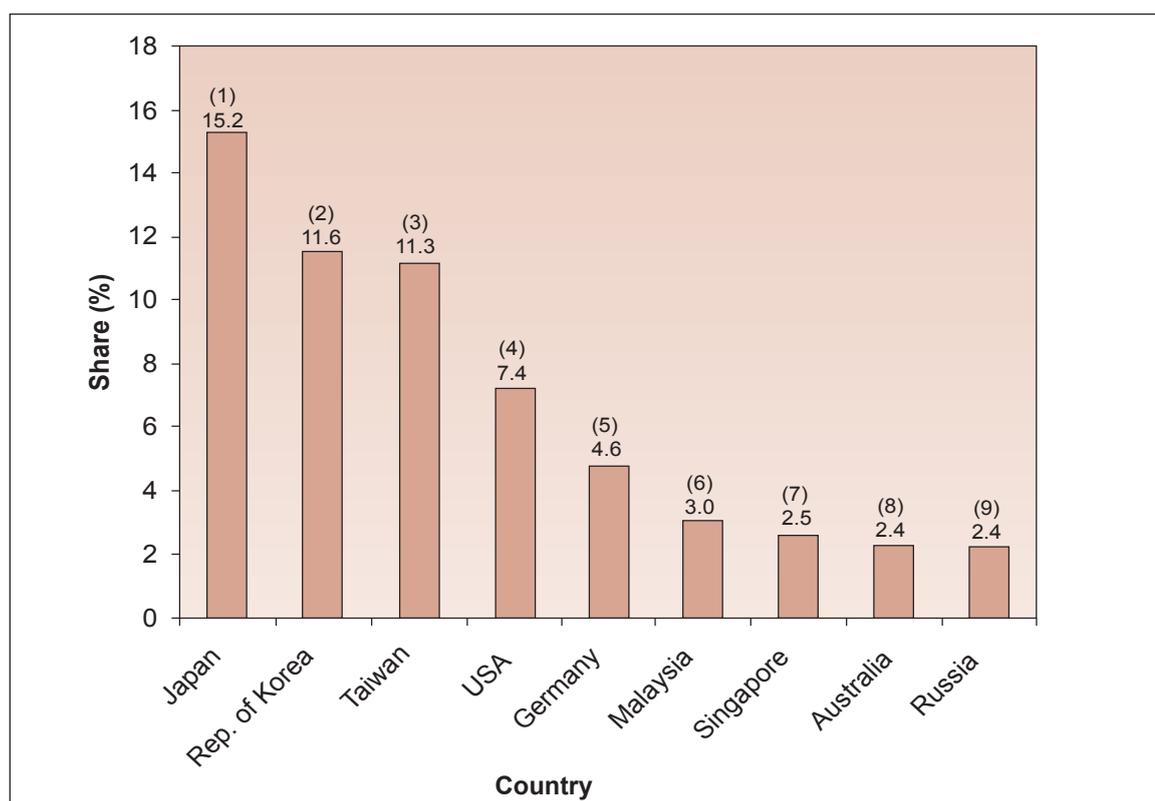
Note: Numbers in parentheses indicate rankings

Source: World Trade Atlas

- 3.18 The export composition of the People's Republic of China had changed, with an increasing share of higher value-added capital and technology-intensive products. This resulted from the establishment of manufacturing facilities in the country by multinational corporations (MNCs). As a result, the country had overtaken Japan as the largest exporter of E&E products from East Asia. It accounted for 28.5 per cent of the total exports of this product from the region in 2005, compared with Japan's contribution of 14.2 per cent. It had also overtaken Taiwan as the second largest exporter of machinery from East Asia, with a contribution of 18.8 per cent of the total exports of this product in 2004, compared with 8.4 per cent in 1999. In the case of textiles, the People's Republic of China had maintained its position as the largest East Asian exporter, with its share of the total exports of this product increasing from 37.6 per cent in 1999 to 53.7 per cent in 2005.
- 3.19 Imports from Japan, the Republic of Korea and Taiwan amounted to 38.1 per cent of the total imports of the People's Republic of China in 2005 (Chart 3.6). The USA was the fourth largest source of imports, with a share of 7.4 per cent. While Taiwan was the third largest source of imports, it was only the ninth largest export market in 2005. Similarly, while Malaysia was the sixth largest source of imports, it was the 15th largest export destination in 2005.

CHART 3.6

## MAJOR SOURCES OF IMPORTS FOR THE PEOPLE'S REPUBLIC OF CHINA, 2005



Note: Numbers in parentheses indicate rankings

Source: World Trade Atlas

3.20 The rapid growth of manufacturing in the People's Republic of China had stimulated an increasing demand for imported machinery and equipment, as well as energy and raw materials. For instance, imports of machinery by the People's Republic of China grew at 28 per cent per annum during the period 1999-2005, from US\$23 billion to US\$68 billion, thereby maintaining its position as East Asia's largest importer of machinery. The country imported US\$47.8 billion of crude oil in 2005, with Malaysia contributing US\$149.6 million.

*(ii) India*

3.21 India's economy comprised almost 80 per cent of South Asia's aggregate GDP. In 2004, it grew at 7.4 per cent and was estimated to have grown at 7.6 per cent in 2005. India accounted for the largest share of South Asia's exports and imports. Its share in the region's exports and imports grew from 65 per cent and 59 per cent, respectively, in 1996 to 69 per cent and 68 per cent, respectively, in 2004. It is expected that India's economic and trade growth will facilitate the overall growth of the region.

3.22 The top three trading partners of India in 2004 were the USA, United Arab Emirates and the People's Republic of China. In 1996, Germany was the second largest trading partner, but it was replaced by the United Arab Emirates in 2004, while the People's Republic of China replaced Japan as the third largest trading partner, in the same year.

3.23 The USA, United Arab Emirates and the People's Republic of China were the top three export destinations of India in 2004, while the top three import sources were the People's Republic of China, the USA and Switzerland. The growing importance of the People's Republic of China in India's trade was reflected by the rapid rise of the former as an import source for India. In 1996, it was the 17th largest import source and by 2004 it had become the largest import source for India. It had also increased its importance as an export destination for India, shifting from the 14th largest export destination in 1996 to the third in 2004. Malaysia was the 19th largest export destination and 14th largest import source for India in 2004.

3.24 Textiles and apparel constituted the bulk of both the manufacturing output and exports of India, with exports growing at 7.4 per cent per annum during the period 1999-2004. India's share in South Asian exports of this product increased from 81 per cent to 82 per cent during the same period. Exports of this product were mainly to the USA, at 22.5 per cent in 2004. In recent years, West Asia had replaced the EU as a significant market for India's textiles and apparel. In 2004, the United Arab Emirates became the second largest export destination for this product, with its share expanding from 7 per cent to 8.4 per cent during the period.

3.25 With the opening up of its economy, India is exploiting its developed manufacturing base, which had previously been oriented towards the domestic market, to export higher value-added products. Domestically, India has developed a complex and diverse manufacturing sector, whereby medium and high technology products accounted for

60 per cent of its manufacturing value-added in 1998. Previously, its export structure was dominated by low technology products, such as textiles and apparel. This dominance is being eroded by the increasing importance of E&E exports.

3.26 In terms of imports, the top five products in 2004 were E&E, machinery, processed foods, textiles and apparel, and rubber products. Processed food products, which formed the second largest group of imports in 1999, declined in importance and became the third largest in 2004, while E&E products moved up from the fourth largest group in 1999 to become the largest in 2004.

### (c) Other Growing Markets

#### (i) West Asia

3.27 In general, economic growth of West Asian countries (comprising Saudi Arabia, United Arab Emirates, Iran, Kuwait, Iraq, Qatar, Oman, Bahrain, Syria, Yemen, Jordan and Lebanon) continued to be affected by volatile oil prices and geopolitical tensions. The economic growth of this region was led by the major oil producing countries, such as the United Arab Emirates, Saudi Arabia, Iran and Jordan.

3.28 Total trade in West Asia grew at an average annual rate of 10.1 per cent, resulting in an increase in its share in world trade from 2.4 per cent in 1996 to 3 per cent in 2004. Its share in world exports grew from 2.8 per cent to 3.8 per cent during the period 1996-2004, while its share in world imports increased from 1.9 per cent to 2.2 per cent. Trade of this region was dominated by Saudi Arabia and the United Arab Emirates. These two countries together accounted for 32 per cent of the region's exports in 2004.

3.29 Trade of the region is mainly oriented towards countries outside the region, with Japan, the USA, the People's Republic of China, the UK and Germany being the major trading partners. Japan, the USA, the Republic of Korea, Singapore and the People's Republic of China accounted for 40 per cent of the export markets of the region. Major exports of the region remained mineral oils, despite efforts to diversify from oil. Major import sources were the USA, Germany, Japan, the People's Republic of China, UK, India, France, Italy and Australia. Major imports into the region were machinery, road vehicles, E&E, mineral oils, and iron and steel.

3.30 Three recent major developments which have the potential to affect future trade flows of the region were:

- the proposal by the USA in 2003 to establish a US-Middle East Free Trade Area;
- the series of negotiations undertaken by Saudi Arabia, the largest economy in the region, in preparation for joining the WTO; and
- the end of the war in Iraq.

## **(ii) Latin America**

- 3.31 The average annual growth of Latin America during the period 1996-2004 was 2.2 per cent. Total trade of the region increased at 8 per cent per annum, with exports growing at 8.8 per cent and imports at 7.2 per cent. The region's share in world trade increased marginally from 4.5 per cent in 1996 to 4.6 per cent in 2004.
- 3.32 Mexico, Brazil and Argentina were the three largest contributors to the region's trade. Collectively, their share in the region's trade increased from 69 per cent in 1996 to 71.9 per cent in 2004. Mexico's share grew from 38.3 per cent to 46.3 per cent and was the most important exporter of this region. Its exports expanded at an average annual rate of 8.9 per cent, while its share in the region's exports grew from 39.6 per cent to 42.5 per cent. Similarly, it was also the largest importer, with its share increasing from 37.1 per cent to 50.4 per cent during the period.
- 3.33 The USA remained the largest trading partner for Latin America, followed by the People's Republic of China and Japan. The three countries together contributed 54.8 per cent of the region's trade in 2004. Malaysia was the region's 14th largest trading partner, accounting for 0.7 per cent of the region's trade. Mexico was the largest export destination for Malaysia, absorbing 43.8 per cent of the total exports of Malaysia to Latin America, while Argentina was the largest import source, at 29.6 per cent of the total imports from the region, followed by Brazil (26.8 per cent), Costa Rica (15 per cent), and Chile (10.8 per cent).
- 3.34 Major exports and imports from this region were E&E products, processed foods, machinery, textiles and apparel, and optical and scientific products. Mexico accounted for 90.9 per cent of the region's exports of E&E products and 69.6 per cent of the region's imports of the same products in 2004. It was also the largest exporter and importer of machinery, textiles and apparel, and optical and scientific products of this region.
- 3.35 The majority of Mexico's trade was conducted under the preferential rules of NAFTA. While the USA remained the largest trading partner of Mexico, the former's share in the total trade of Mexico declined from 79.5 per cent to 72 per cent during the period. The USA also absorbed 88.5 per cent of Mexico's exports in 2004, while another 1.5 per cent was absorbed by Canada. Apart from NAFTA, only Spain had absorbed more than 1 per cent of Mexico's exports, at 1.1 per cent.
- 3.36 There had been a change in the profile of Mexico's import sources, with the share of East Asian sources increasing from 9.5 per cent in 1996 to 21.7 per cent in 2004. Conversely, imports from the USA had contracted from 75.5 per cent to 56.2 per cent during the same period. The People's Republic of China had become an important trading partner of Mexico. In 2004, it became the second largest import source for Mexico, displacing Japan, which was the second largest import source in 1996.

#### (d) Future Trends

- 3.37 The increasing impact of the People's Republic of China's trade is likely to continue in the short to medium terms. Malaysia will therefore need to continue to meet this challenge and leverage upon the opportunities, as a result of the rapid industrialisation and trade expansion of the People's Republic of China in the short and medium terms. Similarly, the shift in the export structure of India is likely to continue, with the liberalisation of its economy and higher investments in new industries, especially E&E and information technology (IT)-related industries. This will also increase competitive pressures on Malaysia and, at the same time, offer opportunities in trade and investments in goods and services.
- 3.38 Presently, world merchandise trade is dominated by three major regions, namely, the EU, Asia and North America. Other regions, such as South America, Central America, the Commonwealth of Independent States, Africa and West Asia, collectively, have a relatively smaller share of the total world merchandise trade, at 12.9 per cent in 2004. However, in the long-term, as these economies develop and further integrate into the world economy, their exports and imports will also grow. Strategic alliances with these countries will enable Malaysia to benefit from their development. It will also enable Malaysia to diversify its export markets.
- 3.39 Projections on Malaysia's merchandise exports, by region, indicate that North East Asia will continue to be the main export destination during the IMP3 period, followed by ASEAN, North America and the EU. Exports to non-traditional markets, such as West Asia, South Asia and Eastern Europe, are also projected to increase at a faster pace.

### SECTION III EXTERNAL TRADE POLICIES AND PERFORMANCE

#### EXTERNAL TRADE POLICIES

##### (a) Major Developments in the Trade Policy Regime

- 3.40 During the IMP2 period, Malaysia undertook progressive liberalisation to achieve the long-term objectives of freer and open trade, and strengthening the domestic capacity to participate in an increasingly open trading environment. The openness to external trade was reflected in the ratio of merchandise trade to GDP, which increased from 1.6 in 1996 to 2 in 2005. The importance of international trade to Malaysia was also reflected by its position in global trade. For merchandise trade, Malaysia maintained its position within the top 20 global exporting and importing countries throughout the IMP2 period.
- 3.41 Malaysia pursues trade liberalisation through the rules-based multilateral trading system under the WTO. At the same time, Malaysia is also engaged in trade liberalisation at the regional and bilateral levels to optimise opportunities on market access for

goods and services and improve opportunities for enhancing the economic growth of the country. Apart from liberalising trade, Malaysia also continues to facilitate exports through:

- export promotion and marketing assistance programmes, provided by Malaysia External Trade Development Corporation (MATRADE), an agency under the Ministry of International Trade and Industry (MITI); and
- provision of export financing facilities by commercial banks and development financial institutions, for example, Export-Import Bank of Malaysia Berhad (EXIM Bank).

### (b) Developments in Tariff and Non-Tariff Measures

3.42 Tariffs continued to be the main border measures on imports. In terms of the types of tariffs used, 99.3 per cent of the 10,458 tariff lines in the Malaysian tariff structure are stated in *ad-valorem* duties. The remainder, which are subject to specific, mixed or alternative duties, are in the process of being converted to *ad-valorem* rates. Malaysia had converted all non-tariff measures to tariff measures for agriculture products, in compliance with its commitments under the WTO Agreement on Agriculture. This had contributed to greater transparency and certainty in agriculture trade.

3.43 Malaysia extends Most-Favoured-Nation (MFN) treatment to all its trading partners, including non-members of the WTO. The average applied MFN tariff rates had been reduced from 9 per cent in 1996 to 8.5 per cent in 2004. Tariff preferences are provided under ASEAN Free Trade Area (AFTA) and other regional free trade agreements (FTAs), for example, ASEAN-China FTA. At the ASEAN level, Malaysia had progressively reduced its Common Effective Preferential Tariff (CEPT) rates from an average of 10.8 per cent in 1993 to 3.5 per cent in 2005. The preferential tariffs among member countries of ASEAN had led to greater intra-ASEAN trade. While reducing its import duties, to safeguard domestic products from unfair competition from imports, Malaysia introduced Countervailing and Anti-Dumping Duties Act, 1993, containing provisions which are in compliance with the WTO. During the IMP2 period, Malaysia imposed anti-dumping duties on seven products, including paper, chemicals and petrochemical products.

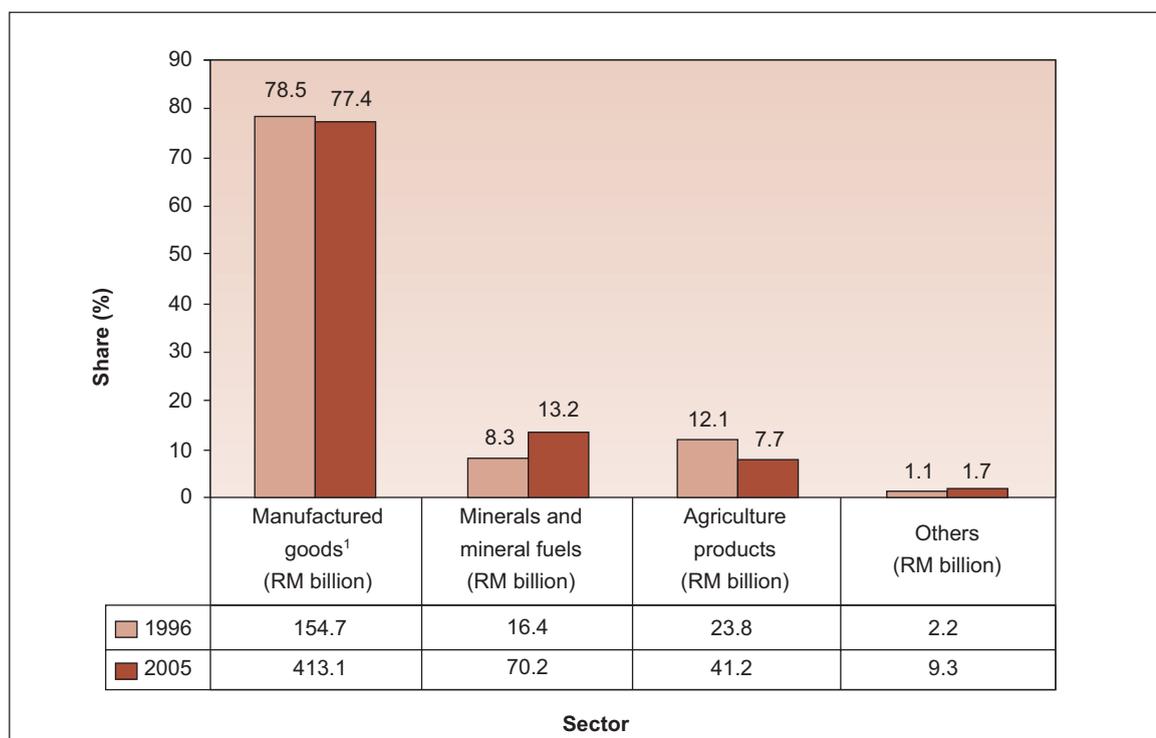
## EXTERNAL TRADE PERFORMANCE

### (a) Major Trends in Merchandise Trade

3.44 Malaysia's total merchandise trade grew from RM394.3 billion in 1996 to RM967.8 billion in 2005. Total exports expanded faster than total imports. Total exports increased 2.7 times from RM197 billion in 1996 to RM533.8 billion in 2005, while total imports grew 2.2 times from RM197.3 billion to RM434 billion. Both exports and imports registered growth annually during this period, except in 2001, due to the global

slowdown and the cyclical downturn in the electronics sub-sector. In terms of the trade balance, surpluses have been recorded since November, 1997. The manufacturing sector continued to be the major growth sector, contributing 78.5 per cent to the total exports in 1996 and 77.4 per cent in 2005 (Chart 3.7). The share of agriculture exports declined from 12.1 per cent in 1996 to 7.7 per cent in 2005, while for minerals and mineral fuels, the share increased from 8.3 per cent to 13.2 per cent.

CHART 3.7  
EXPORTS BY SECTOR



Note: <sup>1</sup> Manufactured goods do not include products, such as vegetable and animal oils and fats (both crude and refined)

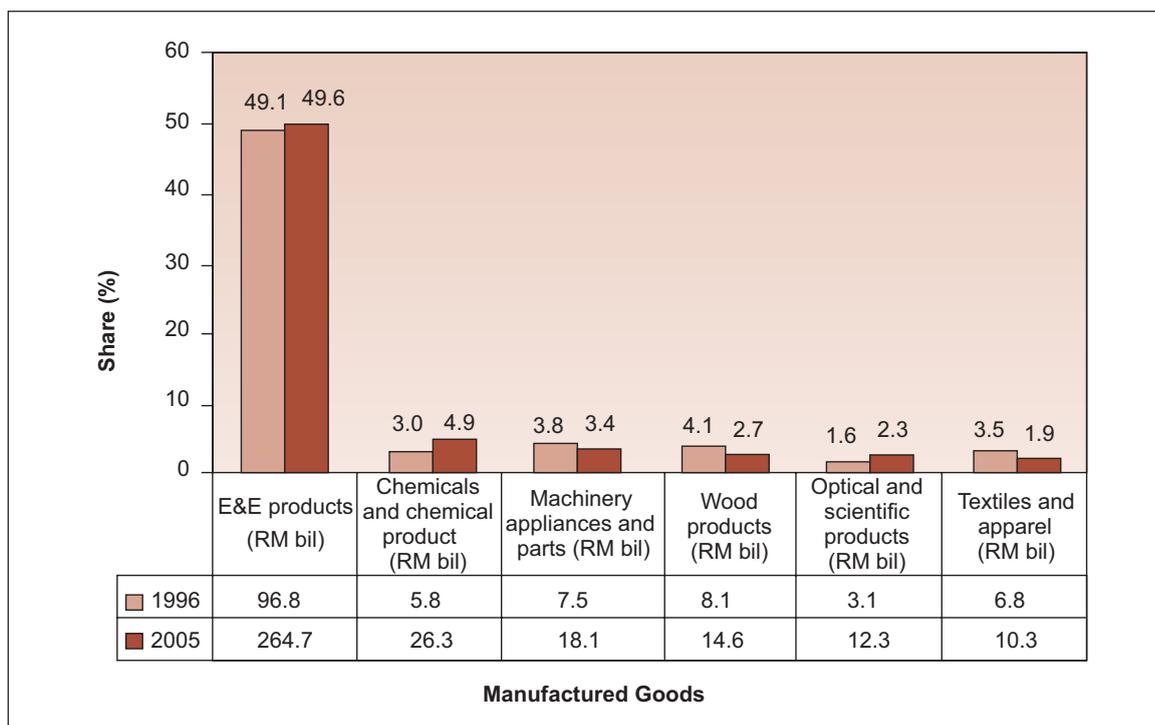
Source: Ministry of International Trade and Industry

### 3.45 Trends in the exports of manufactured products during the period 1996-2005:

- E&E products continued to be the leading contributor, not only in terms of export earnings, but also output, employment and investments. The share of E&E products in the total exports increased from 49.1 per cent, valued at RM96.8 billion, in 1996 to 49.6 per cent (RM264.7 billion) in 2005 (Chart 3.8). There had been an increase in the exports of E&E products having high value and higher technology content, involving both finished products, and parts and components;

CHART 3.8

## EXPORTS OF MANUFACTURED GOODS

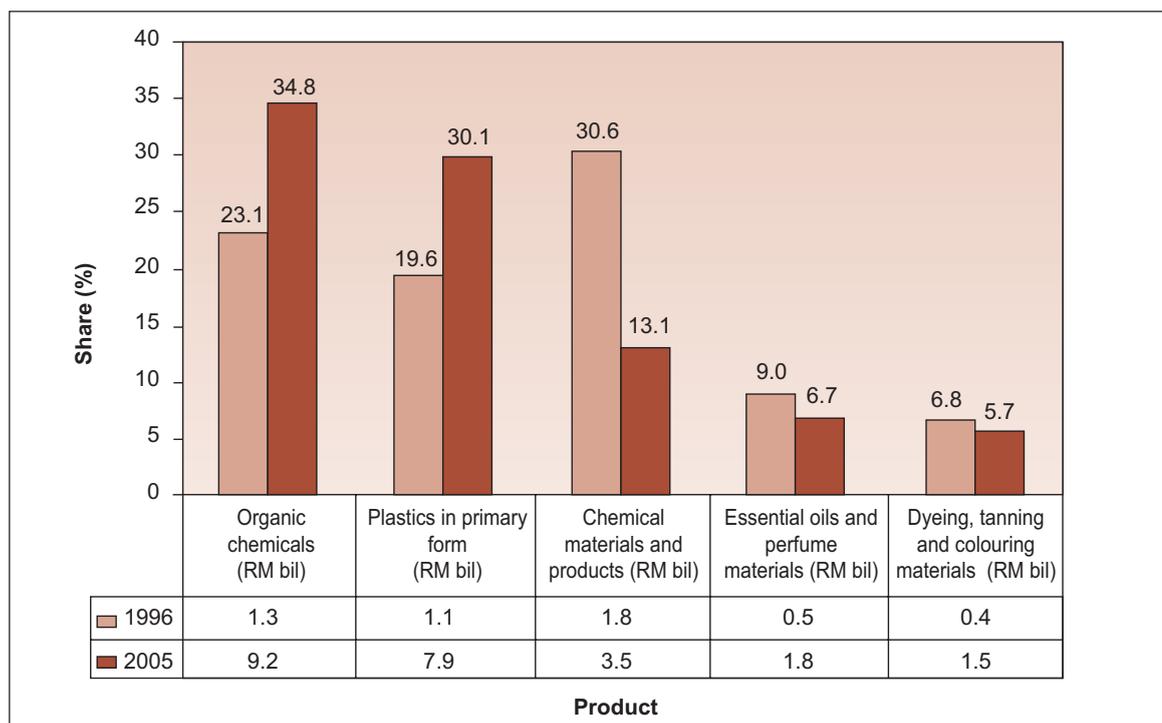


Source: Ministry of International Trade and Industry

- the share of exports of chemicals and chemical products in the total exports increased from 3 per cent, valued at RM5.8 billion, in 1996 to 4.9 per cent (RM26.3 billion) in 2005, making them the second largest manufactured export category in 2005. Organic chemicals, for example, oleochemical products, were the most important product items within the chemicals and chemical products group, as reflected by their increasing share of exports within the product group, from 23.1 per cent in 1996 to 34.8 per cent in 2005 (Chart 3.9). The shift in consumer preference, in favour of natural or plant-based products for cosmetics and personal care, facilitated the rapid growth of oleochemicals. Malaysia has become the leading producer and exporter of oleochemical products in the world;
- in 2005, exports of machinery, appliances and parts maintained their position as the third largest export category of manufactured products, with a value of RM18.1 billion. Nevertheless, their share in the total exports declined marginally from 3.8 per cent, valued at RM 7.5 billion, in 1996 to 3.4 per cent in 2005. Exports of machinery, appliances and parts have become more diversified over the years, catering for the requirements of downstream processing and demands of certain manufacturing industries. Significant growth was registered during the IMP2 period for specialised machinery and parts for industrial use; and pumps, compressors and parts; as well as non-electrical engines and motors;

CHART 3.9

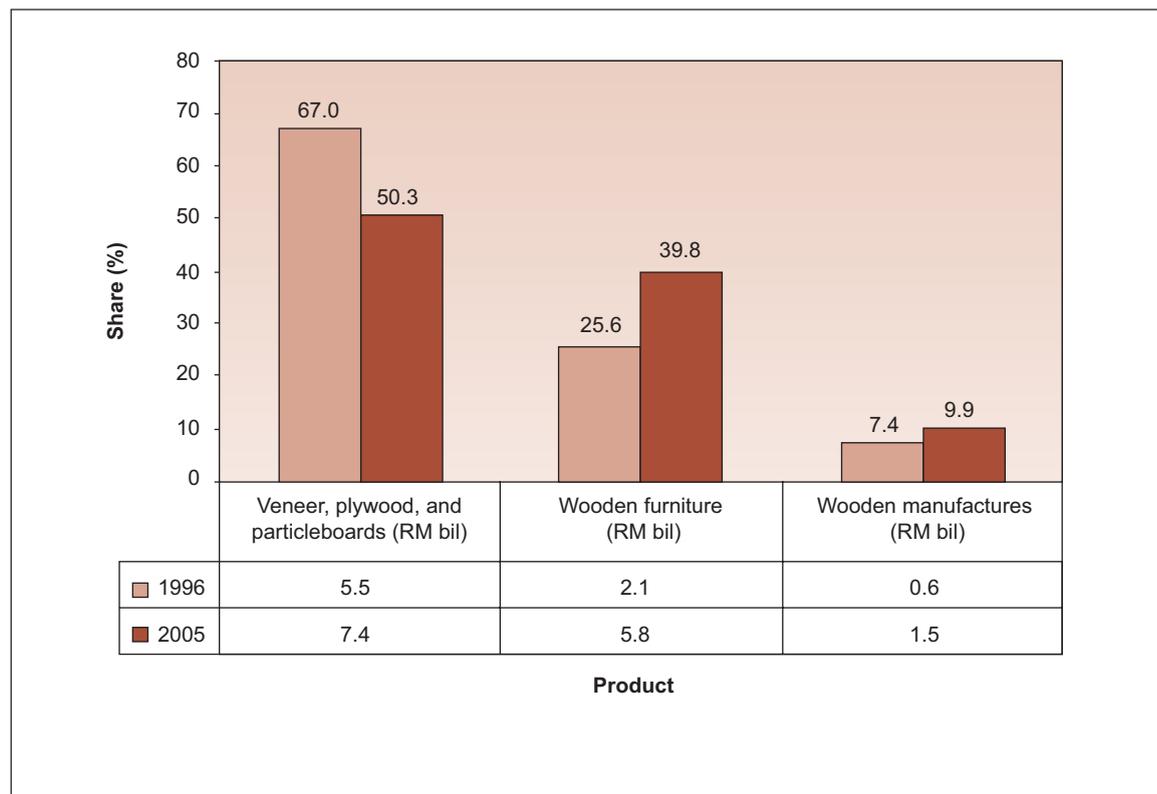
EXPORTS OF CHEMICALS AND CHEMICAL PRODUCTS



Source : Ministry of International Trade and Industry

- wood products represented the fourth largest export category of manufactured products in 2005, declining from the second position in 1996. Exports in 2005 were valued at RM14.6 billion, compared with RM8.1 billion in 1996. Two main product items which collectively contributed 92.6 per cent of wood exports in 1996 and 90.1 per cent in 2005 were veneer, plywood and particleboards; and wooden furniture (Chart 3.10). The faster rate of growth in the exports of wooden furniture enabled their share in the total exports of wood products to increase from 25.6 per cent in 1996 to 39.8 per cent in 2005, while the share of veneer, plywood and particleboards fell from 67 per cent to 50.3 per cent;
- the share of exports of textiles and apparel declined from 3.5 per cent in 1996 (valued at RM6.8 billion) to 1.9 per cent (RM10.3 billion) in 2005. As a result, this product group fell from its position as the fourth largest product group in the exports of manufactured goods to the seventh largest; and
- the share of exports of optical and scientific products increased from 1.6 per cent in 1996 (valued at RM3.1 billion) to 2.3 per cent (RM12.3 billion) in 2005, thereby raising its position to the fifth largest product group in 2005 from the ninth position in 1996 (Chart 3.8). The two largest product items in the exports of optical and scientific equipment were measuring, analysing and controlling instrument parts; and photographic apparatus and equipment. They contributed 75 per cent of the total exports of this product group in 2005.

CHART 3.10  
EXPORTS OF WOOD PRODUCTS



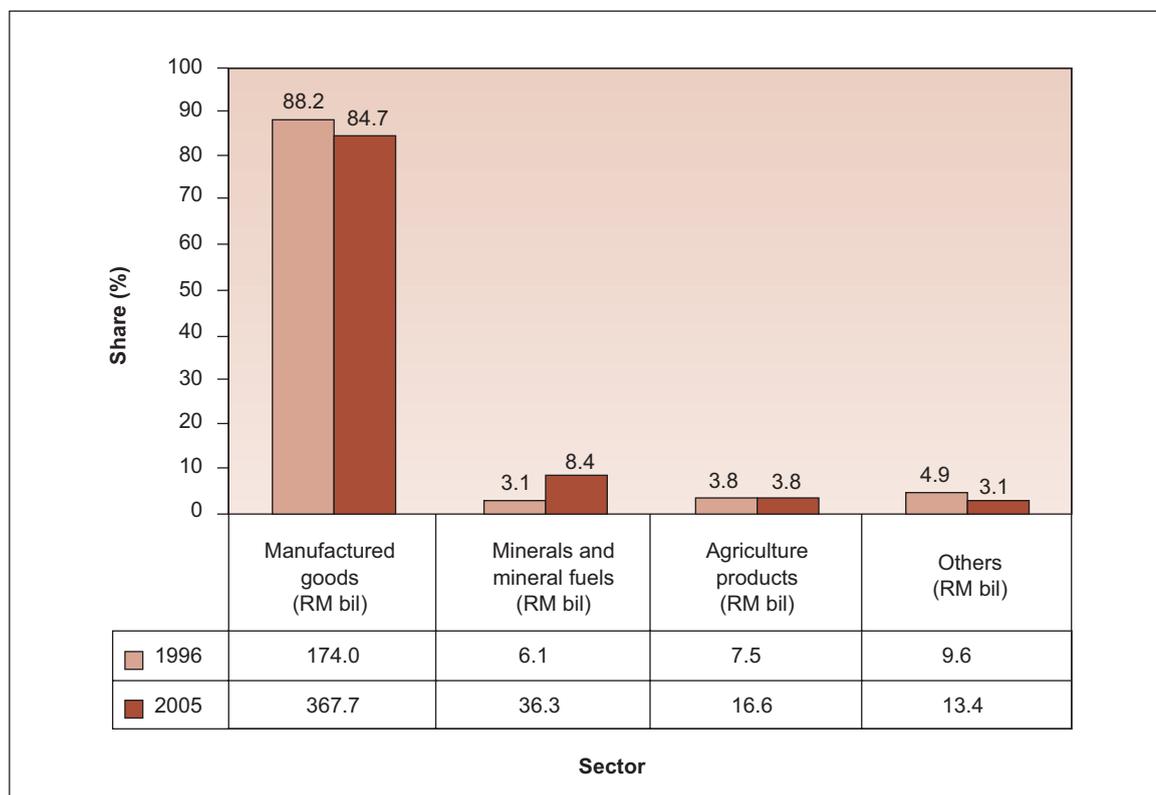
Source: Ministry of International Trade and Industry

3.46 Manufactured products and related intermediate goods constituted 88.2 per cent of the total imports in 1996 and 84.7 per cent in 2005 (Chart 3.11). Top three imports of manufactured goods were E&E products; chemicals and chemical products; and machinery, appliances and parts; collectively accounting for more than half (67.3 per cent) of the total imports of manufactured products in 1996 and 71.1 per cent in 2005. In respect of non-manufactured products, the share of minerals and mineral fuels in the total imports grew from 3.1 per cent in 1996 to 8.4 per cent in 2005, making them the second largest import category in 2005. Agriculture products, the third largest import category, constituted 3.8 per cent of the total imports in 2005.

#### (b) Direction of Merchandise Trade

3.47 ASEAN, as a region, remained Malaysia's major trading partner, accounting for 26.1 per cent of Malaysia's total exports and 24.6 per cent of Malaysia's total imports in 2005. The expansion of Malaysia's trade with ASEAN took place within the growing intra-ASEAN trade during the IMP2 period. Malaysia's contribution to intra-ASEAN trade expanded from 25.7 per cent in 1996 to 26.1 per cent in 2004.

CHART 3.11  
IMPORTS BY SECTOR



Source : Ministry of International Trade and Industry

3.48 Within ASEAN, significant growth was recorded in Malaysia's trade with Singapore, Thailand, Indonesia and the Philippines. Increases in trade were registered with:

- Singapore, by 101.3 per cent, from RM66.6 billion in 1996 to RM134.2 billion in 2005;
- Thailand, by 253.9 per cent, to RM51.6 billion in 2005;
- Indonesia, by 338.4 per cent, to RM29.1 billion; and
- the Philippines, by 349.9 per cent, to RM19.7 billion.

The combined share of Thailand, Indonesia and the Philippines in Malaysia's total trade grew from 6.5 per cent in 1996 to 10.3 per cent in 2005. Singapore's share decreased from 16.9 per cent to 13.9 per cent. Nevertheless, Singapore remained Malaysia's most important trading partner within ASEAN (Table 3.1).

3.49 In 2005, Malaysia's major exports to ASEAN included E&E products, which constituted 42.9 per cent of the total exports to ASEAN, refined petroleum products, 8.8 per cent, crude petroleum, 8.6 per cent, chemicals and chemical products, 6.5 per cent, and

machinery, appliances and parts, 5.5 per cent (Chart 3.12). The dominance of E&E exports to ASEAN was attributed in part to the regional production networks in this industry. These networks emerged, with the expansion of trade and investments in the region. Major imports from ASEAN were E&E products; refined petroleum products; chemicals and chemical products; machinery, appliances and parts; and manufactures of metals.

TABLE 3.1

## MALAYSIA'S TRADE WITH ASEAN

Country	1996		2005	
	Value (RM million)	Share (%)	Value (RM million)	Share (%)
<b>Total</b>	<b>95,069.7</b>	<b>24.1</b>	<b>246,183.7</b>	<b>25.4</b>
Singapore	66,635.2	16.9	134,161.4	13.9
Thailand	14,582.1	3.7	51,612.0	5.3
Indonesia	6,648.8	1.7	29,145.4	3.0
Philippines	4,372.1	1.1	19,667.9	2.0
Vietnam	1,191.2	0.3	8,257.7	0.9
Brunei	826.7	0.2	1,386.2	0.1
Myanmar	656.2	0.2	1,435.4	0.1
Cambodia	152.3	0.04	445.1	0.05
Lao PDR	5.0	neg. <sup>1</sup>	72.7	0.01

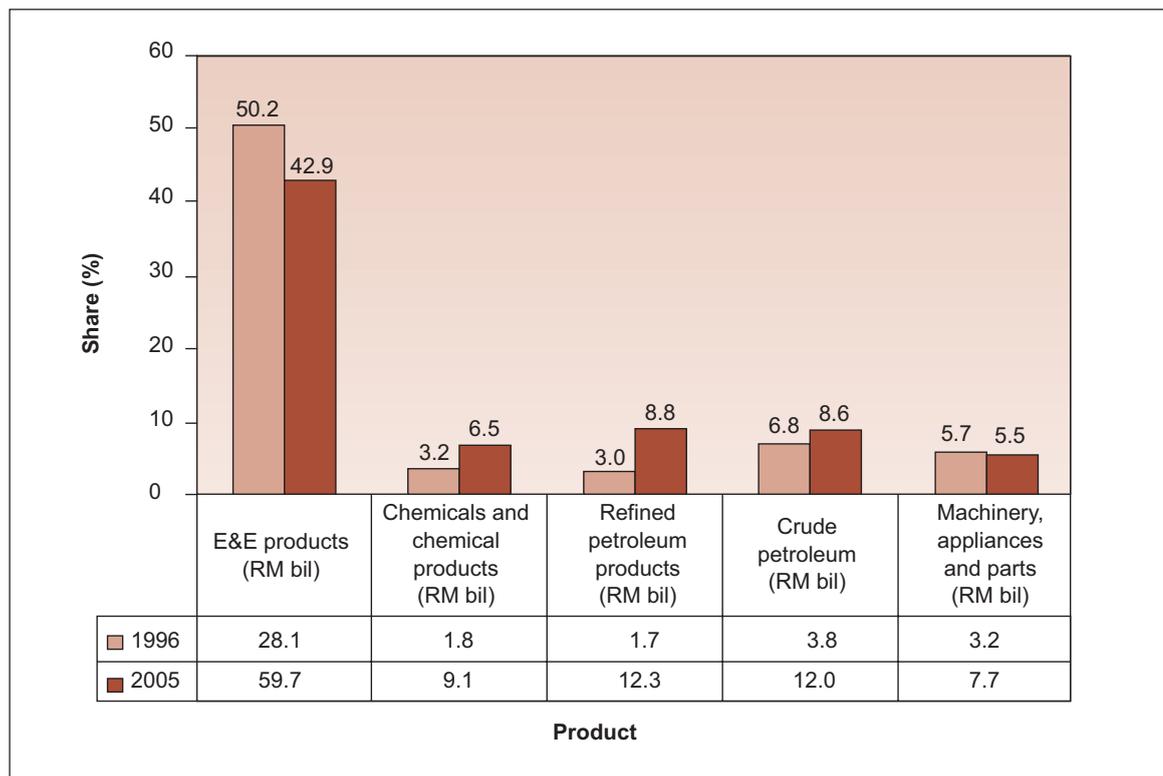
Note: <sup>1</sup> Negligible

Source: Ministry of International Trade and Industry

- 3.50 In terms of individual countries, the USA, Singapore and Japan remained Malaysia's top three trading partners. In 1996, trade with these three countries comprised 52.7 per cent of the total trade of Malaysia. In 2005, in terms of value, trade to these countries expanded 96.2 per cent. Nevertheless, their share of Malaysia's total trade declined to 42.2 per cent (Table 3.2). The relative trading positions of these three countries have changed. Japan declined from its position as the top trading partner of Malaysia in 1996 to become its third largest trading partner in 2005. During this period, the USA moved up from being the third largest trading partner to the largest, while Singapore remained the second largest trading partner.
- 3.51 Trade with the USA and Japan increased. Trade with the USA grew significantly during the IMP2 period, expanding from RM66.4 billion in 1996 to RM161 billion in 2005. The growth of exports to the USA exceeded the growth of imports during this period. Exports grew at an average annual rate of 10.6 per cent, from RM35.8 billion in 1996 to RM105 billion in 2005, while imports grew at an average annual rate of 5.9 per cent to RM55.9 billion. Japan was Malaysia's third largest single country trading partner. Malaysia's trade with Japan had been generally on an uptrend since 1996, increasing from RM75 billion in that year to RM112.9 billion in 2005. However, slower growth was recorded for 2001 and 2002, owing to the economic recession in Japan.

CHART 3.12

## EXPORTS TO ASEAN BY PRODUCT



Source: Ministry of International Trade and Industry

TABLE 3.2

## MAJOR TRADING PARTNERS OF MALAYSIA

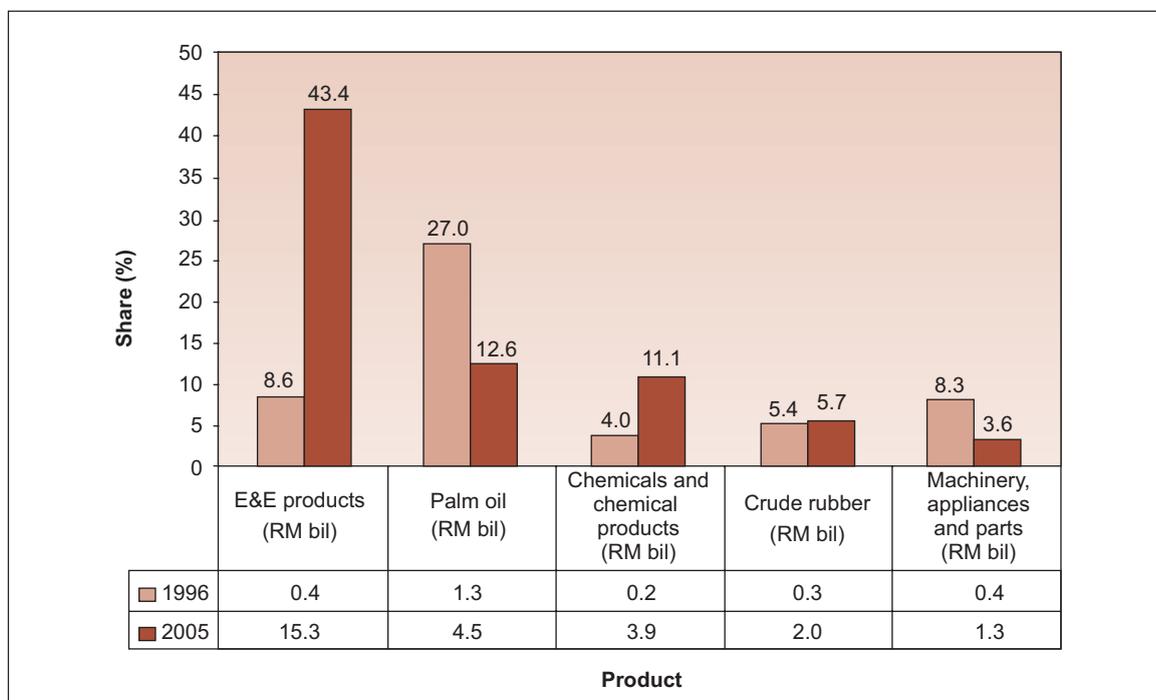
Country	1996		2005	
	Value (RM million)	Share (%)	Value (RM million)	Share (%)
USA	66.4	16.8	161.0	16.6
Singapore	66.6	16.9	134.2	13.9
Japan	75.0	19.0	112.9	11.7
People's Rep. of China	9.5	2.4	85.1	8.8
Thailand	14.6	3.7	51.6	5.3
Hong Kong	16.2	4.1	42.0	4.3
Rep. of Korea	16.3	4.1	39.5	4.1
Taiwan	17.9	4.5	38.8	4.0
Germany	14.4	3.7	30.5	3.2
Indonesia	6.6	1.7	29.1	3.0

Source: Ministry of International Trade and Industry

3.52 During the IMP2 period, the most dynamic movement in trading position was registered by the People's Republic of China, which emerged as the fourth largest trading partner since 2001 from the tenth position in 1996. Significant growth was registered in trade with the People's Republic of China, with total trade expanding from RM9.5 billion in 1996 to RM85.1 billion in 2005. Exports expanded at an average annual growth rate of 21.8 per cent during this period to RM35.2 billion in 2005, and imports by 27.8 per cent to RM49.9 billion. Major exports to the People's Republic of China included E&E products; palm oil; chemicals and chemical products; crude rubber; and machinery, appliances and parts, while major imports were E&E products; machinery, appliances and parts; chemicals and chemical products; iron and steel; and textiles and apparel (Chart 3.13).

CHART 3.13

## EXPORTS TO THE PEOPLE'S REPUBLIC OF CHINA BY PRODUCT



Source: Ministry of International Trade and Industry

3.53 The rapidly increasing importance of the People's Republic of China as Malaysia's trading partner was also marked by a major shift in the composition of Malaysia's top five exports to the country. While palm oil was the main export item to the People's Republic of China in 1996, E&E products became the leading export product category in 2005. In 1996, palm oil contributed 27 per cent of the total exports to the People's Republic of China, while E&E products contributed 8.6 per cent. By 2005, the contribution of palm oil had decreased to 12.6 per cent, while the share of E&E products had increased to 43.4 per cent. This change reflected the growing integration of the People's Republic of China into the region's E&E production networks, due to the presence of MNCs operating in that country.

- 3.54 The share of the EU in Malaysia's total trade declined from 14.3 per cent in 1996 to 11.7 per cent in 2005, due in part to the increasing importance of intra-EU trade and the sluggish trade performance of some EU member countries. The top four EU trading partners of Malaysia were Germany, the Netherlands, the UK and France, accounting for 8.3 per cent of Malaysia's total trade with the region.
- 3.55 Fast emerging markets during the period included South Asia, West Asia, Russia, Czech Republic, Brazil, Mexico, Hungary and South Africa. For South Asia, India was the most important trading partner, being the 15th largest in 1996 and 14th largest in 2005. India accounted for 70.5 per cent of Malaysia's exports to South Asia and 92.4 per cent of imports from the region in 2005. This was followed by Pakistan, Bangladesh and Sri Lanka.
- 3.56 The opening up of India had changed the structure of its imports from Malaysia. The increasing importance of the electronics industry and IT sector in that country had led to a growing demand for parts and components, as reflected in the increasing share of Malaysia's exports of E&E products to that country. The share of exports of E&E products grew from 5.2 per cent in 1996 to 20.3 per cent in 2005. Other major export products included crude petroleum, chemicals and chemical products, palm oil, and saw logs and sawn timber.
- 3.57 Rapid growth in trade was recorded with West Asia. Trade expanded three-fold, from RM6.1 billion in 1996 to RM29.5 billion in 2005. The most significant export markets were United Arab Emirates, Saudi Arabia, Turkey and Iran. Major exports to this region included E&E products, jewellery, palm oil, wood products, textiles and apparel, and machinery, appliances and parts.

### (c) Major Developments in Trade in Services

- 3.58 Major developments in trade in services included:
- data by the WTO indicated that globally Malaysia was the 30th largest exporter of commercial services in 1994 and its ranking improved to the 29th position in 2004. In terms of imports of commercial services, Malaysia was the 28th largest importer for both 1994 and 2004;
  - in 2005, exports of services included transport services, building and construction, professional services, education, health services and franchising;
  - based on Input-Output Tables<sup>1</sup>, the exports of services constituted the smallest percentage of total output within the sector, compared with the primary and secondary sectors. Nevertheless, the percentage of output of services which was exported increased from 8.5 per cent in 1991 to 14.4 per cent in 2000. In contrast, the share of imported inputs in the production of services was larger and had increased from 18.8 per cent in 1991 to 35.8 per cent in 2000;

<sup>1</sup> Analysis of the Input-Output Tables is presented in the Chapter on Growth Areas in Services.

- the Balance of Payments (BOP) indicated that the imports of services exceeded exports for each year during the period. The deficit in net services amounted to RM18.4 billion in 1996, which increased to RM22.2 billion in 1998. Since then, the deficit for each year fluctuated, reaching RM10.2 billion in 2005; and
- in 2005, investments in services totalled RM56.2 billion.

## SECTION IV GLOBAL TRADE GOVERNANCE

### (a) World Trade Organisation

3.59 As a member of the WTO, Malaysia is committed to meet its obligations under the organisation, which govern world trade in goods and services. The three main agreements under the WTO are:

- General Agreement on Tariff and Trade (GATT), 1994, which covers trade in goods;
- General Agreement on Trade in Services (GATS); and
- Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs).

#### (i) *Implementation of Malaysia's Commitments*

3.60 In line with the obligations under the WTO agreements, domestic legislations were enacted or amended. These were:

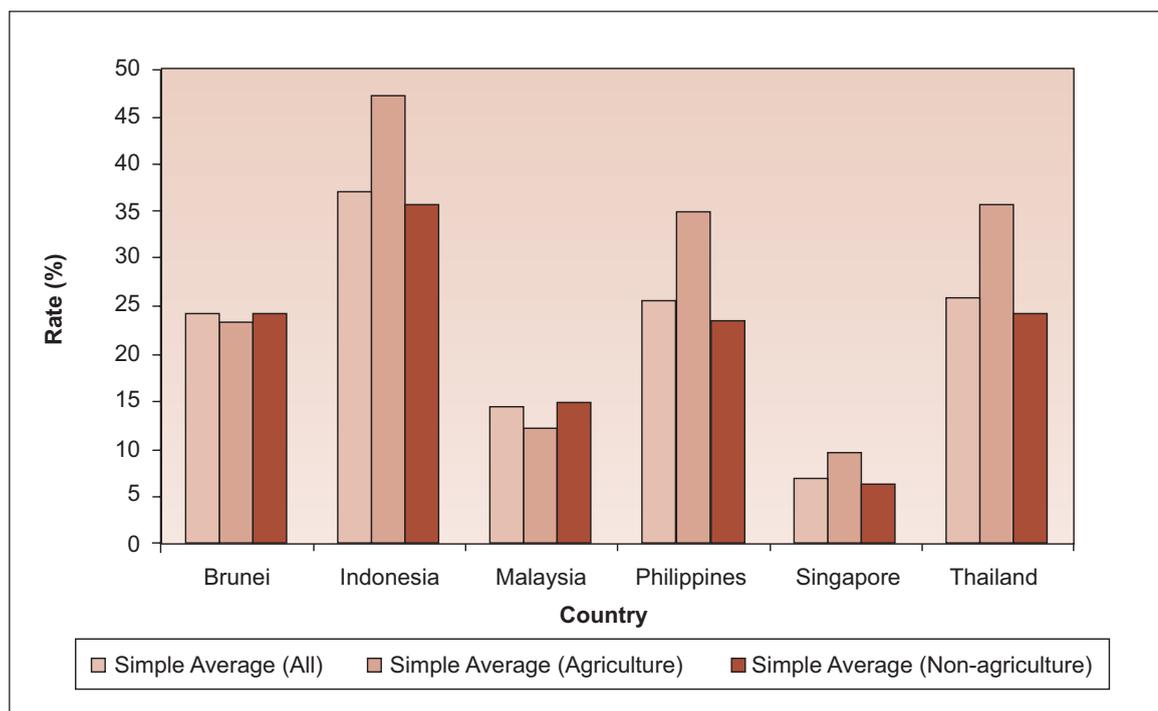
- Countervailing and Anti-Dumping Act, 1993, which was amended in 1998 to meet the WTO requirements;
- laws on intellectual property rights, such as Industrial Design Act, Trade Marks Act, Patents Act and Copyright Act, which were also amended; and
- Layout Designs for Integrated Circuits Act and Geographical Indications Act, which were enacted.

In addition, consistent with its commitment under Trade Related Investment Measures (TRIMs), Malaysia had removed all investment conditions related to local content.

3.61 To provide certainty to traders, 6,419 products or 60.6 per cent of Malaysia's tariff lines are bound, of which 5,212 are non-agriculture products, while 1,207 are agriculture products. In 2003, the average bound tariff rate was 14.5 per cent for both agriculture and non-agriculture products (Chart 3.14). Duties for IT products under the Information Technology Agreement had also been progressively reduced, from an average of 7.9 per cent in 1998, and completely eliminated in 2005.

CHART 3.14

FINAL MOST-FAVOURLED-NATION BOUND TARIFFS (PERCENTAGE), 2003



Source: World Trade Report 2004

3.62 Malaysia is committed to progressive liberalisation of its services sector, while taking into account the need to promote capacity building among the domestic service providers. In this respect, Malaysia has undertaken specific commitments under the GATS by providing conditional market access to foreign service providers in nine sub-sectors:

- business and professional services;
- communication services;
- construction and related engineering services;
- financial services;
- health-related social services;
- tourism and travel-related services;
- recreational, cultural and sporting services;
- transportation services; and
- skills training services.

3.63 Liberalisation of services under the WTO has been deemed to be minimal by both developed and developing countries. A number of developed countries seek greater opportunities to establish commercial presence in foreign markets. Developing countries are keen to gain greater liberalisation in sub-sectors of export interest to them, while some are also seeking for freer cross-border movement of the workforce. A number of ASEAN countries, including Malaysia, are pursuing the inclusion of temporary safeguard measures to mitigate unforeseen adverse impact resulting from liberalisation.

**(ii) Tariff Measures**

***Industrial Products***

3.64 Developed countries have bound all or almost all of their non-agriculture tariffs. The Quadrilateral Group of Industrialised Countries (Japan, the USA, Canada and the EU) also has the largest share of bound duty-free lines - Japan, at 57.1 per cent, the USA (38.5 per cent), Canada (29.4 per cent) and the EU (23.9 per cent). Overall, the average bound rate of duties in developed countries is 5.3 per cent, while that of developing countries is 29.1 per cent.

3.65 Despite the low bound duties of the developed countries, products from developing countries continue to encounter higher tariffs in several product lines, where higher tariffs are applied on downstream natural resource products, compared with the raw materials, which face lower tariffs. On the other hand, in developing countries, many tariff bindings were made at a higher level than the applied tariffs, creating some degree of uncertainty for exporters wishing to gain access to these markets.

***Agriculture***

3.66 In respect of agriculture, the conversion of non-tariff measures into tariff equivalents (tariffication) has resulted in high tariffs for some of the agriculture products. The continued use of export and domestic subsidies by the developed countries has created unfair competition against the exports of agriculture products from developing countries. In 2001, the domestic support by the EU to its agriculture sector amounted to US\$47 billion (Euro 39.3 billion), while the USA provided US\$14.4 billion in domestic support to its farmers.

***Textiles***

3.67 With the elimination of quantitative restrictions in 2005, high tariffs in the developed countries remain an obstacle to greater liberalisation in the textiles and apparel sub-sector. Low cost exporting countries, for example, the People's Republic of China, have benefited from the absence of quantitative restrictions. The sharp increase of exports from the People's Republic of China, on the other hand, has caused trade frictions with the USA and the EU. For Malaysia, measures undertaken by the industry to shift into the production of higher value-added products has helped to sustain exports of textiles and apparel.

**(iii) Non -Tariff Measures**

- 3.68 While the commitments under the Uruguay Round of trade negotiations have lowered tariff barriers and limited the use of quantitative restrictions, both developed and developing countries have resorted to the use of anti-dumping and countervailing measures, and safeguard mechanisms.
- 3.69 Issues on food safety and health have increasingly attracted attention in international trade. For example, the spread of mad cow disease, foot and mouth disease, and avian flu, had led to the use of sanitary and phytosanitary measures to protect life, and human, animal and plant health and safety. The WTO Sanitary and Phytosanitary Agreement encourages the use of international standards in providing such protection, but some countries have resorted to measures beyond international standards, which are more restrictive. In particular, agriculture produce are often subjected to stringent phytosanitary requirements. Tropical fruits and produce are prohibited from entry, unless they fulfil elaborate and rigorous Pest Risk Analysis. Imports of food products, including equipment and materials used to make or pack foods, are governed by the importing country's regulations on food quality, packaging and labelling. Approval is also required for processed poultry products, fish and fishery products, while testing facilities need to be certified by the importing country. Certification requirements often differ among countries and products. As more Malaysian products need to comply with technical regulations, seeking certification of compliance can be complex and costly. Stringent labelling requirements also impose costs on producers.

**(iv) Trade Related Aspects of Intellectual Property Rights**

- 3.70 The Trade-Related Aspects of Intellectual Property Rights (TRIPs) Agreement offers protection of intellectual property (IP) and ensures that inventions, copyrights and trademarks are protected. In line with its obligations, Malaysia has enacted and amended the necessary legislations.

**(v) Future Trends**

- 3.71 It is important for the WTO to remain as the primary forum for setting rules on international trade. The rules of the WTO provide a high degree of equality for all member countries. Without the WTO and a strong dispute settlement mechanism, unilateral actions by major trading countries may re-emerge, which may be detrimental to smaller trading nations. The multilateral trading system under the WTO will need to deal with the following main emerging challenges:
- proliferation of bilateral and regional FTAs, which can marginalise the primacy of the WTO in setting trade rules and determining liberalisation;
  - demand for increased transparency in the decision-making process by major stakeholders, particularly non-governmental organisations;
  - more stringent rules, particularly on IP;

- more rules in non-trade related areas relating to sustainable development, for example, on the environment;
- introduction of rules relating to social corporate responsibility; and
- pressures for flexibility in the present consensus-based decision making rule process.

## **(b) Regional and Bilateral Trade Arrangements**

3.72 Regional trade arrangements include initiatives by countries to facilitate trade through FTAs or customs unions. Regional trade arrangements are not new. In fact, a large number of the WTO member countries are involved in one or more regional trade arrangements. The shift towards liberalisation through such arrangements emerged in the last decade, parallel to the multilateral negotiations in the WTO. Tariff barriers under such arrangements are usually eliminated within a shorter timeframe, compared with commitments under the WTO. The use of regional and bilateral initiatives to promote free trade has resulted in a growing number of FTAs being negotiated by numerous countries and regions, including the USA, Japan, the EU, ASEAN, the People's Republic of China, India, West Asia and Latin America. As at 2004, more than 300 regional trade arrangements had been notified to the WTO.

3.73 The proliferation of regional trade arrangements has produced overlapping memberships. A single country may end up with multiple trade rules, which apply to different regional trade arrangement memberships, resulting in exporters and regulators having to monitor and observe multiple trade rules. In addition, the different rules of origin under different FTAs can increase the complexities of the trade regime of a country.

## **(c) ASEAN Economic Cooperation**

### ***(i) ASEAN Free Trade Area***

3.74 Under the AFTA, import duties on all products will be eliminated by 1 January 2010 for Brunei, Indonesia, Malaysia, the Philippines, Thailand and Singapore (ASEAN 6) and by 1 January 2015 for Cambodia, Lao People's Democratic Republic (Laos PDR), Myanmar and Viet Nam, with flexibility for some products up to 1 January 2018. Other initiatives were trade facilitation measures and industrial cooperation.

### ***(ii) ASEAN Framework Agreement on Services***

3.75 Apart from the liberalisation of trade in goods, trade in services is liberalised under ASEAN Framework Agreement on Services (AFAS). Since 1995, four packages of commitments under three Rounds of Negotiations have been concluded. The commitments made are mainly improvements on offers made under GATS in the

WTO or new sub-sectors which are offered for liberalisation in ASEAN. The Fourth Round of Negotiations commenced in 2005 and are expected to be completed by 31 December 2006.

**(iii) ASEAN Economic Community**

- 3.76 ASEAN has agreed on the need to deepen further regional integration within the group, through the establishment of ASEAN Economic Community (AEC) by 2020. AEC aims to realise free flows of goods, services and investments, freer flow of capital and greater mobility of professionals, talents and skilled labour by 2020. As an initial step, ASEAN has agreed to integrate 11 priority sectors by 2010. The priority sectors are wood-based products, automotive products, rubber-based products, textiles and apparel, agro-based products, fisheries, electronics, e-ASEAN, healthcare, air travel and tourism.

**(iv) ASEAN Free Trade Agreements with the Dialogue Partners**

- 3.77 ASEAN is extending its scope of engagement with its dialogue partners. In this respect, ASEAN is negotiating FTAs with the People's Republic of China, India, Japan, Republic of Korea, Australia and New Zealand. These FTAs are comprehensive and cover goods, services, investments and other areas of economic cooperation. The FTAs with the People's Republic of China and Republic of Korea will be realised in 2010, India (2011) and Japan (2012). The timeline for the other FTAs is being negotiated.
- 3.78 Potential benefits of the ASEAN-China FTA include:
- creation of an economic region with 1.7 billion consumers, a regional GDP of US\$2 trillion and total trade estimated at US\$1.2 trillion;
  - reduction of tariffs to zero is estimated to increase exports by ASEAN to the People's Republic of China by 48 per cent and exports by the People's Republic of China to ASEAN by 55 per cent by 2010; and
  - increase in the GDP of ASEAN by 0.9 per cent or US\$5.4 billion, and that of the People's Republic of China by 0.3 per cent or US\$2.2 billion.
- 3.79 With respect to ASEAN-Japan Comprehensive Economic Partnership, it is estimated that by 2020:
- GDP for ASEAN and Japan will increase by 2 per cent and 0.1 per cent, respectively, compared with the GDP in 1997; and
  - the export value from ASEAN to Japan will increase by US\$20.6 trillion, equivalent to 44.2 per cent of the export value in 1997, while the export value from Japan to ASEAN will increase by US\$20 billion, equivalent to 27.5 per cent of the export value in 1997.

**(d) Bilateral Free Trade Areas**

3.80 Malaysia has concluded Closer Economic Partnership (CEP) Agreement with Japan, which includes a bilateral FTA. Malaysia is negotiating FTAs with Pakistan, Australia, New Zealand, India and the USA. With greater certainty, transparency and more liberal trade regimes provided under the FTAs, trade between Malaysia and the FTA partners is likely to increase. These FTAs will create opportunities, as well as new challenges, for domestic manufacturers.

**(e) Future Trends**

**(i) Emerging Trade Requirements**

3.81 Imposition of extraneous conditions on trade (trade conditionalities), for example, compliance to labour and environment standards, is increasingly being pursued by developed countries. Similarly, non-trade issues, such as transparency, corporate social responsibility and corruption, are also being incorporated by developed countries into the work programmes of international fora.

3.82 A consequence of September 11, 2001 is the concern on the conduct of international trade, with its increasing emphasis on 'secure trade'. New requirements, such as the US Container Security Initiative and International Code for the Security of Ship and Port Facilities by International Maritime Organisation, have increased the costs of doing business. The US Bioterrorism Act 2002, signed in June 2004, has implications for producers of food and pharmaceutical products within and outside the USA, due to its stringent regulation on the import of food products, drugs and medical devices.

**(ii) Evolution of East Asian Community**

3.83 East Asia is the centre of growth and contributes 23 per cent of the world's GDP. Its importance, as one of the three major regions in the world, will increase. Economic cooperation constitutes an important component in harnessing the potential for growth in the region. There will be increased momentum in the evolution of cooperation in East Asia, involving ASEAN, the People's Republic of China, Japan and Republic of Korea. The formation of an East Asian Free Trade Area, through a building block approach, will enhance intra-regional trade and investments.

## **SECTION V CHALLENGES**

3.84 The review on the performance in external trade indicated that Malaysia has been able to retain its global position among the top 20 trading nations. Nevertheless, other countries, for example, the People's Republic of China, have improved on their global trading positions at a faster rate. Further strengthening the global position of Malaysia as a trading nation will therefore be increasingly challenging, with the emergence of strong competitors.

3.85 Challenges in enhancing Malaysia's position in international trade include:

- enhancing exports of growth areas, such as services, biotechnology and other advanced technology-related products, and agro-based products;
- proliferation of FTAs, resulting in increasingly complex rules and overlapping trade regimes which govern market access;
- increasing competitive pressures in all markets, especially from the People's Republic of China and India;
- managing trade impediments, especially in the form of extraneous trade conditions, such as those on labour and social issues, environment and security;
- compliance to mandatory standards, especially those on environment, to gain market access;
- enhancing the efficiency of the domestic trading environment and logistics support;
- exploiting opportunities in outsourcing; and
- integrating Malaysian companies into the global supply chains, involving growing intra- and inter-firm cross border linkages and utilisation of technologies.

**(a) Enhancing Exports of Growth Areas**

3.86 Within the services sector, the challenge is to enhance the capacity of export-ready sub-sectors, such as health, education, construction, franchising, information and communication technology (ICT) and professional services, while identifying other new sub-sectors to be developed for exports. Malaysia's service providers also need to seek and gain recognition within the global community, which will facilitate access to overseas markets.

3.87 Other growth areas which have been identified include biotechnology, advanced technology-related products and agro-based products. The challenges include:

- enhancing the capacity and export capabilities of firms in the growth areas;
- managing increased competition in the domestic market, as a result of liberalisation;
- strengthening the institutional support to meet regulatory and market requirements, particularly for agro-based products; and
- creating market opportunities for these growth areas.

**(b) Proliferation of Free Trade Agreements**

3.88 The proliferation of FTAs has an impact on Malaysia's trade. This development has resulted in the emergence of increasingly complex trade rules with overlapping trade regimes. The challenge is to ensure that Malaysian exporters are able to optimise the benefits from preferential treatment resulting from these arrangements and, at the same time, minimise the disadvantages arising from preferential treatment given to competitors' exports.

**(c) Increasing Competition in Export Markets**

3.89 While liberalisation has improved market access for Malaysia's exports to many countries, it has also increased competition, especially from the People's Republic of China and India. For example, global trends indicate that the share of the People's Republic of China in the world trade in E&E is increasing in major markets. Similar competitive pressures are posed by other countries, which are rapidly industrialising.

**(d) Managing Trade Impediments**

3.90 There has been an increasing trend towards the imposition of trade conditionalities relating to non-trade concerns, such as environment and labour standards, security and social responsibility. Such requirements are increasingly imposed by buyers to meet the preference of consumers in major markets. While the need for such conditionalities is being deliberated at the official level, in reality, manufacturers and producers which can meet the requirements are gaining advantage over those which cannot. Malaysian manufacturers will need to be aware of such requirements and work towards meeting them. Inability to meet trade conditionalities can hinder market access. Compliance, on the other hand, can result in increases in the costs of doing business.

**(e) Compliance to Mandatory Standards**

3.91 Increasingly, the prerequisite for market access is compliance to international standards, especially technical standards. The formulation of the majority of these technical standards is driven by developed countries to meet health, safety and environmental needs. These standards pose a challenge to Malaysia's exporters, in terms of their readiness and capacity. Malaysia needs to be more engaged in contributing to the setting of international standards, and at the same time, provide assistance to industry to ensure its readiness and capacity to meet these standards. Malaysian manufacturers will need to keep abreast of these developments and be able to comply.

**(f) Enhancing the Efficiency of the Domestic Trading Environment**

3.92 Challenges to improving the domestic trading environment include:

- enhancing the efficiency of the delivery system, in particular, customs facilitation and logistics support. Formalities relating to the importation and exportation of goods and services will need to be simplified;

- the logistics system keeping pace with the expansion in trade to facilitate an efficient movement of goods and services, internally and across borders; and
- fully exploiting the potential of the paperless trade transaction system. This will need to be complemented with the creation of an integrated logistics supply chain to provide a faster and cost-effective delivery of goods and services.

**(g) Exploiting Opportunities in Outsourcing**

3.93 There is a growing trend by businesses to focus on their core competencies through outsourcing part or the entire manufacturing processes and services to enhance efficiency and gain competitive edge. There is a need to formulate measures to promote outsourcing activities, including trade rules and customs formalities, financing and logistics support.

**(h) Integrating into the Global Supply Chains and Utilising Technologies**

3.94 With the development of global supply chains, MNCs have the choice of selecting their suppliers worldwide. Companies in Malaysia have to compete with global suppliers in the domestic and international markets. In this respect, Malaysian companies will need to be integrated into the global supply chains. To facilitate this process, they will need to leverage upon the evolving technologies.

**SECTION VI STRATEGIES AND POLICIES**

**TARGETS**

3.95 Malaysia's total trade is expected to reach RM1 trillion by 2006. Given the significant contributions of external trade to economic growth, Malaysia will continue to undertake measures to enhance its position as a major trading nation towards meeting the targeted GDP growth of 6.3 per cent during the IMP3 period.

3.96 The trade targets to achieve the GDP growth include:

- increase in the total merchandise trade by three-fold to RM2.8 trillion by the end of the Plan period;
- increase in merchandise exports to RM1.4 trillion by 2020, with E&E exports contributing 51.2 per cent, palm oil products (5.5 per cent), wood products (3.7 per cent), manufactures of metals (3.5 per cent), machinery, appliances and parts (3.3 per cent), petrochemicals (2.5 per cent) and rubber-based products (1.6 per cent);
- increase in the contribution of services to the total exports from 12.4 per cent in 2005 to 19.5 per cent by 2020;

- increase in the contribution by Malaysian-owned companies to the total exports from an estimated 28 per cent in 2005 to 40 per cent by 2020;
- placing greater emphasis on the high growth markets of North East Asia and emerging markets in South Asia, West Asia and Eastern Europe; and
- continuing to strengthen and expand exports to ASEAN, the USA and the EU.

## STRATEGIC THRUSTS

3.97 Eleven strategic thrusts have been set to enable Malaysia to meet the targets and overcome the challenges in international trade:

- (1) intensifying exports of services;
- (2) promoting exports of the targeted growth areas in the manufacturing and services sectors;
- (3) establishing Malaysia as a leading supplier of *halal* products and services;
- (4) promoting exports of indigenous E&E products;
- (5) promoting trade in motor vehicles, parts and components;
- (6) supporting outsourcing activities;
- (7) enhancing exports through compliance to international standards;
- (8) providing effective financial assistance to enhance exports;
- (9) enhancing the policy framework to facilitate trade;
- (10) strengthening and expanding the institutional support for the exporting community; and
- (11) strengthening the role of private sector and trade and industry associations in enhancing exports.

### (1) INTENSIFYING EXPORTS OF SERVICES

3.98 In line with the Government's aim to further develop the services sector, efforts to enhance the exports of services include:

- facilitating synergistic collaborations among Malaysian service providers and adopting a packaged approach to promote the export of services, whereby related services will be grouped together to be offered to foreign buyers. For example, architectural services can be combined with construction services, financing, contracting and supply of building materials;

- enhancing the overall global visibility in strategic markets, through the ‘branding’ of selected services sub-sectors for which Malaysia has the capacities and capabilities;
- utilising the two funds covering services, established under the Ninth Malaysia Plan (RMK-9), 2006-2010, to enhance capacity building and export capabilities of the services sector:
  - the first fund, Export Services Fund, is to assist Malaysia’s service providers, in particular, those involved in professional services, in undertaking feasibility studies and bidding for overseas projects; and
  - the second fund, Small and Medium Enterprises (SMEs) Export Services Fund, is to enhance the access to financing by SMEs in the services sector, in particular, for upgrading technical and professional skills;
- entering into mutual recognition agreements (MRAs), under bilateral and regional arrangements, to enhance the international recognition of Malaysian qualifications, standards and testing capabilities;
- enhancing market access through multilateral, regional and bilateral agreements, while, at same time, undertaking progressive liberalisation to enhance the capacity of domestic service providers; and
- strengthening inter-agency coordination in the planning and promotion of the exports of services.

## **(2) PROMOTING EXPORTS OF THE TARGETED GROWTH AREAS**

3.99 In tandem with the Government’s efforts to develop new growth areas in the manufacturing and services sectors, efforts will be undertaken to promote the exports of these targeted areas. The efforts include:

- facilitating market entry through strategic partnerships in key potential markets, such as the People’s Republic of China, West Asia, ASEAN and Africa;
- gaining inroads into the global supply chains through joint ventures with major international producers to manufacture and distribute products;
- enhancing the acceptability of Malaysian products by encouraging greater compliance to international standards through improving the access to product testing and certification;
- sponsoring foreign buyers to Malaysia to encourage sourcing from Malaysia;
- organising and participating in international trade fairs and exhibitions in Malaysia and overseas to enhance the image of the country’s products and services;

- undertaking intensive promotion campaigns in selected markets to promote the image of Malaysian products and services in the targeted areas; and
- encouraging Government-linked companies (GLCs) to participate in the development of companies with growth potential in the targeted areas.

### (3) ESTABLISHING MALAYSIA AS A LEADING SUPPLIER OF *HALAL* PRODUCTS AND SERVICES

3.100 Various initiatives will be undertaken to promote the acceptance of Malaysia's *halal* standard globally to facilitate the development of Malaysia as the international hub for *halal* products. The initiatives include:

- promoting Malaysia's *halal* standard as a comprehensive standard, which encompasses Hazard Analysis and Critical Control Points (HACCP), as well as Good Manufacturing Practices (GMP);
- promoting Malaysia as the internationally recognised venue for hosting trade fairs and exhibitions on *halal* products and services;
- establishing linkages between Malaysian exporters and international buyers of *halal* products through continuous promotion at international events and fora; and
- improving the capacity and efficiency of the certifying bodies for *halal* products and services.

### (4) PROMOTING EXPORTS OF INDIGENOUS ELECTRICAL AND ELECTRONICS PRODUCTS

3.101 Exports of E&E products are mainly contributed by MNCs. Measures will be instituted to provide assistance to Malaysian-owned companies to become manufacturers and exporters of E&E products, such as integrated circuits and consumer E&E appliances. Assistance will be provided to such companies to undertake research and development (R&D) in innovating and developing new products, improving product quality, implementing cost effective production technologies and gaining access to new markets. There is an increasing trend among Malaysian-owned companies to also outsource their production. Products which are outsourced will be recognised as indigenous E&E products, if the Malaysian value-added of a particular product is substantial, taking into account brand ownership and activities, such as design and product development, quality control and marketing.

3.102 Measures to assist such companies, including those undertaking outsourcing, include:

- reviewing the existing assistance for the promotion of brands to include the acquisition of brands and integration into market networks through mergers and acquisitions (M&As);

- securing mutual recognition of product standards and certifications with other countries; and
- providing assistance to the companies to undertake testing to meet international standards.

## **(5) PROMOTING TRADE IN MOTOR VEHICLES, PARTS AND COMPONENTS**

3.103 Measures which will be undertaken to promote trade in motor vehicles, parts and components include:

- enhancing exports of selected automotive components by rationalising the operations of manufacturers of parts and components;
- intensifying efforts to gain access to export markets, such as ASEAN and West Asia;
- increasing market access through bilateral and regional trade agreements;
- assisting manufacturers to establish overseas operations; and
- providing support to manufacturers and assemblers to meet quality certification and testing requirements.

## **(6) SUPPORTING OUTSOURCING ACTIVITIES**

3.104 Measures to support outsourcing activities include:

- simplifying customs regulations and procedures;
- reviewing Government assistance and regulations to support outsourcing; and
- addressing the issue of country of origin, as a result of outsourcing, at the WTO and World Customs Organisation levels.

## **(7) ENHANCING EXPORTS THROUGH COMPLIANCE TO INTERNATIONAL STANDARDS**

3.105 For Malaysia's companies to gain greater market share, they need to comply with international standards. Measures to assist companies in complying with such standards include:

- developing a coordinated approach towards the setting and enforcement of standards to ensure the competitiveness of Malaysian products. Trade aspects

will be taken into consideration in the setting of the standards by respective agencies, in consultation with the industries;

- Malaysia assuming an active role in the setting of international standards to enable the interests and concerns of Malaysia's industries to be taken into consideration in setting the standards;
- pursuing MRAs, especially for key markets and products, to facilitate market entry. MRAs will be incorporated as part of the FTA framework;
- intensifying collaborations with certification bodies in relevant overseas markets for the purpose of recognition of certification in Malaysia;
- providing support in encouraging SMEs to comply with international standards; and
- strengthening the capacity of existing institutional machinery for standard development, administration and enforcement.

## **(8) PROVIDING EFFECTIVE FINANCIAL ASSISTANCE TO ENHANCE EXPORTS**

3.106 Effective financial assistance will be provided through:

- reviewing the capacity and capability of EXIM Bank in providing adequate financing for potential exporters of growth areas; and
- enhancing the facilities for trade financing for exporters, including trading companies, by banking institutions. Banks will continue to be the main providers of trade financing, given their stronger financial capacity, staff and system capabilities, and large branch networks to efficiently meet the financial needs of Malaysian exporters.

## **(9) ENHANCING THE POLICY FRAMEWORK TO FACILITATE TRADE**

3.107 The existing policy framework has contributed towards the creation of a conducive trading and business environment. The policy framework will be further enhanced by:

- improving transparency, with respect to the formulation of rules, regulations and international negotiations, which have an impact on trade activities and practices, and businesses;
- amending and updating rules and regulations, to keep pace with changes domestically and externally, taking into consideration inputs from relevant Government agencies and the private sector;

- progressively liberalising the manufacturing, agriculture and services sectors. Timeframes for liberalisation will be set to provide predictability and stability in trade and business;
- promoting healthy competition domestically by encouraging the supply of competitively-priced intermediate and capital inputs, as well as the diffusion of technology by domestic industries;
- improving market access for Malaysia's manufactured and agriculture products and services globally through bilateral FTAs with established trading partners, as well as countries with emerging potential for trade expansion. Regional FTAs through ASEAN will also be pursued;
- undertaking greater harmonisation of rules under different bilateral FTAs and regional arrangements, such as rules of origin and compliance to standards and trade documentation, to facilitate export activities;
- continuing Malaysia's participation in the WTO in strengthening the rules-based system, which will contribute towards the predictability of trade practices and provide protection from unilateral trade measures by other countries;
- striving to ensure that current and future trade negotiations in the WTO will enhance access to global markets, but, at the same time, be balanced by Malaysia's national interests; and
- continually updating trade facilitation measures, mechanisms, rules and practices to promote the efficient clearance of exports and imports.

#### **(10) STRENGTHENING AND EXPANDING THE INSTITUTIONAL SUPPORT FOR THE EXPORTING COMMUNITY**

3.108 Measures to strengthen and expand the institutional support for the exporting community include:

- strengthening the existing institutional support for export promotion. The capacities and capabilities of MATRADE will be enhanced to meet the changing and expanding needs of the private sector through:
  - strengthening the global networking and outreach of MATRADE. The agency will expand its offices overseas and employ specialised personnel (market and product specialists) in targeted high growth and emerging markets;
  - providing sufficient resources for MATRADE to intensify and enhance its export promotion activities;

- intensifying the promotion of Malaysian agriculture produce and agro-based products, in line with the focus on developing the agriculture sector and the policy thrust of strengthening marketing and global networking under the RMK-9;
  - intensifying its role as the focal point for access to trade and market information to facilitate foreign companies in doing business with Malaysia, and also support Malaysian companies in expanding their businesses overseas;
  - intensifying efforts by MATRADE to enlarge the export base by identifying and nurturing new exporters through collaboration with industry and trade associations; and
  - expanding the role of MATRADE to include activities as the Marketing and Brand Promotion Focal Point in assisting other Government agencies in their efforts to promote products and services under their coverage;
- enhancing the efficiency of the delivery system by:
    - improving customs facilitation through streamlining customs procedures;
    - simplifying the issuance of certificates of origin, including the possibility of introducing the practice of self certification; and
    - promoting greater professionalism among the forwarding agents community;
  - enhancing the efficiency of the electronic trade facilitation system to act as a common platform to provide the necessary connectivity among the trading community, permit issuance agencies and supply chains to interact, collaborate and perform transactions electronically. It will also facilitate linkages with similar platforms of Malaysia's trading partners, for example, the ASEAN Single Window, which will provide the electronic link to all similar platforms of ASEAN countries; and
  - facilitating the integration of Malaysian companies into the global supply chains through:
    - the greater use of e-commerce platforms and e-business standards, similar to that of RosettaNet for the E&E industry, to enhance collaboration among industries;
    - promoting the participation of Malaysia's SMEs in the global supply chains;

- providing broadband infrastructure at competitive costs; and
- enhancing strategic alliances with foreign hypermarkets operating in Malaysia to market Malaysian products in their international outlets overseas.

**(11) STRENGTHENING THE ROLE OF PRIVATE SECTOR AND TRADE AND INDUSTRY ASSOCIATIONS**

3.109 Measures to strengthen the role of private sector and trade and industry associations include:

- promoting the role of trade and industry associations as effective intermediaries to collaborate with policy makers in the formulation and implementation of export plans. Assistance will be provided to facilitate the building of an appropriate knowledge base within the associations;
- reviewing the existing incentives to trade and industry associations to promote the export capabilities of their members, which include training, compliance to standards, and knowledge and technology acquisition and advancement, as well as ICT applications and e-commerce;
- developing a critical mass of trading companies which will enhance the exports of the country. This will, in turn, encourage the development and expansion of related services. Measures include:
  - establishing a trade association to advance the interests of trading companies; and
  - reviewing the present incentives, regulations and policies, including customs formalities, to encourage investments in trading activities, including merchanting trade and outsourcing of production by brand owners;
- encouraging the private sector, with the cooperation of MATRADE, to set up trade and distribution centres in selected markets; and
- seeking and obtaining the cooperation and support of Malaysian associations overseas and the network of Malaysian professionals working and living abroad to promote Malaysia's trade and business interests.

# Chapter

# 4



## **INVESTMENTS IN THE MANUFACTURING AND SERVICES SECTORS**





# INVESTMENTS IN THE MANUFACTURING AND SERVICES SECTORS

## SECTION I OVERVIEW

4.01 Investments will continue to assume an important role in economic growth and development. Investments contribute towards the growth of Gross Domestic Product (GDP), capital formation, export earnings, employment, technology development and other economic benefits. Private investments will assume a more important role during the period of the Third Industrial Master Plan (IMP3), 2006-2020, as public investments are expected to grow at a slower pace. Emphasis will also be placed on the quality of private investments. Competition for foreign direct investments (FDIs)<sup>1</sup> is expected to intensify and new competitors for FDIs are anticipated to emerge. Private domestic investments will continue to complement FDIs.

4.02 Major areas covered by this Chapter include:

- global trends in FDIs;
- trends and impact of FDIs in Malaysia;
- trends in domestic investments;
- investment performance of the manufacturing sector during the Second Industrial Master Plan (IMP2), 1996-2005;
- private investments in the services sector;
- issues and challenges affecting future FDIs and private domestic investments; and
- strategies and policies in sustaining future levels of investments.

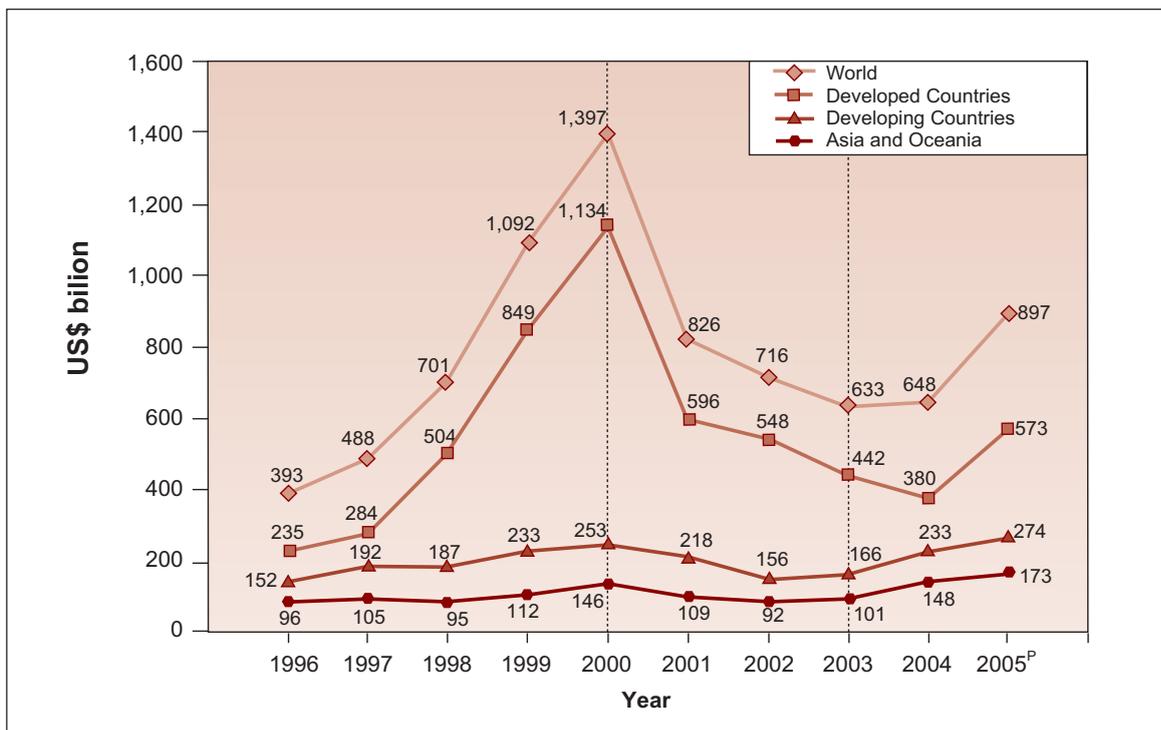
## SECTION II GLOBAL TRENDS IN FOREIGN DIRECT INVESTMENTS

### (a) Global Trends, 1996-2005

4.03 Trends in global FDI flows during the IMP2 period can be divided into three phases, namely, 1996-2000, 2001-2003 and 2004-2005 (Chart 4.1 and Table 4.1).

<sup>1</sup> FDI is defined as an investment involving a long term relationship and reflecting a lasting interest and control by a resident entity in one economy in an enterprise resident in another economy.

CHART 4.1  
FOREIGN DIRECT INVESTMENT INFLOWS BY REGION



Note: <sup>P</sup> Preliminary estimates

Source: World Investment Report, various issues

4.04 During the first five years of the IMP2 period, 1996-2000, global FDI inflows grew rapidly from US\$393 billion in 1996 to a peak of US\$1.4 trillion in 2000. The growth was contributed by the strength of the global economy, expansion in information and communication technology (ICT), robust corporate activities in capital expansion and increasing cross border mergers and acquisitions (M&As). FDI inflows declined subsequently for three consecutive years to US\$633 billion in 2003. FDI inflows in 2004 grew marginally to US\$648 billion, ending the period of decline. According to preliminary estimates, inflows in 2005 increased to US\$897 billion, with both developed and developing countries performing better than in 2004. A stable global investment environment, increase in M&As, improvements in policy environment and recovery of inflows to key recipient countries support the optimistic outlook.

4.05 During the period 1996-2004, developed countries accounted for the major share (72.1 per cent) of global FDI inflows. Although developing countries received a significantly smaller proportion of FDI inflows, their share increased from 18.1 per cent in 2000 to 36 per cent in 2004. Other significant trends of global FDI flows included:

- global FDI flows remaining unevenly distributed and concentrated in a few countries;

TABLE 4.1

## TRENDS OF GLOBAL FOREIGN DIRECT INVESTMENTS

<i>Growth (1996-2000)</i>	<i>Downturn (2001-2003)</i>	<i>Recovery (2004-2005)</i>
<ul style="list-style-type: none"> <li>• High growth in global economy</li> <li>• Technology expansion and high corporate investments in ICT and finance sectors</li> <li>• Surge in cross border M&amp;A activities, contributed partly by high stock valuations</li> <li>• Strong corporate confidence and investment interest</li> <li>• Substantive trans-Atlantic and outward investments</li> </ul>	<ul style="list-style-type: none"> <li>• Global economic slowdown affected FDI decisions</li> <li>• Downturn in ICT sector</li> <li>• Increase in accounting and corporate mismanagement</li> <li>• Low stock valuations, which contributed partly to decline in M&amp;As</li> <li>• Decline in corporate confidence and cautious stance in investing</li> <li>• Rationalisation process took place</li> <li>• Corporate financial tightening, as a result of weak corporate profitability</li> <li>• Terrorism and political tensions aggravated uncertainties</li> <li>• High repayments of intra-company loans contributed to lower FDI flows</li> </ul>	<ul style="list-style-type: none"> <li>• Recovery led by developing countries</li> <li>• Recovery contributed largely by economic stability, increase in M&amp;As and improvements in FDI policy environment</li> <li>• High and sustained record flows to some developing countries was key factor</li> <li>• Improvement in corporate financial situation and resumption of corporate investment expansion</li> <li>• Decline in repayments of intra-company loans</li> <li>• Increase in use of reinvested earnings in financing FDI activities</li> <li>• Increase in inter-regional FDI flows, contributed by relocation, production networks and regional integration</li> </ul>

Source: World Investment Report, various issues

- intensification of competition for FDIs. More countries were competing and adopting innovative approaches in attracting FDIs;
- a changing profile of global FDI flows, influenced by factors such as the rapid growth of ICT, expansion of multinational corporations (MNCs) among developing countries and proliferation of regional and bilateral free trade agreements (FTAs);
- a growing trend of intra- and inter-regional FDI flows;
- increasing share of services in FDIs;
- significance of reinvested earnings for the developing economies; and
- concentration of FDIs in greenfield activities in most developing economies, compared with more M&As in developed countries.

#### (b) Foreign Direct Investment Inflows by Region and Leading Recipient Country

4.06 During the period 1996-2004, the top 20 recipient countries attracted more than four-fifths of the global FDI inflows. Among developed countries, the United States of America (USA), Belgium and Luxembourg, the United Kingdom (UK), Germany and France were the largest recipients of FDI flows (Table 4.2).

TABLE 4.2

## GLOBAL TOP 20 RECIPIENTS OF FOREIGN DIRECT INVESTMENTS

1996-2000				2001-2004			
Rank		Value (US\$ billion)	Share (%)	Rank		Value (US\$ billion)	Share (%)
	<b>World</b>	<b>4,070.5</b>	<b>100.0</b>		<b>World</b>	<b>2,822.8</b>	<b>100.0</b>
1	USA	959.7	23.6	1	Belgium and Luxembourg	435.6	15.4
2	UK	338.7	8.3	2	USA	383.5	13.6
3	Germany	297.8	7.3	3	People's Rep. of China	213.8	7.6
4	Belgium and Luxembourg	257.2	6.3	4	UK	175.4	6.2
5	People's Rep. of China	213.5	5.2	5	France	166.3	5.9
6	Netherlands	169.8	4.2	6	Spain	119.0	4.2
7	France	165.9	4.1	7	Netherlands	91.7	3.2
8	Canada	135.5	3.3	8	Hong Kong	81.1	2.9
9	Hong Kong	123.1	3.0	9	Ireland	74.6	2.6
10	Sweden	120.4	3.0	10	Mexico	70.7	2.5
11	Brazil	120.0	2.9	11	Australia	69.8	2.5
12	Spain	90.4	2.2	12	Brazil	67.4	2.4
13	Mexico	64.4	1.6	13	Germany	65.6	2.3
14	Singapore	63.7	1.6	14	Italy	62.6	2.2
15	Denmark	61.9	1.5	15	Canada	61.8	2.2
16	Ireland	58.2	1.4	16	Singapore	45.3	1.6
17	Argentina	57.8	1.4	17	Switzerland	36.2	1.3
18	Switzerland	49.6	1.2	18	Japan	29.6	1.0
19	Australia	37.0	0.9	19	Russian Federation	25.8	0.9
20	Italy	33.1	0.8	20	Sweden	24.6	0.9
<b>28</b>	<b>Malaysia</b>	<b>24.0</b>	<b>0.6</b>	<b>34</b>	<b>Malaysia</b>	<b>10.9</b>	<b>0.4</b>

Source: World Investment Report, various issues

4.07 Flows to the developing region were concentrated in the Asia and Oceania region and Latin America. Within Asia, the North-East Asia sub-region was the largest recipient. Significant flows to the People's Republic of China and Hong Kong were the main driving force. The ASEAN sub-region was second, followed by West Asia.

4.08 Among developing countries, including newly industrialising economies, the People's Republic of China, Hong Kong, Brazil, Mexico and Singapore were the top five recipients of FDI flows. Together, they accounted for 59 per cent of the total FDI flows to the developing economies. Since the early 1990's, the People's Republic of China had emerged as the largest recipient among developing countries. For the period 1996-2004, Malaysia ranked 30th among all countries (28th for 1996-2000 and 34th for 2001-2004) and 11th among developing countries.

### (c) Foreign Direct Investment Inflows to Asia

4.09 During the period 1996-2004, FDI inflows to Asia increased from US\$95 billion in 1996 to reach a peak of US\$147.5 billion in 2004. The People's Republic of China led with significant levels of inflows, followed by Hong Kong, Singapore, Republic of

Korea and Malaysia (Table 4.3). The major share of FDI inflows to the People's Republic of China, Malaysia, Thailand, Viet Nam and India were channelled to manufacturing activities. In comparison, FDI inflows to Hong Kong and Singapore were mainly in services.

TABLE 4.3

**ASIA'S TOP 10 RECIPIENTS OF FOREIGN DIRECT INVESTMENTS**

1996-2000			2001-2004		
	Value (US\$ billion)	Share (%)		Value (US\$ billion)	Share (%)
<b>Asia</b>	<b>551.4</b>	<b>100.0</b>	<b>Asia</b>	<b>449.4</b>	<b>100.0</b>
People's Rep. of China	213.5	38.7	People's Rep. of China	213.8	47.6
Hong Kong	123.1	22.3	Hong Kong	81.1	18.0
Singapore	63.7	11.6	Singapore	45.3	10.1
Rep. of Korea	27.7	5.0	Rep. of Korea	18.1	4.0
<b>Malaysia</b>	<b>24.0</b>	<b>4.4</b>	India	16.5	3.7
Thailand	23.2	4.2	<b>Malaysia</b>	<b>10.9</b>	<b>2.4</b>
India	13.3	2.4	Turkey	8.8	2.0
Taiwan	12.2	2.2	Taiwan	7.9	1.8
Viet Nam	8.9	1.6	Thailand	7.8	1.7
Philippines	7.6	1.4	Viet Nam	5.6	1.2

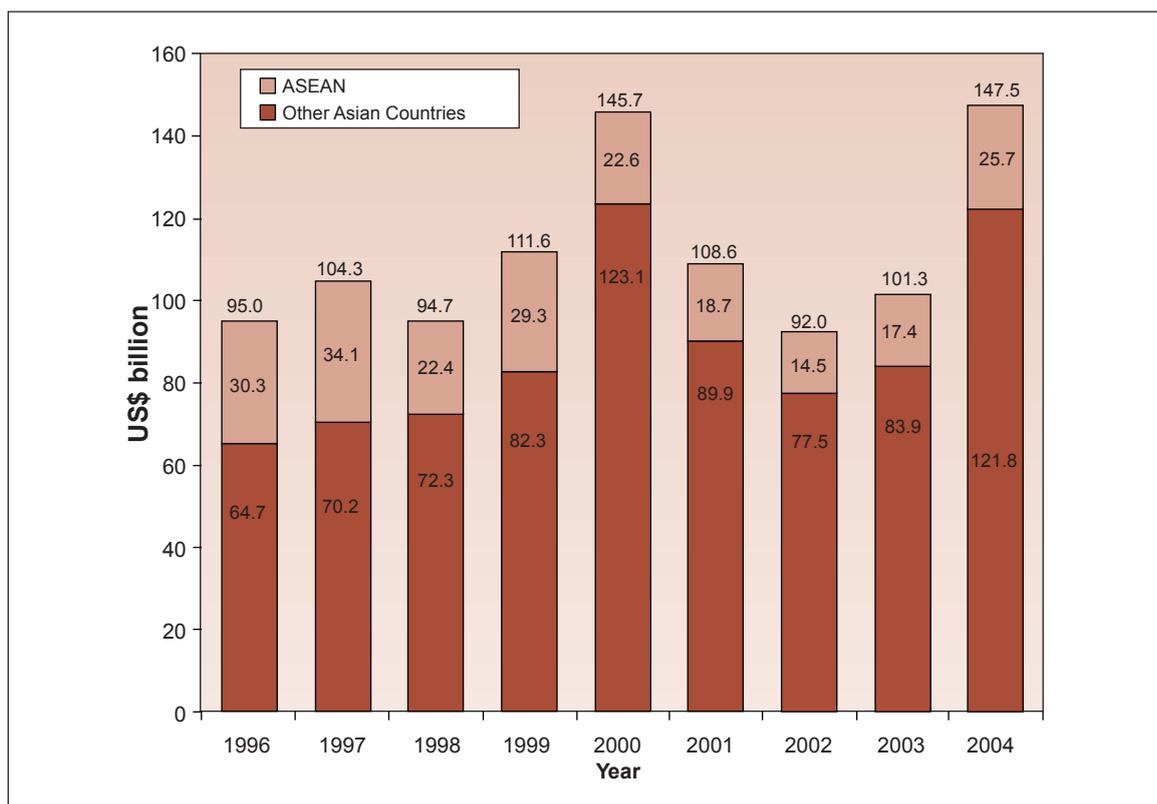
Source: World Investment Report, various issues

4.10 ASEAN accounted for 21.5 per cent of FDI inflows to Asia. FDI inflows to ASEAN increased from US\$30.3 billion in 1996 to US\$34.1 billion in 1997. Following the financial crisis and the global economic slowdown, inflows to the region declined to their lowest level of US\$14.5 billion in 2002. Inflows recovered to US\$25.7 billion in 2004, which were, however, still below the pre-crisis levels (Chart 4.2). Major trends of FDI inflows to ASEAN included:

- inflows remaining uneven;
- sources of FDIs remaining consistent, despite the financial crisis and the global economic slowdown;
- intra-regional investments remaining an important source of FDIs, with potential for further growth;
- FDIs being mainly in greenfield activities;
- reinvested earnings becoming a growing source of FDIs;
- repayments of intra-company loans being unusually high;
- increasing FDIs in services; and
- increasing regional production networks, encouraged by regional integration.

CHART 4.2

## FOREIGN DIRECT INVESTMENT INFLOWS TO ASIA, INCLUDING ASEAN



Source: World Investment Report, various issues

4.11 During the period 1996-2004, Malaysia was the second largest recipient of FDIs in ASEAN, with US\$34.9 billion, after Singapore (US\$109 billion). Thailand was the third largest recipient, with US\$31 billion (Table 4.4). The five largest investors in ASEAN during the period were the USA, with investments totalling US\$38 billion, Japan (US\$26.4 billion), the UK (US\$24.6 billion), the Netherlands (US\$23.5 billion) and Singapore (US\$16 billion). FDI inflows to Malaysia declined from US\$7.3 billion in 1996 to US\$4.6 billion in 2004. Malaysia accounted for 24.1 per cent of FDI flows to ASEAN in 1996, but the share declined to 18 per cent in 2004. The share of FDI inflows into the manufacturing sector in Malaysia increased from 50 per cent in 1999 to 75.9 per cent in 2004 (Table 4.5). Reinvested earnings constituted a significant portion of FDI inflows to Malaysia.

**(d) Sources of Global Foreign Direct Investments and Role of Multinational Corporations**

4.12 During the period 1996-2004, the USA and larger economies of the European Union (EU) were the principal sources of FDI outflows. Asia was also a major contributor to FDI outflows. Asia's global FDI outflows increased from US\$77.1 billion in 1996 to

TABLE 4.4

## FOREIGN DIRECT INVESTMENT INFLOWS TO ASEAN COUNTRIES

Year	1996	2000	2004	1996-2004
Country	(US\$ million)			
<b>ASEAN</b>	<b>30,301</b>	<b>22,646</b>	<b>25,658</b>	<b>215,008</b>
Singapore	9,493	16,485	16,060	108,993
<b>Malaysia</b>	<b>7,297</b>	<b>3,788</b>	<b>4,624</b>	<b>34,871</b>
Thailand	2,338	3,350	1,064	31,002
Viet Nam	1,803	1,289	1,610	14,424
Philippines	1,520	1,345	469	11,098
Brunei	654	549	103	6,899
Myanmar	581	208	556	3,886
Indonesia	6,194	-4,550	1,023	1,809
Cambodia	294	149	131	1,595
Lao PDR	128	34	17	431

Source: World Investment Report, various issues

TABLE 4.5

## FOREIGN DIRECT INVESTMENT INFLOWS INTO MALAYSIA BY SECTOR

Year	1999	2002	2004	1999-2004
Sector	(US\$ million)			
<b>Total</b>	<b>3,895.1</b>	<b>3,203.4</b>	<b>4,624.2</b>	<b>18,537.5</b>
Manufacturing	1,946.3	897.0	3,508.0	9,592.9
Services	115.0	n.a.	1,678.5	2,752.0
Trade and commerce	n.a. <sup>1</sup>	n.a.	450.4	605.4
Financial intermediation and services	n.a.	n.a.	1,118.7	1,880.7
Real estate	115.0	n.a.	23.0	159.5
Other services	n.a.	n.a.	86.4	106.4
Agriculture, fishery and forestry	n.a.	n.a.	13.8	-53.5
Construction	n.a.	n.a.	-23.0	-29.0
Mining and quarrying	722.4	1,089.0	-596.6	3,056.3
Others	1,111.4	1,217.4	43.4	3,218.8

Note: <sup>1</sup> Not available

Source: ASEAN Secretariat – ASEAN FDI Database, 2005

US\$100.4 billion in 2004. Japan, Hong Kong, Singapore, Taiwan, Republic of Korea, the People's Republic of China and Malaysia were major sources of FDIs from Asian countries.

- 4.13 MNCs and their affiliates assumed a significant role in the global economy, as reflected in their sales, assets, value-added, employment and exports. MNCs also registered a high percentage of expenditures on research and development (R&D) in relation to sales, employed a large number of scientific and technical workers and had a high value of intangible assets. Sales, total assets, exports and employment of foreign affiliates of MNCs increased annually, except in 2001 (Table 4.6). Foreign affiliates contributed 6.5 per cent to the world GDP in 1990 and by 2004 their contribution had increased to 9.6 per cent. One-third of world exports were contributed by foreign affiliates in 2004. Total assets of foreign affiliates rose substantially from US\$5.9 trillion in 1990 to US\$36 trillion in 2004.

TABLE 4.6

**SELECTED INDICATORS ON THE CONTRIBUTION OF AFFILIATES OF MULTINATIONAL CORPORATIONS**

Item	2004	1996-2000	2001	2004
	Value at current prices (US\$ trillion)	Annual Growth (%)		
Sales	18.7	8.7	-3.0	10.1
Gross output	3.9	7.7	-7.1	9.5
Total assets	36.0	19.4	-5.7	11.9
Exports	3.7	4.8	-3.3	20.1
Employment (million persons)	57.4	9.4	-3.1	7.9

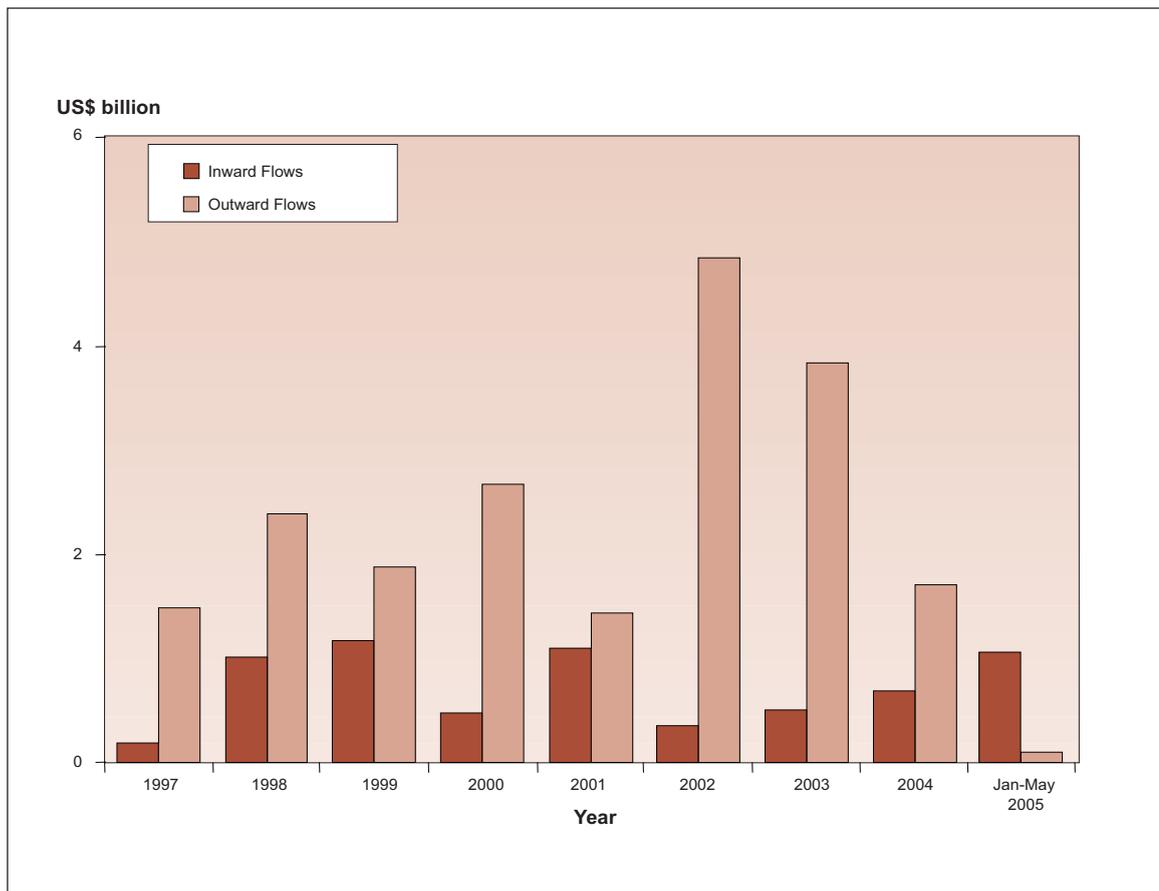
Source: World Investment Report, various issues

**(e) Mergers and Acquisitions**

- 4.14 During the period 1996-2004, cross border M&As were an important feature of global FDI flows. Most M&As were undertaken in developed countries (87.1 per cent), followed by developing countries (11.9 per cent). Global M&As peaked in 2000, at US\$1.1 trillion, before declining to US\$380.6 billion in 2004. Among developing countries, Latin America recorded the most M&As. Brazil, Argentina, Mexico and Chile registered significant levels of M&As. M&As were not a significant feature of FDI flows in ASEAN, with a level of US\$58.5 billion during the period.

4.15 The value of inward M&As, involving Malaysian firms, increased from US\$368 million in 2002 to US\$1.1 billion for the first five months of 2005, partly due to the sustained economic growth and continued strengthening of the country's fundamentals. The value of outward M&As declined from a peak of US\$4.9 billion in 2002 to US\$108 million for the first five months of 2005. The net value of cross border M&As involving Malaysian firms has risen steadily since 2002, amid a continued decline in outward flows (Chart 4.3).

CHART 4.3  
MALAYSIAN CROSS BORDER MERGERS AND ACQUISITIONS



**Notes:** Inward flows are defined as the value of M&As completed in each year, where the targeted firms are Malaysian and the acquiring firms are domiciled in another country  
 Outward flows are defined as the value of M&As completed in each year, where the acquiring firms are Malaysian and the targeted firms are domiciled in another country  
 Includes both privately held and public listed firms

**Sources:** Bloomberg and Securities Commission

- 4.16 The UK, Canada and Japan were among the leading sources of inward M&A flows into Malaysia in the late 1990's, while inflows from Scandinavian countries, notably Norway and Denmark, registered a rise in the early 2000's. Since 2002, there has been a surge in inward investments from Belgium, Australia, Thailand and Singapore. Interest has focused primarily on telecommunications, agriculture and banking, as these sectors have been opened to foreign participation. Other sectors include beverages, oil and gas, and property.

### SECTION III IMPACT OF FREE TRADE AGREEMENTS ON INVESTMENT FLOWS

#### (a) Trends in Trade Agreements Related to Investments

- 4.17 Regional and bilateral trade agreements which have been concluded or being negotiated contain specific and substantial investment-related provisions. In addition, more bilateral investment treaties and double taxation agreements have been signed. The World Trade Organisation (WTO) does not have a dedicated agreement on investments. Nevertheless, agreements which deal with trade, services and intellectual property rights (IPRs) have implications on investments. Such WTO agreements are Trade-Related Investment Measures (TRIMs), General Agreement on Trade in Services (GATS) and Trade-Related Aspects of Intellectual Property Rights (TRIPs). According to statistics by the WTO and United Nations Conference on Trade and Development (UNCTAD), as at the end of 2004, there were more than 180 FTAs with investment provisions. More than 50 per cent of these agreements were concluded in the 1990's. Many countries and regions are entering into bilateral and regional arrangements or agreements, including customs unions and preferential trading arrangements, to further develop and integrate their economies. A number of Asian countries are also negotiating or have concluded trade agreements, including FTAs, with investment provisions (Table 4.7).
- 4.18 ASEAN is committed to liberalising the services and investment sectors under the Framework Agreement on Services and the ASEAN Investment Area (AIA). Under the Framework Agreement on Services, member countries of ASEAN will liberalise the services sector by 2015, with flexibility. Under the AIA:
- Brunei, Indonesia, the Philippines, Malaysia, Singapore and Thailand (ASEAN 6) have granted national treatment in the manufacturing sector to ASEAN investors beginning 2003;
  - for other sectors, covering direct investments in agriculture, fishery, forestry and mining, and services incidental to those sectors, ASEAN 6 have agreed to open up to both ASEAN and non-ASEAN investors by 2010; and
  - Malaysia has phased out some restricted sectors, namely, steel service centres, printing, metal fabrication and metal stamping, in line with the equity liberalisation in 2003.

TABLE 4.7

**FREE TRADE AGREEMENTS OR ECONOMIC AGREEMENTS OF SELECTED ASIAN COUNTRIES (AS AT DECEMBER 2005)**

Country	Partner	
	Concluded	On-going
Malaysia	USA (TIFA) Japan Pakistan (Early Harvest Package)	India Australia New Zealand Pakistan
Thailand	Australia Bahrain India (Early Harvest Package) Peru (Framework) New Zealand	Chile Japan USA BIMSTEC EFTA
Singapore	New Zealand Japan Australia USA Jordan EFTA Republic of Korea Pacific 4 (with New Zealand, Chile and Brunei)	Bahrain Canada Egypt India Mexico Panama Peru Sri Lanka Kuwait Qatar United Arab Emirates
Japan	Singapore Mexico Malaysia	Brunei Indonesia Thailand Philippines ASEAN
India	Thailand (Early Harvest Package) Singapore	ASEAN Malaysia SAFTA
People's Rep. of China	Hong Kong Macao ASEAN (Goods)	Australia Pakistan ASEAN (services and investment)
Rep. of Korea	Singapore Chile ASEAN (Goods)	Japan EFTA ASEAN

Notes: TIFA - Trade and Investment Framework Agreement  
 BIMSTEC - Bangladesh-Bhutan-India-Myanmar-Nepal-Sri Lanka-Thailand - Economic Co-operation  
 EFTA - European Free Trade Area  
 SAFTA - Singapore-Australia Free Trade Agreement

Source: Various sources

- 4.19 ASEAN is moving towards realising the vision of an ASEAN Economic Community (AEC) by 2020. The main objective is to form a single market and a competitive investment environment. The AEC envisages the free flows of goods, services and investments, and freer flows of capital, and professionals, talents and skilled labour by 2020. As an initial step towards realising the AEC, 11 priority sectors have been selected for earlier integration, covering wood-based products, automotive products, rubber-based products, textiles and apparel, agro-based products, fisheries, electronics, e-ASEAN, healthcare, air travel and tourism.
- 4.20 ASEAN is involved in FTA negotiations with the People's Republic of China, Japan, Republic of Korea, India, Australia and New Zealand. It is also exploring the feasibility of FTAs with the EU and Pakistan. In addition, a study is being undertaken on the possibility of establishing a Free Trade Area between ASEAN and the three East Asian Countries (People's Republic of China, Japan and Republic of Korea).
- 4.21 In addition to its involvement in FTAs with ASEAN at the regional level, Malaysia is presently negotiating with four bilateral partners - India, Pakistan, New Zealand and Australia. These negotiations are expected to be concluded within the next two years. Malaysia has concluded an Economic Partnership Agreement with Japan. In addition, Malaysia has concluded a Trade and Investment Framework Agreement (TIFA) with the USA, which provides for negotiations on FTA.

**(b) Impact on Investments**

**(i) Bilateral Agreements**

- 4.22 The FTAs will create opportunities, as well as new challenges and increased competition, for Malaysian investors and manufacturers. The FTAs will create a more liberal investment climate to attract more FDIs into Malaysia and provide an enabling framework for Malaysian investors to invest in the partner countries. The likely impact of the FTAs on Malaysian investments in the partner countries will depend on whether Malaysian companies have the ability and competitive advantage to undertake those investments. To enable companies to take advantage of the FTAs, there is a need to improve the dissemination of information, access to finance and overall assistance.

**(ii) ASEAN Free Trade Area**

- 4.23 ASEAN Free Trade Area (AFTA) has facilitated market, resource and efficiency-seeking investments. The ASEAN Industrial Cooperation Scheme (AICO) has enhanced regional production networks of MNCs, particularly in the automotive and electrical and electronics (E&E) industries. The AIA has further improved the overall investment environment in the region, through the opening up of industries for investments.

4.24 During the period 2001-2004, intra-ASEAN investments accounted for 14.3 per cent of the total FDI flows, compared with 10.7 per cent during the period 1996-2000. Singapore and Malaysia were the largest regional investors. Intra-ASEAN investments are expected to grow with regional integration. The new member countries of ASEAN and Indonesia are likely to benefit more from the growth of intra-ASEAN investments, as firms in the higher cost countries relocate to the lower cost member countries. The realisation of the AEC will also accelerate the development of regional production networks and encourage market and efficiency-seeking FDIs into the region.

**(iii) ASEAN's Free Trade Agreements with Dialogue Partners**

4.25 The implementation of ASEAN-China FTA in goods, beginning 1 July 2005, as well as ASEAN-China investment agreement being negotiated presently, is expected to influence the prospects and future growth of investment flows between the People's Republic of China and ASEAN, which have been fluctuating. Resource-seeking FDIs, including in commodities, are expected to increase rapidly. Market-seeking and efficiency-seeking MNCs operating in ASEAN and the People's Republic of China are likely to consolidate their operations in these two markets. Production networks linking the two markets are expected to grow, as will intra-firm trade. Labour-intensive processes are likely to be located in the People's Republic of China and lower cost countries in the region. In the medium term, knowledge-intensive and higher technology component products are likely to be located in the more developed countries of ASEAN. In the longer term, with the full realisation of the ASEAN-China FTA, the competitiveness of the People's Republic of China in these industries is expected to pose a considerable challenge to ASEAN, including Malaysia.

4.26 FTAs involving ASEAN with Republic of Korea, India and Japan are expected to be realised by 2010, 2011 and 2012, respectively. The Framework Agreement with the Republic of Korea has been concluded and its implementation is scheduled towards the end of 2006. The Republic of Korea, India and Japan are important trading and investment partners to ASEAN. The impact of the FTAs on FDI flows will be significant, but will differ between them. For instance, the ASEAN-Japan and ASEAN-Korea FTAs are likely to lead to an increase in the FDI flows from these countries into ASEAN, leading to the strengthening of industrial linkages with these two countries. In comparison, the FTA with India is expected to generate two-way FDI flows between ASEAN and India.

**(iv) Overall Impact of Trade Agreements on Investments**

4.27 FTAs have the potential to lead to an overall improved business and investment environment by enhancing certainty and transparency, generating new investment opportunities and providing benefits of synergies. FTAs provide the framework which can facilitate trade and investment flows. In reality, countries with a more conducive business and production environment, supported by efficient infrastructure and availability of skilled labour, will be able to attract more FDIs.

## SECTION IV FOREIGN DIRECT INVESTMENTS IN MALAYSIA

### (a) Trends of Foreign Direct Investments

4.28 During the period 1996-2005, total net FDI inflows in current prices increased by 66 per cent to RM121.8 billion from RM73.4 billion recorded during the period 1986-1995. Average annual FDI flows rose to RM12.2 billion from RM7.3 billion (Table 4.8).

TABLE 4.8

#### INVESTMENT TRENDS (IN CURRENT PRICES)

	Total (RM billion)		Annual Average (RM billion)		Change (%)
	1986- 1995	1996- 2005	1986- 1995	1996- 2005	
<b>Total investments<sup>1</sup></b>	<b>476.7</b>	<b>903.8</b>	<b>47.7</b>	<b>90.4</b>	<b>89.6</b>
Private	313.6	464.5	31.4	46.4	48.1
Public	163.1	439.3	16.3	43.9	169.4
<b>FDIs<sup>2</sup></b>	<b>73.4</b>	<b>121.8</b>	<b>7.3</b>	<b>12.2</b>	<b>66.0</b>
<b>GDP</b>	<b>1,345.3</b>	<b>3,498.3</b>	<b>134.5</b>	<b>349.8</b>	<b>160.0</b>

Notes: <sup>1</sup> Investments refer to Gross Fixed Capital Formation

<sup>2</sup> FDIs are derived from tables on Balance of Payments in Economic Reports and *Bank Negara* Annual Reports

Sources: Ministry of Finance Economic Reports and *Bank Negara* Annual Reports

4.29 The share of FDIs to GDP declined from 5.5 per cent during 1986-1995 to 3.5 per cent during 1996-2005. The share of private investments to GDP declined from 23.3 per cent to 13.3 per cent. Public investments and, to some extent, FDIs, had helped to moderate the overall decline in the contribution of total investments to the GDP, from 35.4 per cent during the period 1986-1995 to 25.8 per cent during the period 1996-2005 (Table 4.9). The less pronounced fluctuations in both FDIs and public investments, compared with private investments, had a stabilising effect on the overall investments during the IMP2 period, when private domestic investments remained sluggish, following the financial crisis in 1997.

4.30 The share of FDIs in the country's total capital stock rose steadily from an estimated 10 per cent in the early 1980's to 15 per cent in the mid-1990's. The share of FDIs recorded a significant increase after the financial crisis. As at the end of 2005, the share of FDIs in the total capital stock was estimated at 20 per cent. Excluding housing, the estimated FDI share increased to 25 per cent of the total capital stock.

TABLE 4.9

**INVESTMENTS BY TYPE AND CONTRIBUTION TO GROSS DOMESTIC PRODUCT  
(IN CURRENT PRICES)**

	Share (%)		Change (percentage point)
	1986-1995	1996-2005	
<b>Share of GDP</b>			
Total investments <sup>1</sup>	35.4	25.8	-9.6
Private investments	23.3	13.3	-10.0
Public investments	12.1	12.6	0.5
<b>FDIs<sup>2</sup></b>	<b>5.5</b>	<b>3.5</b>	<b>-2.0</b>
<b>Share of total investments</b>			
Private	65.8	51.4	-14.4
Public	34.2	48.6	14.4
<b>FDIs<sup>2</sup></b>	<b>15.4</b>	<b>13.5</b>	<b>-1.9</b>

Notes: <sup>1</sup> Refers to Gross Fixed Capital Formation

<sup>2</sup> FDIs are derived from tables on Balance of Payments in Economic Reports and *Bank Negara* Annual Reports

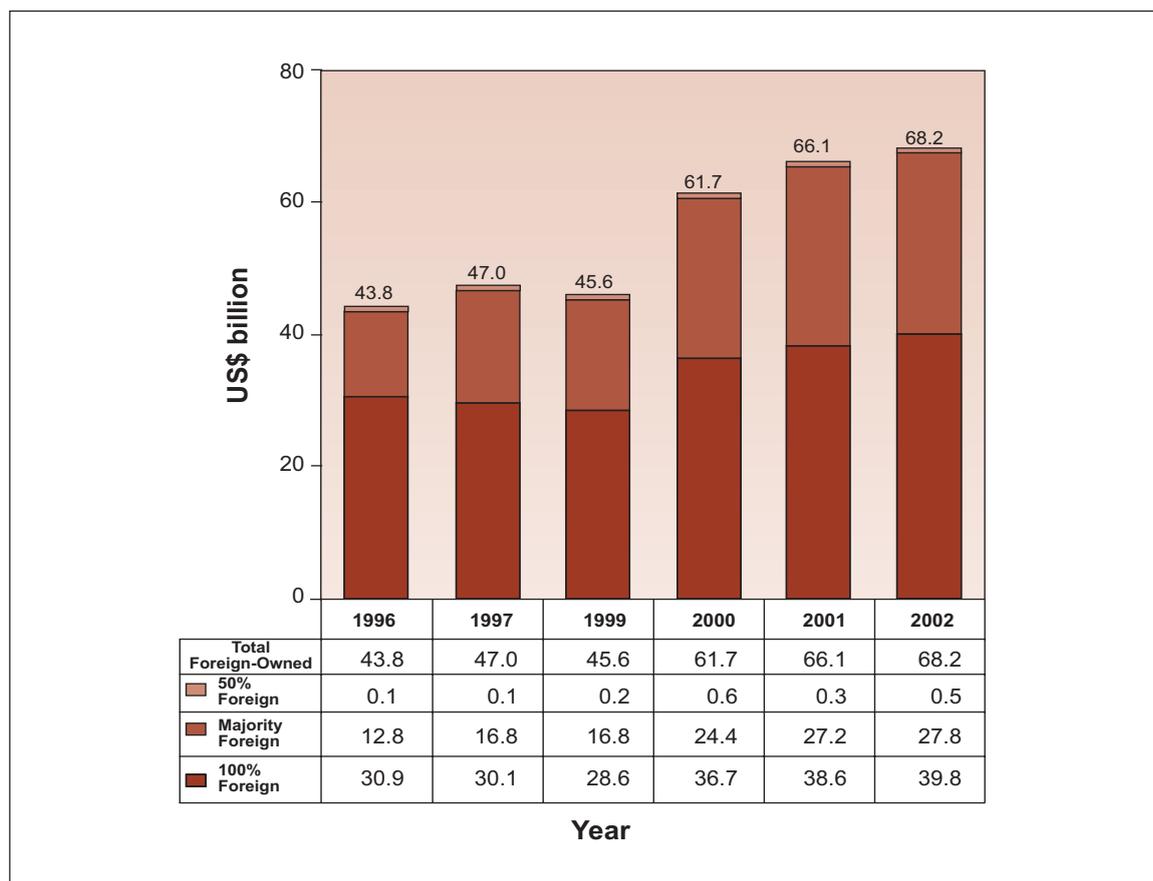
Sources: Ministry of Finance Economic Reports and *Bank Negara* Annual Reports

**(b) Foreign Direct Investments in the Manufacturing Sector**

- 4.31 The total value of fixed assets in manufacturing establishments increased from RM112.4 billion in 1996 to RM176.5 billion in 2002. The value of fixed assets of foreign-owned firms increased from RM43.8 billion to RM68.2 billion during this period (Chart 4.4). The share of foreign-owned firms in the total fixed assets of manufacturing establishments remained at 39 per cent from 1996 to 2002.
- 4.32 Investments in fixed assets of foreign-owned firms in 2002 were largely concentrated in E&E, at RM20.3 billion, chemicals and chemical products (RM12.5 billion), petroleum and petroleum products (RM6.9 billion), machinery and equipment (RM4.6 billion), plastic products (RM4.4 billion), and textiles and textile products (RM4 billion). Collectively, these six industries accounted for RM52.7 billion or 77 per cent of the total foreign-owned fixed assets in the manufacturing sector. In the professional and scientific measuring equipment sub-sector, foreign-owned firms accounted for 90.2 per cent of the total fixed assets in the sub-sector in 2002. Other sub-sectors with a high proportion of investments in fixed assets by foreign-owned companies were machinery and equipment, at 71.9 per cent, E&E (64 per cent) and textiles and textile products (61.3 per cent).
- 4.33 The pattern of ownership by foreign-owned firms indicated a change during the IMP2 period. An increasing proportion of the total fixed assets of foreign-owned firms were owned by majority (more than 50 per cent) foreign-owned companies, rather than

CHART 4.4

### INVESTMENTS IN FIXED ASSETS OF FOREIGN-OWNED FIRMS IN THE MANUFACTURING SECTOR



Note: 1998 data are not available

Source: Based on data from Department of Statistics

wholly foreign-owned firms. In 1996, majority foreign-owned firms owned 29.2 per cent of the total fixed assets of all foreign-owned firms. By 2002, their share increased to 40.8 per cent.

#### (c) Impact of Foreign Direct Investments on the Manufacturing Sector

4.34 The Ministry of International Trade and Industry (MITI) undertook a study<sup>2</sup> in 2004 to assess the impact of FDIs on the Malaysian economy, in terms of growth, trade, balance of payments (BOP), capital formation, employment, productivity, indirect and spillover effects and technology transfers.

<sup>2</sup> A study on the Impact of Foreign Direct Investments on the Malaysian Economy was commissioned by MITI and carried out by RAM Consultancy Services Sdn. Bhd.

**(i) Growth and Structural Change**

- 4.35 The study indicated that FDIs had a positive and statistically significant relationship with economic growth. Based on regression results, an increase of 1 per cent in FDIs resulted in a rise of 0.02 per cent in real GDP. Domestic investments had a greater effect, estimated at 0.28 per cent. This can be explained by their larger size and wider distribution across all sectors of the economy, whereas FDIs were largely concentrated in the manufacturing sector. In the identification of sources of growth for the entire economy, the estimated contribution of foreign capital to GDP growth indicated a significant increase, from an average annual rate of 4.8 per cent during the period 1986-1995 to 14.5 per cent during the period 1996-2005.
- 4.36 Based on data from Annual Establishment Surveys by the Department of Statistics, the total output of the manufacturing sector increased 10-folds from RM42.6 billion in 1985 to RM429.2 billion in 2002. FDIs contributed to the growth of the manufacturing output and transformation of the sector:
- the share of the output of foreign-owned companies rose from 34.4 per cent in 1985 to 50.5 per cent in 2002. The substantial increase was largely due to market expansion (mainly exports), rather than substitution of the output of locally-owned firms;
  - industries where foreign-owned companies accounted for a large share of the output were professional and scientific measuring equipment, at 94.4 per cent, machinery and equipment (89.9 per cent) and E&E (76.3 per cent); and
  - FDIs contributed to the transformation of the manufacturing sector, as reflected in the concentration of FDIs in the higher technology industries, such as E&E, petroleum products, professional and scientific measuring equipment, and machinery and equipment.

**(ii) Trade and Balance of Payments**

- 4.37 FDIs and exports were positively related during the period 1985-2002. In the short term, a rise of 1 per cent in FDIs was associated with an increase in exports of 0.04 per cent, while in the long term, it was associated with an increase in exports of 0.52 per cent. The much higher long term impact is consistent with the expansion and upgrading in production capacities, especially among well-established MNCs in Malaysia. The impact of FDIs on trade balance was negative in the short term, due to imports of capital goods. Nevertheless, in the long term, FDIs generated net trade gains, as reflected in large trade surpluses during the second half of the IMP2 period.
- 4.38 Based on data compiled from Annual Establishment Surveys by the Department of Statistics, foreign-owned firms accounted for 70 per cent of the total value of exports of manufactured products during the period 2000-2002. These firms were more export-oriented, compared with locally-owned firms, in E&E, professional and scientific equipment, machinery and equipment, beverages and tobacco, basic metals, and chemicals and chemical products. Imports by foreign-owned firms accounted for 70 per cent of the total imports of raw materials.

4.39 The main impact of FDIs on BOP was through the trade, services and capital accounts. There was a positive and statistically significant short term impact of FDIs on the overall BOP.

**(iii) Capital Formation**

4.40 A substantial portion of FDIs is channelled towards fixed capital formation, which comprises investments in plants, equipment, machinery, technology and other fixed assets. The contribution of FDIs to fixed capital formation rose, as reflected by the increase in the share of FDIs to the total private investments in fixed capital formation in the manufacturing sector from 23.4 per cent during the period 1986-1995 to 26.2 per cent during the period 1996-2005.

**(iv) Employment**

4.41 Foreign capital contributed to employment creation, as the demand for labour in the manufacturing sector increased significantly. In 1985, foreign-owned companies employed 29.3 per cent of the workforce in the sector and by 2002, the share had increased to 38.4 per cent. Foreign-owned firms accounted for 45.1 per cent of the total skilled workforce in the manufacturing sector in 1999, or an average of 179 persons per firm, compared with 25 for a locally-owned firm.

**(v) Productivity and Efficiency**

4.42 FDIs were positively related to national productivity. Consistent results were obtained in separate analyses of total factor productivity and labour productivity, used as alternative measures of productivity:

- *Labour Productivity*

In 2002, foreign-owned firms recorded higher average labour productivity, at RM385,108, than locally-owned firms (RM235,666).

- *Capital Productivity*

In 2002, capital productivity of foreign-owned firms was higher, with an average ratio of 3.2, compared with 2 for locally-owned firms.

- *Capital Intensity*

Average capital intensity of the manufacturing sector, based on fixed assets per employee, was RM44,896 in 1985, which increased substantially to RM120,579 in 2002. The capital intensity of foreign-owned firms was RM120,297 in 2002, slightly lower than the level of RM120,563 for locally-owned firms.

- *Unit Labour Cost*

Average unit labour cost (labour wage per output) decreased from a ratio of 0.08 times in 1985 to 0.06 times in 2002, reflecting an improvement in labour

cost competitiveness. In general, foreign-owned firms, with a unit labour cost of 0.05 in 2002, were more efficient than locally-owned firms (0.07) in the deployment of labour in producing output.

**(vi) Indirect and Spillover Effects**

4.43 Indirect effects of FDIs extend beyond the macro-economic variables. They include the use of utilities and other services. The spillover effects also include the transfer of technology, management practices and know-how to domestic enterprises. These are less apparent for assessment but, nevertheless, are important contributions to the economy.

4.44 Areas of major indirect and spillover effects were:

- *Research and Development*

Total expenditures on R&D by manufacturing companies in 2002 amounted to RM1.3 billion, representing 0.3 per cent of the total output. Average expenditures on R&D by foreign-owned firms amounted to RM406,000 in 2002, compared with RM63,000 by locally-owned firms.

- *Technology Transfers*

At least two stages of the technology transfer process, namely, adoption and absorption, have been attained in most firms. There was evidence of technology transfers from MNCs to supporting firms, for instance, in the E&E sub-sector in Pulau Pinang. In general, adoption was complete, but absorption was not, because R&D skills were largely not transferred. Domestic sourcing of inputs indirectly transfers technological expertise, since local supplier firms were compelled to meet the standards of their MNC clients. The MNCs often assist suppliers in meeting these standards. Technology transfers accompanying domestic sourcing were evident among the local supporting firms in the E&E sub-sector in Pulau Pinang.

- *Spending on Information Technology*

Spending by wholly foreign-owned firms on information technology (IT) constituted 63 per cent of the total IT spending by manufacturing firms in 2002.

- *Staff Training*

Average expenditures on staff training by a foreign-owned firm in 2002 amounted to RM64,000, compared with RM10,000 by a locally-owned firm.

- *Wages*

The share of wages by foreign-owned firms to total wages increased from 30.8 per cent in 1985 to 42.5 per cent in 2002. Average wages paid by foreign-owned firms in 2002 were 18.3 per cent higher than those paid by locally-owned firms.

- *Outsourcing of Services*

In 2002, the average expenditure on the outsourcing of services by foreign-owned firms was RM5.1 million, compared with RM975,000 by locally-owned firms.

- *Government Tax Revenue*

The contribution of the manufacturing sector to direct taxes increased from RM512 million in 1985 to RM3.9 billion in 2002. Direct taxes paid by foreign-owned firms in the manufacturing sector increased from RM246 million in 1985 to RM983 million in 2002. The average direct taxes paid by a foreign-owned firm amounted to RM687,000 in 2002, compared with RM238,000 by a locally-owned firm. The petroleum industry accounted for 35.4 per cent of the total direct taxes paid, followed by the chemical and E&E industries.

- *Utility Consumption*

Total utility consumption, comprising electricity, water, fuel and lubricants, in the manufacturing sector increased substantially from RM1.5 billion in 1985 to RM10.9 billion in 2002. The average utility consumption by a foreign-owned firm amounted to RM3.1 million in 2002, much higher than the average consumption of RM530,000 for a locally-owned firm.

## SECTION V TRENDS OF PRIVATE DOMESTIC INVESTMENTS

4.45 Private domestic investments<sup>3</sup> have contributed to industrial growth and development. In recent years, increasing emphasis has been placed on private domestic investments and the need to revive private domestic investments and domestic entrepreneurship. Private domestic investments are expected to assume a greater role, together with FDIs, in generating growth.

4.46 Broad trends of private domestic investments for the economy and the manufacturing sector included:

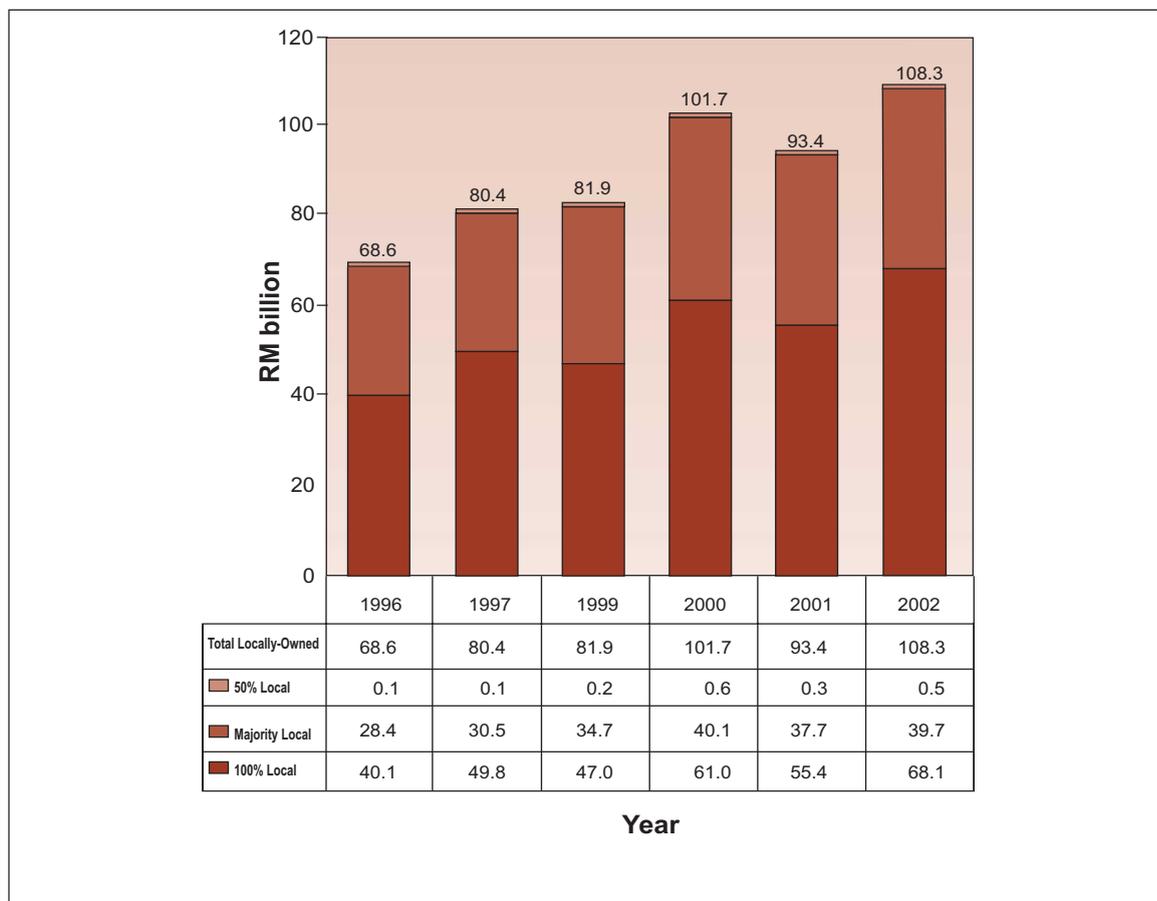
- during the period 1996-2005, private domestic investments accounted for 26.8 per cent of the GDP growth, compared with 14.5 per cent for FDIs;
- private domestic investments have a positive and statistically significant impact on GDP, with an elasticity of 0.28, larger than that of FDIs (0.02). An increase of 1 per cent in private domestic investments raises GDP by 0.28 per cent. The greater impact of private domestic investments is due to their larger size and wider distribution across sectors of the economy;

<sup>3</sup> Statistics on private domestic investments are based on various establishment surveys on industries in the manufacturing sector undertaken by the Department of Statistics.

- during the IMP2 period, the value of fixed assets of locally-owned firms increased from RM68.6 billion in 1996 to RM108.3 billion in 2002 (Chart 4.5). The share of locally-owned firms in the fixed assets in the manufacturing sector was maintained at 61 per cent in 1996 and 2002;
- in 2002, there were more firms which were wholly owned by Malaysians (11,293) than majority owned by Malaysians (701). Wholly locally-owned firms accounted for a larger share (38.6 per cent) of the total fixed assets than majority locally-owned firms (22.5 per cent);
- investments in fixed assets by locally-owned firms were mainly in chemicals and chemical products, at RM18.9 billion; E&E (RM11.4 billion); paper, printing and publishing (RM10.3 billion); non-metallic mineral products (RM9.6 billion); food products (RM9.4 billion); basic metal products (RM9 billion) and transport equipment (RM8 billion) industries;
- industries which recorded increases in the share of locally-owned firms in the total fixed assets of the industries included paper, printing and publishing (from 90.5 per cent in 1996 to 93.1 per cent in 2002); wood and wood products (from 80.5 per cent to 81.4 per cent); and E&E (from 23.5 per cent to 36.1 per cent). Industries which recorded declines included food products (from 81.6 per cent in 1996 to 78.8 per cent in 2002), and chemicals and chemical products (from 69.5 per cent to 59.7 per cent);
- in 2002, employment in locally-owned firms accounted for 61.1 per cent of the total employment in the manufacturing sector, while wages paid by locally-owned firms constituted 57 per cent of the total wages paid in the sector;
- in 2002, exports of locally-owned firms accounted for 30 per cent of the total manufactured exports, including 23.5 per cent by wholly locally-owned firms;
- industries where locally-owned firms accounted for a large portion of the total exports of the industries concerned were petroleum and petroleum products, at 82.1 per cent, wood and wood products (80.1 per cent), food products (66.3 per cent), furniture and fixtures (64.4 per cent), and rubber and rubber products (60.2 per cent); and
- in respect of equity ownership, the total Malaysian share of the equity capital or paid-up capital of companies in the economy has increased since 1980. The share capital held by Malaysian residents increased from 57.1 per cent in 1980 to 74.5 per cent in 1985, due to the accelerated restructuring of ownership of the corporate sector. However, the ownership of the share capital by Malaysian residents declined to 64 per cent in 1995. The level of ownership recovered to 67.5 per cent of the total share capital in 2004.

CHART 4.5

### INVESTMENTS IN FIXED ASSETS OF LOCALLY-OWNED FIRMS IN THE MANUFACTURING SECTOR



Note: 1998 data are not available

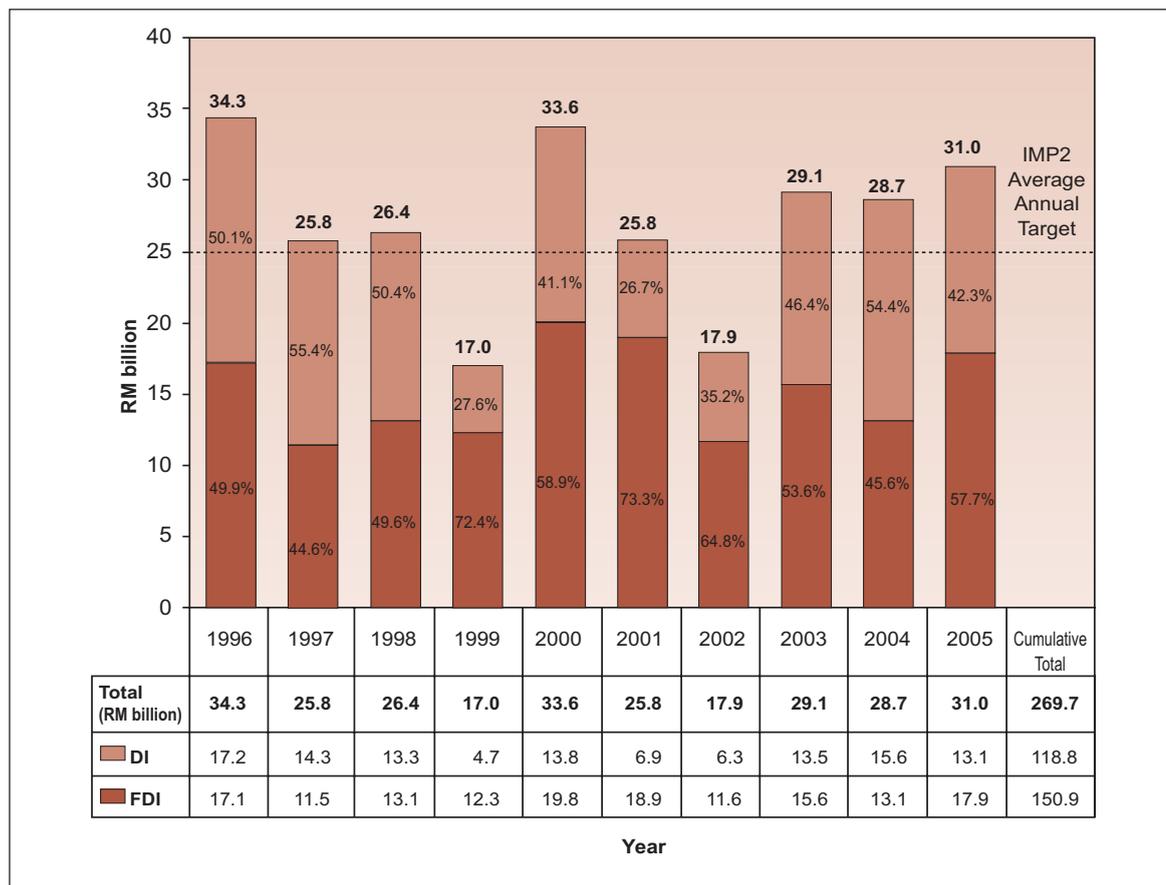
Source: Based on data from Department of Statistics

## SECTION VI INVESTMENT PERFORMANCE IN THE MANUFACTURING SECTOR

- 4.47 The IMP2 targeted total investments of RM250 billion in the manufacturing sector, with RM110 billion for the first half of the IMP2 period (1996-2000) and RM140 billion for the second half (2001-2005). These targets were translated into annual investments of RM25 billion. For the period 1996-2005, approved investments in the sector totalled RM269.7 billion or RM27 billion per year, exceeding the IMP2 targets (Chart 4.6).
- 4.48 The ratio of domestic investments to FDIs was set at 60:40. During the IMP2 period, the ratio achieved was 44:56, with domestic investments totalling RM118.8 billion or average investments of RM11.9 billion annually, and FDIs, RM150.9 billion (RM15.1 billion annually). Although the level of domestic investments was below the IMP2 target of RM150 billion, domestic investments have registered a growing trend in recent years, increasing from RM6.3 billion in 2002 to RM13.1 billion in 2005. This

CHART 4.6

**APPROVED INVESTMENTS IN THE MANUFACTURING SECTOR**



Notes: DI – Domestic investments  
 FDI – Foreign direct investments

Source: Malaysian Industrial Development Authority

trend is in tandem with initiatives undertaken by the Government to further increase domestic investments in the manufacturing sector. While the level of domestic investments was below the target, the sustained and substantial inflows of FDIs contributed significantly towards the achievement of the overall IMP2 investment target.

4.49 The manufacturing sector continued to shift towards more capital intensive, higher value-added, higher technology and knowledge intensive activities. This was reflected in the upward trend of capital intensity, measured by the capital investment per employee (CIPE) ratio of projects approved since 1990. The CIPE ratio of new manufacturing projects approved increased from RM167,638 in 1990 to RM278,126 in 2005. Approved investments in the manufacturing sector were mainly in E&E, at RM84.3 billion; petroleum products, including petrochemicals (RM31.2 billion); basic metal products (RM24.7 billion); paper, printing and publishing (RM19.5 billion);

chemicals and chemical products (RM17.6 billion); transport equipment (RM16.7 billion); and non-metallic mineral products (RM12.9 billion). These industries, with combined investments of RM206.9 billion, accounted for 76.7 per cent of the total approved investments in the sector.

- 4.50 A large proportion of the 8,727 projects approved during the period were for locations in Selangor (2,570 projects), Johor (1,949) and Pulau Pinang (1,181). Selangor registered the highest approved investments, at RM52.7 billion, followed by Johor (RM38.8 billion), Sarawak (RM31.8 billion) and Pulau Pinang (RM31.6 billion). Collectively, these four states accounted for RM154.9 billion or 57.4 per cent of the total approved investments during the period.
- 4.51 As at 31 December 2005, of the 8,727 projects approved, 6,419 (73.5 per cent) were implemented, comprising 6,224 (71.3 per cent) in operation and 195 (2.2 per cent) at the stage of machinery installation and factory construction. The total investments in the 6,419 projects implemented amounted to RM160.2 billion. The remaining 2,308 projects were in various stages of implementation.

## SECTION VII MALAYSIAN INVESTMENTS OVERSEAS

### (a) Trends in Foreign Direct Investments from Developing Countries

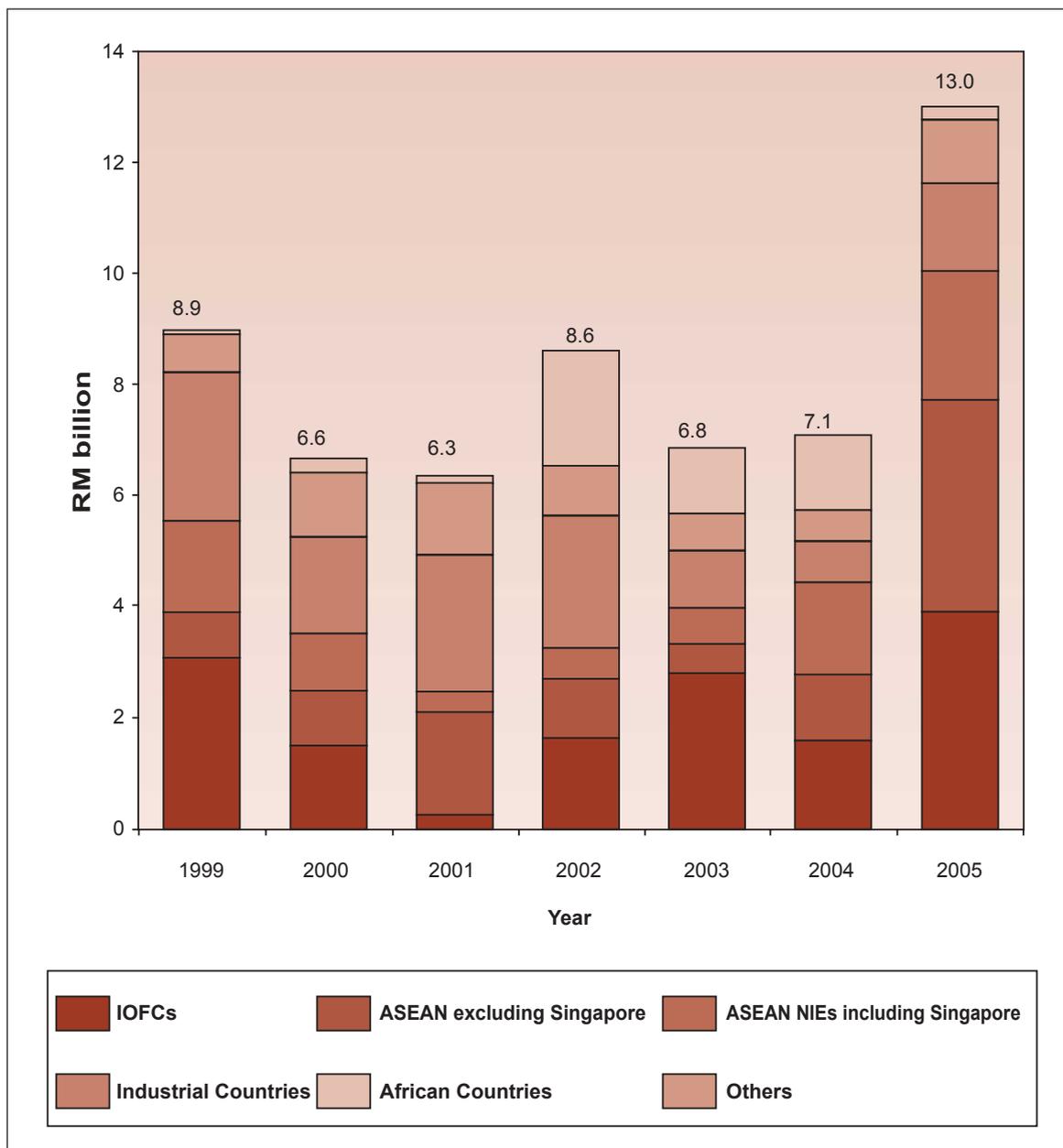
- 4.52 Overseas investments by developing countries have become an important feature of global capital flows. FDI outflows from the developing countries were negligible until the beginning of the 1990's. However, by 2004, they accounted for 11.4 per cent of the world total FDI outflows and more than one-tenth of the world total FDI stock. During the last 15 years, annual FDI outflows from developing countries grew faster than those from the developed countries. Asia recorded the largest FDI outflows and outward stock for developing countries, accounting for 65 per cent of the total outflows and 69.3 per cent of the total outward stock of developing countries, followed by Latin America.

### (b) Trends in Malaysian Investments Overseas

- 4.53 Investments overseas by Malaysian companies have been increasing. Based on World Investment Report 2005, Malaysia's outward stock of investments increased from US\$2.7 billion in 1990 to US\$13.8 billion in 2004. The outward stock, as a percentage of GDP, also increased from 6.1 per cent in 1990 to 11.7 per cent in 2004. In 2005, gross outflows of investments from Malaysia totalled RM13 billion. These outflows were mainly to international offshore financial centres (including Labuan), ASEAN (excluding Singapore), newly industrialised economies in Asia (including Singapore) and industrial countries (Chart 4.7). These investments were undertaken by non-financial public enterprises and resident controlled companies. During the period 1999-2005, resident controlled companies accounted for 52 per cent of Malaysia's total outward investments, while the balance were undertaken by the non-financial public enterprises.

CHART 4.7

GROSS OUTFLOWS OF INVESTMENTS<sup>1</sup> FROM MALAYSIA BY DESTINATION



Notes: <sup>1</sup> Include gross outflows of equity, short- and long-term inter-company borrowings and outflows for real estate. Exclude retained earnings

NIEs - Newly industrialised economies

IOFCs - International offshore financial centres

Source: Cash Balance of Payments Reporting System, Bank Negara Malaysia

4.54 Malaysian companies operating overseas were involved in the petroleum industry, logging, construction, hotels, manufacturing, telecommunications, property and real estate, banking and finance, and other types of services. Investments in oil and gas, and services accounted for 77 per cent of the total Malaysian outward investments during the period 1999-2005 (Chart 4.8). In general, the inflows of income from outward investments were not able to offset the repatriation of investment income from foreign-owned firms in the country. The deficit in the investment income increased from RM20.3 billion in 1999 to RM21 billion in 2005.

## SECTION VIII PRIVATE INVESTMENTS IN THE SERVICES SECTOR

### (a) Trends in Foreign Direct Investments in Services

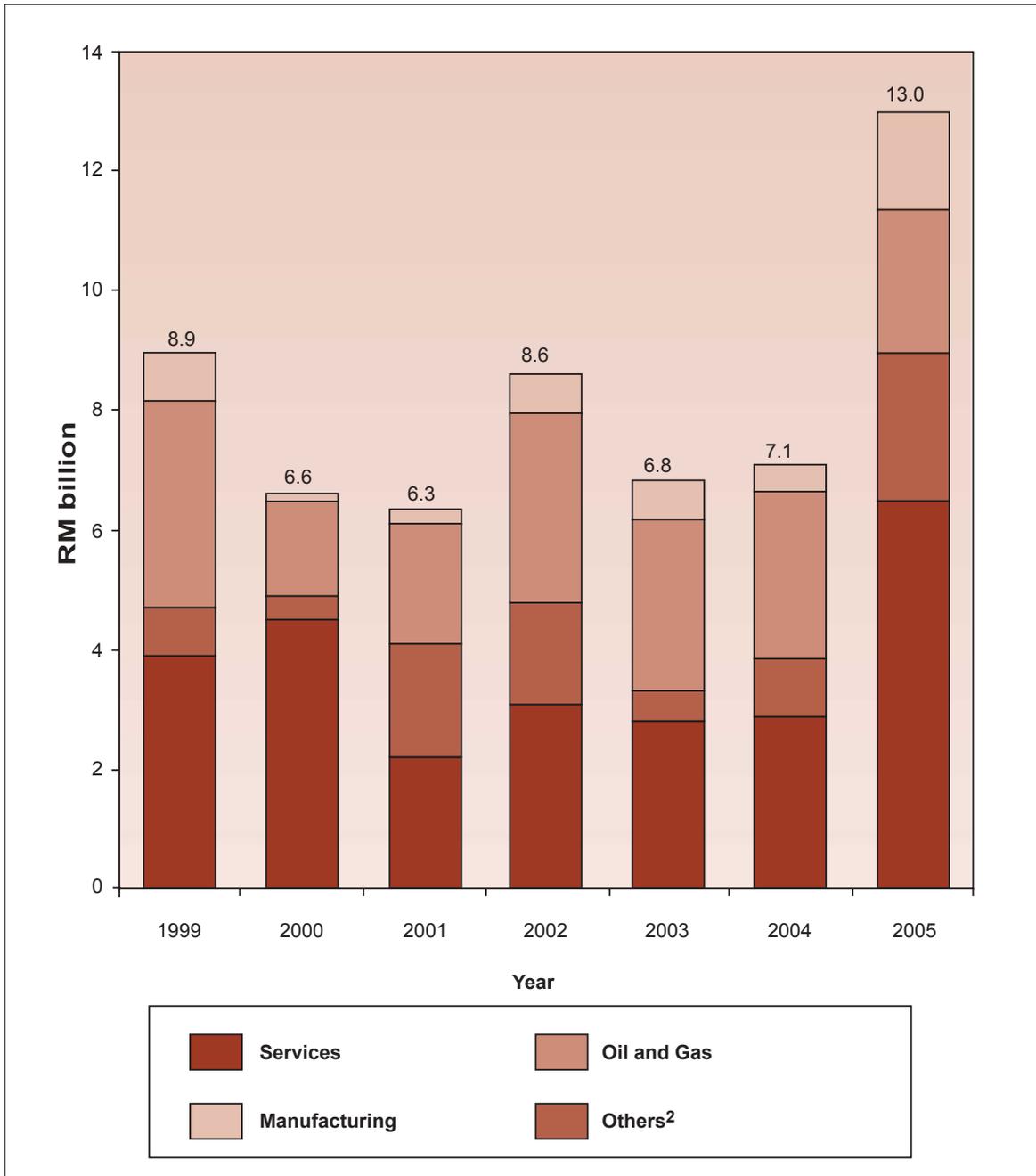
4.55 Global FDIs in the services sector are growing rapidly. According to UNCTAD, it is estimated that the services sector accounted for 25 per cent of the world FDI stock in 1970, which increased to 50 per cent, valued at US\$950 billion, in 1990 and 60 per cent (US\$4 trillion) in 2002. On average, services accounted for US\$500 billion or two-thirds of the total FDI inflows during the period 2001-2002. The share of services to GDP in most countries has risen steadily during the last four decades to reach 72 per cent in developed countries and 52 per cent in developing countries in 2001. In 2002, services accounted for 20 per cent of world exports.

4.56 Global trends of FDIs in services included:

- increase in FDIs in the sector, due to various factors, including:
  - liberalisation of the investment regimes relating to FDIs by many countries, undertaken unilaterally or resulting from bilateral and regional commitments; and
  - overall growing needs for services in many countries;
- dominance of developed countries in outward FDIs in services, including the USA, Japan and the EU. Nevertheless, outward FDIs in services by developing countries began to grow visibly from the 1990's;
- changing composition of FDIs in services. Until recently, the concentration was in trade and finance. However, FDIs in electricity, water, telecommunications and business services (including ICT-enabled corporate services) are becoming more prominent;
- advances in ICT have also made it possible for the outsourcing or offshoring of services. Through offshoring, FDIs will grow in importance in the future. Presently, the offshoring of services include export-oriented services, such as call centres, business processes, drawing, testing and R&D. The increased tradability of services has been the prime mover of offshoring;

CHART 4.8

GROSS OUTFLOWS OF INVESTMENTS<sup>1</sup> FROM MALAYSIA BY MAJOR SECTOR



Notes: <sup>1</sup> Include gross outflows of equity, short- and long-term inter-company borrowings and outflows for real estate. Exclude retained earnings

<sup>2</sup> Include agriculture, construction and other unclassified sectors

Source: Cash Balance of Payments Reporting System, *Bank Negara Malaysia*

- cross border M&As in the 1990's were undertaken mainly in the services sector, namely, banking, telecommunications and water supply;
- supply of services can be through non-equity arrangements (which are not captured by data on FDIs). These include franchising, management contracts and other forms of collaboration. The arrangements cover areas such as hotels, restaurants, car rental, retailing, and accounting, legal and other professional services;
- changing pattern of global FDI flows, where service providers are investing abroad to seek new investment opportunities, compared with the earlier pattern, where outward FDIs in services were undertaken by companies to support or complement trade or overseas manufacturing by their clients; and
- increasingly, services which were largely national in character, have become multinational, with the growth of MNCs in services.

4.57 In ASEAN, the services sector is also a major recipient of FDIs. While the manufacturing sector remained an important recipient of FDIs, it is estimated that FDIs in services, as a whole, accounted for an average share of 56 per cent of the total investments in ASEAN during the period 1995-2003. This was attributed to the liberalisation of the services sub-sectors by ASEAN countries to foreign investments, including finance, telecommunications, transport and logistics, and retail and business services.

#### **(b) The Services Sector in Malaysia**

4.58 In 2005, the non-Government services sector grew by 6.2 per cent and constituted the largest component of GDP, at 50.5 per cent, valued at RM132.4 billion (in constant 1987 prices). Including Government services, the sector accounted for 58.1 per cent of GDP, valued at RM152.2 billion. After the manufacturing sector, the services sector is becoming important, in terms of its contribution to total FDI inflows. In 2004, the sector was the second largest contributor to FDI inflows, at RM6.4 billion or 36.3 per cent of the total inflows, of which financial intermediation and services accounted for RM4.3 billion or 24.2 per cent. FDI inflows into the manufacturing sector amounted to RM13.3 billion in 2004, or 75.9 per cent of the total inflows (Table 4.10).

4.59 The development of services activities related to the manufacturing sector was given focus in the IMP2. This involved, among others, the promotion of activities along the value-chain, such as:

- R&D;
- product design;
- integrated market support;
- integrated logistics; and
- ICT services.

TABLE 4.10

**FOREIGN DIRECT INVESTMENT INFLOWS INTO MALAYSIA BY SECTOR, 2004**

<i>Sector</i>	<i>(RM million)</i>	<i>Share (%)</i>
<b>Total</b>	<b>17,572</b>	<b>100.0</b>
Manufacturing	13,330	75.9
Services	6,378	36.3
Financial intermediation and services	4,251	24.2
Trade and commerce	1,712	9.7
Other services	328	1.9
Real estate	87	0.5
Agriculture, fishery and forestry	53	0.3
Construction	-87	-0.5
Mining and quarrying	-2,267	-12.9
Others	165	0.9

Source: Department of Statistics

4.60 In addition, regional establishments were promoted. These included:

- operational headquarters (OHQs);
- international procurement centres (IPCs);
- regional distribution centres (RDCs);
- regional offices; and
- representative offices.

A total of 2,097 regional establishments had been approved, as at December 2005. These included 106 OHQs, 177 IPCs, 10 RDCs, 552 regional offices and 1,252 representative offices (Table 4.11). Other services which were promoted included education and training, tourism, health, distributive trade, construction and selected business and professional services.

**(c) Approved Investments in the Services Sector**

4.61 The services sector accounted for the largest share of the total approved investments of RM97.2 billion in 2005. Its share was estimated at RM56.2 billion or 57.8 per cent of the total approved investments, followed by the manufacturing sector (RM31 billion) and the primary sector (RM9.9 billion). Sub-sectors in services which recorded substantial investments included real estate (housing), transport, utilities, telecommunications and IT (Table 4.12). In 2005, a total of 2,453 projects were approved, with total investments amounting to RM56.2 billion. The majority of the investments were from domestic sources, accounting for RM52.5 billion or 93.4 per cent of the total investments in the sector.

TABLE 4.11

**APPROVED REGIONAL ESTABLISHMENTS, AS AT 31 DECEMBER 2005**

<i>Regional Establishments</i>	<i>Number</i>	<i>Estimated Business Spending (RM million)</i>
<b>Total</b>	<b>2,097</b>	<b>6,103</b>
Operational headquarters	106	1,163
International procurement centres	177	4,587
Regional distribution centres	10	131
Regional offices <sup>1</sup>	552	80
Representative offices <sup>1</sup>	1,252	142

Note: <sup>1</sup> Figures for 2003-2005

Source: Malaysian Industrial Development Authority

#### 4.62 Investments in services included those in:

- transport, which were mainly in maritime, aviation and highway construction and maintenance;
- utilities, which were mainly in independent power plants, and the transmission and distribution of electricity;
- telecommunications and IT, which were mainly in communication and multimedia projects, companies with Multimedia Super Corridor (MSC) status and software development projects; and
- other service activities, which included education services (mainly private colleges and universities, and skills centres), R&D and health services (private hospitals).

## SECTION IX INVESTMENTS IN INFRASTRUCTURE

4.63 Apart from the physical infrastructure, which include transportation and telecommunications facilities and specialised industrial parks, financial facilities are also important in attracting investments. The financial infrastructure consists of the banking system and the non-bank financial intermediaries, including development finance institutions.

### (a) Financing of Investments

4.64 With a high national savings rate, domestic sources of financing investments are expected to continue to be important. External sources of financing, such as loans and bonds, will supplement the domestic sources. Nevertheless, the size of financing

TABLE 4.12

## APPROVED INVESTMENTS IN THE SERVICES SECTOR

	2004				2005			
	Number	Domestic	Foreign	Total	Number	Domestic	Foreign	Total
		(RM million)				(RM million)		
<b>Total</b>	<b>2,140</b>	<b>42,757.5</b>	<b>3,500.9</b>	<b>46,258.4</b>	<b>2,453</b>	<b>52,456.4</b>	<b>3,773.2</b>	<b>56,229.6</b>
Real estate (housing)	1,071	19,359.2	120.8	19,480.0	1,209	21,719.2	127.4	21,846.6
Transport	51	9,282.2	30.0	9,312.2	71	10,917.6	41.5	10,959.1
Utilities	7	4,372.3	nil	4,372.3	15	8,671.6	8.1	8,679.7
Telecommunications and IT	202	6,165.8	460.2	6,626.0	294	5,641.9	462.7	6,104.6
Financial services	61	2,043.6	2,032.6	4,076.2	79	2,654.6	651.4	3,306.0
Hotels and tourism	42	876.5	184.1	1,060.6	29	1,334.7	831.4	2,166.1
Distributive trade	124	238.7	238.2	476.9	510	671.0	1,055.2	1,726.2
Support services	1	109.2	nil	109.2	15	690.2	31.6	721.8
Regional establishments	233	27.9	375.2	403.1	169	54.7	385.8	440.5
R&D <sup>1</sup>	296	213.8	59.2	273.0	19	74.0	177.4	251.4
Education services	42	21.9	0.6	22.5	36	17.7	0.3	18.0
Health services (private hospitals)	10	46.4	nil	46.4	7	9.2	0.4	9.6

Note: <sup>1</sup> Data available cover only companies granted incentives and grants

Sources: Various ministries and agencies

from external sources will be monitored to maintain the external debt servicing ratio at a manageable level. In 2005, external debt amounted to RM30 billion, with a debt-service ratio, as a percentage of the Gross National Product (GNP), of 6.3 per cent.

4.65 During the Ninth Malaysia Plan (RMK-9), 2006-2010, savings are estimated to average 36.2 per cent of GNP. Savings are expected to exceed investments, resulting in an overall positive savings-investment gap of 14.9 per cent of GNP. There will be a higher savings-investment gap of 10.6 per cent for the private sector, compared with 4.3 per cent for the public sector. The financial sector assumes a major role in the efficient mobilisation and allocation of financial resources. In 2005, the assets of the financial system amounted to RM1.9 trillion or almost four-folds of GDP. The banking system accounted for about two-thirds of the total assets. As at the end of 2005, out of the total credit of RM972.5 billion, RM73.6 billion, or 7.6 per cent, were channelled to the services sector and RM58.1 billion, or 6 per cent, to the manufacturing sector. Development finance institutions assume an important role in financing growth and industrial development. As at the end of 2005, total lending by the development finance institutions amounted to RM47.5 billion, of which RM9.6 billion, or 20.1 per cent, were channelled to the services sector and RM4.5 billion (9.4 per cent) to the manufacturing sector.

#### (b) Financial Sector Master Plan

4.66 The continued development of the financial system is guided by the strategic and policy thrusts of the:

- Financial Sector Master Plan, 2001-2010; and
- Capital Market Master Plan, 2001-2010.

4.67 The objective of the Financial Sector Master Plan is to develop a financial system which is competitive, resilient and dynamic. The plan covers conventional banking and insurance sectors, Islamic banking and *takaful*, development finance institutions, alternative modes of financing and the Labuan International Offshore Financial Centre. The initial phase of the plan focuses on enhancing the capacities and capabilities of domestic financial institutions, strengthening the regulatory and supervisory framework, promoting a safe and efficient payments system and developing the framework on consumer education and protection.

#### (c) Capital Market Master Plan

4.68 The capital market provides a more stable source of long-term financing and the diversification of risks. There has been increasing mobilisation of finance through the capital market. Bond financing has grown in importance, compared with equity financing. Since the 1980's, the bond market has been growing and new debt instruments have been introduced.

4.69 The Capital Market Master Plan provides a blueprint for the long-term development of the capital market, and the framework and foundation for capital mobilisation. The plan focuses on issuers, investors, market institutions, market intermediaries and the regulatory framework. During the period 1996-July 2004, out of the total equity issuance of RM74.9 billion, the services sector (excluding construction) accounted for RM41.1 billion, or 54.8 per cent, and the manufacturing sector, RM19 billion (25.4 per cent). During the period 1996-2005, total private debt securities issued amounted to RM247.8 billion. The services sector (excluding Government and other services) accounted for RM152.3 billion or 61.5 per cent of the total securities issued and the manufacturing sector, RM30.2 billion (12.2 per cent).

**(d) Venture Capital Financing**

4.70 Venture capital is another alternative source of financing for businesses, including small and medium enterprises (SMEs). Most of the venture capital investments were channelled to ICT, life sciences and manufacturing. The total amount of venture capital investments in these three areas constituted 85.7 per cent of the total investments undertaken in 2005. Domestic venture capital funds were concentrated in ICT, at 53.6 per cent, manufacturing (17 per cent) and life sciences (11.1 per cent), while foreign venture capital funds mainly invested in life sciences (57.4 per cent), ICT (34.1 per cent) and manufacturing (8.5 per cent).

**(e) Other Infrastructure**

4.71 The provision of quality physical infrastructure, including electricity, telecommunications, water, gas and industrial estates, is important for the development of high technology and capital-intensive industries. Presently, Malaysia has sufficient generation capacity for electricity to meet the increasing demands from both industries and domestic consumers. However, there is a need to ensure quality, reliable and uninterrupted supply of electricity to industries to avoid adverse effects on industrial development.

4.72 A comparison of average tariffs indicated that electricity prices in Malaysia rank among the lowest, compared with ASEAN and other selected Asian countries. With the upward trend in global oil prices, efforts have been intensified to increase the share of renewable energy in the generation mix of the electricity sector, as well as the promotion of energy efficiency in the country.

4.73 With respect to telecommunications, the focus is on capacity expansion through more integrated and coordinated planning to meet demand. Efforts include:

- positioning Malaysia as a regional and global ICT and multimedia hub. Towards this objective, the ICT and multimedia industries were liberalised. Value-added services, such as voice, data and text-based applications, were promoted. Incentives were provided to attract MNCs to the Multimedia Super Corridor of Malaysia (MSC Malaysia);

- consolidating the cellular phone industry; and
- expanding the provision of broadband services. The broadband penetration rate will need to be improved, with faster deployment of broadband services on a wider scale in the country.

## SECTION X CHALLENGES

4.74 Challenges in sustaining and enhancing investments in the manufacturing and services sectors include:

- competition in global FDI inflows and international production networks;
- regional integration and FDIs;
- private domestic investments;
- outward investments;
- shift towards productivity-driven growth;
- expansion and diversification into the services sector;
- liberalisation of equity policies;
- enhancing the investment environment; and
- dependence on foreign workers.

### (a) Competition in Global Foreign Direct Investment Inflows and International Production Networks

4.75 Global FDI inflows are mainly to the developed economies. The USA and Europe attract a major share of the FDI inflows. Although global FDI inflows to developing countries are expected to increase, they will not be able to match the flows to the developed economies. Developing countries have to compete for FDIs among themselves and also against developed countries, particularly for investments in high technology industries, ICT and R&D. Malaysia faces intense competition for FDIs from the People's Republic of China, India, other ASEAN countries and Eastern European economies. Some of these countries have the advantage of large domestic markets and greater supply of labour at lower costs. These competing countries also provide fiscal and non-fiscal incentives and have liberalised their investment regimes.

4.76 Present trends in FDIs are expected to continue. Competitive pressures, and ICT and technological developments have led to the growth of international production networks among MNCs. Malaysia will need to enhance its competitiveness and attractiveness to assume a larger role in the global production networks. In this respect, efforts to attract MNCs will need to be intensified.

**(b) Regional Integration and Foreign Direct Investments**

4.77 More countries are entering into regional and bilateral FTAs. The volume, source and direction of growth in trade and investments are expected to be influenced by these agreements. This development will encourage countries to engage and enter into FTAs with trading and investment partners. Whether such FTAs or other similar agreements are effective in attracting FDIs depend on the nature of the provisions, including the scope of coverage and whether substantive investment elements are included.

**(c) Private Domestic Investments**

4.78 Private domestic investments contribute to capital formation, economic growth and employment. Nevertheless, the present contribution of private domestic investments is affected by a number of limitations, including industry coverage, access to export markets and level of technology. Among key challenges for private domestic investments are:

- widening their coverage to include areas of higher growth, as well as raising the level and quality of private domestic investments;
- increasing the export levels of products and services; and
- developing the technological capabilities of Malaysian companies.

**(d) Outward Investments**

4.79 FDI outflows from developing countries have been increasing, in response to globalisation and to sustain competitiveness. Intra-regional FDIs involving developing countries (for example, ASEAN) are also increasing. Malaysian companies will need to expand overseas and take advantage of opportunities arising from regional investment agreements and bilateral FTAs. Encouraging and supporting Malaysia's investments overseas is an important step in strengthening and consolidating the country's industrial competitiveness. Less competitive industries need to relocate to third countries to maintain their competitiveness and market share. Well established companies need to be encouraged to expand their operations overseas to gain greater access to markets and resources.

**(e) Shift Towards Productivity-Driven Growth**

4.80 Due to rising labour and other costs, the manufacturing sector will need to undertake a major shift towards productivity-driven growth. There will be a need for greater investments in knowledge-intensive activities, ICT and technology and movement up the value chain.

**(f) Expansion and Diversification into the Services Sector**

4.81 In 2005, the contribution of the non-Government services sector to the GDP, at 50.5 per cent, was larger than that of the manufacturing sector (31.4 per cent). It is expected to further increase to 59.7 per cent in 2020, compared with 28.5 per cent for the manufacturing sector. FDI inflows into the services sector, including through offshoring, have been increasing and are expected to expand further. Their contribution in upgrading the capacity and capability of the services sector will need to be taken into account in the liberalisation of the sector. Emerging services sub-sectors will need to be identified and promoted.

**(g) Liberalisation of Equity Policies**

4.82 A more liberal and less regulated economy can enhance its attractiveness to foreign and domestic investors. Most countries are expected to further liberalise their economies, in line with the present trend in globalisation. The extent and speed of liberalisation will continue to be a major policy issue and will need to be addressed, particularly with respect to the services sector.

**(h) Enhancing the Investment Environment**

4.83 With the emergence of new competitors for FDIs, there is a need for Malaysia to enhance its relative attractiveness to MNCs. The investment environment will need to remain conducive and competitive, particularly in terms of costs of doing business, the delivery system, tax regime, infrastructure and skilled workforce, to be able to continue to attract foreign and domestic investments.

4.84 Based on a survey<sup>4</sup> of MNCs in Malaysia, the People's Republic of China was cited as a strong competitor for investments. Nevertheless, a high proportion of the MNCs indicated their intention to expand their operations in Malaysia as well. Among factors viewed favourably by the MNCs were infrastructure, communication and the legal system. Factors which were viewed less favourably were administration and governance, and market size and access. These results support the need to further improve the quality of the delivery system of the public sector. Malaysia's small domestic market, compared with the People's Republic of China and India, was viewed as a disadvantage for investments.

**(i) Dependence on Foreign Workers**

4.85 Malaysia continues to depend on foreign workers in the manufacturing and services sectors, as well as other sectors in the economy. As at 31 December 2005, there were 1.8 million foreign workers, of which 32 per cent were in the manufacturing sector and 8.8 per cent in the services sector. These workers were generally employed in areas where Malaysians were not available or not willing to work. There is a need for Malaysia to reduce its dependence on foreign workers.

<sup>4</sup> A survey on Investment Environment was conducted on 229 MNCs in Malaysia in 2004, with the assistance of Malaysian International Chamber of Commerce and Industry. The survey focused on fiscal regime, labour, administration and governance, market access, legal system, infrastructure, communication and perceptions.

## SECTION XI STRATEGIES AND POLICIES

### INVESTMENT<sup>5</sup> TARGETS

4.86 During the IMP3 period, Malaysia's GDP is targeted to grow at an average annual rate of 6.3 per cent. In line with this target, implications on investments include:

- total investments growing at a rate of 7.7 per cent per annum;
- private investments growing at 10.2 per cent per annum;
- share of private investments to the GDP increasing from 8.9 per cent in 2005 to 11.6 per cent in 2020;
- size of private investments required for the manufacturing and services sectors:

#### Manufacturing sector

- RM412.2 billion for the whole period, or an average annual investment level of RM27.5 billion;
- breakdown for each five-year period:

2006-2010 : RM101.1 billion  
 2011-2015 : RM135.5 billion  
 2016-2020 : RM175.6 billion

#### Services sector

- RM687.7 billion for the whole period, or an average annual investment level of RM45.8 billion;
- breakdown for each five-year period:

2006-2010 : RM92.6 billion  
 2011-2015 : RM210.7 billion  
 2016-2020 : RM384.4 billion

Details of the investment targets are in Table 4.13; and

- for the manufacturing and services (excluding Government services, financial services and utilities) sectors, the targeted ratio of domestic investments to FDIs is 60:40.

<sup>5</sup> For the purpose of targeting, investments refer to gross fixed capital formation, which comprises investments in fixed assets, such as buildings, plant, machinery and equipment.

TABLE 4.13

## INVESTMENT TARGETS

Breakdown of Investments	2006-2010	2011-2015	2016-2020	2006-2020
	(RM billion <sup>1</sup> )			
<b>Total Investments</b>	<b>634.5</b>	<b>934.5</b>	<b>1,325.4</b>	<b>2,894.4</b>
Private	310.0	520.2	808.0	1,638.2
Public	324.5	414.4	517.3	1,256.2
<b>Total Private Investments</b>	<b>310.0</b>	<b>520.2</b>	<b>808.0</b>	<b>1,638.2</b>
Manufacturing	101.1	135.5	175.6	412.2
Services	92.6	210.7	384.4	687.7
Agriculture	31.9	54.8	82.3	169.0
Mining	40.0	59.0	80.9	179.9
Construction	44.4	60.2	84.8	189.4
<b>Overall Average Annual Private Investments</b>	<b>62.0</b>	<b>104.0</b>	<b>161.7</b>	<b>109.2</b>
Manufacturing	20.2	27.1	35.1	27.5
Services	18.5	42.1	76.9	45.8
Agriculture	6.4	11.0	16.5	11.3
Mining	8.0	11.8	16.2	12.0
Construction	8.9	12.0	17.0	12.6

Note: <sup>1</sup> Current prices

Source: Ministry of International Trade and Industry

## STRATEGIC THRUSTS

4.87 Strategies and policies on investments will contribute towards sustaining industrial growth, accelerating industrial restructuring and raising the level of competitiveness of the economy. To address the challenges and facilitate the achievement of the targets for investments under the IMP3, eight strategic thrusts have been set:

- (1) competing globally for FDIs by targeting and having a more focused approach;
- (2) raising the level of competitiveness and productivity of the manufacturing and services sectors and positioning Malaysia as a major manufacturing hub and service provider in the global supply chains;

- (3) positioning industries to benefit from bilateral, regional and multilateral agreements related to investments;
- (4) enhancing private domestic investments, including investments by Government-linked companies (GLCs) and SMEs;
- (5) promoting outward investments by Malaysian companies;
- (6) diversifying into services sub-sectors which have potential for investments and exports;
- (7) continuing the progressive liberalisation of the equity policy in the services sector, including opening up sub-sectors which have export potential; and
- (8) making the environment more conducive for investments, including the institutional and infrastructure support, regulatory regime and the delivery system.

## **(1) COMPETING GLOBALLY FOR FOREIGN DIRECT INVESTMENTS**

4.88 With the intensification of competition for FDIs globally, Malaysia will adopt a more focused approach in its drive to attract FDIs. Elements of this approach include:

- establishing specialised technology parks for certain promoted industries;
- identifying and encouraging specific potential investors to invest in targeted industries and sub-sectors;
- adopting faster decision making process for targeted investors; and
- organising specialised investment and trade missions on a regional basis, based on industries and sub-sectors to be promoted.

## **(2) INTEGRATING MALAYSIA INTO THE GLOBAL SUPPLY CHAINS**

4.89 Malaysia will need to enhance its integration in the global supply chains, with the aim of gaining a bigger share of the global production and services networks. Products and activities with growth potential will be identified for investments and exports. MNCs which are substantially involved in the international production networks will be encouraged to establish and expand their operations in Malaysia. In addition, policy measures will be introduced to attract greater investment flows. More Malaysian companies will be encouraged to explore opportunities to participate in these international production networks.

### (3) POSITIONING INDUSTRIES TO BENEFIT FROM INTERNATIONAL AGREEMENTS

4.90 Malaysia will continue to participate in international agreements which can enhance trade and investment flows. These agreements will facilitate efforts to integrate Malaysia into the global economy. Strategies which will be pursued include:

- initiating more bilateral or regional economic agreements and FTAs with Malaysia's trading partners, including potential markets, for example, countries of the Organisation of the Islamic Conference (OIC);
- enhancing cooperation and collaboration with the business sector to ensure that the international agreements entered into are relevant and provide the enabling environment and opportunities for the greater growth and development of Malaysia's business sector;
- reviewing investment provisions in bilateral and regional investment agreements to improve the investment environment, including enhancing the transparency and predictability of investment policies and measures; and
- working towards the realisation of the AIA and AEC.

4.91 Industries will be encouraged to prepare and equip themselves to be able to benefit from the various agreements. Efforts include:

- undertaking progressive liberalisation of sub-sectors which are presently under various forms and levels of protection;
- encouraging the consolidation of companies to strengthen their capabilities and enable them to expand their operations overseas; and
- encouraging GLCs to diversify their investments overseas, which presently are mainly in oil and gas, and telecommunications. The diversification efforts will take advantage of opportunities arising from the various agreements.

### (4) ENHANCING PRIVATE DOMESTIC INVESTMENTS

4.92 Measures to sustain and enhance the growth of private domestic investments include:

- assisting and facilitating domestic companies, including GLCs, which have the capacity to expand into the potential growth areas;
- focusing on industries and sub-sectors which have export potential and competitive advantage, such as food products, including *halal* foods, palm biomass products and oleochemical derivatives, and machinery and equipment, including engineering support services, and biotechnology; and

- reviewing incentive schemes and assistance programmes to promote reinvestments, outsourcing, branding, R&D (including commercialisation), design and development (D&D), standards conformance and automation.

## **(5) PROMOTING OUTWARD INVESTMENTS**

4.93 Outward investments have the potential to bring in economic benefits to Malaysia, in the form of access to new markets, maintaining market share and sourcing raw material inputs and components for domestic industries. In addition, the repatriation of profits from such investments to Malaysia will improve the country's BOP.

4.94 The Government will continue to encourage and promote the growth of Malaysian investments overseas, including investments by GLCs. Initiatives which will be undertaken include:

- encouraging financial and banking institutions to support Malaysian companies which are keen to establish their operations overseas;
- encouraging outward M&As by Malaysian companies;
- encouraging the development of industrial parks overseas to facilitate outward investments by Malaysian companies; and
- establishing offices in targeted countries to assist Malaysian companies intending to invest in those countries.

## **(6) DIVERSIFYING INTO THE SERVICES SECTOR**

4.95 A comprehensive plan for the promotion of investments in the services sector will be formulated. The plan will incorporate:

- targeted sub-sectors to be promoted, including selected business and professional services, and services related to health, education, tourism, distributive trade and logistics;
- initiatives and policy measures to increase investments in the targeted sub-sectors;
- measures to upgrade domestic capabilities in the sector; and
- a more coordinated, effective and business friendly institutional delivery and regulatory system.

## (7) PROGRESSIVE LIBERALISATION OF THE EQUITY POLICY

4.96 The equity policy in the services sector will be progressively liberalised to integrate the sector into the global marketplace, similar to the equity policy in the manufacturing sector, which has been progressively liberalised over the years. Sub-sectors which are ready for liberalisation will be identified. Presently, sub-sectors which have been opened up for foreign participation include education and training, and specialised tourism projects.

## (8) INSTITUTIONAL AND OPERATING ENVIRONMENT

### *(i) Delivery System*

4.97 Measures to improve the Government delivery system include:

- introducing a standardised system or mechanism for the various levels of approvals, involving the Federal and State Governments and Local Authorities; and
- exempting projects located in approved industrial estates or zones from having to apply for planning permits.

### *(ii) Licensing and Incentive Mechanism*

4.98 Companies exempted from licensing under the Industrial Coordination Act (ICA) will be required to register, to enable the compilation of comprehensive data on the manufacturing sector. In addition, this will assist and facilitate the Government in providing support and services to a greater number of SMEs. A new approach in the processing of incentives will be considered to improve the approval process and shorten the response time to investors.

### *(iii) Private Sector Representation in Local Authorities or Councils*

4.99 Local authorities or councils will be required to have private sector representatives, such as from the chambers of commerce, and trade and industry associations. This is to ensure that the legitimate concerns of the business community are taken into consideration in formulating rules and regulations. If necessary, amendments to the relevant legislations will be made.

### *(iv) Incentive Regime*

4.100 Incentive schemes will continue to be an important policy instrument to promote and attract investments in the targeted industries and sub-sectors. To sustain Malaysia's competitiveness, the incentive system will be reviewed. Key areas to be covered include:

- review of the corporate income tax system;

- continual review of incentive packages so that Malaysia's incentive regime remains attractive. Areas of improvement include the terms and conditions of Pioneer Status and Investment Tax Allowance;
- review of the list of promoted activities, in line with the more focused and targeted growth areas;
- improvement of the institutional aspects and the delivery system for incentives and financial assistance, including the mechanism for the granting of double deduction for R&D; and
- review of current approaches in attracting investors to the states, for example, by providing incentives and other assistance, through an Investment Fund, to complement the incentives offered by the Federal Government.

**(v) Strategic Investment Fund**

- 4.101 A Pre-Packaged Incentive Scheme is in place to attract high quality investments in projects which are of high technology and knowledge-intensive, involve R&D and have strong linkages. It is expected that during the IMP3 period, there will be more investments in high technology and strategic industries.
- 4.102 Under the RMK-9, the Strategic Investment Fund has been created to support the pre-package incentives scheme. The Government has provided an allocation of RM600 million for the fund. The Government will continue to provide the necessary allocations for the fund during the subsequent five-year Malaysia Plans, to cover the remainder of the IMP3 period, 2011-2020.

**(vi) Automation Fund**

- 4.103 Automation will not only improve efficiency, quality, productivity and the overall competitiveness of companies, but also reduce their dependency on less-skilled workers, especially foreign workers. The Government has set up an automation fund under the RMK-9 to encourage industries to modernise and automate their manufacturing processes. Allocations for the fund will continue to be provided by the Government during the subsequent five-year Malaysia Plans.

**(vii) Industrial Adjustment Fund**

- 4.104 With globalisation and liberalisation measures under the AFTA and bilateral FTAs, companies, including SMEs, will be encouraged to rationalise, consolidate and upgrade their production capacities and capabilities to sustain their businesses and enhance their competitiveness. The Government has set up an Industrial Adjustment Fund under the RMK-9 to assist companies in undertaking the rationalisation of their operations. The fund provides grants and loans at preferential interest rates to companies undertaking M&As, automation, modernisation and upgrading of their production capacities. For the period 2011-2020, the Government will continue to provide allocations for the fund.

**(viii) Fund for the Adoption of New Technologies**

4.105 With the rapid emergence and development of new technologies, a fund will be considered to assist companies in testing and adopting applications of these technologies into their production processes.

**(ix) Grants for Research and Development**

4.106 Presently, various incentive schemes are provided to promote R&D activities, including grants under the Ministry of Science, Technology and Innovation:

- Commercialisation of R&D Fund;
- Industry Grant Scheme; and
- MSC Grant Scheme.

There is a need to review and consolidate these grant schemes.

**(x) Adequate Supply of Skilled Workforce**

4.107 A policy to attract skills and talents will be formulated. Present immigration policies will be reviewed to facilitate the entry of foreign talents for a temporary or unlimited period, depending on the merits of each case. The potential supply of foreign expertise within the country will be tapped. This will be undertaken by allowing eligible spouses of expatriates and foreign residents in Malaysia, under the Malaysia My Second Home Programme, who have the specific skills and expertise, which are in short supply, to be employed in the relevant industries and sub-sectors.

4.108 Further liberalisation of training institutions will be explored to facilitate the establishment of new technical training institutions and the expansion of capacities of existing institutions. Malaysia will be developed into a centre for technical training in selected areas to serve domestic and regional needs.

**(xi) Specialised Parks**

4.109 Specialised high technology parks will be established for industries targeted for promotion in the IMP3. These parks will be equipped with the required physical infrastructure and supported by the availability of skilled workforce and support industries to provide a favourable and conducive environment for investors. Presently, there is a high technology park in Malaysia, namely, Kulim High Technology Park.

4.110 In the short term, a new high technology park will be established to cater for the needs of high technology and capital-intensive industries, and R&D activities. In addition, during the course of the IMP3 period, the requirement for additional parks

dedicated to specific industries, such as biotechnology and pharmaceuticals, will be considered to be developed. In pursuing a targeted investment approach during the IMP3 period, appropriate facilities will be provided to enhance the investment environment and attract specific industries to the country.

- 4.111 Existing industrial estates will be upgraded to attract further investments. Developers will be encouraged to ensure that industrial estates have the requisite facilities. The existing petrochemical industrial complexes in Kertih, Gebeng and Pasir Gudang-Tanjung Langsat will be further integrated. An offshoot of these petrochemical complexes will be the establishment of a plastics park, located in the vicinity of the petrochemical complexes, to cater for downstream activities.

**(xii) Quality and Reliable Supply of Utilities**

- 4.112 Provision of reliable and high quality utilities is important for greater industrial growth. The expected expansion in the manufacturing and services sectors will increase the demand for related infrastructure and utilities, such as telecommunications, electricity, gas and water. Measures which will be undertaken include:
- making available secure, reliable, quality and cost-effective supply of utilities;
  - improving the water distribution system and water treatment plants and making available the supply of water at competitive rates; and
  - improving the quality of broadband infrastructure and increasing the penetration rate of broadband services at competitive tariffs.

# Chapter

# 5



## **DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES**





# DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES

## SECTION I OVERVIEW

- 5.01 The development of competitive and resilient small and medium enterprises (SMEs) forms an integral component of the initiatives for Malaysia to achieve sustainable economic growth and developed country status by 2020. The challenges posed by increased liberalisation, new entrants to the market and technological developments require SMEs to raise efficiency levels, strengthen inter-firm linkages and respond timely to market changes. At the same time, greater integration into the global economy provides opportunities for SMEs to participate in the international supply chains. This will necessitate SMEs to move up the value chain and adopt new technologies, particularly information and communication technology (ICT). Only SMEs which are capable of harnessing technology and knowledge to develop high value-added products and services will be able to compete globally.
- 5.02 Technology and innovation will be the drivers of growth and competitiveness of SMEs during the period of the Third Industrial Master Plan (IMP3), 2006-2020. SMEs will be encouraged to capitalise on outward investment opportunities, adopt best business practices and be more resilient in the face of greater competition. A systemic approach will be adopted to support the upgrading of firm level capabilities.
- 5.03 Apart from SMEs in the manufacturing sector, the Plan also focuses on harnessing the potential of SMEs in the services sector. The contribution of SMEs will be enhanced in sub-sectors such as logistics, distributive trade, professional and business services, and back office services. In addition, SMEs will be encouraged to be involved in high value-adding manufacturing-related services, such as designing and packaging. The Plan places emphasis on the creation of a more conducive business environment, together with a more cohesive policy and supportive regulatory and institutional framework, to stimulate vibrant entrepreneurial activities, including the expansion and diversification of existing firms and the creation of new firms in potential areas of growth. Policy and regulatory support will be targeted at promoting the development of dynamic, innovative, entrepreneurial and competitive firms, able to compete in an open market. During the Plan period, the special needs of the different categories of SMEs, namely, micro, small and medium enterprises, will be addressed. In line with the aim to make SMEs more competitive, financial support for SMEs will be market-driven and based on performance.

5.04 This Chapter covers:

- the profile and performance of SMEs, including their contribution to the economy, and the institutional support for SMEs;
- trends and challenges in the development of SMEs, including access to market and upgrading the human capital; and
- strategic thrusts and future directions in the development of SMEs, including enhancing the competitiveness of SMEs and the potential growth areas for the development of the SMEs in the manufacturing and services sectors.

## SECTION II PROFILE AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES

5.05 SMEs in the manufacturing sector are defined as enterprises with full-time employees not exceeding 150 or annual sales turnover not exceeding RM25 million. These SMEs are further categorised into medium-sized companies, small enterprises and micro-enterprises:

Category	Definition
Medium-sized companies	Companies with annual sales turnover of between RM10 million and RM25 million or employing between 51 and 150 workers.
Small enterprises	Companies with annual sales turnover of between RM250,000 and RM10 million or employing between five and 50 workers.
Micro-enterprises	Companies with annual sales turnover not exceeding RM250,000 or with full time employees not more than five.

5.06 SMEs in the services and primary agriculture sectors and ICT are enterprises with full-time employees not exceeding 50 or annual sales turnover not exceeding RM5 million. These SMEs are further categorised into medium-sized companies, small enterprises and micro-enterprises:

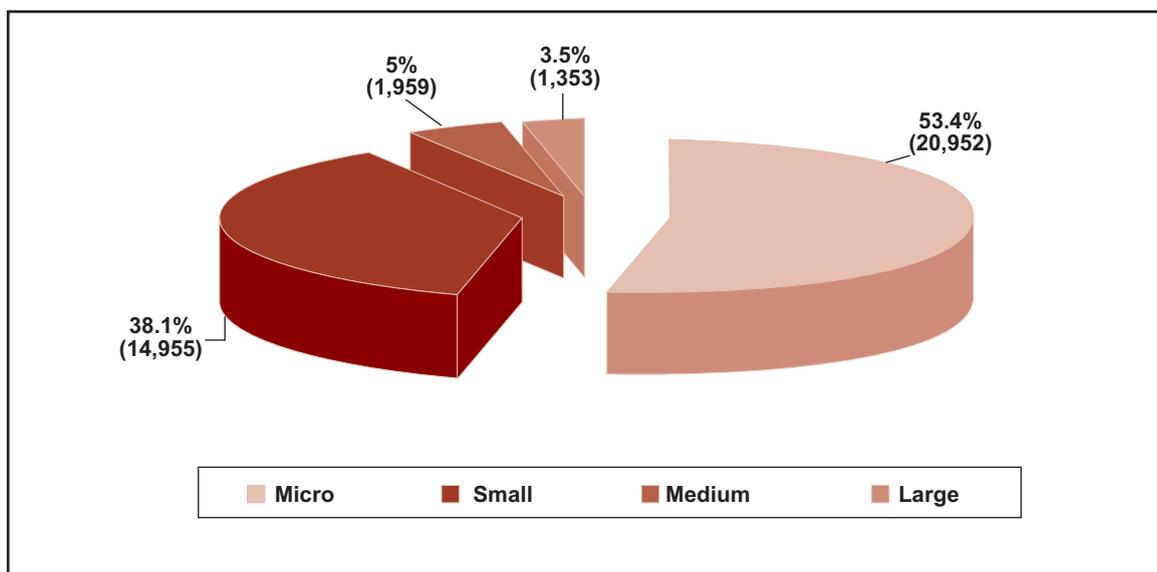
Category	Definition
Medium-sized companies	Companies with annual sales turnover of between RM1 million and RM5 million or employing between 20 and 50 workers.
Small enterprises	Companies with annual sales turnover of between RM200,000 and RM1 million or employing between five and 20 workers.
Micro-enterprises	Companies with annual sales turnover not exceeding RM200,000 or employing not more than five workers.

5.07 As at 2003, there were 523,132 establishments in the manufacturing, services and agriculture sectors, of which 518,996 (99.2 per cent) comprised SMEs:

- in the manufacturing sector, out of 39,219 active companies, 37,866 (96.6 per cent) were SMEs. The largest number comprised micro-enterprises, at 20,952 or 53.4 per cent of the total SMEs in this sector. This was followed by 14,955 (38.1 per cent) in the small-sized category and 1,959 (5 per cent) in the medium-sized category (Chart 5.1). In terms of distribution by industry, SMEs were mainly in the textiles and apparel, and resource-based industries. The textiles and apparel industry accounted for 23.2 per cent of the SMEs, followed by food and beverages (15 per cent), metals and metal products (12.4 per cent) and paper, printing and publishing (9.2 per cent) (Table 5.1);
- in the services sector, out of 451,516 establishments, 449,004 (99.4 per cent) were SMEs. In the sector, 69.3 per cent of the SMEs were in the distributive trade (wholesale, retail and restaurants), followed by transport and communication (6.2 per cent), financial intermediaries (4.3 per cent) and professional services (2.5 per cent) (Table 5.2); and
- in the agriculture sector, out of 32,397 active companies, 32,126 (99.2 per cent) were SMEs. In the sector, 65.8 per cent of the SMEs were in the planting, market plantation and horticulture, followed by fisheries (20.9 per cent), poultry farming (6.9 per cent) and agricultural and animal husbandry services (4.8 per cent) (Table 5.3).

CHART 5.1

## ENTERPRISES IN THE MANUFACTURING SECTOR BY SIZE, 2003



Source: Department of Statistics

TABLE 5.1

## DISTRIBUTION OF SMALL AND MEDIUM ENTERPRISES IN MANUFACTURING BY SUB-SECTOR, 2003

Sub-Sector	Total Number of Establishments	SMEs	
		Number	Share (%)
<b>Total</b>	<b>39,219</b>	<b>37,866</b>	<b>100.0</b>
Textiles and apparel	8,855	8,779	23.2
Food and beverages	5,804	5,664	15.0
Metals and metal products	4,809	4,686	12.4
Paper, printing and publishing	3,549	3,483	9.2
Furniture	2,352	2,286	6.0
Rubber and plastics products	2,343	2,166	5.7
Wood and wood products	2,149	2,052	5.4
Non-metallic mineral products	1,708	1,650	4.4
Machinery and equipment	1,435	1,390	3.7
Electrical and electronics	1,362	1,077	2.8
Chemicals and chemical products	1,115	1,047	2.8
Transport equipment	769	699	1.8
General manufacturing <sup>1</sup>	2,969	2,887	7.6

Note: <sup>1</sup> Include leather products, tobacco products, medical, precision and optical instruments, recycling and petroleum products

Source: Census of Establishments and Enterprises, 2005 (preliminary data), Department of Statistics

TABLE 5.2

**DISTRIBUTION OF SMALL AND MEDIUM ENTERPRISES IN SERVICES BY SUB-SECTOR, 2003**

<i>Sub-Sector</i>	<i>Total Number of Establishments</i>	<i>SMEs</i>	
		<i>Number</i>	<i>Share (%)</i>
<b>Total</b>	<b>451,516</b>	<b>449,004</b>	<b>100.0</b>
Wholesale and retail	249,178	248,221	55.3
Restaurants	63,067	63,013	14.0
Transport and communication	28,231	27,980	6.2
Financial intermediaries	19,291	19,108	4.3
Professional services	11,245	11,120	2.5
Real estate activities	8,847	8,779	2.0
Business and management consultancy services	8,404	8,352	1.9
Health <sup>1</sup>	7,838	7,759	1.7
Education	7,738	7,618	1.7
Hotel	2,494	2,275	0.5
Computer services	1,182	1,095	0.2
Telecommunications	88	58	neg. <sup>3</sup>
Selected services <sup>2</sup>	43,913	43,626	9.7

Notes: <sup>1</sup> Include hospital, medical, dental and veterinary services, homeopathy and foot reflexology

<sup>2</sup> Include rental services, advertising, research and development, business activities (such as labour recruitment, cleaning of buildings, packaging services and duplication services), recreation, cultural and sporting activities (such as motion picture projection and recreation clubs) and other service activities (such as hair dressing, beauty and funeral services)

<sup>3</sup> Negligible

Source: Census of Establishments and Enterprises, 2005 (preliminary data), Department of Statistics

TABLE 5.3

**DISTRIBUTION OF SMALL AND MEDIUM ENTERPRISES IN AGRICULTURE BY SUB-SECTOR, 2003**

<i>Sub-Sector</i>	<i>Total Number of Establishments</i>	<i>SMEs</i>	
		<i>Number</i>	<i>Share (%)</i>
<b>Total</b>	<b>32,397</b>	<b>32,126</b>	<b>100.0</b>
Planting, market plantation and horticulture	21,333	21,146	65.8
Fisheries	6,701	6,699	20.9
Poultry farming	2,249	2,208	6.9
Agricultural and animal husbandry	1,571	1,558	4.8
Forestry, logging and other related services	283	258	0.8
Mixed agriculture – agricultural and animal husbandry	230	227	0.7
Hunting, trapping and game propagation, including related services activities	30	30	0.1

Source: Census of Establishments and Enterprises, 2005 (preliminary data), Department of Statistics

5.08 In the services sector, SMEs are involved in a wide range of activities:

- distributive trade, which consists of four major sub-categories (wholesale, retail, restaurants and motor vehicles distribution), SMEs are mainly retailers and restaurant operators, as these sub-categories pose minimal entry barriers and require relatively small capital outlay. Retail trade is the largest sub-category. Wholesale trade, although constituting the smallest sub-category, is the highest revenue generator;
- education and training, mainly providing training in specific areas, such as human resource management, ICT, business planning, productivity improvement and basic financial management;
- professional and business services;
- new types of services, such as business process outsourcing and shared services;
- tourism, SMEs are mainly in handicraft, travel agencies and tour operator services;
- construction and related services, of which the number of SMEs awarded general contract works of up to RM5 million per year, increased from 890 in 1998 to 1,423 in 2004, registering an annual average growth of 8.1 per cent; and
- in the ICT sub-sector, the number of SMEs increased from 300 in 1995 to 3,500 in 2005, accounting for 73.7 per cent of the total number of companies approved with Multimedia Super Corridor (MSC) status. The majority of these SMEs are in software application development and software engineering. In developing their software products and solutions, these SMEs create their own intellectual property (IP).

### **Contribution of Small and Medium Enterprises to the Economy**

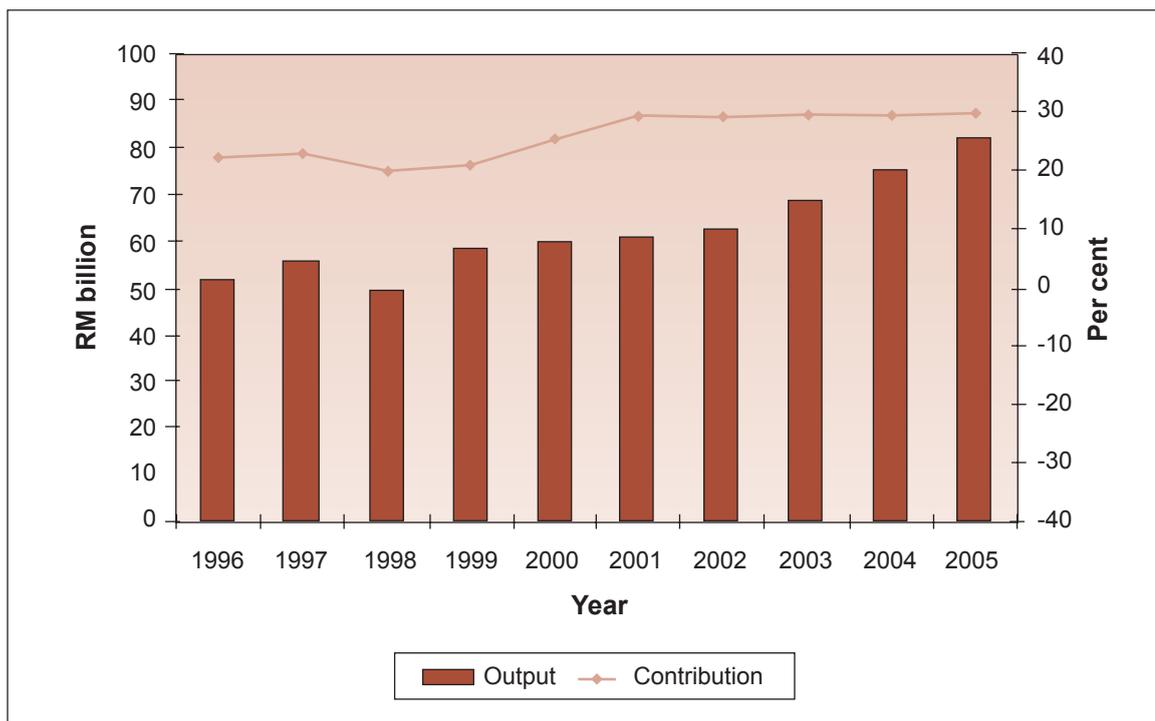
5.09 SMEs are important suppliers and service providers to leading industries. In addition, a large number of SMEs are also producers of finished goods and services. Policies and programmes in the Second Industrial Master Plan (IMP2), 1996-2005, contributed towards the further development of SMEs, creating a progressively expanding and efficient supply base to large corporations. Collectively, these SMEs contributed to the growth of the manufacturing, services and agriculture sectors, as well as ICT services, in terms of output, value-added, employment and exports.

### (a) Manufacturing Output

5.10 During the IMP2 period, output by SMEs registered an average annual growth rate of 5.3 per cent, increasing from RM51.5 billion, or 22.1 per cent of the total manufacturing output, in 1996 to RM82 billion, or 29.6 per cent in 2005 (Chart 5.2).

CHART 5.2

#### CONTRIBUTION OF SMALL AND MEDIUM ENTERPRISES TO THE TOTAL MANUFACTURING OUTPUT



Source: National Productivity Corporation, computed from Annual Survey of Manufacturing Industries, Department of Statistics

### (b) Manufacturing Value-Added

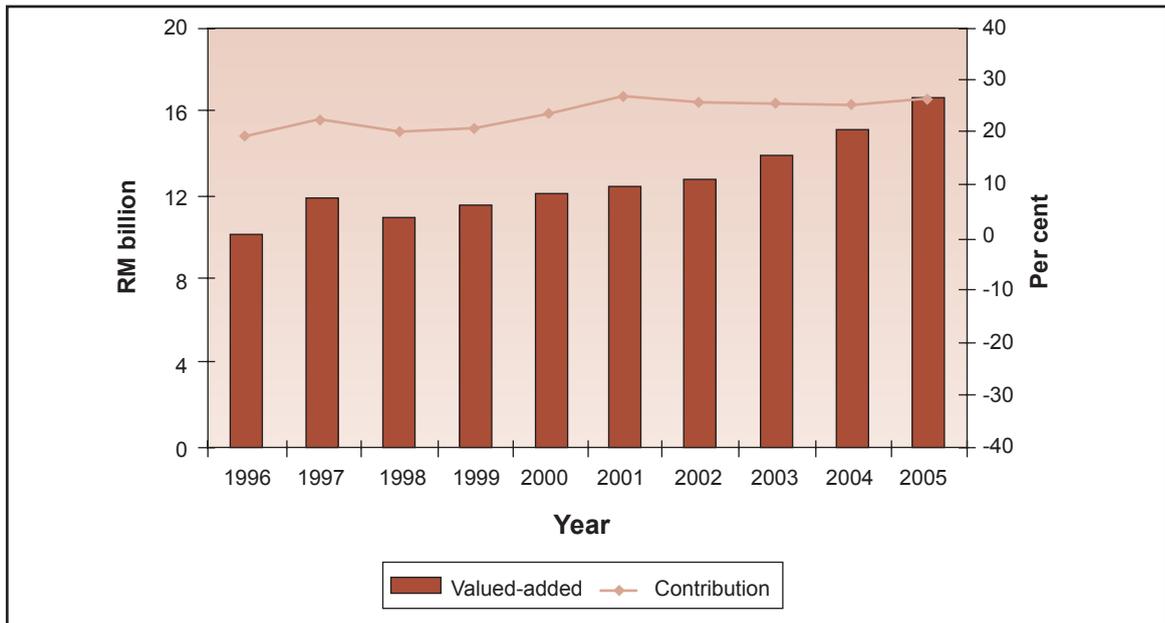
5.11 During the same period, SMEs registered an average annual growth of 5.6 per cent in value-added. In 2005, the growth of value-added by SMEs was 9.2 per cent, compared with the overall growth of 9.8 per cent for the manufacturing sector. In 2005, SMEs contributed RM16.6 billion, or 25.9 per cent, to the total value-added of the manufacturing sector, compared with RM10.1 billion, or 19.5 per cent, in 1996 (Chart 5.3).

### (c) Employment in the Manufacturing Sector

5.12 During the IMP2 period, SMEs recorded an average annual growth of 2 per cent in employment. In 2005, SMEs employed 394,670 workers, representing 31.1 per cent of the total employment in the manufacturing sector, compared with 329,848 workers, or 29.6 per cent, in 1996 (Chart 5.4).

CHART 5.3

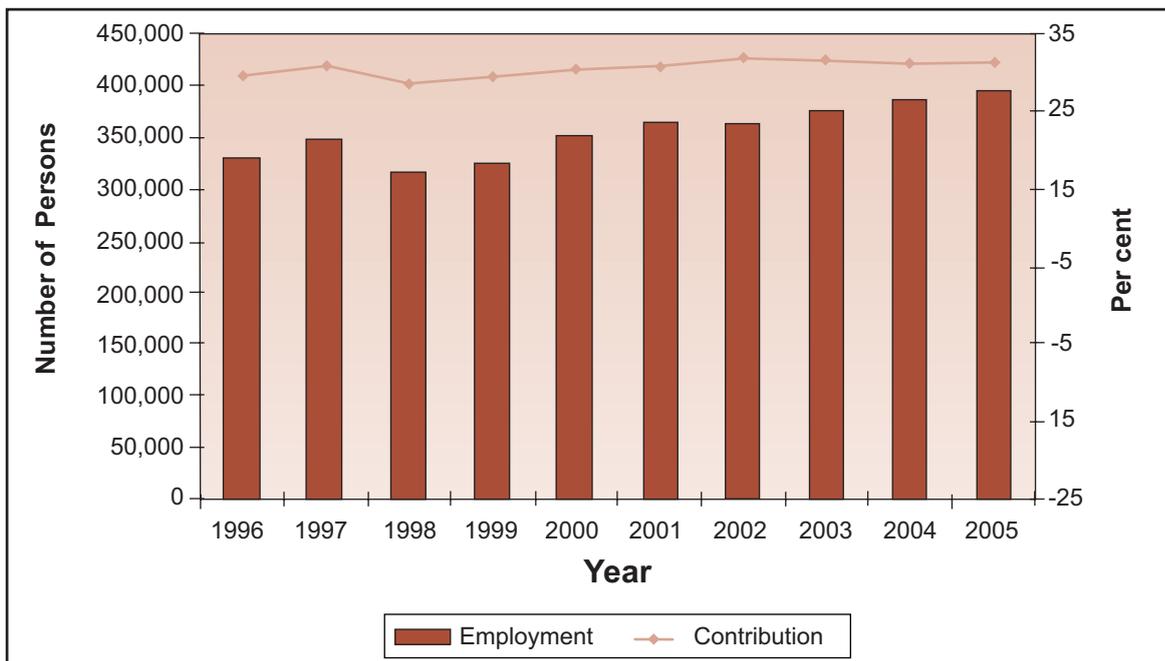
### CONTRIBUTION OF SMALL AND MEDIUM ENTERPRISES TO THE TOTAL MANUFACTURING VALUE-ADDED



Source: National Productivity Corporation, computed from Annual Survey of Manufacturing Industries, Department of Statistics

CHART 5.4

### CONTRIBUTION OF SMALL AND MEDIUM ENTERPRISES TO EMPLOYMENT IN THE MANUFACTURING SECTOR



Source: National Productivity Corporation, computed from Annual Survey of Manufacturing Industries, Department of Statistics

## (d) Exports of Manufactured Products

5.13 In 2004, SMEs exported 25.6 per cent of their total output, compared with 20.8 per cent in 1996. Since a sizeable number of the SMEs were involved as suppliers of parts and components to large corporations, including multinational corporations (MNCs), the products of SMEs were also exported indirectly through these corporations.

## International Comparison

5.14 In developed economies, such as Taiwan, Japan, Italy, Germany and Republic of Korea, SMEs are significant, both in terms of numbers<sup>1</sup> and economic contribution. In these countries, SMEs, which comprised more than 99 per cent of the total establishments, undertook rationalisation and reorganisation of their operations, making them more productive and competitive.

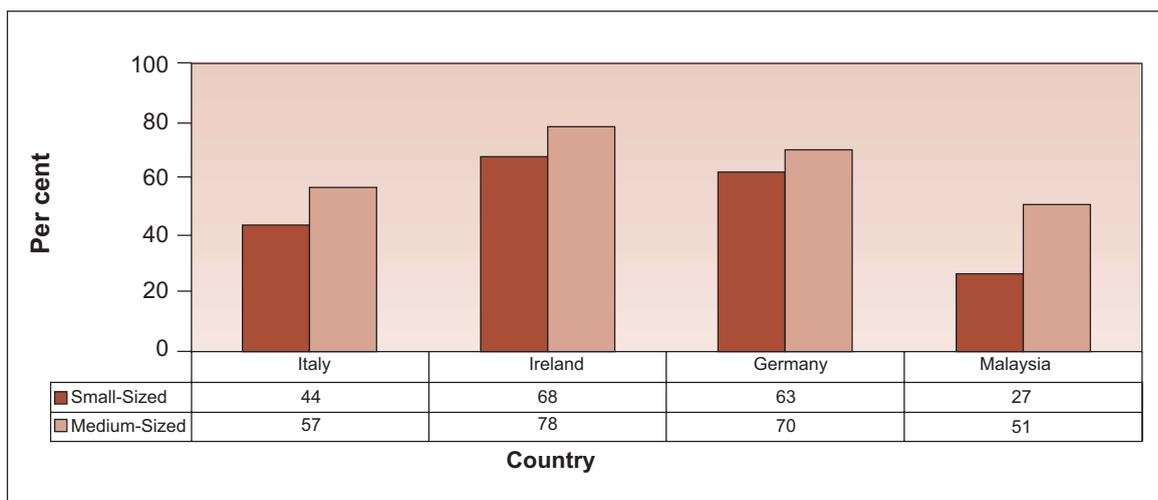
5.15 SMEs in these countries contributed in several areas:

- a large proportion of SMEs in Italy, Ireland and Germany undertook research and development (R&D). In 2000, 78 per cent of medium-sized companies and 68 per cent of small-sized companies in Ireland carried out R&D activities. In comparison, 51 per cent of medium-sized companies and 27 per cent of small-sized companies in Malaysia undertook innovation related activities (Chart 5.5). SMEs which participated in R&D activities in these selected developed countries benefited through horizontal integration and specialisation along the value chain. Some of these SMEs became successful global service providers, through their involvement as original equipment manufacturers (OEMs) and own design manufacturers (ODMs);
- in terms of contribution to output in the manufacturing sector, in 2003, SMEs in Germany contributed the highest, at 57 per cent, followed by Italy (36.7 per cent), Taiwan (31.4 per cent), Japan (20.3 per cent) and Republic of Korea (16 per cent) (Chart 5.6); and
- in terms of employment in the manufacturing sector, SMEs in Republic of Korea contributed 81.9 per cent, followed by Taiwan (77.6 per cent), Germany (70.2 per cent), Japan (64.1 per cent) and Italy (49.1 per cent) (Chart 5.6).

<sup>1</sup> Different countries adopt different definitions of SMEs

CHART 5.5

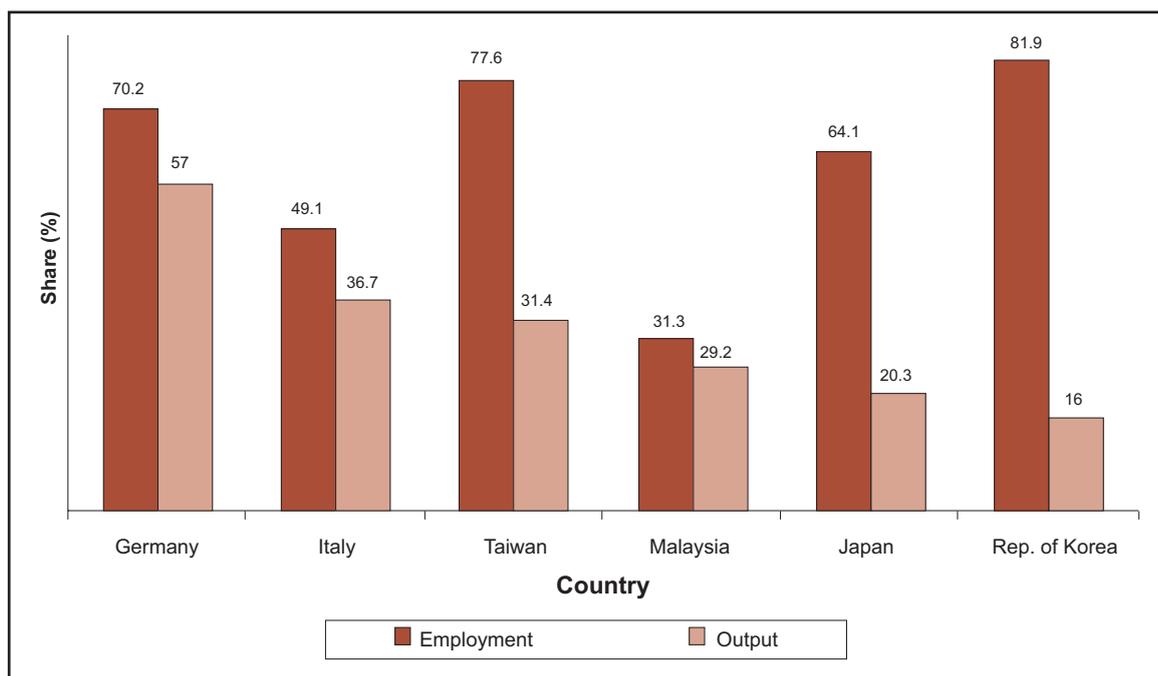
### INTERNATIONAL COMPARISON OF SMALL AND MEDIUM ENTERPRISES IN RESEARCH AND DEVELOPMENT ACTIVITIES, 2000



Source: Malaysian Science and Technology Information Centre (MASTIC), 2001

CHART 5.6

### CONTRIBUTION OF SMALL AND MEDIUM ENTERPRISES TO OUTPUT AND EMPLOYMENT BY COUNTRY, 2003



Sources: 2003 Observatory of European SMEs; White Paper on SMEs, Taiwan; and SMEs in Germany, Facts and Figures 2004

5.16 In Malaysia, a number of SMEs in the electrical and electronics (E&E) industry, as well as precision plastics components, stamping, tooling and machining activities, have evolved to become global suppliers to MNCs. This is partly attributable to the core competencies and skills developed and acquired over the years, as well as the establishment of a conducive policy and institutional framework.

### Institutional Support

5.17 The National SME Development Council has been established as the highest policy making body on the development of SMEs. The Council aims at strengthening inter-ministry and inter-agency cooperation, coordination and implementation of policies and programmes for the development of SMEs. Initiatives by the Council include:

- adoption of a comprehensive framework for the development of SMEs;
- establishment of a comprehensive database on SMEs;
- adoption of standard definitions for SMEs to facilitate the formulation of more effective programmes for SMEs in the manufacturing, services and agriculture sectors and ICT;
- provision of alternative sources of financing, including the securitisation of loans and new trade financing arrangements for SMEs, to enable them to obtain pre- and post-shipment financing from banking institutions; and
- coordination of training for employees of SMEs through the expanded role of *Pembangunan Sumber Manusia Berhad* (PSMB).

5.18 Various programmes have been implemented to nurture the technological capabilities and enhance the productivity of SMEs. The programmes provided by the relevant ministries and agencies, including the Ministry of Science, Technology and Innovation; Small and Medium Industries Development Corporation (SMIDEC); National Productivity Centre (NPC); Malaysian Technology Development Corporation (MTDC) and Multimedia Development Corporation (MDeC), are aimed at upgrading the products and processes of SMEs, enhancing their productivity, and providing knowledge and nurturing skills on certification, acquisition of technology and commercialisation of R&D findings.

5.19 The Government has also introduced various programmes aimed at equipping and facilitating SMEs to promote their products and services in both the domestic and export markets. The programmes and activities were created to provide an avenue for SMEs to exhibit and showcase their products and services, aimed at initiating linkages and networking with MNCs and large corporations. Under the Market Development Grant (MDG), assistance is provided to SMEs to participate in international trade fairs, trade missions and the display of products in Malaysia Trade Centres overseas. The grant scheme has enabled SMEs to make in-roads into the export market. For activities in the domestic

market, SMEs are provided assistance to market their products and services under the Industrial Linkage Programme (ILP), Vendor Development Programme and Global Supplier Programme. The programmes have contributed towards forging greater inter-firm linkages among SMEs, as well as between SMEs and large firms and MNCs. SMEs have also benefited, in terms of networking, technology transfer and training in new skills and core competencies. SMEs participating in ILP and Global Supplier Programme are able to reap the benefits of sharing through bulk sourcing of raw materials and use of common facilities, such as warehousing, cold-room and testing facilities.

- 5.20 Various programmes were undertaken to develop *Bumiputera* entrepreneurs, as part of the efforts to create a viable and competitive *Bumiputera* Commercial and Industrial Community. Government agencies and a number of Government-linked companies (GLCs) assisted in the development of ancillary and supporting industries through their own vendor programmes, which contributed to the development of competent and competitive *Bumiputera* SMEs. Many companies were involved as anchor companies, including *Perusahaan Otomobil Nasional Berhad* (PROTON), *Petroleum Nasional Berhad* (PETRONAS), *Tenaga Nasional Berhad* (TNB) and a number of MNCs. These anchor companies created more than 200 first-tier *Bumiputera* vendor companies, which were involved in manufacturing and related activities.
- 5.21 For the retail business, SMEs are provided assistance under *Projek Usahawan Bumiputera Dalam Bidang Peruncitan* (PROSPER<sup>2</sup>) and related financing assistance for franchising, namely, Franchise Investment and Financing Schemes. These assistance schemes provide funds to mezzanine companies<sup>3</sup> and promote smart partnerships, in the form of equity financing and franchising, for companies involved in developing or promoting products and services for local or international markets. The marketing of products by SMEs in specific areas, such as agriculture and furniture, is supported by specialised agencies, including Federal Agricultural Marketing Authority (FAMA) and Malaysian Furniture Promotion Council, as well as private sector organisations.
- 5.22 In terms of access to financing, according to a survey undertaken by *Bank Negara Malaysia*, in 2001, main sources of financing for SMEs were:

Source	Share (%)
Banking institutions	47.3
Internal funds/retained earnings	32.4
Borrowings from informal sources	11.0
Development finance institutions	4.1

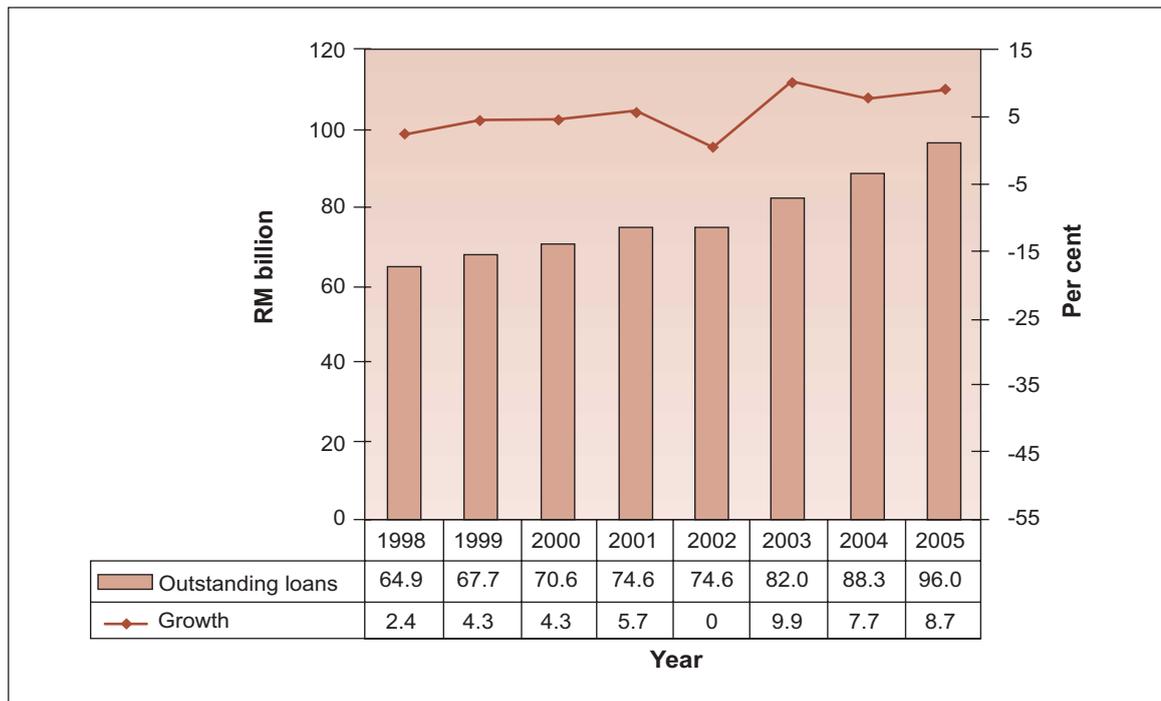
<sup>2</sup> PROSPER is a programme under *Perbadanan Usahawan Nasional Berhad* which provides assistance, in the form of financing and business advisory services, for entrepreneurs intending to establish retail businesses.

<sup>3</sup> Mezzanine company is a company which receives intermediate financing, prior to initial public offering of its shares.

5.23 As at the end of 2005, the banking system recorded a total of RM96 billion of outstanding loans to SMEs (Chart 5.7). In 2005, a total of RM35.8 billion of new loans was approved to more than 85,000 SME accounts. Loans to SMEs accounted for 42.6 per cent of outstanding business loans. On a sectoral basis, lending to SMEs was diversified, with almost two-thirds being channelled to distributive trade, manufacturing and construction sectors, reflective of the business focus of the majority of the SMEs. In addressing the financing needs of SMEs, *Bank Negara Malaysia* has established special revolving funds, namely, Fund for Small and Medium Industries 2, New Entrepreneur Fund 2 and Fund for Food. These funds are available through commercial banks, Islamic banks and selected development finance institutions. As at the end of 2005, a total of RM8.9 billion was made available under the special revolving funds. Due to the revolving nature of the funds, a total of RM11.2 billion had been approved to 24,503 borrowers. The promoted sectors under this initiative cover food production, manufacturing and services.

CHART 5.7

### CUMULATIVE OUTSTANDING LOANS TO SMALL AND MEDIUM ENTERPRISES



Source: Bank Negara Malaysia

5.24 In addition to financing from the commercial sector, the Government also provides loans and grants through the relevant ministries and agencies, such as the Ministry of Entrepreneur and Cooperative Development, SMIDEC and *Perbadanan Usahawan Nasional Berhad*. For example, during the IMP2 period,

RM2.9 billion were allocated to the Ministry of Entrepreneur and Cooperative Development and RM640 million to SMIDEC to undertake various financial support schemes for SMEs in the forms of soft loans and grants.

5.25 *Bank Negara Malaysia* has undertaken various initiatives to enhance access to financing to SMEs, including:

- establishment of dedicated SME Unit, *Bumiputera* Development Unit and Complaints Unit at commercial banks, to address the financing needs of SMEs and provide other ancillary services, such as:
  - identifying and structuring appropriate financial requirements for SMEs;
  - conducting training courses, workshops and other educational programmes;
  - providing cash management services;
  - providing advice on financial management; and
  - providing trade financing facilities, such as Multi-Currency Trade Financing Facility and Indirect Exporter Financing Scheme;
- establishment of Small Debt Resolution Scheme to facilitate the restructuring of non-performing loans of SMEs with on-going businesses;
- enhancement of the capacity of Credit Guarantee Corporation Malaysia Berhad in providing guarantees for loans extended by banking institutions to SMEs;
- establishment of Development Financial Institution and Enterprise Department at *Bank Negara Malaysia* to provide, among others, general advice on financing matters, which enhance the awareness among SMEs on lending policies and programmes of development finance institutions and commercial banks; and
- establishment of the SMEinfo Portal ([www.smeinfo.com.my](http://www.smeinfo.com.my)), an integrated online information gateway for SMEs. The portal provides information on all aspects of SME development, including financing, advisory services, training programmes, and business and networking opportunities, as well as other SME development programmes and initiatives by the Government and the private sector. SMEs can also advertise their companies and products to large potential customers by providing information about their companies, description of the products and services being offered, and contact details, through the SME Directory of the portal.

- 5.26 The SME Bank, which started operations in October 2005, focuses on the specialised financial needs of SMEs. The Bank is also given the responsibility to nurture and further develop SMEs by providing non-financial services in areas such as business advisory services, technical management, marketing and information technology (IT). Various financing needs of SMEs will be addressed through specialised financial products, catering for industries at various stages of growth and with different market potentials. In respect of venture capital, Malaysian Venture Capital Management Berhad and MTDC continue to provide early stage financing to potential start-up companies, including SMEs, involved in high-technology activities.
- 5.27 To upgrade the skills and technical competencies of both workers and owner-operators of SMEs, various programmes have been undertaken by agencies such as SMIDEC, *Institut Keusahawanan Negara*, *Majlis Amanah Rakyat* (MARA) and state skills development centres. During the period 1999-2005, a total of 753,845 workers of SMEs, or 47.8 per cent of the total employment in SMEs, had been trained in both technical and soft skills under the Human Resource Development Fund (HRDF). The fund had been expanded to include firms in manufacturing-related services, such as logistics and market support (Table 5.4). More training modules, incorporating market requirements, will be introduced.

### **Impediments to the Development of Small and Medium Enterprises**

- 5.28 During the IMP2 period, there was an increase in the contribution of SMEs in the manufacturing sector. However, inherent structural weaknesses prevent the full realisation of their potential. The weaknesses included:

#### **(a) Limited Utilisation of Technology**

- 5.29 A large number of SMEs are still involved in labour-intensive production processes, as reflected by the decrease in the capital investment per employee (CIPE) ratio from RM55,256 in 1996 to RM36,806 in 2005. SMEs, in general, also utilise low level of technology and less productive methods of operation. In a survey conducted in 2003, less than 5 per cent of business operations by SMEs had been fully automated, while 75 per cent, semi-automated. The survey also indicated that 69.2 per cent of these enterprises used indigenous technology. The use of ICT to enhance productivity and market outreach is still limited among SMEs. The most widely utilised ICT application is computer-aided-design (24.7 per cent), followed by e-commerce (22.5 per cent), computer-aided manufacturing (12.9 per cent) and enterprise resource planning (10.7 per cent).

TABLE 5.4

**EMPLOYEES OF SMALL AND MEDIUM ENTERPRISES TRAINED UNDER HUMAN RESOURCE DEVELOPMENT FUND BY STATE AND TYPE OF COURSE, 1999-2005**

State	Course	Soft skills	Quality	ICT	Supervisory	Technical	Moulds and dies	Others		Total
								Diploma	Overseas	
<b>Total</b>		<b>299,044</b>	<b>266,492</b>	<b>97,321</b>	<b>48,734</b>	<b>38,453</b>	<b>423</b>	<b>624</b>	<b>2,754</b>	<b>753,845</b>
Selangor		90,509	80,990	27,769	13,655	10,789	90	72	270	224,144
Johor		44,138	60,339	17,546	7,600	4,750	36	19	128	134,556
Pulau Pinang		46,471	44,321	14,301	8,198	7,600	39	37	594	121,561
Wilayah Persekutuan Kuala Lumpur		36,942	16,420	14,618	5,554	3,505	105	109	274	77,527
Kedah		12,368	15,189	3,610	2,903	3,161	55	4	39	37,329
Negeri Sembilan		15,392	11,562	3,069	2,289	1,945	3	166	482	34,908
Perak		10,721	12,247	6,216	2,259	1,209	6	127	343	33,128
Melaka		10,525	8,628	4,152	2,304	1,075	4	28	119	26,835
Sarawak		11,480	4,929	1,490	1,662	996	55	14	75	20,701
Pahang		8,844	5,720	2,278	1,144	1,852	3	39	229	20,109
Sabah		5,793	4,161	1,231	713	832	24	3	26	12,783
Terengganu		3,373	657	549	257	468	1	nil	1	5,306
Kelantan		1,210	524	392	156	52	nil	1	42	2,377
Perlis		803	605	47	30	85	1	2	126	1,699
Wilayah Persekutuan Labuan		475	200	53	10	134	1	3	6	882

Source : Pembangunan Sumber Manusia Berhad, Ministry of Human Resources

**(b) Limited Involvement in Research and Development Activities**

5.30 Investments by SMEs in R&D and innovation, which will enable them to move up the value chain, are still limited. Based on the same survey conducted in 2003, SMEs which undertook R&D activities accounted for 55 per cent of the SMEs surveyed. Of the SMEs which undertook R&D, 59.4 per cent concentrated on process improvement, 44 per cent, new product development and 21.9 per cent, innovation and technology. In terms of innovation, only 19 per cent of these enterprises registered their trademarks and 3 per cent, patents. One of the reasons for the low registration is the lack of awareness among SMEs on the importance of IP protection.

**(c) Lack of Technical, Professional and Management Expertise and Entrepreneurial Skills**

5.31 Generally, SMEs are faced with the shortage of technical and professional expertise, due to their inability to attract and retain suitable talents. This constraint has led to the limited utilisation of technology and involvement in R&D activities. SMEs, in general, are also not professionally managed, due to the lack of management expertise. They lack awareness on the importance of adopting best business practices and quality management systems, such as financial management and customer focused activities. As a result, SMEs are unable to compete effectively in the market, nor take advantage of market opportunities, created by new technological developments and process improvements. SMEs need to possess high entrepreneurial skills and appropriate business acumen to sustain their operations. Presently, most SMEs lack entrepreneurial capabilities and the required business values and discipline in operating their businesses.

**(d) Inability to Explore Market Opportunities**

5.32 SMEs are less able to capitalise on market opportunities brought about by regionalisation and globalisation, as a result of their limited technical and financial capabilities. Due to the limitation in domestic market expansion, there is a need for SMEs to explore potential export markets. Although some have ventured into overseas markets, the number is still limited.

**SECTION III CHALLENGES**

5.33 The business and operating environment will become more challenging to SMEs during the IMP3 period. The challenges include:

- changing international market environment;
- competition from emerging economies;
- advancements in technology;

- global business trends;
- nurturing innovative and resilient SMEs;
- access to markets;
- access to financing;
- enhancing human capital;
- adopting best business practices;
- harnessing the potential of SMEs in the services sector; and
- formulating a more cohesive policy and institutional framework.

#### **(a) Changing International Market Environment**

5.34 Increased globalisation and liberalisation will have an impact on firms, especially SMEs. The current global trading arrangements, such as the multilateral rules of the World Trade Organisation (WTO), ASEAN Free Trade Area (AFTA) and other regional and bilateral free trade agreements, pose both challenges and opportunities. SMEs, which form the supply base of industries, will also be affected by the adjustments and structural changes arising from the dynamic market and business operating environment. It may necessitate SMEs to undertake structural reforms, involving reorganisations, consolidations, specialisation and repositioning of businesses, to become more competitive and resilient, in both the domestic and export markets.

5.35 Greater integration into the global economy provides wider opportunities for domestic SMEs to participate in the regional and global supply chains. Effective participation will require SMEs to move up the value chain. Adoption and application of the latest technologies will assist SMEs in responding to this challenge. A number of Malaysian SMEs which have moved up the value chain and attained core and specialised technical competencies over the years, have succeeded in becoming global suppliers and service providers, supplying products and providing services directly to MNCs and large international corporations which are based in Malaysia. These SMEs also indirectly supply products and provide services to MNCs outside Malaysia through the branch operations of the MNCs based in Malaysia.

#### **(b) Competition from Emerging Economies**

5.36 Domestic SMEs have to equip themselves for the competition from emerging economies, such as the People's Republic of China and India, which are not only low cost producers and service providers, but also innovative. To have the competitive advantage over these emerging economies, Malaysian SMEs need

to move away from low wage, labour-intensive activities to higher value-added activities. This will necessitate SMEs to acquire the enabling technologies to develop and enhance their capabilities, as well as adopt cost effective and best business practices. To enhance the competitiveness of domestic products and services, emphasis will also need to be given not only to the promotion, packaging and design of products and services, but also branding. Brand building will need to be integrated into the marketing strategy to promote the products of SMEs, as this will facilitate access into new markets and increase existing market share.

- 5.37 Conformance to standards and certification is essential for SMEs to sustain both domestic and export market shares. Adoption of quality management systems, such as good manufacturing practices (GMP), good agricultural practices and good regulatory practices, will not only provide assurance to consumers, but also provide the competitive advantage to SMEs. On its part, the Government will accelerate the formulation and adoption of standards for products and services and enhance their enforcement, covering both domestic and imported products and services.

**(c) Advancements in Technology**

- 5.38 Advancements in technology have resulted in the shortening of product life cycles. SMEs need to undertake continuous upgrading of existing products and processes, and be involved in R&D, and design and development (D&D) activities, as well as product innovation, to remain competitive. In addition, SMEs need to take advantage of the recent trend in technology convergence, resulting in opportunities in new applications and creation of new products and services. However, SMEs are often constrained by their limited resources in R&D and D&D. While programmes and support measures by the Government have assisted SMEs in improving their products and processes, and moving up the value chain, there is still a lack of a critical mass of SMEs undertaking R&D and D&D activities.
- 5.39 To enhance their technological capabilities, SMEs need to acquire appropriate technologies by leveraging on the resources and expertise of research institutes, universities and specialised Government institutions, such as SIRIM Berhad, Malaysian Agricultural Research and Development Institute (MARDI), Rubber Research Institute and Malaysian Palm Oil Board (MPOB), through closer collaboration with these institutions to take advantage of opportunities arising from the dissemination and commercialisation of research findings on technologies and products. These institutions will need to assume a more effective role, by focusing on product and process innovations to support SMEs which are already operating as, or have the potential to become, OEMs, ODMs and own brand manufacturers (OBMs).

**(d) Global Business Trends**

5.40 There is an increasing worldwide trend among large manufacturers, particularly MNCs, to outsource non-core activities along the value chain to other specialised companies, as part of the global consolidation and rationalisation process, to remain competitive. This has created opportunities for SMEs, as MNCs continue to seek for sources of supplies which are more competitive. However, SMEs need to be innovative to be able to participate in the regional and global supply chains. To benefit from opportunities created, SMEs will need to:

- produce products and provide services which are acceptable to MNCs, in terms of quality, cost and delivery;
- comply with international standards and certifications;
- adopt the strategy on product and service differentiation and specialisation, as well as branding;
- cope with the demands of shorter lead times and the pressure to reduce costs;
- focus on efforts to build and enhance core competencies; and
- adopt latest ICT and best business practices, such as supply chain management and customer relationship management.

5.41 SMEs will need to improve their adherence to environmental standards and requirements by adopting more environment-friendly technologies and practices, such as:

- green productivity, where both productivity improvement and environmental protection are achieved simultaneously;
- cleaner production processes;
- efficient consumption of energy and materials; and
- better maintenance and waste management.

5.42 In a competitive market environment, SMEs need to have the agility to respond to fast changing market requirements. Thus, SMEs need to adopt a global outlook in their business operations to make them more resilient in the market. The need to undertake business operations on a 24x7 basis will pose both a challenge and opportunity for those SMEs undertaking their operations on a global scale.

5.43 Changing consumer behaviour will influence the types of products and services brought into the market. Presently, there is a trend towards convenience products and services and increasingly, marketing channels are shifting from departmental to convenience stores and internet shopping. This creates opportunities which can be taken advantage of by small and home-based business units.

### (e) Nurturing Innovative and Resilient Small and Medium Enterprises

5.44 Nurturing innovative and resilient enterprises is important in sustaining the country's competitive advantage. Enterprises can both grow and expand by themselves or through mergers, consolidations and strategic alliances. Nevertheless, there is a need for institutional support and a conducive environment, which encourages entrepreneurial activities, including:

- a more cohesive policy and regulatory framework;
- provision of strategic locations;
- close collaboration between entrepreneurs and research institutes, and financiers;
- more active involvement of industry associations and chambers of commerce, supported by business-friendly local authorities;
- more effective programmes and initiatives for business incubation and start-up phases; and
- encouragement to SMEs to register their intellectual property rights (IPRs) for the development of more creative and innovative SMEs.

5.45 In addition to these basic requirements, countries which have been successful in nurturing a vibrant entrepreneurial and innovative community also adopt an education system which incorporates entrepreneur related programmes at secondary school and tertiary levels, and promotes creativity and innovation among students at an early stage. At the tertiary level, the education system also includes programmes which encourage the establishment of incubation centres and start-up ventures. The development of new innovative and creative business entities in these countries is enhanced and supported by a cohesive and systemic institutional approach, including effective incubation programmes. Special emphasis is also given to hasten the growth of start-up companies and micro-enterprises in specific high growth areas.

### (f) Access to Market

5.46 The majority of SMEs are dependent on the domestic market. Only 25.6 per cent of the output of SMEs in the manufacturing sector are exported. In efforts to gain access to export markets, SMEs face challenges to produce quality products, at competitive prices, as well as meeting delivery schedules. Increasing costs of production and freight charges, as well as the need to overcome non-tariff barriers, also exert pressures on SMEs wanting to export.

5.47 Greater coordination among relevant agencies will further strengthen the implementation and improve the effectiveness of market development programmes. Present initiatives will need to be repackaged to reflect changing market conditions and the special needs of the SMEs. Programmes on capacity building, especially in marketing skills, will need to be further strengthened to enable SMEs to expand and diversify their market coverage.

**(g) Access to Financing**

5.48 SMEs will need to keep abreast of the trend in the capital and money markets, where other financial products, such as equity, bonds and other commercial papers, are increasingly being utilised. For new and start-up firms, more venture funds will need to be made available to finance investments in new growth areas, particularly in knowledge, ICT-based projects and agro-based businesses. The existing Government-owned venture capital funds, namely, those under Malaysia Venture Capital Management Berhad, Malaysia Debt Venture Berhad and MTDC, will need to be strengthened and aligned to meet the financing requirements at pre-seed to start-up stages of project conceptualisation and initiation. In addition, the creation of more private venture capital funds will need to be encouraged.

**(h) Enhancing Human Capital**

5.49 SMEs, in general, face a shortage of skills and technical knowledge to upgrade and improve their business and manufacturing operations. The application of leading technologies requires workers in SMEs to be equipped with appropriate competencies and knowledge. In this respect, less than half (43 per cent) of SMEs provide training for their employees. SMEs are also faced with the inability to attract qualified and technically skilled workers, due to limited financial capacity.

5.50 Many innovative SMEs are managed and owned by technopreneurs and intrapreneurs who have acquired technical and business skills while working for MNCs and GLCs. Dedicated programmes will need to be introduced to encourage the creation of more technopreneurs and intrapreneurs.

**(i) Adopting Best Business Practices**

5.51 A major requirement in addressing the structural weaknesses of SMEs and transforming them into resilient, innovative and competitive business units, is the need for entrepreneurs and business operators to adopt best business practices. The areas include continuous improvement, benchmarking, forging strategic alliances and collaborations, certification, business networking and application of customer-focused management policy and practices.

**(j) Harnessing the Potential of Small and Medium Enterprises in the Services Sector**

5.52 The services sector has been identified as a new source of growth. However, the potential of SMEs in the sector has not been adequately harnessed nor developed, compared with those in the manufacturing sector. Existing SMEs in the services sector will need to be assisted and new potential SMEs nurtured. New assistance programmes need to be introduced to encourage their growth and develop their competencies.

### **(k) Formulating a More Cohesive Policy and Institutional Framework**

5.53 The formulation and establishment of a cohesive policy, regulatory and institutional framework, as well as the creation of a conducive entrepreneur related business environment, are important in enhancing the performance and contribution of SMEs. Presently, there exist several agencies involved in SME-related programmes in different functional areas, directed at specific target groups. Information on these programmes is widely disseminated to the target groups. However, inadequate specialised talents and technical expertise of the Government agencies concerned in providing advisory services, limit the effectiveness and outreach of some of these programmes.

5.54 Policies and regulatory framework, aimed at enhancing productivity and competitiveness, will need to address specific requirements of different categories of SMEs in the various sectors, especially the services sector. Presently, in the distributive trade, logistics, business and professional services, education and training, tourism, construction and healthcare sub-sectors, the emphasis has been more towards compliance with regulatory and licensing requirements. In respect of the present market development programmes, there is insufficient emphasis on business and technical advisory services, as well as the promotion of products and services of SMEs in the domestic market. Present efforts on market promotion undertaken by agencies, such as the Malaysia External Trade and Development Corporation (MATRADE), Malaysian Furniture Promotion Council and Malaysian Palm Oil Promotion Council, are mainly directed towards the export markets.

## **SECTION IV STRATEGIES AND POLICIES**

### **STRATEGIC THRUSTS**

5.55 For SMEs in both the manufacturing and services sectors to contribute significantly to the realisation of the long term competitiveness of the country, five strategic thrusts have been set:

- (1) enhancing the competitiveness of SMEs;
- (2) capitalising on outward investment opportunities;
- (3) driving the growth of SMEs through technology, knowledge and innovation;
- (4) instituting a more cohesive policy and supportive regulatory and institutional framework; and
- (5) enhancing the growth and contribution of SMEs in the services sector.

## (1) ENHANCING THE COMPETITIVENESS OF SMALL AND MEDIUM ENTERPRISES

### (i) *Integration into the Regional and Global Supply Chains*

5.56 Integration into the regional and global supply chains of MNCs will facilitate SMEs in their efforts to internationalise their operations. SMEs will be encouraged to take advantage of outsourcing and offshoring trends among the MNCs and large corporations, especially in the high value-added activities outsourced by the latter. Measures to facilitate the integration of the SMEs include:

- encouraging SMEs to focus on nurturing and enhancing core competencies, such as process and product engineering, as well as adopting ICT, to meet international standards on quality and delivery imposed by MNCs;
- promoting intensively the utilisation of international standards, for example, the RosettaNet Standard. MNCs and large corporations with an extensive supply base will be identified and encouraged to adopt the RosettaNet Standard, as well as drive its application among their suppliers;
- continuing support programmes to enhance the efficiency and competitiveness of SMEs to enable them to reap the benefits arising from the outsourcing trend. Advisory programmes, involving both foreign and local experts, will be strengthened to provide the necessary technical know-how and support to enhance the productivity of SMEs; and
- encouraging local and foreign hypermarkets and large retail outlets to market the products of SMEs and undertake brand promotion for the SMEs locally and overseas.

### (ii) *Rationalisation and Specialisation into Selected High Value-Added Activities*

5.57 To remain regionally and globally competitive, SMEs will be encouraged to move up the value chain. Examples:

- SMEs in apparel and furniture to move into designing, branding and patenting;
- SMEs in the food industry to diversify into the production of products, such as convenience and bio-organic foods;
- SMEs in the electrical and electronics (E&E) industry to move into areas, such as automation equipment, instrumentation and systems integration;
- SMEs in automotive parts and components to be more involved in D&D activities during the planning and development of new models;

- SMEs in the palm oil industry to expand and diversify into more downstream activities, such as food products, pharmaceuticals and other manufactured fats products; and
- SMEs in the manufacturing related services industry to be more involved in activities such as heat treatment, wire harnessing and polishing.

***(iii) Specialisation in Core Competencies to Develop Market Niches***

5.58 SMEs will be encouraged to specialise in products and services which leverage upon their core competencies to create and develop market niches, both domestically and internationally. They will also be encouraged to acquire expertise to effectively market their products and services. Greater collaborative efforts will be undertaken between technical and development agencies to improve and strengthen the core technological competencies and capabilities of SMEs.

5.59 The Government will facilitate the acquisition and enhancement of skills and competencies of SMEs, especially in emerging technologies, such as biotechnology and photonics, through:

- emplacement of employees of SMEs at MNCs and large corporations; and
- provision of support programme for SMEs to acquire cutting-edge technologies, including ‘bridging technology’<sup>4</sup>, to upgrade their operations.

***(iv) Customer-Driven Approach***

5.60 SMEs will be encouraged to adopt a more customer-driven approach in business operations, through programmes on customer relationship management, to enhance their customer relationship skills. Focus will be given on efforts to enable SMEs to acquire better understanding on market structure and customer demands, which will provide them with insights on the market needs.

***(v) Strengthening Inter-Firm Linkages***

5.61 Increased outsourcing and offshoring activities by large firms and MNCs provide opportunities for the greater participation of SMEs in the global market. Inter-firm linkages among SMEs and between SMEs and large corporations, as well as MNCs, will be intensified and strengthened to enable SMEs to become reliable and competitive suppliers.

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<sup>4</sup> Bridging technology is a combination of several technologies, which can be utilised to provide a broader range of products or services

- 5.62 Presently, the ILP under SMIDEC is confined to the production phase of the manufacturing sector. The scope of the ILP will be widened to cover the entire value chains in both the manufacturing and services sectors. In addition, the existing incentives under the ILP will be reviewed and strengthened to attract participation by large corporations and MNCs in the programme.
- 5.63 The Government policy of according preference to using and procuring local products and services will be continued. The private sector will also be encouraged to source their inputs, parts and components, as well as services, from domestic suppliers.

**(vi) Adopting Best Business Practices and Benchmarking**

- 5.64 SMEs will be encouraged to adopt best business and management practices, such as supply chain management, customer relationship management and enterprise resource planning, to gain competitive edge. They will also be encouraged to benchmark against their peers and competitors to improve performance. Training programmes will be designed, in collaboration with industry associations and chambers of commerce, to encourage the participation of SMEs in benchmarking programmes provided by NPC.

**(vii) Transformation and Restructuring of Businesses**

- 5.65 SMEs will be encouraged to transform their business models and practices to be cost effective and responsive to changes in the business environment. This may involve the restructuring, streamlining and consolidation of operations, as well as the repositioning of businesses. SMEs will also be encouraged to form strategic alliances and consortia to leverage upon complementarities and synergistic business networks.

**(2) CAPITALISING ON OUTWARD INVESTMENT OPPORTUNITIES**

- 5.66 SMEs will be encouraged to undertake outward investments to gain inroads into new export markets, as well as be more competitive suppliers to MNCs. It will also enable SMEs to benefit from wider sourcing for industrial inputs and provide better opportunities for collaboration and resource sharing. Measures to facilitate such efforts include:
- encouraging more financial institutions to provide loans to SMEs for new investments overseas, especially in the ASEAN region; and
  - SMIDEC initiating closer bilateral cooperation with its foreign counterparts to facilitate networking between domestic and foreign SMEs. Under this initiative, cooperation programmes will be undertaken, involving other relevant Government agencies, including MATRADE and NPC. Such cooperation programmes include industry linkages, joint trade missions, exhibitions, and exchange of information and best practices.

5.67 To enable SMEs to capitalise on outward investment opportunities, they will be encouraged to:

- acquire an understanding of the characteristics and requirements of the different markets which they are targeting;
- possess sufficient international marketing knowledge and skills to be able to gain access to new markets; and
- adopt greater application of ICT in business operations, as well as utilisation of e-commerce.

**(i) *Equipping Small and Medium Enterprises with Knowledge and Skills***

5.68 To compete effectively in the international market, SMEs will be encouraged to equip themselves with knowledge and skills in areas such as financial management and marketing. These skills will enable SMEs to respond to new market trends and requirements of the different market segments. Efforts will be undertaken to assist SMEs to further develop their technical skills, especially in creating innovation and generating economic value from knowledge applications.

5.69 SMIDEC, together with other agencies and the private sector, will review the present training and apprenticeship programmes and assist in the formulation of new programmes, to incorporate knowledge management plans and strategies, as well as knowledge-based applications and practices among the SMEs. Existing training programmes, aimed at enhancing entrepreneurial capabilities, including marketing and financial management, will be expanded and reinforced. In marketing, training modules will focus on areas such as negotiation skills, merchandising, pricing, brand building and consumer behaviour, to enable SMEs to keep pace with new market trends and requirements. In addition, industry associations will be encouraged to establish a specialised training entity to provide relevant and requisite training, specifically in the areas of technology adoption and resource management. This effort will further support and improve the business efficiency and operational capabilities of SMEs.

**(ii) *Access to Market Intelligence***

5.70 SMEs will be encouraged to gather market intelligence to facilitate entry into new markets through undertaking specific market studies by themselves or accessing secondary sources of information. This will, among others, enhance their awareness on new and emerging aspects of business operations and practices, such as innovation, acculturation, advertising and the changing medium of communication, to strengthen local brands and build market share.

- 5.71 An interactive trade portal, MITI and Agencies Trade and Industry Information Exchange (MATRIIX), has been developed, which provides a comprehensive source of information on market intelligence. The trade portal provides information on areas such as market requirements, consumer preferences, and international standards and regulations, as well as environmental requirements. Real time market information from other agencies will be incorporated into the trade portal.

***(iii) Conformance to International Standards and Regulations***

- 5.72 SMEs will be encouraged to conform to international standards and regulations to gain access to the export market. The formulation and adoption of Malaysian standards for products and services, in line with international requirements, will be accelerated and their enforcement enhanced. SMIDEC will collaborate with the regulatory bodies to facilitate SMEs in conforming to the required standards and regulations.

***(iv) Greater Involvement of Trading Companies in the Export of Products and Services of Small and Medium Enterprises***

- 5.73 To encourage more trading companies to market the products and services of SMEs, the existing export incentives will be reviewed. Greater involvement will be encouraged among Malaysian large trading companies, including GLCs, in facilitating SMEs to export their products and services.

***(v) Enhancing the Role of Industry Associations in Facilitating Market Access for Small and Medium Enterprises***

- 5.74 Industry associations will be encouraged to assume a more pro-active role in facilitating market access for their members among the SMEs. This will include undertaking bulk breaking of imported raw materials and components, and the provision of common facilities, such as warehousing and cold-room and testing facilities. Assistance will be provided to industry associations which undertake these activities.

***(vi) Leveraging on the Halal Hub***

- 5.75 SMEs involved in activities such as food processing, pharmaceuticals, cosmetics, beauty care and palm oil-based products, will be encouraged to obtain *halal* certification to leverage upon the competitive edge of the country in becoming the *halal* hub. SMEs will also be encouraged to be involved in the provision of related *halal*-compliant services, such as cold-chain facilities, transportation, handling and forwarding, and warehousing services.

### (3) DRIVING THE GROWTH OF SMALL AND MEDIUM ENTERPRISES THROUGH TECHNOLOGY AND INNOVATION

5.76 In line with global trends and technological advancements, growth in future businesses will be mainly driven by technology and innovation. The emergence of new technologies and products, as well as the introduction of advanced applications and processes in the markets, have influenced ways of doing business. For SMEs to be able to respond to this development, measures which will be instituted include:

- adoption and application of leading technologies, including effective utilisation of ICT;
- encouraging research and D&D activities;
- closer collaboration with specialised Government research institutes and universities;
- enhancement of the human capital of SMEs;
- nurturing innovative and resilient SMEs;
- acculturation of entrepreneurship and innovation; and
- creation of a more conducive business environment, which stimulates vibrant and innovative entrepreneurial activities.

#### *(i) Adoption and Application of Advanced Technologies*

5.77 The adoption and application of advanced technologies, including ICT, will contribute towards the creation of SMEs which are competitive and able to respond in a timely manner to market demands and changes. High priority will be given to efforts to strengthen the technological capacities and capabilities of SMEs to meet the challenges of globalisation and increasing competition. Strategies will be directed at encouraging and enabling SMEs to acquire technologies which will enable them to move up the value chain. Such technologies will also assist SMEs to achieve product and service differentiation. In the process, a greater number of local technology-based companies will be created among the SMEs.

5.78 Support programmes to accelerate the adoption of technologies in relevant areas among the SMEs will be continued and strengthened. SMIDEC, in collaboration with technology-based institutions, such as SIRIM Berhad, MTDC, MDeC and Malaysia Bio-Technology Corporation, will introduce technology foresight programmes for SMEs, which will enable them to be aware of and take advantage of future technologies.

**(ii) Encouraging Research and Development Activities**

5.79 SMEs will be encouraged to undertake high value-added activities in areas such as R&D, and product and process engineering, to gain and sustain competitive advantage within the context of expanding supply chains. Continual upgrading of existing products, processes and services will be encouraged to meet the dynamic market demands for more innovative and sophisticated products and services.

5.80 Specific programmes will be implemented to nurture local SMEs as R&D partners to tap the opportunities of R&D outsourcing by MNCs and GLCs. Measures will also be undertaken to encourage collaborative ventures among MNCs, GLCs and SMEs to facilitate technology transfers and skills development. Existing programmes for enhancing technological capabilities and supporting R&D activities among SMEs will be strengthened. The scope of coverage of the programmes will be expanded to include the acquisition of 'bridging technologies'.

**(iii) Closer Collaboration with Specialised Government Research Institutes and Universities**

5.81 To overcome resource constraints faced by SMEs in undertaking R&D activities, closer and pro-active collaboration between SMEs and research institutes and universities will be undertaken. Measures towards more effective collaboration include:

- making R&D programmes of these research institutes and universities more market-driven to meet specific needs of SMEs, with emphasis on innovation; and
- upgrading resource and institutional capacities of these research institutes and universities to enable the provision of more effective advisory services and the commercialisation of more research findings.

5.82 To intensify the promotion and dissemination of research findings, SMIDEC, in collaboration with research institutes and technology-based institutions, will establish a database on technologies, processes, systems designs and softwares, which are ready for commercialisation. In addition, a dedicated commercialisation fund for SMEs will be considered to encourage SMEs to undertake the commercialisation of potentially viable R&D results. The role of incubation centres to support the development of start-up companies will be strengthened. Benchmarking of these centres with those in other countries, which have created commercially successful SMEs through their incubation programmes, will be undertaken.

***(iv) Enhancing the Human Capital of Small and Medium Enterprises***

5.83 Developing human resources is vital in driving growth through technology and innovation, as well as enabling SMEs to move up the value chain. To bridge the gaps in the human resource development of SMEs, existing programmes on skills upgrading and the acquisition of core competencies and specialised knowledge will be continued and enhanced. Training modules for SMEs will be re-oriented to reflect changing market requirements and technology advancements to create the supply of skilled and knowledge workers, both in technical and managerial fields. The provision of these training programmes will also include training within the organisations of the SMEs.

***(v) Nurturing Innovative and Resilient Small and Medium Enterprises***

5.84 A critical mass of innovative SMEs will be nurtured to generate growth which is driven by technology and innovation. This category of SMEs will also be created through mergers and acquisitions, consolidations and strategic collaborations. Efforts involving both public and private sector institutions in nurturing innovative and resilient SMEs and developing required talents include:

- undertaking special support programmes to encourage GLCs, MNCs and local institutions and enterprises to create technopreneurs and intrapreneurs from within their organisations; and
- encouraging both public and private research institutions, such as Malaysian Institute of Microelectronics System (MIMOS), Technology Park Malaysia, SIRIM Berhad and universities, to establish more incubation and business start-up centres. These centres will be the catalyst for the growth of innovative SMEs, as well as those with leading technologies.

***(vi) Acculturation of Entrepreneurship and Innovation***

5.85 Innovativeness will be nurtured at an early stage through the education system. Modules on entrepreneurship and entrepreneur related skills will be incorporated into the curriculum at the tertiary level, including universities. This will develop and enhance innovative and entrepreneurial talents. Creating awareness and acquiring such capabilities will facilitate the change in mindsets, as well as inculcate positive business values and discipline.

5.86 Existing entrepreneurship programmes, including advisory and outreach services, will be expanded to equip SMEs with new and improved management and business practices and methods in production, quality improvement, marketing and distribution to raise productivity, efficiency and profitability. New schemes, including those on increased automation and business coaching, as well as the provision of technical skills, to assist SMEs to develop, commercialise and

market innovative ideas, will also be implemented. Programmes on technopreneur development will be expanded to support science and technology-based SMEs, particularly *Bumiputera* SMEs, to benefit from home-grown technologies. Measures to be undertaken include providing appropriate infrastructure, encouraging transfer of technology and improving access to financing. New support mechanisms will be introduced to enhance the outreach programmes for SMEs, including advisory services on business, design, packaging and marketing.

***(vii) Creating a More Conducive Environment for Technology and Innovation***

- 5.87 A more conducive environment for technology and innovation among the SMEs will be created, including supportive institutional framework. Active involvement of industry associations will be encouraged, supported by close collaboration between entrepreneurs, research organisations and financial institutions, for the creation of a vibrant entrepreneurial community. In addition, incubation centres will be strategically located to support the creation of a critical mass of innovative enterprises. An industry-driven 'National SME Focal Point', involving entrepreneurs, research institutes, financiers, including venture capitalists, and relevant Government agencies, will be established as an avenue for the exchange of information, including new technology and market trends and best practices in R&D and research commercialisation.

**(4) INSTITUTING A MORE COHESIVE POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORK**

***(i) Policy and Regulatory Framework***

- 5.88 A systemic approach to catalyse the growth of new entrepreneurs and SMEs will be adopted to achieve a higher rate of success among businesses. Programmes on SMEs, especially in the services sector, will focus more on the developmental aspects, including meeting specific targets and requirements of the SMEs. The implementation of these programmes will be more coordinated.
- 5.89 Financial support programmes to meet the special needs of the different categories of SMEs will be continued and strengthened. The coverage of the programmes will include enhancing financial guarantees and widening the scope for the securitisation of borrowings. The SME Bank will guarantee loans granted to SMEs by other banking institutions, as well as facilitate the securitisation of SME loans, enabling them to also tap the capital market. To encourage greater participation in export markets, new trade financing arrangements, covering pre-shipment and post-shipment financing, will be introduced.

5.90 The capital market will complement traditional sources of funding for SMEs. Innovative financing instruments will be introduced for knowledge-intensive, as well as technology-intensive, start-up enterprises, using intangible collaterals, such as ideas, knowledge and expertise, as their principal assets to source funds from the capital market. SMEs will also be encouraged to utilise other alternative sources of financing, including equity financing and venture capital, as well as other financial instruments. Existing Government-owned venture capital funds will be increased, providing more emphasis to the financing needs at the pre-seed and start-up stages. In addition, the creation of more private venture capital funds will be encouraged. Collaboration between research institutes, business incubators, entrepreneurs and venture capitalists will be strengthened to create wider networking and funding opportunities.

5.91 A Services Sector Development Fund for SMEs will be considered to assist potential entrepreneurs to upgrade their technical and professional skills, especially in supply chain management and integrated logistics activities and services. The fund is proposed to be utilised, among others, for the purchase of new machinery and equipment required to enable SMEs to participate in the relevant targeted services sub-sectors, including manufacturing-related services.

5.92 The Government will continue with the provision of industrial sites and special parks for SMEs at more competitive rates. This will include agriculture and *halal* parks, in addition to building business premises and providing office space at strategic locations. Regulations and procedures will be reviewed to make them more business-friendly, which will result in faster processing and decision making. Other support programmes for SMEs include:

- providing assistance in the registration and patenting of IPs; and
- extending the existing market development programme and technical advisory services, which mainly cater for the development of export markets, to cover the promotion of products and services of SMEs in the domestic market. To facilitate this greater coverage, the business and technical advisory services provided by SMIDEC will be enhanced and the scope of Market Development Grant expanded.

**(ii) Institutional Framework**

5.93 Measures to enhance the institutional framework include:

- promoting greater inter-agency coordination to make development programmes on SMEs more effective through complementarities of efforts and sharing of knowledge;

- strengthening the role of the National SME Development Council to include coordinating functions between Federal and State Governments, as well as local authorities, to facilitate the growth of SMEs;
- reinforcing the collaboration between the Government, entrepreneurs, industry associations, researchers, academia, financiers and venture capitalists through the 'National SME Focal Point'. This will be an avenue for policy discourse, and technical and advisory consultations, including financial requirements, to mobilise resources and synergies for the overall development and growth of SMEs; and
- adopting performance appraisal and monitoring mechanisms, as well as enhancing the advisory capacity of the implementing Government agencies, to improve the efficiency of the delivery and outreach of the support programmes for SMEs.

**(5) ENHANCING THE GROWTH AND CONTRIBUTION OF SMALL AND MEDIUM ENTERPRISES IN THE SERVICES SECTOR**

5.94 Services sub-sectors with potential growth for SMEs include distributive trade, professional and business services, logistics services, construction and ICT.

**(i) *Distributive Trade***

5.95 Measures to encourage the greater growth and contribution of SMEs in distributive trade include:

- promoting more new products and services for franchising;
- providing assistance for local franchised products and services;
- upgrading the quality of premises and services;
- improving existing training programmes for SMEs to focus on required skills, such as managerial, technical, pricing, packaging and merchandising;
- enhancing inter-firm linkages and market access;
- encouraging the utilisation of ICT to raise productivity and efficiency along and up the supply chains;
- enhancing the capacity and capability of SMEs to operate in strategically located up-market shopping complexes and tourist destinations; and
- improving the access to information and market intelligence to facilitate changes in the merchandise mix, in response to changing consumer trends.

**(ii) Business and Professional Services**

5.96 Measures to promote the greater growth and contribution of SMEs in business and professional services include:

- developing programmes to encourage professionals to become entrepreneurs in their own fields. These include encouraging entrepreneurs to establish specialist chains, such as pharmacies; dental and medical clinics; and legal, accounting, engineering and consultancy firms;
- MATRADE and Professional Services Development Corporation providing greater focus on facilitating SMEs in professional services to enter the export market;
- encouraging domestic professional services to provide inputs and participate in negotiations towards mutual recognition arrangements; and
- encouraging the establishment of small office home office, as these business entities will be more flexible to meet customer demands.

**(iii) Logistics Services**

5.97 SMEs will be encouraged to participate in the integrated logistics supply chain, as they have the potential to provide the delivery services in the country. To improve the efficiency and capabilities of the business operators, the present incentives will be reviewed.

**(iv) Construction**

5.98 Measures to encourage the greater growth and contribution of SMEs in the construction sub-sector include:

- strengthening the technical expertise of SMEs in selected and specialised services;
- encouraging SMEs to link to large construction companies to form a capable domestic sub-contracting base to enable the SMEs to participate in construction projects domestically and overseas; and
- enhancing the capabilities of SMEs in the industry through specialisation, consolidation and mergers.

**(v) Information and Communication Technology**

5.99 Measures to encourage the greater growth and contribution of SMEs in the ICT sub-sector include:

- considering the provision of seed and start-up funding to stimulate the growth of more technopreneurs and SMEs in ICT; and
- providing business development and mentoring services to nurture technopreneurs and SMEs in ICT.

## POTENTIAL GROWTH AREAS FOR THE DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES

5.100 Several knowledge-intensive industries and selected services have been identified as having the potential and competitive advantage for the development and future growth of SMEs.

### (a) Manufacturing Sector

Industry	Potential Areas
(i) Resource based	<ul style="list-style-type: none"><li>- herbal and traditional medicines</li><li>- cosmetics</li><li>- palm oil-based products</li><li>- wood based products</li><li>- food and beverages, including convenience food for the <i>halal</i> market</li></ul>
(ii) Machinery and engineering	<ul style="list-style-type: none"><li>- precision machining and tooling</li><li>- process and product engineering</li><li>- automation and system automation</li></ul>
(iii) Electrical and electronics	<ul style="list-style-type: none"><li>- components for semi-conductors and radio frequency identification</li><li>- precision stamping</li><li>- D&amp;D of integrated circuits</li><li>- high end printed circuit board assemblies</li><li>- substrates of printed circuit boards</li></ul>
(iv) Medical devices	<ul style="list-style-type: none"><li>- medical diagnostic devices and kits</li><li>- medical and surgical disposable devices and equipment</li></ul>
(v) Manufacturing-related services	<ul style="list-style-type: none"><li>- software development and software systems integration</li><li>- mould design and texturing</li><li>- prototyping services</li><li>- burn-in or testing of integrated circuits</li><li>- failure analysis or repair centres for integrated circuits, printed circuit boards and printed circuit board assemblies</li></ul>

- calibration and maintenance services
- surface mounting, using advanced and composite materials

(vi) Metal products

- galvanised iron
- special steel, including alloy steel and stainless steel

**(b) Services Sector**

<b>Industry</b>	<b>Potential Areas</b>
(i) Distributive trade	<ul style="list-style-type: none"> <li>- retail</li> <li>- wholesale</li> <li>- restaurants</li> <li>- motor vehicle distribution</li> <li>- motor vehicle trade and repair services</li> <li>- franchising</li> </ul>
(ii) Transport services and logistics	<ul style="list-style-type: none"> <li>- forwarding</li> <li>- packaging</li> <li>- haulage</li> <li>- warehousing</li> <li>- storage</li> <li>- bulk breaking</li> <li>- integrated logistics supply chain</li> </ul>
(iii) Tourism services	<ul style="list-style-type: none"> <li>- hotels</li> <li>- transportation</li> <li>- eco-tourism</li> <li>- agro-tourism</li> <li>- health tourism</li> <li>- edu-tourism</li> </ul>
(iv) Professional and business services	<ul style="list-style-type: none"> <li>- human resource management</li> <li>- market research</li> <li>- management consultancy</li> <li>- advertising</li> </ul>

- legal
  - accounting, book-keeping, auditing and tax consultancy
  - architectural
  - engineering
  - R&D
  - environment and energy
- (v) Education and training
- courses on new technologies/methods/processes/technical standards
  - entrepreneurship
  - professional accredited courses
- (vi) Construction
- civil engineering (metal works, electrical works, plumbing, sewerage and sanitary works, refrigeration and air conditioning works, painting works, carpentry, tiling, and flooring and glass works). To adopt clustering approach in bidding for projects by combining complementary skills and expertise, especially in civil engineering
  - residential and non-residential construction
  - infrastructure (for example, bridges)
- (vii) ICT
- customised software development
  - consultancy in e-commerce
  - consultancy in security

# Chapter

# 6



## BRANDING





## SECTION I OVERVIEW

6.01 The Second Industrial Master Plan (IMP2), 1996-2005, promoted the full integration of manufacturing operations through the value chain to strengthen industrial linkages and enhance productivity and competitiveness. As Malaysia moves into the next phase of industrialisation and further integrates into the global economy, strategic brand creation becomes increasingly important. Integrated efforts in the differentiation of national competencies, at Government, industry and corporate levels, provide opportunities for enhancing national competitiveness in the global marketplace.

6.02 This Chapter covers:

- the importance of branding, brand building practices and brand support programmes in Malaysia;
- challenges in infusing a greater focus on branding as a sustainable competitive advantage; and
- brand strategies and policies, at the national, industry and corporate levels, to address regional and global challenges in branding.

## SECTION II BRANDING IN MALAYSIA

### IMPORTANCE OF BRANDING

6.03 Branding is important for companies intending to create a significant impact, as well as gain and sustain a sizable market share in today's competitive business environment. Branding is no longer viewed merely as a marketing and communication function, but encompasses all facets of business and market differentiation strategies. Builders of well-recognised brands have adopted the 'brand value chain' approach. Under this approach, cohesive strategic responses to the target brand positioning are identified and implemented through the value chain, from research and development (R&D) to commercialisation.

6.04 Malaysian companies need to be aware of best practices in competitive brand building and be able to integrate branding into their business strategies and practices. Acquisition of skills and capabilities on brand building will enable the development of strategic and intrinsic values, as well as strengthen brand positioning in the domestic and global markets. In addition to the importance of branding at the product and company levels, there is a need to build national icons, which are associated with projected and perceived values. As an example, Malaysia has been able to promote and project the PETRONAS Twin Towers as a global icon in a relatively short time, where the concept of the structural design embodies the country's progressive values and vision.

### WELL-RECOGNISED INDIGENOUS BRANDS

6.05 Well-recognised Malaysian brands in the global marketplace possess common characteristics and stakeholder profiles:

- **Owner-Managed Brands**

These brands emerge from family or owner-managed companies, with a history of strong corporate performance and leadership. They include *Royal Selangor, Sapura, Boh, Lewre, Bonia, Clara International, Shangri-la, Brahim's, Top Glove, YTL, Hong Leong, Habib* and *Silver Bird*. These are generally long-established companies, where family or owner interests have sustained commitments and investments to long-term brand learning and capabilities.

- **Government-Linked Company (GLC) Brands**

These brands are associated with companies with first-mover advantages, where access to relatively stable market opportunities enables them to gain early brand visibility and develop strong market reputation. They include *PETRONAS, Malaysia Airlines, Proton, Maybank, Perodua, MISC, Golden Hope* and *New Straits Times*.

- **Acquired Brands**

This category refers to global brands with strong brand market value and goodwill acquired by Malaysian companies. They include *Lotus, York, Dunham-Bush, Laura Ashley, Mistral, Crabtree & Evelyn* and *Guthrie*. Acquisition, however, does not guarantee the sustainability of the goodwill, which the brand carries at the point of purchase.

- **Company-Driven Brands**

These are brands built by companies through market-oriented leadership, where brand-driven leaders contribute to the creation and institutionalisation of strong brand cultures and values. They include *Maxis, Air Asia, Celcom, Pensonic, Ekowood, Jasmine, Carotino, Hotlink, Astro, PLUS* and *Silverstone*.

6.06 The number of Malaysian brands which rank among the regional and global leading brands is still limited. Commitments of companies and continued investments will contribute towards the international recognition and long-term sustainability of Malaysian brands.

## ISSUES RELATING TO BRANDING ACTIVITIES

6.07 In Malaysia, research has indicated that the majority of companies are reluctant to brand. The lack of a strategic brand focus within the majority of Malaysian companies results in business decisions and investments which are neither structured nor aligned to target market differentiation opportunities. This may affect the delivery of brand promises at all levels of organisation.

6.08 The reluctance to brand is due to several misperceptions and inappropriate practices:

- branding involves high investments and is viable only for larger companies with widespread retail and distribution channels;
- branding is practised more as a marketing and functional activity, rather than a long-term investment along the value chain process;
- ineffective linkage within a company, between the brand builder and those responsible for brand investments, results in a brand not being given the strategic focus it requires. Brand managers report to marketing directors, not to the chief executive officers or boards of directors;
- expenditures on branding are associated more with advertising and promotion and recorded accordingly by statutory accounting practices. Such expenditures are normally written off each year and not routinely tracked to rationalise or support future brand investment decisions; and
- there is lack of information on brand investment models. Brand equity or brand value creation is not well understood and pursued by the majority of Malaysian companies. Brand equity is the potential and sustainable value created by a company through years of brand commitment, research, creation, measurement and response action.

6.09 For original equipment manufacturers (OEMs), additional factors indicated by the research results for not undertaking branding are:

- as component manufacturers, OEMs are bound by contractual arrangements with brand owners; and
- since marketing and brand activities fall outside the OEM contracted scope of work, they lack brand knowledge and experience.

6.10 For Malaysian companies which have initiated branding activities, several shortcomings remain:

- branding is practised more at the promotional or launch phase of products and services, and often not sustained throughout the product lifecycle or service brand development;
- few companies have strategic brand blueprints to drive and integrate enterprise-wide brand-building activities at corporate or executive planning level;
- lack of brand competencies at strategic levels of organisation, which leads to ineffective brand strategies and outcomes; and
- insufficient investments in the drivers of a brand along its value chain.

### **SECTION III SUPPORT PROGRAMMES FOR BRANDING**

6.11 Various ministries and agencies are involved in efforts to enhance the competitiveness of Malaysian products and services globally. Some of the ministries and agencies provide support and incentives, which directly promote branding initiatives. Others contribute indirectly to the branding initiatives through the provision of support and incentives at various stages of the brand value chain. The ministries involved include:

- Ministry of International Trade and Industry (MITI);
- Ministry of Finance;
- Ministry of Science, Technology and Innovation;
- Ministry of Domestic Trade and Consumer Affairs; and
- Ministry of Agriculture and Agro-Based Industry.

#### **DIRECT SUPPORT**

##### **(a) Brand Excellence Award**

6.12 This annual award is part of the Industry Excellence Award, conferred by the Government through MITI, to companies which have invested in developing brands and are committed to promoting the brands towards becoming internationally known.

##### **(b) Double Tax Deduction**

6.13 Tax incentive, in the form of double deduction, is provided for the promotion of exports of products and services. Eligible expenses cover those related to brand promotion. Double deduction is also available for the promotion of indigenous brands domestically.

**(c) Brand Promotion Grant**

6.14 The scheme provides assistance to a company to undertake the development and promotion of Malaysian brands. For small and medium enterprises (SMEs), the scheme provides 100 per cent reimbursable grant of up to RM1 million. For non-SMEs, the scheme provides 50 per cent reimbursable grant of up to RM2 million.

**(d) Market Development Grant**

6.15 The scheme provides assistance to SMEs to undertake activities for the development of export markets. The assistance is given in the form of a matching grant of up to RM100,000 per company. Eligible expenses include the promotion of brands overseas.

**INDIRECT SUPPORT****(a) Grant for Business Planning and Development**

6.16 Under this grant, assistance is provided to SMEs to undertake business planning, and market and technology feasibility studies. The maximum amount eligible per company is RM40,000.

**(b) Grant for Product and Process Improvement**

6.17 This grant encourages SMEs to improve and upgrade existing products, product designs and processes. The maximum grant allocated per company is RM500,000.

**(c) Grant for Enhancing Marketing Skills**

6.18 SMEs are encouraged to improve their marketing strategies to compete in both the domestic and export markets. The grant provides assistance to SMEs to train their employees in areas related to marketing strategies and planning, pricing, distribution and brand development. Assistance is provided in the form of a matching grant, where 50 per cent of the cost of training is borne by the Government.

**(d) Grant for Enhancing Product Packaging**

6.19 SMEs are assisted to improve product appearance through the provision of a matching grant of 50 per cent of the project costs, for enhancing product packaging, design and labelling, utilising appropriate technologies. The maximum amount eligible per company is RM200,000.

**(e) Grant for the Development and Promotion of *Halal* Products**

6.20 The scheme is introduced to encourage participation by Malaysian companies in the development and promotion of *halal* products (food and non-food) and services. The scheme provides assistance to companies to develop products for the *halal* market, as well as undertake promotional activities. The maximum grant allocated per company is RM150,000.

**(f) Grant for Productivity and Quality Improvement and Certification**

6.21 The scheme provides assistance to SMEs for productivity and quality improvement and compliance with international quality standards and certification. The maximum grant allocated per company is RM250,000.

**(g) Tax Incentives**

6.22 Tax incentives which indirectly support branding include deductions for the establishment of sales offices overseas, *halal* certification, registration of patents and trademarks, product licensing in foreign countries and the development of websites.

## **SECTION IV CHALLENGES**

6.23 Challenges in creating brand awareness and encouraging companies to adopt brand value chain in brand planning, development and promotion include:

- ineffectiveness of corporate structures and culture;
- absence of universally-recognised brand valuation processes;
- lack of integration of brand support clusters;
- implications of new channels and intermediaries;
- lack of R&D activities to support innovation and branding;
- development and protection of indigenous intellectual property (IP);
- supply chain inefficiency;
- dominance of foreign brands;
- limited number of home-grown anchor brands;
- dependence on foreign own brand manufacturers (OBMs);
- limited domestic market; and
- 'country of origin' effects.

**(a) Ineffectiveness of Corporate Structures and Culture**

6.24 While chief executive officers and boards of directors are aware of the importance of brands, this recognition, however, has not been translated into institutionalised brand practices. Lack of integrated support within a company in pursuing investment decisions impedes the implementation of any branding strategy. Companies need to adopt organisation strategies which support branding as a cross-functional process. In addition to an effective corporate structure, appropriate levels of commitment, from the executive leadership down to the entire organisation, are necessary to create a sustainable brand culture.

**(b) Absence of Universally-Recognised Brand Valuation Processes**

6.25 Constraints faced by companies in developing brands include:

- insufficient brand experience and expertise within the financial services community to adequately advise on the treatment of brand investments under the current financial and accounting practices;
- this is compounded by the absence of universally-recognised brand valuation processes; and
- lack of understanding and tracking of brand performance, as well as financial prospects of brands.

**(c) Lack of Integration of Brand Support Clusters**

6.26 Brand support clusters are available in Malaysia and elsewhere, from business and marketing strategists and corporate identity designers, to design and technology institutes and web designers. Nevertheless, integrating these dispersed skills and experiences is challenging, in the absence of effective brand building knowledge and skills. The brand challenge for the majority of companies is not in the non-availability of the service providers, but the knowledge and skills to integrate their competencies.

**(d) Implications of New Channels and Intermediaries**

6.27 An important prerequisite to global branding is greater brand visibility, which can be achieved only through effective distribution channels. The development of new channels and intermediaries in the global supply chain poses a challenge to companies pursuing brand promotion. Depending on the industry, global channels are in most cases controlled by international OBMs. These companies have adopted complex approaches in the sourcing and buying of materials, products and services, which enable them to select the most competitive OEM suppliers worldwide. This leads to pressures on OEM producers to improve product quality, cost management and delivery, which result in margin reductions and potential product and service obsolescence. The internet and e-business

influence the ways products and services are manufactured, distributed and traded. Technology-enabled business transactions necessitate a rethinking of current distribution strategies, including the promotion of brands, where the adoption of multi-channel delivery provides the opportunity for the creation of a larger base of customers to manufacturers and service providers.

6.28 Malaysian companies which depend on international trading houses to gain access to foreign markets are faced with several disadvantages. They have minimal control over profit margins and sales volume. In the long term, they are not able to develop and understand target markets and customers, where such knowledge and ability influence the impact of product and service competitiveness. A major challenge in the export and distribution of Malaysian products and services is the accelerating pace of channel consolidation within developed markets. In some developed countries, major retail chains control a large share of the consumer market for products such as electronics, apparel and food. Consolidation implies that there are fewer distributors to which manufacturers can sell their goods, and their bargaining power is therefore reduced. While the environment is becoming more difficult, opportunities exist for innovative companies, as global buyers continually seek distinctive products and services. They are willing to support new brands which offer good margins and fair prices to their customers.

**(e) Lack of Research and Development Activities to Support Innovation and Branding**

6.29 Compared with many other countries, the level of investments in R&D in Malaysia is relatively low. Companies need to strengthen their R&D capabilities to produce products and services which are able to gain access to and compete in the global market.

**(f) Development and Protection of Indigenous Intellectual Property**

6.30 The protection of brand investments, through ease of registration of trademarks, copyrights and patents, and effective enforcement of intellectual property rights (IPRs), is important in maintaining differentiation opportunities for products and services.

**(g) Supply Chain Inefficiency**

6.31 As a value chain process, branding in Malaysia lacks support from not only cross-functional processes within an organisation, but also other processes along the supply chain. For example, capable logistics management is an important process in an efficient brand delivery system, as it affects the flow and storage of goods, services and information along supply and distribution chains. Strategies to address the inadequacies in the logistics industry will contribute to sustainable brand development.

**(h) Dominance of Foreign Brands**

6.32 The global market is dominated by brands from the United States of America (USA), the European Union (EU) and several East Asian countries. Malaysian companies will need to develop the comparative knowledge and experience in integrating the multi-faceted aspects of sustainable brand creation, to be able to compete with brand builders which have long invested in strategic brand learning and development. The building of global brands has generally taken a long time to accomplish. Its growth has been facilitated not only by a sophisticated worldwide support infrastructure, but also the sustained corporate pursuit of market knowledge, market advantage and response capabilities.

**(i) Limited Number of Home-Grown Anchor Brands**

6.33 Malaysia has a limited number of well-recognised home-grown anchor brands, which can contribute towards the sustainable branding of a nation. Anchor brands are national testimonials of good quality products and services. They instil trust and confidence, while mitigating any possible adverse 'country of origin' effects. The 'spill-over' effects of anchor brands positively contribute to perceived values and national associations by global markets. Anchor brands build the foundation for SMEs to create support brands and venture overseas. The structured and sustained support of well-recognised anchor brands has the potential to lead the way for better access to the global market for smaller companies.

**(j) Dependence on Foreign Own Brand Manufacturers**

6.34 Rapid globalisation and the emergence of lower cost producing countries pose a threat to the future growth of Malaysian OEMs. The continued operations of local OEMs are largely dependent on their ability to meet the requirements of foreign OBMs on product quality and cost competitiveness. Malaysian OEMs will need to acquire other skills and capabilities, in areas such as product and packaging design, and market distribution and access, which are not normally required as part of their OEM operations.

**(k) Limited Domestic Market**

6.35 Countries with large domestic markets provide companies with the opportunity to 'test-market' their product and service brands on a larger customer base and more varied customer profile. Modifications or improvements to such domestic brands are made within national boundaries, before they are exported. Such countries also offer opportunities for companies to understand more about customer preferences and, therefore, respond with products and services more effectively. Malaysian companies need to find ways to offset the disadvantage of a limited domestic market in developing the same level of market knowledge to facilitate branding.

### (I) 'Country of Origin' Effects

6.36 Any national branding effort will need to take into consideration the impact of 'country of origin' effects on product and service perceptions. As countries, industries and companies have often been associated with stereotyped labels or images, national branding is as important for Malaysia as corporate, product and service branding. Apart from communication efforts to project a favourable image of the country brand, a related challenge is the development of an integrated initiative to enhance the drivers of positive market perceptions. These include brand-aligned work cultures, values, technological developments and industry performance of all national stakeholders. The stronger the synergy between national, corporate, product and service branding, the clearer and stronger the message will be to target stakeholders. Effective branding for Malaysia will depend on the consistency and sustainability of a positive perception by the target market.

## SECTION V STRATEGIES AND POLICIES

6.37 Synergistic allocation and utilisation of resources by both the public and private sectors is necessary for leveraging upon brand building as a competitive advantage for Malaysia. Branding strategies and policies to be adopted cover national, industry and corporate initiatives:

### National Initiatives

- (1) establish a National Branding Task Force;
- (2) identify brand champions;
- (3) create favourable national traits and image;
- (4) build national icons;
- (5) encourage large companies and domestic market leaders to lead in global brand creation;
- (6) designate anchor brands to support SMEs;
- (7) support companies with product and service brand potential;
- (8) manage domestic and international distribution channels;
- (9) introduce governance in brand and marketing practices;
- (10) develop and protect IP in product and service innovations; and
- (11) review the teaching and practice of the evolving discipline on branding;

### Industry Initiatives

- (1) identify sub-sectors for accelerated brand creation;
- (2) encourage the migration of OEMs to OBM; and
- (3) facilitate branding in the services sector; and
- (4) provide support for obtaining branding and marketing services; and

### Company-Level Initiatives

- (1) align corporate, product and service positioning with the country brand;
- (2) encourage chief executive officers to champion the efforts on building and sustaining brand skills and expertise; and
- (3) monitor the impact of brand investments on market performance.

## NATIONAL INITIATIVES

### (1) ESTABLISH A NATIONAL BRANDING TASK FORCE

6.38 Visible leadership and sponsorship of champions will be promoted to mobilise and sustain the enthusiasm, interest, commitment and participation in brand building efforts among many different stakeholders. In this respect, a National Branding Task Force will be established to address strategic brand issues. The Task Force will promote national, corporate, product and service brand creation across key stakeholders in the public and private sectors.

6.39 Areas of responsibility of the Task Force include:

- formulating and reviewing national strategies to support the growth of potential brands;
- identifying approaches to encourage more Malaysian companies to undertake brand building efforts;
- assessing the impact of strategic investments on branding, based on feedback from industries and key stakeholders;
- assessing the challenges and progress of the national brand initiatives, to effectively evolve and sustain positive signals for 'Made-in-Malaysia' products and services;
- identifying competency gaps;
- reviewing incentives to facilitate funding for brand-building initiatives;
- monitoring global developments and their implications on market access issues associated with branding; and
- monitoring and assessing 'country of origin' effects.

6.40 Members of the Task Force will comprise representatives from relevant Government agencies and industry leaders. The Task Force will include well-recognised national brand builders, technical experts and professional advisors to assist in the development and promotion of brand building across sectors. The Task Force will be jointly chaired by the Chief Executive Officer of Malaysia External Trade Development Corporation (MATRADE) and a representative of the private sector. MATRADE will also act as the Secretariat to the Task Force.

## **(2) IDENTIFY BRAND CHAMPIONS**

6.41 Individuals with the commitment, strategic influence and capacity for brand creation will be identified from the public and private sectors. These champions will be co-opted into the National Branding Task Force. Their major role will be to determine the macro or key drivers and inhibitors within and across the different levels of brand creation, and recommend response strategies. This will involve the changing of mindsets, investment patterns and response behaviours at Government, industry and corporate levels through every phase of the brand value chain.

## **(3) CREATE FAVOURABLE NATIONAL TRAITS AND IMAGE**

6.42 Cohesive delivery of the tangibles, in support infrastructures, and the intangibles, in value systems, will be promoted, in support of the brand that Malaysia aspires to create. Consistent communication, through a systematic articulation of national aspirations and competencies, on the unique and differentiated brand elements in the 'Malaysia' name, will be encouraged. The determination and delivery of the 'Malaysia' brand will involve integrated inputs and support of various national stakeholders, in particular, the convergence of support infrastructure, including Government policies, cultures, competencies and delivery systems.

## **(4) BUILD NATIONAL ICONS**

6.43 Collective support will be sought and sustained in the building of national icons, whether they are symbols of progress, innovation, hospitality, creativity, resilience or any other sustainable signal. The ability to infuse the country's history, legacy, values and aspirations in building the national image will be developed. This ability will determine the strength of the national image.

## **(5) ENCOURAGE LARGE COMPANIES AND DOMESTIC MARKET LEADERS TO LEAD IN GLOBAL BRAND CREATION**

6.44 A prerequisite to global brand recognition is market and brand leadership in domestic markets, where business relationships and market-consumer familiarity improve the likelihood for achieving targets on brand and market performance. For large local companies, brand learning and experiences within domestic markets will facilitate brand entry into foreign markets.

6.45 Large local companies will be encouraged to develop enterprise skills, competencies and business experiences in branding and invest in the improvement of their brand image. These companies have the resources and market influence to lead in global brand creation efforts. Brand monitoring will be undertaken to measure the progress of Malaysian companies in embarking and investing in branding, compared with other brands in the market. Various aspects of branding, such as sales and profits, consumer awareness, brand image and brand value, will be monitored and measured.

**(6) DESIGNATE ANCHOR BRANDS TO SUPPORT SMALL AND MEDIUM ENTERPRISES**

6.46 Selected large local companies, with sound financial performance and global network, will be identified as anchor brands. This will enable SMEs to tap into the marketing and distribution channels of the anchor brands, without having to initially build their own. When these SMEs achieve substantial market shares, they will be able to build their own marketing and distribution networks. Benefits to be derived by SMEs through the anchor brand approach include:

- providing a wider exposure to markets overseas to SMEs, without having to incur substantial initial investments and resources. Instead, they will be able to channel their limited resources to other activities in the value chain, including R&D on products and services; and
- providing information and new knowledge for SMEs to produce innovative and competitive products and services.

**(7) SUPPORT COMPANIES WITH PRODUCT AND SERVICE BRAND POTENTIAL**

6.47 Existing incentives will be reviewed to provide greater financial stimulus for companies with brand potential to progress in product and service development, from the conceptual and R&D stage to the brand and market commercialisation phase. It is targeted that 100 home-grown company brands will be developed and promoted into international brands, with the support of the Brand Promotion Grant. Companies supported under the grant will be required to have clear branding strategies and business plans, resources to invest in branding and commitment to their branding programmes. The grant is part of the Government's efforts to encourage SMEs to brand their products and services to increase export sales. From the 100 companies targeted to be provided with the grant, about 60 per cent will be SMEs. The company brands will cover a wide range of industries with export potential, including electrical and electronics (E&E), automotive parts and components, agro-based produce, such as food and beverages, building materials, furniture, rubber products, cosmetics and toiletry, medical equipment and pharmaceuticals, plastics-based products, garments,

footwear, jewellery and gifts. In addition, services with brand and export potential will also be promoted, such as information communication technology (ICT) and construction related services.

## **(8) MANAGE DOMESTIC AND INTERNATIONAL DISTRIBUTION CHANNELS**

6.48 In promoting global brands, Malaysian companies will be assisted in developing effective distribution channels, both domestically and abroad. The Government will extend the coverage of incentives to include expenses incurred in the development and nurturing of supply chains abroad, for the building of regional or global brands. At the company level, distribution management strategies to be adopted to support strategic brand building include:

- reappraising channel development, in response to changing customer buying behaviours, technologies and competition; and
- building a multi-channel system, through physical and online distributions, to achieve sustainable competitive advantage.

## **(9) INTRODUCE GOVERNANCE IN BRAND AND MARKETING PRACTICES**

6.49 Brand building requires the support of cross-functional skills and those of numerous third parties. Greater governance and regulation of brand service providers and marketing practices will be instituted to minimise confusion and delays in the adoption of effective brand building.

## **(10) DEVELOP AND PROTECT INTELLECTUAL PROPERTY IN PRODUCT AND SERVICE INNOVATIONS**

6.50 A conducive environment will be created to protect IPRs, including patents, designs, copyrights and trademarks, which are important components of the brand value chain. Such environment will not only attract investments, but also promote greater innovativeness and creativity among domestic inventors of products and services. Technical support for the registration and protection of IPs will be enhanced.

6.51 The protection given will be extended to cover processes. In general, under present domestic IP laws, innovative processes and methodologies which have been developed are not eligible for registration and protection. While some manufacturing processes are accepted for patents, present IP laws do not cover service-oriented processes, where the outcome is a service or business solution, and not a product. In promoting the growth of the services sector, potentially patentable service methodologies and processes will be considered for patent registration.

## **(11) REVIEW THE TEACHING AND PRACTICE OF THE EVOLVING DISCIPLINE ON BRANDING**

6.52 Presently, branding is still generally taught, and therefore practised, as a subset of the marketing discipline. As part of the evolution of branding as a discipline, the development of effective approaches to brand building will be encouraged. The convergence of academic research from institutions of higher learning with best practices of brand builders, professional service providers and Government agencies, will create the knowledge infrastructure to initiate and sustain value chain branding within Malaysian enterprises.

6.53 Improved access to knowledge and best practices in brand creation will encourage companies to assign priority to brand investments. In implementing their brand investment strategies, companies will be encouraged to adopt effective approaches to brand building. This will minimise the gaps in knowledge and experience between companies with well-recognised brands and those without.

## **INDUSTRY INITIATIVES**

### **(1) IDENTIFY SUB-SECTORS FOR ACCELERATED BRAND CREATION**

6.54 Sub-sectors for accelerated brand creation will cover those already supported by matured or maturing business value chains, where national competencies are competitive. They include electronics, furniture, palm oil, processed foods, and *halal* products and services, as well as other resource based products which are prominent in the overseas market, and where the 'country of origin' effects will enhance the global promotion of such brands.

### **(2) ENCOURAGE THE MIGRATION OF ORIGINAL EQUIPMENT MANUFACTURERS TO OWN BRAND MANUFACTURERS**

6.55 Research on brand practices among Malaysian OEMs indicates that the majority consider product quality and reliability as the core strengths of the country's manufacturing sector. However, product quality and reliability alone will not be adequate to sustain the OEM market, as global brand purchasers continually source for distinctive products and capabilities around the world. OBM's are in a better position to sustain their markets. Malaysian companies will be encouraged to hasten the pace at which they evolve from OEMs to OBM's. These OEMs will be provided the support to develop stronger brand value chains for their products and services, either in joint ventures with global brands or other local OEM clusters.

### **(3) FACILITATE BRANDING IN THE SERVICES SECTOR**

6.56 The services sector is targeted to assume a greater role in driving the growth of the economy during the Third Industrial Master Plan (IMP3) period. Malaysia is envisaged to be a regional centre for selected business services, including

distribution, tourism, education, health and professional services. The development of capacities and capabilities in the services sector will include brand-building skills. The same principles of value chain branding apply to the services sector, including the importance of strategic alliances, technologies and customer services. The global services sector is well represented with established brands, where the driver of service branding centres on the credibility and sophistication of customer services. The customer services are developed and effectively delivered through technologies and strategic alliances.

#### **(4) PROVIDE SUPPORT FOR OBTAINING BRANDING AND MARKETING SERVICES**

6.57 Companies in the manufacturing and services sectors will be assisted in identifying and obtaining relevant branding and marketing services. A virtual platform will be established to help match companies with appropriate local and international service providers. Indigenous competencies will be nurtured and developed to address the gaps and take advantage of opportunities in the brand value chain. The creation of complementary service providers to support brand building, through special programmes, will further contribute towards the progressive growth and development of Malaysian brands.

#### **COMPANY-LEVEL INITIATIVES**

##### **(1) ALIGN CORPORATE, PRODUCT AND SERVICE POSITIONING WITH THE COUNTRY BRAND**

6.58 Companies will be encouraged to embody national brand values within corporate, product and service brands. Timely articulation of national brand values by the National Branding Task Force will provide guidelines on the promotion and convergence of values to be promoted by all stakeholders.

##### **(2) ENCOURAGE CHIEF EXECUTIVE OFFICERS TO CHAMPION THE EFFORTS ON BUILDING AND SUSTAINING BRAND SKILLS AND EXPERTISE**

6.59 While components of the strategic brand processes may be outsourced to qualified third parties, companies will be encouraged to focus on acquiring institutionalised knowledge in brand building. This knowledge is proprietary, which they can build and leverage upon for future market advantage. Different categories of brand expertise will be encouraged to be developed, in accordance with activities along the value chain, which may involve both market-facing business processes and back-end operations. Each phase of the brand value chain will create its own demands on people and technology. Chief executive officers of organisations will be encouraged to initiate and manage efforts to fulfill the demands. The development of brand mindsets and strategic competencies

required to drive well-recognised brands, through an entrepreneurial spirit and culture, will be promoted. This requires active participation of top management, comprising both the chief executive officers and the boards of directors. The development of brand skills and expertise is relevant to both start-up companies, as well as established companies, including SMEs and larger organisations.

**(3) MONITOR THE IMPACT OF BRAND INVESTMENTS ON MARKET PERFORMANCE**

6.60 Guidelines on brand investments will be formulated for companies intending to undertake branding. While waiting for the development of universally-accepted brand audit and valuation models, brand performance indicators will be designed and monitored by process custodians and incorporated into the companies' balance scorecards. These process custodians include internal and external auditors, corporate planners and strategists, financial controllers, service providers, and systems and methods managers. Brand experts and financial service professionals will determine the manner of recording the cost of brand activities.

# Chapter

7



## **GROWTH AREAS IN THE MANUFACTURING SECTOR**





# GROWTH AREAS IN THE MANUFACTURING SECTOR

## SECTION I OVERVIEW

7.01 The Second Industrial Master Plan (IMP2), 1996-2005, emphasised moving beyond manufacturing operations to include the development and enhancement of research and development (R&D), design capabilities, integrated support industries, and distribution and marketing activities. The integration of manufacturing operations with the related activities along the value-chain was emphasised, with the objective of forging industrial linkages, and enhancing productivity and competitiveness. The five strategic thrusts of the IMP2 were:

- adopting global orientation;
- enhancing competitiveness;
- improving requisite economic foundation;
- nurturing Malaysian-owned manufacturing companies; and
- adopting information-intensive and knowledge-driven processes.

7.02 This Chapter covers:

- the overall performance of the manufacturing sector, in terms of the share of manufacturing value-added to Gross Domestic Product (GDP), exports of manufactured products, total approved investments and employment in the sector;
- challenges facing the sector, including increasing competition from emerging economies and enhancing the development of the human capital;
- outlook of the sector, which will be influenced by major trends in manufacturing, including global industrial integration and the shift towards knowledge-based industrial growth; and
- strategic thrusts for the further development of the sector, including accelerating the transition towards higher value-added products and activities, and further integrating domestic companies into the global supply chains.

## SECTION II PERFORMANCE OF THE MANUFACTURING SECTOR

7.03 During the IMP2 period, the manufacturing sector achieved mixed performance. The sector exceeded the investment and employment targets. In terms of investments, a total of RM269.7 billion in investment projects was approved, compared with the target of RM250 billion. The growth and size of employment in the sector were also higher, at an average annual rate of 4.4 per cent and 3.1 million workers, compared with the targets of 3.5 per cent and 2.8 million, respectively (Table 7.1).

TABLE 7.1

### PERFORMANCE OF THE MANUFACTURING SECTOR DURING THE SECOND INDUSTRIAL MASTER PLAN

	1996-2005	
	IMP2 Targets	Actual
Value-added of manufacturing sector		
Growth (%)	9.5	6.2
Share to GDP (%)	38.4	31.4
Growth of exports of manufactured products (%)	16.0	11.2
Total approved investments in manufacturing (RM billion)	250.0	269.7
Employment in manufacturing		
Persons (million)	2.8	3.1
Growth (%)	3.5	4.4

Sources: Ministry of International Trade and Industry, and Department of Statistics

7.04 However, the achievement of the sector, in terms of the growth and contribution of value-added to the GDP, and the growth of exports of manufactured products, was below the targets. The sector achieved an average annual growth of 6.2 per cent in value-added and contributed 31.4 per cent to the GDP, compared with the targets of 9.5 per cent and 38.4 per cent, respectively. Exports of manufactured products grew by an average annual rate of 11.2 per cent, compared with the target of 16 per cent.

7.05 The mixed performance of the sector was attributed to several unforeseen external factors, such as the Asian financial crisis in 1997, the cyclical downturn in the electronics sub-sector in 2001 and the global economic slowdown in 2001. Being an open and export-oriented economy, the performance of the sector was affected, to a certain extent, by the influence of these external

factors. Nevertheless, the influence was mitigated by the satisfactory performance of industries more dependent on the domestic market. The lower growth of exports arising from the decline in the global demand for electronics products was cushioned by the expansion in the output of domestic-oriented industries, namely, transport equipment, petroleum products and construction-related products.

**(a) Production**

7.06 The sector registered an overall growth in production of 7.8 per cent. Except for textiles and apparel, other industries recorded growth. Among the industries which registered relatively high growth were the electrical and electronics, at 10.2 per cent, transport equipment (9.8 per cent), food manufacturing (8.5 per cent), fabricated metal products (8.4 per cent) and chemicals and chemical products (8.4 per cent) (Table 7.2).

TABLE 7.2

**GROWTH IN THE MANUFACTURING SECTOR BY SELECTED INDUSTRY**

<i>Industry</i>	1996	2000	2005	1996-2005
	<i>Production Indices (1993=100)</i>			<i>Average Annual Growth (%)</i>
<b>Overall</b>	<b>147.3</b>	<b>209.7</b>	<b>266.2</b>	<b>7.8</b>
Electrical and electronics products	159.5	284.2	349.3	10.2
Fabricated metal products	157.1	192.6	258.7	8.4
Chemicals and chemical products	149.6	187.0	267.2	8.4
Food manufacturing	123.7	174.7	254.2	8.5
Rubber products	140.0	165.7	235.9	6.5
Paper and paper products	121.0	162.0	215.3	5.7
Transport equipment	199.5	199.3	291.9	9.8
Wood and wood products	123.1	103.6	108.0	neg. <sup>1</sup>
Textiles and apparel	92.8	117.3	86.1	-0.5

Note: <sup>1</sup> Negligible

Source: Department of Statistics

**(b) Productivity**

7.07 The sector achieved an overall growth in productivity of 8.5 per cent during the IMP2 period. Industries which achieved higher growth in productivity were chemicals and chemical products (14.3 per cent), electrical and electronics (8.9 per cent), wood products (5.9 per cent) and food manufacturing (4.5 per cent) (Table 7.3).

TABLE 7.3

**PRODUCTIVITY GROWTH OF THE MANUFACTURING SECTOR**

Industry	1996	2000	2005	1996-2005
	Sales Value per Employee (RM)			Average Annual Growth (%)
<b>Overall</b>	<b>212,889</b>	<b>325,959</b>	<b>457,084</b>	<b>8.5</b>
<b>Non-resource based</b>				
Electrical and electronics products	233,790	419,590	548,900	8.9
Machinery and equipment	270,790	315,939	400,796	3.8
Transport equipment	319,176	382,539	390,686	2.6
Manufactures of metals	153,293	183,903	224,282	4.4
Pharmaceuticals	109,712	126,144	135,758	2.8
Textiles and apparel	95,014	126,142	128,030	4.1
<b>Resource based</b>				
Chemicals and chemical products	463,349	1,036,014	1,621,673	14.3
Beverages and tobacco	606,783	606,667	600,458	1.6
Food manufacturing	216,615	251,328	316,811	4.5
Non-metallic products	229,219	210,634	241,303	3.3
Rubber products	142,729	147,637	225,948	4.3
Wood products	81,323	104,788	131,833	5.9

Source: National Productivity Corporation

**(c) Exports**

7.08 Exports of manufactured products registered an average annual growth of 11.2 per cent during the IMP2 period, increasing from RM154.7 billion in 1996 to RM413.1 billion in 2005. Manufactured exports which registered higher growth were petroleum products, at 21.2 per cent, iron and steel products (19.1 per cent), chemicals and chemical products (17.4 per cent), manufactures of plastics (16.8 per cent) and beverages and tobacco (15.7 per cent) (Table 7.4).

TABLE 7.4

## EXPORTS OF MANUFACTURED PRODUCTS

Industry	1996		2000		2005		1996-2005 Average Annual Growth (%)
	Value (RM million)	Share (%)	Value (RM million)	Share (%)	Value (RM million)	Share (%)	
<b>Total manufactured exports<sup>1</sup></b>	<b>154,664.7</b>	<b>100.0</b>	<b>309,427.4</b>	<b>100.0</b>	<b>413,132.7</b>	<b>100.0</b>	<b>11.2</b>
<b>Non-resource based</b>	<b>126,703.8</b>	<b>81.9</b>	<b>265,828.7</b>	<b>85.9</b>	<b>340,584.8</b>	<b>82.4</b>	<b>11.1</b>
Electrical and electronics products <sup>2</sup>	96,800.6	62.6	219,583.0	71.0	264,698.9	64.1	11.4
Machinery, appliances and parts <sup>2</sup>	7,471.4	4.8	10,825.9	3.5	18,120.6	4.4	9.9
Optical and scientific equipment	3,119.1	2.0	6,811.3	2.2	12,317.7	3.0	15.6
Manufactures of metals	3,738.9	2.4	6,870.5	2.2	10,847.9	2.6	11.7
Textiles and apparel	6,816.0	4.4	10,265.3	3.3	10,289.1	2.5	4.9
Iron and steel products	1,474.3	1.0	2,346.4	0.8	7,002.8	1.7	19.1
Transport equipment <sup>2</sup>	4,658.0	3.0	2,975.2	1.0	6,997.9	1.7	2.9
Manufactures of plastics	1,531.3	1.0	3,829.8	1.2	6,696.3	1.6	16.8
Jewellery	1,094.2	0.7	2,321.3	0.8	3,613.6	0.9	11.8
<b>Resource based</b>	<b>23,246.0</b>	<b>15.0</b>	<b>38,505.3</b>	<b>12.4</b>	<b>63,378.8</b>	<b>15.3</b>	<b>11.8</b>
Chemicals and chemical products	5,829.1	3.8	12,918.6	4.2	26,301.3	6.4	17.4
Wood products <sup>2</sup>	8,146.8	5.3	11,157.6	3.6	14,638.9	3.5	8.3
Rubber products <sup>2</sup>	3,607.7	2.3	4,720.8	1.5	6,985.5	1.7	7.8
Processed food <sup>2</sup>	2,333.4	1.5	3,408.4	1.1	6,529.9	1.6	10.8
Non-metallic mineral products	1,641.1	1.1	2,567.7	0.8	2,934.3	0.7	5.8
Petroleum products	413.4	0.3	1,128.9	0.4	2,214.4	0.5	21.2
Paper and pulp products	698.4	0.5	1,396.3	0.5	2,073.4	0.5	10.3
Beverages and tobacco	576.1	0.4	1,207.0	0.4	1,701.1	0.4	15.7
Other manufactures	4,714.9	3.0	5,093.4	1.6	9,169.1	2.2	9.0

Notes: <sup>1</sup> The value of the total exports of manufactured products, compiled by Ministry of International Trade and Industry (MITI), differs from the value of the total export of manufactured products contained in the Ninth Malaysia Plan, due to the difference in product groupings adopted by MITI and Economic Planning Unit (EPU). For example, in 2005, the figure by MITI was RM413.1 billion, while the figure by EPU was RM429.9 billion

<sup>2</sup> Export values in this Table differ from the export values of the targeted growth industries, due to different coverage in the product groupings

Source: Ministry of International Trade and Industry

**(d) Investments**

7.09 During the IMP2 period, the sector attracted investment projects, valued at RM269.7 billion. Major investments were in electrical and electronics (E&E), valued at RM84.3 billion or 31.3 per cent of the total investments, followed by petroleum products, including petrochemicals (RM31.2 billion or 11.6 per cent) and basic metal products (RM24.7 billion or 9.2 per cent) (Table 7.5). Foreign direct investments (FDIs) contributed RM150.9 billion, or 55.9 per cent of the total approved investments, and domestic investments, RM118.8 billion or 44.1 per cent. Major sources of FDIs were the USA, valued at RM38.8 billion, Japan (RM22.5 billion), Singapore (RM18.6 billion), Germany (RM16.9 billion) and Taiwan (RM7.2 billion).

**(e) Employment**

7.10 As at 2005, employment in the sector totalled 3.1 million workers. The largest contributor to employment was the electrical and electronics industry, with 840,800 persons or 26.8 per cent of the total employment, followed by wood products, including furniture (373,800 persons or 11.9 per cent), and chemicals, fertilisers, plastics and petroleum products (327,000 persons or 10.4 per cent) (Table 7.6).

**SECTION III CHALLENGES****(a) Competitiveness**

7.11 Presently, Malaysia's competitive position is being challenged by increasing competition from emerging economies. The manufacturing sector has been able to rationalise and diversify its operations and remain a major contributor to the economy. Nevertheless, there is a need to ensure that the sector continues to contribute towards maintaining Malaysia's overall global competitive position. This is in view of the sector being expected to continue to be a major contributor to the growth of the economy.

**(b) Investments**

7.12 The sector will require substantial investments, both from foreign and domestic sources, to further develop the targeted industries. In view of the increasing global competition for investments, the sector will need to be provided and supported with the full range of the required facilities and related services, including the necessary infrastructure and skilled workforce, to remain attractive for investors.

TABLE 7.5

## APPROVED MANUFACTURING PROJECTS BY INDUSTRY

Industry	1996-2005					
	Total Capital Investments (RM million)	Share (%)	Foreign Investments (RM million)	Domestic Investments (RM million)	Number of Projects	Potential Employment ('000 persons)
<b>Total</b>	<b>269,688.3</b>	<b>100.0</b>	<b>150,867.6</b>	<b>118,820.7</b>	<b>8,727</b>	<b>837.6</b>
<b>Non-resource based</b>	<b>147,948.6</b>	<b>54.9</b>	<b>93,678.6</b>	<b>54,270.0</b>	<b>5,004</b>	<b>538.1</b>
Electrical and electronics products	84,285.4	31.3	65,466.1	18,819.3	2,054	310.6
Basic metal products	24,707.8	9.2	8,473.2	16,234.7	350	24.0
Transport equipment	16,714.7	6.2	7,009.9	9,704.7	590	52.1
Fabricated metal products	7,694.5	2.9	4,228.9	3,465.6	736	51.7
Machinery manufacturing	6,422.4	2.4	3,132.3	3,290.1	735	36.9
Textiles and textile products	4,945.5	1.8	2,848.5	2,097.0	396	46.9
Scientific and measuring equipment	3,027.0	1.1	2,470.9	556.2	117	13.5
Leather and leather products	151.2	0.1	48.9	102.3	26	2.4
<b>Resource based</b>	<b>120,587.4</b>	<b>44.7</b>	<b>56,844.5</b>	<b>63,742.8</b>	<b>3,564</b>	<b>290.5</b>
Petroleum products (including petrochemicals)	31,198.8	11.6	20,064.1	11,134.6	116	8.4
Paper, printing and publishing	19,484.1	7.2	8,466.5	11,017.6	244	20.7
Chemicals and chemical products	17,618.4	6.5	8,972.7	8,645.7	529	23.2
Non-metallic mineral products	12,855.8	4.8	6,029.6	6,826.3	367	21.2
Natural gas	9,521.4	3.5	1,477.9	8,043.5	5	1.2
Food manufacturing	8,969.0	3.3	3,785.4	5,183.6	602	39.9
Plastic products	6,314.3	2.3	2,807.1	3,507.2	583	39.0
Wood and wood products	6,170.0	2.3	1,676.7	4,493.3	385	53.2
Rubber products	4,209.4	1.6	1,858.6	2,350.8	260	31.9
Furniture and fixtures	2,840.4	1.1	640.3	2,200.1	413	48.0
Beverages and tobacco	1,405.9	0.5	1,065.7	340.2	60	3.6
Miscellaneous	1,152.3	0.4	344.4	807.9	159	9.0

Source: Malaysian Industrial Development Authority

TABLE 7.6  
EMPLOYMENT IN THE MANUFACTURING SECTOR

Industry	1996		2000		2005		1996-2000	2001-2005	1996-2005
	('000 persons)	Share (%)	('000 persons)	Share (%)	('000 persons)	Share (%)	Average Annual Growth (%)	Average Annual Growth (%)	
<b>Total</b>	<b>2,203.9</b>	<b>100.0</b>	<b>2,565.8</b>	<b>100.0</b>	<b>3,132.1</b>	<b>100.0</b>	<b>4.8</b>	<b>4.1</b>	<b>4.4</b>
<b>Non-resource based</b>	<b>1,227.6</b>	<b>55.7</b>	<b>1,317.6</b>	<b>51.4</b>	<b>1,628.4</b>	<b>52.0</b>	<b>3.0</b>	<b>4.3</b>	<b>3.7</b>
Electrical and electronics products	626.6	28.4	645.3	25.2	840.8	26.8	2.2	5.4	3.8
Basic metals and metal products	177.3	8.0	193.8	7.6	282.8	9.0	3.8	7.9	5.8
Textiles and textile products	208.7	9.5	215.8	8.4	214.8	6.9	1.7	-0.1	0.8
Machinery and equipment	130.5	5.9	161.4	6.3	162.6	5.2	5.8	0.1	2.9
Transport equipment	84.5	3.8	101.3	3.9	127.4	4.1	4.7	5.4	5.2
<b>Resource based</b>	<b>922.8</b>	<b>41.9</b>	<b>1,186.6</b>	<b>46.2</b>	<b>1,423.8</b>	<b>45.5</b>	<b>7.1</b>	<b>3.7</b>	<b>5.4</b>
Wood products, including furniture	236.3	10.7	352.7	13.7	373.8	11.9	10.4	1.2	5.7
Chemicals, fertilisers, plastics and petroleum products	184.6	8.4	238.1	9.3	327.0	10.4	7.5	6.6	7.0
Food processing, beverages and tobacco	196.7	8.9	237.7	9.3	298.9	9.5	5.8	4.7	5.2
Rubber processing and products	124.0	5.6	132.0	5.1	171.5	5.5	2.9	5.4	4.1
Paper and paper products, printing and publishing	95.9	4.4	121.6	4.7	137.7	4.4	6.7	2.5	4.6
Non-metallic mineral products	85.3	3.9	104.5	4.1	114.9	3.7	5.8	1.9	3.8
Others	53.5	2.4	61.6	2.4	80.0	2.6	4.7	5.4	5.0

Sources: Economic Planning Unit and Department of Statistics

**(c) Productivity**

- 7.13 The manufacturing sector will need to undertake a major shift towards a productivity-driven growth strategy. This strategy will facilitate the sector moving up the value chain and expanding the export market. It involves, among others, the greater use of knowledge, information and communication technology (ICT) and other technologies. As part of the efforts to expand the market for Malaysia's products, industries will need to give emphasis on productivity and quality improvements on their products and services.
- 7.14 As total factor productivity (TFP) is important in enhancing productivity and competitiveness, companies will need to ensure that all resources are optimally combined to enhance TFP. In addition, sustained improvements in labour productivity will also be required to enhance the overall productivity of the sector. While the sector has achieved improvements in the quality of its workforce, and the application of technology and management systems, such improvements need to be further enhanced, to keep pace with advancements by competitors and thereby sustain a competitive edge.

**(d) Development of Human Capital**

- 7.15 As industries shift towards higher value-added and knowledge intensive activities, there is a need to ensure an adequate supply of the required skilled workforce. The present mismatch between the supply and demand of the skilled workforce will need to be resolved. A culture of continuous learning, creativity and innovation among the workforce will need to be nurtured.

**(e) Technology**

- 7.16 In the efforts to enhance the attractiveness of their products and services, companies in the sector will need to apply latest technologies in product and process development. Since these technologies are fast evolving, companies are faced with the challenge of balancing the appropriateness of retaining the present technologies against the need to devote substantial investments in acquiring the new technologies.
- 7.17 Apart from acquiring new technologies developed overseas, the sector will need to undertake greater efforts to develop its own technological capabilities, to take advantage of new trends in technology. Emerging technologies which can be considered for development and application include advanced electronics displays, photonics, high density data storage and conductive polymers. By adopting new technologies in their operations, local manufacturing companies will be able to build on their existing expertise as contract manufacturers to become own brand and design manufacturers.

**(f) Research and Development**

7.18 In general, local companies have not given adequate focus on R&D to facilitate their shift towards higher value-added activities. Most of the R&D efforts have been undertaken by the Government, as well as multinational corporations (MNCs) and large companies. The sector will need to take greater efforts in undertaking R&D, in collaboration with public research institutes. With the greater focus on R&D, local companies will be able to develop an advantage vis-à-vis their competitors, in terms of the quality, innovativeness and attractiveness of products and services.

**(g) Standards**

7.19 Requirements on standards, especially those imposed by developed countries, have been made more stringent, to address concerns on safety and protecting the environment. Companies in the sector will need to be aware of and adhere to these standards, to sustain and expand their market share. Additional resources will need to be made available to develop the capacity to meet these standards and cover the costs of compliance.

**(h) Raw Materials**

7.20 As the sector diversifies and develops potential growth areas, there will be a need to make available an adequate supply of the required raw materials. While some of the raw materials are available locally, they are either not sufficient to meet the requirements of industries, or costly. In such situations, the importation of the required raw materials will need to be facilitated.

**(i) Access to Markets**

7.21 Despite the reduction in tariffs, exporters face difficulties in gaining access to certain markets. This is due to technical barriers to trade imposed by certain countries, such as those related to certification, sanitary and phytosanitary regulations, labelling, packaging, standards and testing requirements. Measures will be undertaken by the Government to facilitate market access of Malaysian products and services, including undertaking bilateral and regional trade negotiations and entering into mutual recognition arrangements (MRAs).

## SECTION IV OUTLOOK OF THE MANUFACTURING SECTOR

7.22 The manufacturing sector will continue to remain an important sector, growing at an average annual rate of 5.6 per cent during the period of the Third Industrial Master Plan (IMP3), 2006-2020, and contributing 28.5 per cent to the economy in 2020. Manufactured exports are expected to continue to lead in export expansion. The share of exports of E&E products, a major contributor to the exports of manufactured products, is expected to be sustained, due to the anticipated growing demand for wireless applications and consumer electronics. Other sub-sectors which are expected to register expansion in exports include chemicals and chemical products, machinery and equipment, automotive components, medical devices and agro-based products. The further growth of the sector will be influenced by major trends in manufacturing, including industrial integration at the global level and shift towards knowledge-based industrial growth.

### (a) Global Industrial Integration

7.23 As globalisation opens up not only the markets for products and services, but also the markets for raw materials and intermediate inputs, the future competitiveness of companies is closely related with their ability to identify and develop a global niche market for their products and gain access to key international sources and suppliers of important intermediate inputs. In their efforts to remain competitive, firms will need to focus on their core competencies, while outsourcing other work areas to outside firms, which have greater production efficiencies or other unique advantages. This will hasten the process of global industrial interdependence and integration. As industries rationalise to be part of the global networks of industrial interdependence and integration, electronic commerce will become more important. More manufacturing centres will shift towards locations which will maximise their competitive and comparative advantages.

### (b) Knowledge-Based Industrial Growth

7.24 As industries strive to produce more advanced products and provide better quality services, knowledge will become a more important determining factor for companies to remain competitive. Companies will need to incorporate more knowledge-based activities and processes in their operations, to enable them to retain their lead in product innovation and market presence. The greater use of ICT will facilitate the quest for knowledge and, at the same time, transform key business operations and processes, as well as facilitate companies in linking to the entire networks of production facilities and services.

7.25 Computer-based knowledge acquisition and technology training are becoming a basic requirement for the industrial workforce. Employers require multi-skilled knowledge workers, who are able to deal flexibly with information-based, computer-integrated technologies and participate in decisions related to product and process improvements. As automation in manufacturing increases substantially, there is a need to provide retraining to equip the workforce with new skills and competencies in operating and maintaining the automated equipment.

## SECTION V STRATEGIC THRUSTS

7.26 Five strategic thrusts have been set to facilitate the greater development of the manufacturing sector during the IMP3 period:

- (1) accelerating the transition towards higher value-added products and activities;
- (2) facilitating and accelerating the development of domestic and regional clusters;
- (3) further integrating domestic industries into the global supply chains;
- (4) promoting knowledge-based activities, including R&D and design and development (D&D), and supporting the application of leading edge technologies by industry; and
- (5) encouraging mergers and acquisitions (M&As), consolidations and strategic partnerships among industries to strengthen their capabilities and competitiveness.

### (1) ACCELERATING THE TRANSITION TOWARDS HIGHER VALUE-ADDED PRODUCTS AND ACTIVITIES

7.27 Industries will be encouraged to hasten the transition towards higher value-added products and activities to remain competitive. Measures include:

- identifying, developing and promoting new growth areas. Major export items are expected to include an increasingly larger proportion of higher value-added products in electrical and electronics, chemicals and chemical products, automotive components, machinery and equipment, ICT and multimedia products, and agro-based products;
- enhancing the application of technology to improve and develop new products and processes;
- equipping the workforce with the necessary skills in the technical and professional fields to facilitate the transition towards higher value-added activities;

- assisting and facilitating domestic companies, including Government-linked companies (GLCs), which have the capacity to expand into new growth areas; and
- improving assistance programmes to promote investments and reinvestments, including outsourcing, branding, R&D, D&D, standards conformance and automation.

## **(2) FACILITATING AND ACCELERATING THE DEVELOPMENT OF DOMESTIC AND REGIONAL CLUSTERS**

7.28 Efforts will be continued to further develop domestic clusters. Support services will be encouraged to be established to meet the needs of clusters which have the potential for further growth. At the same time, the development of regional clusters will be encouraged, taking advantage of increasing trade liberalisation and regional initiatives on industrial integration. The formation of regional conglomerates will be encouraged. Within the Association of Southeast Asian Nations (ASEAN), Malaysia will collaborate in implementing the roadmaps for the integration of seven of the 11 priority sectors involving manufacturing, namely, wood-based products, textiles and apparel, automotive products, rubber-based products, agro-based products, fisheries and electronics.

## **(3) FURTHER INTEGRATING DOMESTIC INDUSTRIES INTO THE GLOBAL SUPPLY CHAINS**

7.29 Malaysia will continue to position itself in the global supply chains, with the aim of having a greater presence in the global production networks. Measures will be undertaken to assist and facilitate Malaysian companies to take advantage of opportunities arising from the growing trend towards economic integration, at the regional and global levels. These include:

- encouraging companies to focus on core competencies and strengths within the regional and global networks;
- facilitating collaborations between Malaysian firms (including small and medium enterprises - SMEs) with GLCs and multinational corporations (MNCs) in Malaysia, and Malaysian firms with MNCs operating outside Malaysia;
- encouraging outsourcing, off-shoring and other forms of business practices which promote integration; and
- developing Malaysia as the regional hub for selected products and services, including *halal* products and services, biotechnology and automotive products.

#### **(4) PROMOTING KNOWLEDGE-BASED ACTIVITIES AND SUPPORTING THE APPLICATION OF LEADING EDGE TECHNOLOGIES**

7.30 Efforts will be undertaken to promote knowledge-based activities and support the application of leading edge technologies, particularly in the identified growth areas. These include:

- encouraging industries to undertake knowledge-based activities and processes in their operations. Technology innovation will be promoted to create new products and markets;
- facilitating industries in the adoption and diffusion of advanced manufacturing technologies and practices;
- developing and improving technological capabilities in the targeted fields of expertise, such as microelectronics, nanotechnology, automotive engineering and biotechnology;
- providing assistance to companies to undertake activities, such as R&D and training, including the training of Malaysian personnel, by both foreign and locally-owned companies in selected industries;
- encouraging companies to automate their manufacturing processes; and
- developing specialised high technology parks, with the required physical infrastructure, workforce and support industries, to meet the needs of the targeted growth areas.

#### **(5) ENCOURAGING CONSOLIDATIONS AND STRATEGIC PARTNERSHIPS AMONG INDUSTRIES**

7.31 Industries will be encouraged to rationalise their activities and operations to gain greater competitive advantage and market share. This will facilitate companies in taking advantage of preferential treatment and market opening opportunities created by free trade agreements (FTAs). In addition, companies will be encouraged to consider rationalisation and consolidation of their operations, through strategic partnerships and M&As. This will enable them to expand their operations with synergistic strengths and advantages.

## SECTION VI TARGETED GROWTH AREAS

7.32 Twelve industries in the manufacturing sector have been targeted for greater development and promotion. These industries have the potential to contribute to the further growth and exports of the sector. They will contribute in diversifying industrial activities and enhancing the resilience of the sector, to enable it to take advantage of growing markets, regionally and globally. The targeted industries are:

### **Non-resource based**

- (i) electrical and electronics;
- (ii) medical devices;
- (iii) textiles and apparel;
- (iv) machinery and equipment;
- (v) metals industry; and
- (vi) transport equipment; and

### **Resource based**

- (vii) petrochemicals;
- (viii) pharmaceuticals;
- (ix) wood-based products;
- (x) rubber and rubber products;
- (xi) oil palm-based industry; and
- (xii) food processing.



# **NON-RESOURCE BASED INDUSTRIES**

**ELECTRICAL AND ELECTRONICS INDUSTRY**

**MEDICAL DEVICES INDUSTRY**

**TEXTILES AND APPAREL INDUSTRY**

**MACHINERY AND EQUIPMENT INDUSTRY**

**METALS INDUSTRY**

**TRANSPORT EQUIPMENT INDUSTRY**



# Chapter

# 8



## **ELECTRICAL AND ELECTRONICS INDUSTRY**





# ELECTRICAL AND ELECTRONICS INDUSTRY

## SECTION I OVERVIEW

8.01 The electrical and electronics (E&E) industry is the leading contributor to Malaysia's industrial development, in terms of output, foreign exchange earnings and support activities. During the period of the Second Industrial Master Plan (IMP2), 1996-2005, the industry registered double digit growth in exports, thus maintaining Malaysia's position as a net exporter of E&E products. The industry accounted for an average share of 50.5 per cent of the total merchandise trade during the period. Malaysia's production and exports of semiconductors ranked among the top five in the world for the period 2000-2004.

8.02 Progress was recorded in several product categories of the industry:

- semiconductors, the largest component of exports, underwent major advances in technology and productivity improvements;
- there was a major diversification into industrial electronics, such as computers and computer peripherals, telecommunications and scientific equipment;
- in consumer electronics, domestic companies moved up the value chain in the production of advanced display products, such as thin-film transistor-liquid crystal displays (TFT-LCD), plasma television sets and digital audio visual products; and
- within electrical products, a large number of domestic companies were able to expand their operations and develop their own brands to gain access to both the domestic and export markets.

8.03 The continued presence of major multinational corporations (MNCs) has benefited the industry, in terms of technological progress and skills development. It has also encouraged the development of locally-owned support industries and outsourcing activities, in the supply of equipment, materials, parts and components, and dedicated services:

- support industries developed during the period included precision stamping and precision machining, process automation, engineering plastics and advanced materials;
- dedicated outsourcing services, such as contract design, burn-in, testing, failure analysis and rapid prototyping, also developed during the period; and

- the launch of the initiative of Multimedia Super Corridor (now known as Multimedia Super Corridor of Malaysia - MSC Malaysia) during the period had also encouraged the establishment of design centres for hardware and software development and systems integration.

8.04 During the period of the Third Industrial Master Plan (IMP3), 2006-2020, the industry will continue to grow and contribute significantly to the industrial progress and transformation. It will leverage upon its strengths in semiconductors, information and communication technology (ICT) and support industries to develop new products, based on new and emerging technologies. The trend towards extensive applications of electronics in industries and services, together with the development of multimedia ICT, will provide growth opportunities, especially in the areas of miniaturisation, digitalisation and multimedia applications.

8.05 The trend towards outsourcing will continue, as MNCs strive to remain competitive in their core businesses. In the medium to long term, the industry will strengthen its linkages with the automotive, medical, defence and aerospace industries. The development of new industrial and consumer electronics products, through the application of electronics and ICT, will attract considerable investments into the industry. The support industries and services are expected to expand, in tandem with these developments.

## **SECTION II PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN**

### **(a) Structure of the Industry**

8.06 The E&E industry can be divided into two major product categories, namely electrical and electronics. The electronics product category can be sub-divided into three segments:

- electronics components, including semiconductors, passive components, and other components, such as printed circuit boards, metal stamped parts and precision plastic parts;
- industrial electronics, including multimedia and information technology (IT) products, telecommunications equipment and office equipment; and
- consumer electronics, including audio products, audio visual products, and other products, such as audio visual accessories, cameras and electronic games.

8.07 The electrical product category comprises:

- industrial equipment, such as electrical apparatus; industrial lightings, distributors and connectors, protecting electrical circuits; and solar power equipment;
- electrical appliances, such as lightings, washing machines, ovens, rice cookers, blenders, irons and electric kettles; and

- electrical components, such as wires, conductors, power cables, telecommunications cables and fibre optic cables.

- 8.08 The industry is supported by a wide range of engineering industries and services. These include surface treatment, precision stamping, machining, process automation, moulds and dies, and dedicated E&E services, such as calibration, testing, failure analysis, repairs and maintenance.
- 8.09 During the IMP2 period, a total of 901 companies in E&E commenced operations, producing mainly electronics components and electrical products (Table 8.1). Together, they accounted for more than 65 per cent of the total E&E companies in operation. Within the electrical products category, major producers were involved in the manufacture of industrial equipment and electrical appliances. In general, local producers, which were mainly small and medium enterprises (SMEs), supplied their products to the MNCs in Malaysia.

TABLE 8.1

**ELECTRICAL AND ELECTRONICS COMPANIES WHICH COMMENCED OPERATIONS DURING 1996-2005**

<i>Product Category</i>	<i>No. of Companies</i>	<i>Investments (RM billion)</i>
<b>Total</b>	<b>901</b>	<b>57.4</b>
<b>Electronics products</b>	<b>651</b>	<b>53.2</b>
Components	346	39.5
Industrial	161	11.3
Consumer	144	2.4
<b>Electrical products</b>	<b>250</b>	<b>4.2</b>

Source: Malaysian Industrial Development Authority

- 8.10 During the IMP2 period, the industry recorded changes in the composition of its product categories. Since 1999, industrial electronics have overtaken electronics components as the leading product segment. This was a result of the increased manufacture of high value-added products, such as computers, computer peripherals and telecommunications equipment. Nevertheless, the electronics components segment continued to record double-digit growth to meet the increased external demand for high-end industrial and consumer electronics products.
- 8.11 The industry has moved up the value chain into the manufacture of high-end products, such as fabricated wafers, mobile phones, telecommunications equipment, computer notebooks and servers, and provision of services, such as design of integrated circuits, prototyping, testing and failure analysis. The

global trend towards outsourcing, together with Malaysia's attractive location, have attracted many electronics manufacturing services companies to establish their operations in the country and make Malaysia their regional production and distribution centres for high-end electronics products.

- 8.12 Major semiconductor and related companies are located largely in Free Zones in Pulau Pinang, Selangor and Melaka. Some other companies, with licensed manufacturing warehouse (LMW) status, are located in various industrial estates across the country. Pulau Pinang and its adjacent areas, particularly Kulim High Technology Park, have the essential features of a semiconductor cluster, with the presence of major manufacturing companies and well supported by components and parts manufacturers, engineering support industries and dedicated services, including logistics. The cluster also benefits from the presence of training centres and institutions of higher learning to support human resource training and research and development (R&D) activities.
- 8.13 A growing number of MNCs in E&E have made Malaysia their centre for value-added activities, such as R&D, distribution, procurement and customer services. As at the end of 2005, there were seven operational headquarters (OHQs) and 103 international procurement centres (IPCs) which have established their operations in Malaysia to serve regional and global markets.

**(b) Investments**

- 8.14 During the IMP2 period, investments in E&E totalled RM84.3 billion. Investments in the electronics components segment attracted RM54.5 billion or 64.7 per cent of the total investments in the industry. The substantial investments reflected Malaysia's competitive strength in attracting higher value-added semiconductor manufacturing projects. Apart from electronics components, substantial investments were channelled to the industrial electronics segment, as reflected by the substantial increase in its share of approved investments in the E&E industry, from RM4.6 billion or 11.2 per cent in the first phase of the IMP2 period, 1996-2000, to RM14 billion (32.3 per cent) in the second phase, 2001-2005 (Table 8.2). Projects approved during the period totalled 2,054, of which 1,495 (72.8 per cent) have been implemented. Of the total projects implemented, 787 were Malaysian-owned, while the balance were foreign-owned. These projects have created employment opportunities for 231,600 persons.
- 8.15 Foreign sources contributed RM65.5 billion or 77.7 per cent of the total investments, and domestic sources, RM18.8 billion (22.3 per cent). The inflow of foreign investments into the industry was largely influenced by the cyclical growth pattern of the global electronics industry (Chart 8.1). Of the total number of projects approved with foreign investments, 68.1 per cent were in the electronics components segment. They were mainly reinvestments in high-end semiconductor projects and, to a lesser extent, expansion projects in other components, such

as capacitors and resistors. Major sources of foreign investments were the United States of America (USA), Japan, Singapore and Germany:

- investments from the USA were mainly in semiconductor devices, computers and peripherals;
- investments from Japan were in consumer electronics products, such as television sets (CRT/TFT-LCD/plasma), MP3 players, discman, DVD players/ recorders, digital theatre systems and cameras;
- investments from Singapore were largely in support industries, such as precision parts and engineering moulded components, and services, such as surface treatment and machining; and
- investments from Germany were in semiconductors, passive components and electronics wires.

TABLE 8.2

### APPROVED INVESTMENTS IN THE ELECTRICAL AND ELECTRONICS INDUSTRY

<i>Product Category</i>	1996-2000		2001-2005		1996-2005	
	<i>Value (RM bil)</i>	<i>Share (%)</i>	<i>Value (RM bil)</i>	<i>Share (%)</i>	<i>Value (RM bil)</i>	<i>Share (%)</i>
<b>Total</b>	<b>41.0</b>	<b>100.0</b>	<b>43.3</b>	<b>100.0</b>	<b>84.3</b>	<b>100.0</b>
<b>Electronics products</b>	<b>36.5</b>	<b>89.0</b>	<b>40.7</b>	<b>93.9</b>	<b>77.2</b>	<b>91.6</b>
Components	30.5	74.4	24.0	55.3	54.5	64.7
Industrial	4.6	11.2	14.0	32.3	18.6	22.0
Consumer	1.4	3.4	2.7	6.3	4.1	4.9
<b>Electrical products</b>	<b>4.5</b>	<b>11.0</b>	<b>2.6</b>	<b>6.1</b>	<b>7.1</b>	<b>8.4</b>

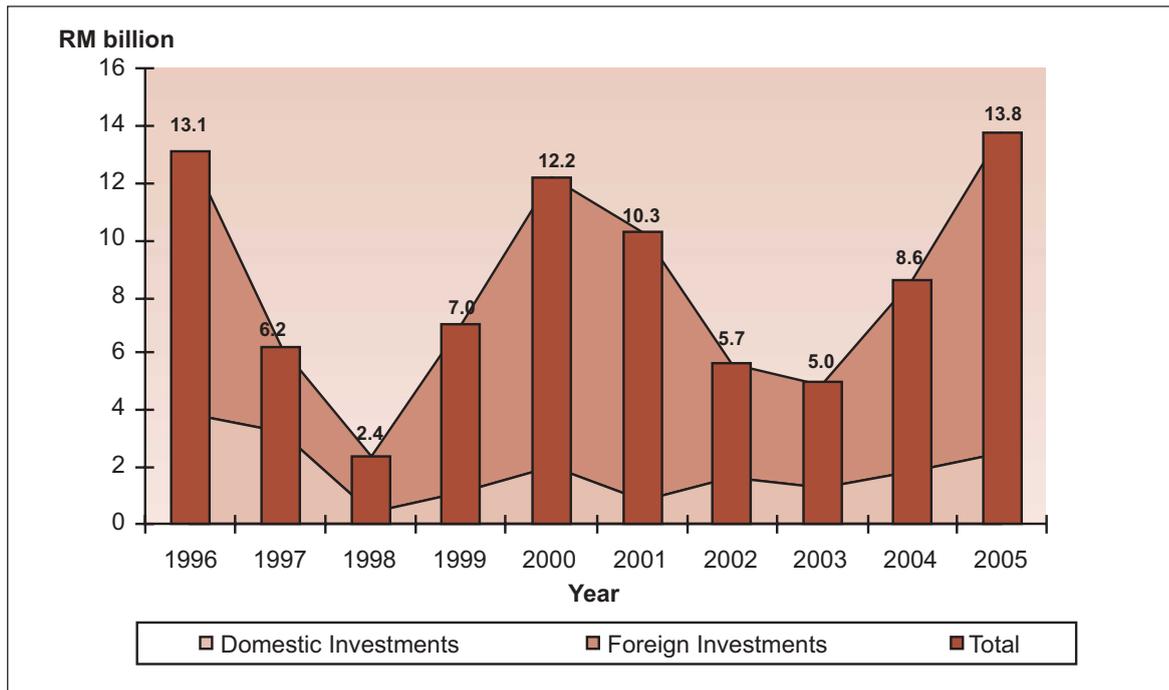
Source: Malaysian Industrial Development Authority

8.16 MNCs assume a significant role in increasing the technology level of the industry, in tandem with the global trend in miniaturisation and convergence of technologies in multifunctional products:

- some of the MNCs have transferred their R&D operations to Malaysia to provide research support to their operations in the Asia Pacific region;
- a number of the domestic companies and public research institutions have also benefited from the R&D activities, through collaboration with these MNCs in the areas of product development and process improvement; and
- a growing number of MNCs have also established related services, such as OHQs, regional distribution centres (RDCs), IPCs and regional offices.

CHART 8.1

**SOURCES OF APPROVED INVESTMENTS IN THE ELECTRICAL AND ELECTRONICS PROJECTS**



Source: Malaysian Industrial Development Authority

8.17 Domestic investments were mainly in industrial electronics and electronics components. Starting as suppliers of essential parts and components, domestic companies have built up their technological capabilities to undertake sub-assemblies and contract manufacturing to complement the operations of the MNCs. Among the products and activities undertaken were wafer fabrication, design of integrated circuits, assembly and packaging, testing and failure analysis. Presently, some of these companies are able to supply parts and components to the global market. Malaysian companies have also been able to produce own brand consumer electrical and electronics products. Within the industrial electronics segment, Malaysian-owned companies have ventured into the manufacture of multimedia and telecommunications products for both the domestic and export markets.

**(c) Productivity**

8.18 During the IMP2 period, the industry recorded an average annual growth in productivity, measured by sales value per employee, of 8.9 per cent. In terms of value, the productivity increased from RM233,790 in 1996 to RM548,900 in 2005. The increase in sales was largely due to the demand for high-end products, such as office, computing and accounting machinery; and consumer electronics, which stimulated the growth in the worldwide semiconductor market.

8.19 During the period, the industry was able to sustain its labour cost competitiveness, as the increase in labour cost per employee of 6.1 per cent was more than compensated by the higher growth in productivity of 8.9 per cent. This was further reflected by an average annual decrease of 2.5 per cent in the unit labour cost. The increase in labour cost was attributed to higher wages for skilled workers, as the industry moved from basic operations to more complex and high technology processes.

**(d) Exports**

8.20 During the IMP2 period, exports of E&E products registered an average annual growth of 11.1 per cent, from RM99.3 billion in 1996 to RM265.1 billion in 2005. Major export product categories were industrial electronics and electronics components, which together accounted for 81.4 per cent of the total exports of E&E products in 2005 (Table 8.3). Prior to 1999, the electronics components segment was the major contributor to the exports of E&E products. Since then, with the exception of 2003, the industrial electronics segment has emerged as the major contributor (Chart 8.2). This trend indicates that companies in Malaysia are moving towards exports of high value-added products, such as personal computers, and telecommunications equipment and devices.

8.21 The USA, Japan, Singapore and the European Union (EU) remained major export destinations, due, in part, to the consumer demand and preference for the latest E&E gadgets. The USA remained the single largest export market for Malaysian E&E products, absorbing an average of 28 per cent of the total exports of E&E products during the period. Lately, the People's Republic of China, India, Australia, ASEAN, Eastern Europe and South America have emerged as new markets.

**(e) Imports**

8.22 Imports of E&E products increased by an average annual growth rate of 10.4 per cent, from RM76.6 billion in 1996 to RM194.1 billion in 2005 (Table 8.3). Against a higher increase in exports, Malaysia maintained its overall position as a net exporter of E&E products. Major products imported were electronics components and industrial electronics. Semiconductors formed the largest component of imports, at more than 50 per cent, with the bulk being components for the production of consumer and industrial electronics products. Some of the semiconductors imported originated from Malaysia, but distributed by third countries. The presence of many electronics manufacturing services companies and other MNCs in industrial electronics has also resulted in the high import of parts and components for data processing machines and telecommunications equipment.

TABLE 8.3

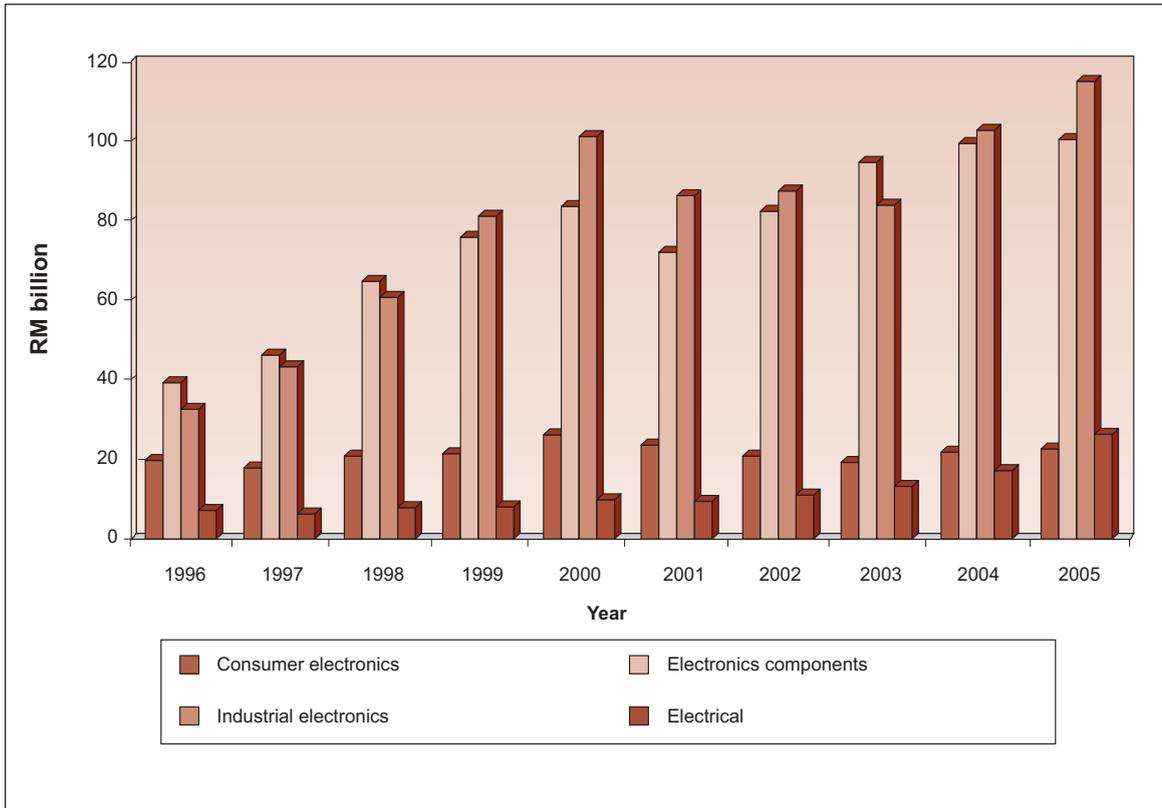
## EXPORTS AND IMPORTS OF ELECTRICAL AND ELECTRONICS PRODUCTS

Product Category	1996		2000		2005		1996-2005		1996-2005	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	(RM billion)									
<b>Total</b>	<b>99.3</b>	<b>76.6</b>	<b>221.9</b>	<b>156.4</b>	<b>265.1</b>	<b>194.1</b>	<b>1,890.3</b>	<b>1,366.3</b>	<b>11.1</b>	<b>10.4</b>
<b>Electronics products</b>	<b>92.3</b>	<b>68.1</b>	<b>211.9</b>	<b>142.5</b>	<b>238.5</b>	<b>177.2</b>	<b>1,772.3</b>	<b>1,245.5</b>	<b>10.8</b>	<b>10.8</b>
Components	39.7	49.7	84.0	111.8	100.4	120.7	760.7	913.4	10.7	9.9
Industrial	32.7	17.9	101.4	30.0	115.4	54.5	795.6	322.7	15.4	12.9
Consumer	19.9	0.5	26.5	0.7	22.7	2.0	215.9	9.4	0.6	10.5
<b>Electrical products</b>	<b>7.0</b>	<b>8.5</b>	<b>10.0</b>	<b>13.9</b>	<b>26.6</b>	<b>16.8</b>	<b>118.1</b>	<b>120.8</b>	<b>14.2</b>	<b>7.1</b>

Source: Department of Statistics, compiled by Ministry of International Trade and Industry

CHART 8.2

**EXPORTS OF ELECTRICAL AND ELECTRONICS PRODUCTS BY SEGMENT**



Source: Ministry of International Trade and Industry

**(f) Research and Development and Technology Development**

8.23 During the period 2001-2005, the Government allocated RM129 million for R&D in new and emerging technologies, such as micro-electromechanical systems, photonics, advanced displays, advanced packaging and nanotechnology. The bulk of the allocation were utilised by public universities under the Intensified Research in Priority Areas (IRPA) and Industry Grant Scheme (IGS) programmes. As at 2005, a total of 31 projects in R&D, with investments amounting to RM681.6 million, were approved. These projects focused on product development and process improvements for opto-electronics, semiconductors (programmable logic chips, integrated circuit designs, radio frequency integrated circuits testing and failure analysis) and display products.

8.24 Malaysian manufacturers have also incorporated R&D activities in their operations. Among R&D activities undertaken in-house were on mobile communication devices, semiconductor packaging technology, wafer fabrication, testing equipment, biometrics and display products, as well as consumer products, such as electrical

appliances and air conditioners. An increasing number of Malaysian companies utilise ICT to support their businesses in areas such as R&D, marketing, sales, logistics and supply chain management.

8.25 Many MNCs had shifted their operations in R&D and design and development (D&D) to Malaysia. Expenditures on D&D by US companies in Malaysia grew from RM552.1 million in 2002 to more than RM1 billion in 2005, due to the increase in activities, involving new integrated circuits packaging and new processes. Other MNCs had also established their R&D centres locally to take advantage of lower operating costs. The R&D activities, for example, process automation and integration, were also being outsourced to local research institutes, R&D centres and SMEs. Presently, the MNCs employ more than 2,000 local engineers in their operations. The application of enabling technologies, such as nanotechnology and micro-electromechanical systems, in manufacturing processes has led to the development of miniaturised and digitalised E&E products, and parts and components.

8.26 A growing number of companies in E&E have advanced from traditional manufacturing to virtual manufacturing operations. Virtual manufacturing companies outsource their manufacturing activities, while concentrating on their core activities, such as R&D, D&D, marketing and brand development. This outsourcing activity has benefited a large number of local contract manufacturers and assemblers. Products and activities outsourced to domestic companies include design, development and manufacture of semiconductor equipment, tools, speakers, keyboards and electrical appliances. The three major virtual manufacturing companies operating in Malaysia utilise the services of more than 800 sub-contractors and suppliers.

8.27 Many SMEs have benefited from the presence of the MNCs in the country. A growing number of former employees of the MNCs have started their own companies and become suppliers to the MNCs. Some of these local companies have moved up the value chain and have been able to progress in tandem with the MNCs, in terms of technology, to become contract manufacturers, as well as independent manufacturers. Among the products manufactured by these local companies are consumer electronics products, telecommunications equipment, computers and computer peripherals. Domestic companies have also undertaken R&D activities to strengthen their manufacturing operations.

#### **(g) Performance by Product**

##### ***(i) Electronics Components***

8.28 Production of electronics components is relatively capital-intensive and has attracted the largest investments during the IMP2 period. These investments were largely undertaken by leading MNCs from the USA, Germany and Japan. Semiconductor devices accounted for about 85 per cent of the investments,

while the balance were for other electronics components, such as capacitors, resistors, inductors, coils, transformers, magnets, quartz crystals, oscillators, printed circuit boards, precision metal stamped parts and engineering plastics injection mouldings for electronics applications.

- 8.29 Malaysia has attracted leading semiconductor companies in microprocessors, microchips, power integrated circuits, linear integrated circuits, opto-electronics devices, and other logic and discrete devices. Presently, there are 53 companies involved in the production of semiconductor devices, including silicon and fabricated wafers, assembly and packaging, and design and testing of integrated circuits. The semiconductor sub-segment has also progressed towards automated manufacturing operations to produce the most advanced semiconductor packages, such as flip chip, organic land grid array (OLGA) packages, field-programmable gate array (FPGA) and multi-leaded chips (MLC). The global trend in the sub-segment has led to many semiconductor companies undertaking specialisation and adopting new technologies, for example, nanotechnology, in their manufacturing processes.
- 8.30 Malaysian-owned companies are similarly capable of producing advanced semiconductor packages. The semiconductor sub-segment has also encouraged the development of domestic support activities, such as the production of leadframes, bonding wires, vision inspection system and in-circuit testers, as well as burn-in test services. The presence of the MNCs, especially in semiconductors, has led to the establishment of other local support activities, such as specialised machinery and equipment, moulds and dies, and metal and plastics parts. A number of these domestic companies have progressed and are able to compete in the global market.
- 8.31 The electronics components segment has progressed towards automated manufacturing operations, as reflected by the high managerial, technical and supervisory ratio of 25.2 per cent recorded during the IMP2 period. Some of the companies producing the latest generation of integrated circuits have registered higher managerial, technical and supervisory ratio, of up to 65 per cent.

***(ii) Industrial Electronics***

- 8.32 Presently, there are 161 manufacturers of industrial electronics products, including 52 in the manufacture of computers and computer peripherals, 80 in telecommunications equipment and 21 in optics and photonics products. The majority of the manufacturers in the segment are MNCs. Most of the MNCs are world leading technology companies and undertake integrated manufacturing and services activities. The presence of the MNCs has led to the development of support industries and services along the value chain, supplying important parts and components and dedicated services, such as precision stamping and machining, and surface treatment.

8.33 Major products manufactured are personal computers, storage units, telecommunications equipment, handheld devices and mobile phones. There are several leading MNCs which produce industrial electronics products, incorporating the latest technologies, for both the local and export markets. Two multinational computer companies have established their operations in the country, supplying personal computers with the latest technology to the global market. Several original equipment manufacturers (OEMs) produce the latest models of mobile phones of major brands.

**(iii) Consumer Electronics**

8.34 There are 144 companies producing consumer electronics products, such as television sets, radios, compact disc and video compact disc players, home theatres, decoders, video games, camcorders and digital cameras. The larger manufacturers are Japanese MNCs, which are world leaders in audio visual products.

8.35 Due to intense competition from lower cost countries, companies in the segment have undergone consolidation to concentrate on higher value-added products and R&D activities in Malaysia. Labour intensive assembly operations have been phased out or relocated to lower cost countries. In tandem with the global trend on outsourcing, the MNCs in Malaysia are increasingly outsourcing their activities to locally-owned companies. Some of these domestic companies have also acquired sufficient technological capabilities to become OEMs, own design manufacturers (ODMs) and own brand manufacturers (OBMs), producing for both regional and global markets.

**(iv) Electrical Products**

8.36 Presently, there are 250 companies in electrical products in operation. Major products manufactured include electrical household appliances, wires and cables, electrical industrial equipment and other electrical products. Of the total number of companies in operation, 48 are foreign-owned, mainly from Japan and Republic of Korea. They operate on a larger scale and are capable of producing high-end electrical products, applying the latest technologies, for the export market. Some of these companies undertake R&D activities and also outsource some of the manufacturing activities to domestic companies.

8.37 Malaysian-owned companies are largely SMEs, producing household electrical appliances as OEMs for major foreign-owned brands. The larger companies have established integrated facilities to undertake R&D and manufacture their own brands of electrical appliances, which are exported to ASEAN, West Asia, the USA, the People's Republic of China and Japan. To remain competitive, an increasing number of local companies have undertaken outsourcing of parts and components from cheaper sources, such as the People's Republic of China and Thailand. Some others have also expanded offshore, as a

means of gaining access to the export market. Production of electrical power cables and wires is largely undertaken by local companies, catering mainly for the domestic market, with Tenaga Nasional Berhad and Telekom Malaysia as the major customers. In recent years, these companies have also begun to export their products to ASEAN countries.

### SECTION III PROSPECTS

8.38 The future growth of the E&E industry in Malaysia will be influenced by the overall growth of the global market for E&E products and the advancement of technologies in the electronics product category, particularly semiconductors. Further integration of technologies will enable companies to develop greater product functionalities and enhance performance and system management. Demand for data and information network security will encourage further collaboration among manufacturers of semiconductors, data storage and end products to design, develop and manufacture products which can perform these functions.

8.39 Rapid technology development in the applications of electronics in the automotive industry will increase linkages between the two industries. The applications include motor and transmission control, transmission, ignition modules, automatic braking system, anti-collision system, air-bag, lighting and security system. The global market for automotive electronics is projected to reach US\$185.3 billion in 2012. With its established foundation in both the electronics segment and automotive industry, Malaysia is expected to benefit from this development.

#### **(i) Semiconductors**

8.40 Within the next five years, the industry is projected to grow at an average annual rate of 6.5 per cent and be able to generate revenues of US\$318 billion by 2010. This is attributed to high consumer spending and the changing preference for the most advanced electronics devices among developed countries. The growth in demand for E&E products is expected to be higher among emerging economies, especially in Asia Pacific, in view of the expansion in electronic commerce and increase in consumer purchasing power.

8.41 Malaysia is expected to benefit from the growth in demand for semiconductors from these markets, as a result of the further integration of existing semiconductor companies into the global production networks. The need to sustain competitiveness will compel semiconductor companies to outsource their manufacturing processes to more cost efficient producers. The future trend will be towards specialisation, where the larger semiconductor manufacturers will specialise in their core competencies, such as design of integrated circuits and marketing or fabless houses, while outsourcing almost all of their manufacturing functions. This trend will provide opportunities to attract companies

in integrated circuits design and fabless houses to Malaysia. To date, Malaysia has been able to attract leading semiconductor companies in the assembly and packaging of microprocessors, micro controllers, memories, signal processors and logic integrated circuits. Presently, the bulk of their components, especially fabricated wafers, are imported. Nevertheless, there will be opportunities to encourage these companies to be involved in backward integration into wafer fabrication activities. Further adoption of nanotechnology is expected to improve the performance of semiconductor devices, as well as generate new applications and products. To sustain competitiveness, more Malaysian semiconductor manufacturers are expected to adopt this new technology in their operations.

**(ii) Industrial Electronics**

- 8.42 The growth of the market for ICT is expected to be driven by the trend towards mobile technology for communication and data transfer. However, the more mature markets, such as personal computers and software, will still register significant growth. Global economic growth will support continued spending on ICT, which will increase by an average annual rate of 7.7 per cent to nearly US\$3.7 trillion in 2008. Key markets in Eastern Europe and Asia are expected to register double digit growth. Software will record the fastest growth, at 9.9 per cent per annum, followed by services (8.4 per cent), hardware (7.4 per cent) and communication (7 per cent).
- 8.43 The convergence between the entertainment industry and ICT will create a new demand for mobile devices and applications. Smartphones and personal digital assistants are expected to register high growth, driven by fashion trend, as well as the wider availability of wireless-fidelity (WiFi) connected hotspots. The availability of wireless, mobile and broadband facilities will be the key driver in this segment.
- 8.44 The increase in sales of digital video recorders and cameras, together with the increasingly popular video-on-demand application, has stimulated the sales of high performance personal computers. Sales of personal computers are expected to increase between 5 per cent and 10 per cent per annum during the next few years, due to an increase in sales of high performance laptops and handheld computers.
- 8.45 Sales by electronics manufacturing services providers, led by computers and telecommunications equipment, are expected to reach US\$138.2 billion by 2009, with the recovery of major markets, for example, the EU. To remain competitive and enhance product capabilities, electronics manufacturing services companies are expected to integrate or consolidate their worldwide operations, through mergers and acquisitions (M&As), with related component manufacturers and outsource their labour intensive operations to lower cost countries. With the expansion of markets in Asia, electronics manufacturing services providers within the industrial electronics segment are expected to grow at 7 per cent

per annum. These companies are expected to change their focus to new market segments, for example, telecommunications, especially in wireless and radio frequency identification devices and electronics applications in the fields of medicine, automotive engineering and aerospace.

- 8.46 There is rapid development of new products globally, based on new and emerging technologies. Among the new and emerging technologies are nanotechnology, micro-electromechanical systems, wireless technology, photonics and alternative energy, such as solar cells and fuel cells. These new and emerging technologies, together with the trend towards extensive applications of electronics in industries and services, and the development of the multimedia and ICT industries, provide growth opportunities in Malaysia, especially in the areas of automation, miniaturisation, digitalisation and multimedia applications. The advances in technology will encourage further convergence of consumer electronics and ICT in multimedia applications, which will further contribute towards the development of the industrial electronics segment. This development trend will provide opportunities for the growth of the electronics components segment, especially semiconductors, which remain the foundation and driver of growth of the E&E industry.
- 8.47 The creation of MSC Malaysia has provided the impetus for the development of the ICT industry in the country. The progressive expansion of MSC Malaysia to other parts of the country will create a wider impact on economic sectors, particularly manufacturing and services. Within the E&E industry, the expansion of applications in ICT will create new demands for related products and services.

### ***(iii) Consumer Electronics***

- 8.48 The production of consumer electronics products, especially audio visual products, is projected to grow, with the trend towards the digitalisation of broadcasting in the developed countries. The global market for consumer electronics is expected to register double digit growth to US\$203.3 billion in 2009. Audio visual products will be the leading source of revenues in the segment. Sales of television sets, which account for more than 80 per cent of the total revenues in the segment, are expected to grow at a slower pace. While the USA and Europe will remain major markets, Asia Pacific, including Malaysia, is expected to achieve the fastest growth, in view of increased affluence and changing lifestyles.
- 8.49 Potential growth areas for Malaysia are in integrated home-entertainment networks, digital car entertainment system, home-network devices and portable digital video device players. The domestic companies, which are OEMs and ODMs, will need to take advantage of the growing consumer market to promote their own brand products, through the existing networking with the MNCs in the country.

**(iv) Electrical Products**

- 8.50 The new applications of electronics will generate growth in the up-market segment in electrical appliances. Manufacturers have incorporated new features, utilising programmable logic controller integrated circuits into their products, such as smart rice cookers, blenders, ovens, vacuum cleaners, washing machines, refrigerators and air-conditioners, to attract buyers who prefer trendy and fashionable products. A new growth area in this product category will be solar powered energy, utilising photovoltaic technology. The market for solar powered products has registered significant growth of 30 per cent per annum during the last seven years. This growth momentum is expected to continue within the next five years. In 2005, worldwide sales of photovoltaic cells and modules totalled US\$10 billion and are expected to reach US\$38 billion by 2010.
- 8.51 In 2005, the Government launched the Malaysian Building Integrated Photovoltaic project, aimed at intensifying the usage of solar energy as an alternative source of electricity. There are opportunities to attract investments in photovoltaic fabricated wafers, cells, modules, power management system, junction boxes, photovoltaic wires, connectors, mounting metal structures and inverters.

## **SECTION IV CHALLENGES**

### **(a) Positioning Malaysia in the Global Supply Chain Networks**

- 8.52 There are various activities along the manufacturing value chain which need to be further developed. The challenge is to identify these activities in the various E&E segments and sub-segments, such as industrial electronics, consumer electronics and semiconductors, as well as explore opportunities in new and emerging technologies.
- 8.53 The growth of the industrial electronics segment will be led by ICT, which is expected to grow at 7.7 per cent per annum. This will have a significant impact on the development of other electronics segments. The challenge is to identify and promote 'the missing link' in the electronics value chain, for example, developing capability in photo mask production for semiconductors and display panels for the consumer and industrial electronics segments. The future growth of consumer electronics is mainly in the production of digital audio visual products. Domestic companies will need to acquire sufficient technological capabilities to manufacture these products and, at the same time, upgrade their global market intelligence in efforts to gain access to the international market.

8.54 With the increasing trend in global outsourcing, more companies are expected to be involved in the production of electronics components. The presence of leading electronics manufacturing services companies provides opportunities for local companies to be part of their supply chains. The challenge for local suppliers is to strengthen their capabilities to meet the requirements of the electronics manufacturing services companies.

**(b) Development of Clusters in Semiconductors and Information and Communication Technology**

8.55 Although there are companies locally already involved in every major phase of the semiconductor value chain, with the exception of assembly and packaging, the numbers are too small to create an impact on the semiconductor cluster. The negative trade balance of semiconductors during the IMP2 period, at an average value of RM12.4 billion annually, indicates the gap in the value chain, which is presently being outsourced from other countries.

8.56 There is thus a need to promote further investments in activities related to the design of integrated circuits, masking and wafer fabrication, and production of materials and inputs for integrated circuits packaging, and precision parts and components for the fabrication of automation equipment. The challenge is to upgrade the capabilities of local semiconductor support companies to fill the gap along the semiconductor value chain. More importantly, there will be a need to create an effective synergy, or a cluster of semiconductor manufacturers, to optimise the benefits and minimise the costs along the value chain.

**(c) Limited Research and Development**

8.57 Present limitations on R&D have affected the competitiveness of Malaysian-owned E&E companies in the global market. Major limitations are:

- lack of focused and structured efforts in R&D by local research institutes to facilitate the shift towards higher value-added activities;
- limited exposure of local research institutes to leading-edge technologies;
- insufficient support services, such as testing, calibration and failure analysis, to support R&D activities;
- poor R&D linkages and collaborations between local research institutes and the industry;
- inadequate experienced R&D personnel in both the research institutes and the industry; and

- inability to commercialise R&D findings, due to poor planning and assessment on the commercial feasibility of the research results, stringent funding conditions and accessibility, and the administrative environment not conducive to encourage public researchers and innovators to participate in the commercialised projects.

**(d) Shortage and Mismatch of Qualified Human Resources**

8.58 The ability to create a bigger pool of engineers and scientists is important to sustain existing operations and attract new investments in the industry. E&E companies face a constraint in employing and retaining more experienced technical personnel in specialised skills. With the rapid development of new and innovative products, the industry requires qualified and experienced scientists in areas such as physics, chemistry, electronics, materials science, electrical engineering and fabrication, to be able to translate research findings into market applications. There is a need to take these requirements into consideration in formulating programmes for the overall workforce development of the industry.

8.59 Apart from the low intake of students in science, technical and engineering fields at institutions of higher learning, the courses offered lack specialisation. Skills needed for emerging technologies are demanding, requiring personnel with advanced qualifications in the respective fields. The mismatch between the requirement by industry and the availability of graduates has led to a situation of graduates not being equipped with the appropriate qualifications to be readily absorbed by the industry, particularly in the areas of product development and process improvements.

**(e) Limited Global Marketing Networks**

8.60 While the MNCs have established integrated marketing networks for their products, local companies have yet to acquire sufficient knowledge on global marketing. The costs and time in gathering information on potential markets, as well as the lack of experienced marketing personnel, have constrained the ability of these companies to compete internationally. There is a need to enhance domestic capabilities in marketing and technological know-how to enable the local companies to integrate into the global supply chains.

**(f) Inadequate Infrastructure for High Technology Projects**

8.61 High technology projects, such as wafer fabrication and advanced flat panel displays, require special facilities, which can only be provided in dedicated industrial parks. The challenge is to create industrial parks which provide not only basic facilities, such as uninterrupted power supply and clean water, but also other key related services. These services include training, R&D, incubation centres, specialised testing, assistance in technical and technology development, and research commercialisation.

8.62 The increase in global sourcing and outsourcing activities has created demand for broadband communication. Presently, the availability of broadband communication is confined within and between industrial estates. This limitation prevents connectivity via broadband outside the industrial estates, domestically and internationally, thus affecting continuous two-way communication with principal offices and major clients abroad.

**(g) Management and Disposal of Scheduled Wastes**

8.63 Presently, E&E companies dispose their scheduled wastes through:

- in-house waste treatment plants;
- recycling activities by independent companies;
- disposal at *Kualiti Alam Sdn. Bhd.* central site; and
- storage within the factory premises.

8.64 *Kualiti Alam Sdn. Bhd.* has been appointed to undertake the disposal of scheduled wastes generated by industries. In view of the high charges of disposal, many companies prefer to stock their wastes at their premises. The prevalent activity of stocking scheduled wastes can pose a danger to safety and health.

**(h) New Ruling on 'Green' Guidelines by the European Union**

8.65 The EU has imposed new requirements affecting manufacturers of E&E products:

- with effect from 2006, the EU has enforced a new ruling on 'green' guideline in the Waste from Electrical and Electronics Equipment Directive 2002/96/EC. This guideline outlines the responsibilities of producers and exporters for the treatment, recovery and disposal of E&E equipment; and
- Restriction of Hazardous Substances Directive 2002/95/EC on electrical and electronics equipment. The directive aims to protect human health and the environment through the restricted use of certain substances. The directive affects manufacturers, sellers, distributors and recyclers of E&E equipment, containing lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers. The affected products include IT and telecommunications equipment, lighting and E&E tools (except large scale stationary industrial tools).

The industry views the directive as a barrier to trade, as the costs of compliance involved are substantial and burdensome. SMEs will be most affected, as the additional costs incurred will have an adverse impact on their competitiveness.

### (i) Certified Testing and Calibration Centres

8.66 To date, there is only one certified testing centre of switchgears in Malaysia, namely, TNB Research, which is only able to certify products for domestic use. Power electrical products from 10KV–132KV require a specific type of testing, which cannot be undertaken locally. Manufacturers incur high costs in testing, since they have to send their products overseas, for example, to Italy, to obtain certification for high-voltage equipment. Certain test equipment used in the E&E industry need to be calibrated overseas, since there is no such facility available locally.

## SECTION V STRATEGIES AND POLICIES

### TARGETS

8.67 During the IMP3 period, the E&E industry is expected to undergo rapid expansion and diversification and maintain its position as the largest exporter of manufactured goods. For the period, targets set for investments and exports are:

- total investments of RM82.4 billion; and
- exports to reach RM738.9 billion in 2020 (Table 8.4).

TABLE 8.4

### PROJECTIONS FOR THE ELECTRICAL AND ELECTRONICS INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	<i>(RM billion)</i>				<i>Average Annual Growth (%)</i>
Investments	19.9	27.1	35.4	82.4	7.2
Investments per year	4.0	5.4	7.1	5.5	n.a. <sup>1</sup>
Exports (end period)	411.7	558.5	738.9	738.9	7.1

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

### STRATEGIC THRUSTS

8.68 Towards realising the objectives and targets set for the industry, seven strategic thrusts have been set:

- (1) strengthening and deepening the semiconductor sub-segment;
- (2) deepening and widening the development of the ICT industry value chain;

- (3) intensifying R&D and design activities;
- (4) promoting the application of new and emerging technologies;
- (5) integrating the industry into the regional and global supply chain networks;
- (6) making available a sufficient supply of highly skilled and innovative workforce; and
- (7) strengthening the institutional support for the further development of the industry.

**(1) STRENGTHENING AND DEEPENING THE SEMICONDUCTOR SUB-SEGMENT**

8.69 The industry will be further strengthened through the realisation of a fully developed semiconductor cluster, covering the North-Western Corridor, including Pulau Pinang, Perak, Kulim High Technology Park and the neighbouring industrial areas in Kedah. The Federal Government, in collaboration with the relevant State Governments, will identify and designate these areas to cater for the development of the entire semiconductor value chain.

8.70 The development of the semiconductor value chain will involve:

- core activities, such as design centres for integrated circuits and fabless houses, slicing and polishing of silicon wafers, photo masking, wafer fabrication and assembly, testing and packaging;
- support industries, such as metal fabrication (including lead frames, moulds and dies, and automation equipment), bonding wires, surface treatment (including plating and machining), engineering plastics (including magazines and anti-static trays), speciality chemicals and gases, clean room equipment and accessories, and recycling of silicon wafers;
- support services, such as failure analysis, burn-in testing and engineering and clean room maintenance;
- high quality infrastructure, utilities and common facilities, for example, waste management and disposal system;
- enhancing the Institute of Microelectronics to serve as the Centre of Excellence for semiconductors in areas such as R&D, design of integrated circuits, wafer fabrication, testing and packaging, training and other related services;
- establishing dedicated training institutes, in collaboration with the industry and international bodies; and
- encouraging other leading semiconductor companies to invest in the core activities. More SMEs will also be encouraged to become suppliers to the core semiconductor manufacturers.

## (2) DEEPENING AND WIDENING THE DEVELOPMENT OF THE INFORMATION AND COMMUNICATION TECHNOLOGY VALUE CHAIN

8.71 The industrial electronics segment will be further developed through the enhancement of the ICT industry value chain. The value chain, presently centred around MSC Malaysia in Klang Valley, will be progressively expanded to designated areas across the country. Leading multinational ICT companies and local SMEs will be encouraged to establish or expand their operations in these areas. Collaborations, through strategic partnerships and joint ventures, between the MNCs and local SMEs will be promoted.

8.72 The designated areas will be complemented with the full range of activities along the value chain:

- core activities
  - ICT services, such as R&D, software development, multimedia content, supply chain management, business process outsourcing and internet service providers;
  - ICT products, such as computers (servers, desktops, notebooks, palmtops and other related peripherals), multimedia equipment and telecommunications equipment (handheld devices, base stations, facsimile machines, scanners, and networking equipment and devices); and
  - ICT support parts and components, such as hard disk drives, magnetic heads, data storage media, printer heads and laser pick-up units.

The application of advanced technologies, such as flat panel displays, wireless communication technologies, microcomputers and photonics, will be promoted in these areas; and

- infrastructure facilities
  - broadband networking facilities;
  - wireless communication equipment and devices;
  - information kiosks; and
  - wireless internet connections in designated areas (hotspots).

## (3) INTENSIFYING RESEARCH AND DEVELOPMENT AND DESIGN ACTIVITIES

8.73 Measures will be introduced to promote the specialisation of R&D activities and the creation of Centres of Excellence among existing R&D centres in public universities and research institutes, to avoid the duplication in research

areas and facilitate the development of new and emerging technologies. Four public universities will be designated as Centres of Excellence in specific areas:

- Institute of Microelectronics, located in *Universiti Sains Malaysia*, Pulau Pinang - in semiconductors;
- *Universiti Teknologi Malaysia*, Johor and Multimedia University, Cyberjaya - in ICT;
- *Universiti Kebangsaan Malaysia*, Selangor - in micro-electromechanical systems; and
- *Universiti Malaya*, Kuala Lumpur - in photonics.

These centres will be responsible in providing technology support, R&D facilities, incubators for new start-up companies, market intelligence and access to funding for the industry. Collaborations between the centres and the relevant industries will be initiated to enable effective transfer and exchange of know-how. The Government will provide sufficient support to equip the centres with the required infrastructure and resources.

8.74 Measures will be undertaken to enhance R&D activities in the industry, including:

- enhancing the incubator programmes of Government-led research institutes and technology parks to provide a more conducive environment for start-up companies among SMEs;
- encouraging Government-linked companies (GLCs) involved in the industry to intensify their R&D activities in new and emerging technologies;
- considering more attractive incentives to promote R&D activities among domestic companies; and
- strengthening and enforcing the regulations on intellectual property (IP) to provide greater confidence to potential investors in technology and R&D activities.

8.75 A more conducive working and living environment will be created for researchers. Measures include:

- reviewing the rules and regulations in public universities to enable researchers to participate in the commercialisation of their research work, as stakeholders or joint-venture partners; and
- providing due recognition and instituting an attractive reward system to enhance the image of researchers. This will include granting of national awards, upgrading their salary scales and improving their working and living conditions.

#### **(4) PROMOTING THE APPLICATION OF NEW AND EMERGING TECHNOLOGIES**

8.76 The application of new and emerging technologies will be encouraged to improve the competitiveness of domestic companies:

- nanotechnology - for medical products and devices;
- micro-electromechanical systems - for telecommunications, automotive electronics, vehicle sensors and airbags, and optical switchings;
- photonics - for ICT, imaging and medical devices;
- wireless technologies - for mobile communication and data transfer; and
- advanced display technology - for thin-film transistors and liquid crystal displays (TFT-LCD) and organic light emitting diodes (OLEDs).

8.77 The Government, in collaboration with the industry, will formulate and implement a comprehensive action plan to enable all stakeholders to gain optimum benefits from these technologies. The plan will include areas such as R&D, human resource development (HRD), infrastructure and other institutional support.

#### **(5) INTEGRATING DOMESTIC COMPANIES INTO THE REGIONAL AND GLOBAL SUPPLY CHAIN NETWORKS**

8.78 Measures will be undertaken to nurture existing domestic companies with growth potential to expand and integrate into the regional and global supply chain networks, as well as become major producers on their own. The measures include:

- assisting and facilitating local companies to expand into the potential growth areas of the supply chain;
- promoting R&D and D&D to develop and enhance indigenous technological capabilities;
- promoting external linkages with the global E&E cluster through outsourcing and offshoring of various activities in the value chain;
- encouraging M&As, as well as strategic partnerships, among and across related industries;
- promoting outward investments by Malaysian companies in key markets; and
- encouraging the compliance of Malaysian made E&E products with international standards and certifications.

#### **(6) MAKING AVAILABLE SKILLED WORKFORCE**

8.79 Measures will be undertaken in the development of the required human resources in the industry to ensure that skilled personnel and qualified workforce will be readily available, including:

- introducing special courses in universities in the areas of physics, chemistry, engineering, microelectronics, photonics and material science. The number of science and engineering graduates undertaking post-graduate studies, especially in these areas, will be increased. The universities and their research facilities will be provided with modern laboratories;
- considering attractive benefits for post-graduate and post-doctoral fellows, to generate a pool of post-doctoral fellows with the relevant expertise in the industry; and
- strengthening collaborations between universities and the industry to ensure that the skilled workforce meets the requirements of the industry, including internship and exchange programmes to encourage the mobility of skilled research personnel and graduates.

## (7) STRENGTHENING THE INSTITUTIONAL SUPPORT

8.80 Measures will be undertaken to strengthen the institutional support for the further development of the industry:

- **Enhancement in total factor productivity**

Continuous improvements of the productivity performance of the industry will be encouraged to sustain the competitiveness of Malaysian E&E products in the global market. Initiatives to enhance the growth contribution of TFP in the industry include:

- upgrading the quality of the workforce through collaborations between universities and the industry; and
- undertaking internship and exchange programmes to facilitate the matching of skills requirements by the industry.

- **Support schemes**

A comprehensive package of support schemes will be formulated to assist public research institutes and encourage private sector participation in the growth initiatives:

- creation of a semiconductor cluster;
- enhancement of the ICT industry value chain;
- productivity improvements through mechanisation and automation;
- promotion and intensification of R&D, including prototyping and commercialisation;
- application of new and emerging technologies;
- outward investments, including M&As;

- creation of Centres of Excellence; and
- utilisation of environment-friendly materials.

- **Standards certification**

The Government, through SIRIM Berhad, will formulate a standardised quality control management system to ensure that Malaysian E&E companies comply with international standards. The required infrastructure will be established to facilitate the calibration, testing and certification of E&E products. The standards will be benchmarked against global best practices to enhance the confidence among buyers of Malaysian E&E products.

- **Management and disposal of scheduled wastes**

Existing rules and regulations governing the management and disposal of scheduled E&E wastes will be reviewed to:

- institute proper management and storage of wastes;
- prevent overstocking of wastes at factory premises;
- promote greater utilisation of the central storage facility at Kualiti Alam; and
- encourage recycling activities.

- **Strengthening the role of industry associations**

Private sector representation in key areas in the industry will be strengthened through:

- encouraging further establishment of industry associations; and
- expanding the roles and functions of existing industry associations.

# Chapter

# 9



## MEDICAL DEVICES INDUSTRY





## SECTION I OVERVIEW

- 9.01 The medical devices industry has emerged as one of the new areas for development and promotion. The industry has registered growth, as health facilities and services expanded, with the Government's efforts to provide quality health and medical services, as well as the increasing global demand for better healthcare products and services. Malaysia has become the world's leading producer and exporter of catheters, and surgical and examination gloves, supplying 80 per cent of the world market for catheters and 60 per cent for rubber gloves, which include surgical and examination gloves, and industrial rubber gloves. In 2005, surgical and examination gloves, catheters and condoms accounted for RM4.5 billion, or about 85 per cent, of the total exports of medical devices. Other exports of medical devices which registered strong growth included cannulae, needles, and medical and surgical instruments and appliances, as well as orthopaedic appliances.
- 9.02 There is vast potential, both locally and regionally, for the further development of the industry. During the period of the Third Industrial Master Plan (IMP3), 2006-2020, greater emphasis will be given to the industry to enable it to expand its market share and sustain its competitiveness. Foreign companies will be encouraged to undertake not only the outsourcing of components and sub-assemblies for medical devices in Malaysia, but also establish manufacturing facilities, with design and development activities.

## SECTION II PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Status of the Industry

- 9.03 The industry encompasses a wide range of products used in human healthcare for diagnosis, prevention, monitoring, treatment or alleviation of diseases. The product coverage ranges from aids for disabled persons, implantable devices, heart valves, stents, anaesthetic and respiratory equipment, orthopaedic devices, electromedical and imaging equipment, dialysers, in-vitro diagnostics, ophthalmic devices and surgical instruments, to medical disposables, such as surgical and examination gloves, catheters, syringes and needles.

- 9.04 Initially, local production of medical devices had been limited to products comprising mainly medical disposables, such as medical gloves, condoms and catheters. The industry has gradually expanded to other higher end medical devices. Presently, there are 159 medical device manufacturers in the country, comprising both multinational corporations (MNCs) and Malaysian-owned companies, of which:
- 105 produce surgical and examination gloves;
  - 10 produce catheters; and
  - 44 manufacture other medical devices, equipment, surgical instruments and apparatus.
- 9.05 During the period of the Second Industrial Master Plan (IMP2), 1996-2005, while the production of medical gloves continued to expand, with increasing global demand for barrier protection against contamination and spread of communicable diseases, the industry had also diversified into the production of higher value medical devices and products. These products included catheters, syringes, needles, sutures, surgical instruments, medical tubes and bags, medical electrodes, endoscopes, procedural and urological kits, blood transfusion sets, dialysis solution and diagnostic radiographic equipment. The production of medical gloves had also diversified into higher quality and speciality gloves, such as low protein, powder-free medical gloves and safety gloves. Some Malaysian-owned medical glove companies had become major global producers, with their own brands and marketing channels, as well as operations being established overseas, especially in the People's Republic of China, to tap into the vast market. Apart from the higher value medical products, hospital support systems, such as medical gas, anaesthetic delivery and control units, and examination tables and equipment, were also manufactured. The diversification in production was partly attributed to increased demand for other medical devices previously not manufactured in Malaysia, as well as Malaysian facilities undertaking the production of more sophisticated parts of the manufacturing value chain from their parent companies in Europe and the USA, which had been affected by rising direct and indirect production costs.
- 9.06 Manufacturers had also moved up the value chain by upgrading their technology and moving from basic processes and assembly to product and process research and development (R&D), design and prototyping, and distribution and logistics. Companies had increasingly utilised higher technologies in their manufacturing processes. Generally, manual assembly procedures were automated, where technically feasible and financially justifiable, to reduce labour cost. An example is moving to 'multivac' type of semi- or fully automatic packing lines from manual packing (preformed pouches). Other applications of higher technology processes included the utilisation of new materials, better coating for improved performance and more efficient processing technologies.

**(b) Investments**

9.07 A total of 145 projects were approved, with investments totalling RM3.6 billion. Foreign investments amounted to RM2.3 billion or 64 per cent, while domestic investments, RM1.3 billion (36 per cent) (Table 9.1). The projects approved were for the production of various medical devices:

- 81 projects were for the production of dipped rubber products, comprising surgical and examination gloves, and condoms, with investments valued at RM1.3 billion, accounting for 37.6 per cent of the total investments approved;
- 23 projects were for the manufacture of catheters and related products, which included needles, disposable syringes and sutures, with investments valued at RM379.2 million (10.7 per cent); and
- 41 projects were for the production of other medical devices and products, such as dialyser and bloodline sets, surgical and dental instruments, medical electrodes and orthopaedic products, patient monitors, contact lenses and stent grafts, with aggregate investments amounting to RM1.8 billion (51.7 per cent).

Of the total projects approved, 117 are in operation.

9.08 Investments in catheters and related products, and other medical devices increased significantly, from RM295.5 million for 23 projects approved during the first phase of the IMP2 period (1996-2000) to RM1.9 billion for 41 projects approved during the second phase of the IMP2 period (2001-2005). This reflected the trend in the shift of production to higher value medical devices and products.

**(c) Exports**

9.09 During the period 1996-2005, exports of medical devices and products grew at an average annual rate of 8 per cent to RM5.3 billion in 2005. While exports of medical gloves increased from RM2.2 billion in 1996 to RM3.7 billion in 2005, their share of the total exports of medical devices declined from 80 per cent in 1996 to 70 per cent in 2005. This reflected the shift to increasing exports of other medical devices and products, which included catheters, cannulae and sutures. Exports of these other medical devices and products registered high growth of more than 200 per cent in 2005. Other major exports of medical devices and products included syringes, needles, catheters, cannulae and sutures, valued at RM690 million, medical and surgical X-ray apparatus (RM129 million), sheath contraceptives (RM116 million) and other medical instruments, apparatus and appliances (RM490 million) (Table 9.2). The United States of America (USA) remained the leading export destination. In 2005,

it accounted for 40 per cent of the total exports of medical devices and products. Exports of medical gloves to the USA amounted to RM1.5 billion or 40 per cent of the total exports of medical gloves. Other major export destinations included the European Union (EU) and Japan.

TABLE 9.1

**INVESTMENTS IN THE MEDICAL DEVICES INDUSTRY**

<i>Products</i>	<i>1996-2000</i>	<i>2001-2005</i>	<i>1996-2005</i>
<b>Total investments (RM million)</b>	<b>746.5</b>	<b>2,807.6</b>	<b>3,554.1</b>
<b>Foreign (RM million)</b>	<b>424.3</b>	<b>1,845.9</b>	<b>2,270.2</b>
<b>Domestic (RM million)</b>	<b>322.2</b>	<b>961.7</b>	<b>1,283.9</b>
<b>No. of projects</b>	<b>64</b>	<b>81</b>	<b>145</b>
<b>Employment (persons)</b>	<b>9,740</b>	<b>10,670</b>	<b>20,410</b>
Dipped rubber products			
Total investments (RM million)	451.0	888.3	1,339.3
Domestic (RM million)	250.8	621.0	871.8
Foreign (RM million)	200.2	267.3	467.5
No. of projects	41	40	81
Employment (persons)	8,124	7,712	15,836
Catheters and related products			
Total investments (RM million)	54.0	325.2	379.2
Foreign (RM million)	50.5	241.0	291.5
Domestic (RM million)	3.5	84.2	87.7
No. of projects	8	15	23
Employment (persons)	313	153	466
Other medical devices			
Total investments (RM million)	241.5	1,594.1	1,835.6
Foreign (RM million)	173.6	1,337.6	1,511.2
Domestic (RM million)	67.9	256.5	324.4
No. of projects	15	26	41
Employment (persons)	1,303	2,805	4,108

Source : Malaysian Industrial Development Authority

**(d) Imports**

9.10 The domestic market for medical devices, estimated at about RM2 billion, grew by an average annual rate of between 15 per cent and 20 per cent. Imports accounted for about 90 per cent of the total domestic market, comprising mainly higher value medical devices and medical equipment.

TABLE 9.2

## EXPORTS OF MEDICAL DEVICES

Products	1996	2000	2005	1996-2005
	(RM million)			Average Annual Growth (%)
<b>Total</b>	<b>2,715.5</b>	<b>3,780.5</b>	<b>5,319.2</b>	<b>8.0</b>
Surgical and examination gloves	2,175.6	2,828.6	3,743.6	6.9
Catheters, syringes, needles and sutures	367.5	528.3	690.0	6.7
Medical and surgical X-ray apparatus	9.0	58.4	129.3	39.7
Sheath contraceptives	43.0	60.2	115.8	10.7
Electromedical equipment	9.5	25.0	59.0	20.0
Ophthalmic lenses, including contact lenses	44.0	50.4	46.7	-0.4
Dental and ophthalmic instruments and appliances	3.8	7.9	25.2	21.0
Medical furniture	2.2	2.9	19.8	25.4
Other medical instruments, apparatus and appliances	60.9	218.8	489.8	22.0

Sources: Ministry of International Trade and Industry, and Department of Statistics

9.11 During the period 1996-2005, imports of medical devices and products registered an average annual growth of 15 per cent, increasing from RM539 million in 1996 to RM1.7 billion in 2005 (Table 9.3). Medical and surgical x-ray apparatus, electromedical equipment, and other medical equipment, instruments and appliances accounted for the bulk (69 per cent) of the imports in 2005. Leading sources of imports were the EU, the USA and Japan.

### (e) Employment

9.12 During the IMP2 period, employment in the industry grew at an average annual rate of 6.1 per cent and was estimated at 20,410 persons in 2005. As the industry moved into the production of higher value products and increased automation, a higher proportion of the workforce were employed in the managerial, professional, supervisory and technical staff levels. The capital investment per employee (CIPE) ratio in approved projects increased from RM59,000 in 1996 to RM232,000 in 2005, reflecting the shift towards the production of higher end medical devices and products, involving more capital and technology intensive operations.

TABLE 9.3

## IMPORTS OF MEDICAL DEVICES

Products	1996	2000	2005	1996-2005
	(RM million)			Average Annual Growth (%)
<b>Total</b>	<b>539.4</b>	<b>910.0</b>	<b>1,729.0</b>	<b>15.0</b>
Medical and surgical x-ray apparatus	105.1	116.4	229.9	10.4
Electromedical equipment	78.4	93.1	196.7	14.6
Catheters, syringes, needles and sutures	73.9	110.2	191.1	9.7
Ophthalmic lenses, including contact lenses	51.5	105.3	132.9	10.0
Dental and ophthalmic instruments and appliances	36.7	62.5	89.1	13.4
Surgical and examination gloves	12.1	35.4	79.8	19.2
Medical furniture	27.7	30.6	28.2	5.0
Sheath contraceptives	0.4	7.0	13.8	27.7
Other medical instruments, apparatus and appliances	153.6	349.5	767.5	21.5

Sources: Ministry of International Trade and Industry, and Department of Statistics

#### (f) Research and Development

9.13 Greater focus was given by the manufacturers of medical devices on R&D of products and processes to maintain their competitive edge, in view of growing global competition. R&D activities were mainly undertaken by MNCs, which had increasingly transferred their product design capabilities to Malaysia. In 2004, R&D expenditures by the larger companies were estimated at RM43.7 million, or 1.4 per cent of their total sales. R&D activities undertaken included improvements in:

- process control and product quality;
- product development and automation, for example, improvements on coating technology;
- auto dipping and curing process;
- latex compound formulations; and
- process design of safety needles.

9.14 Further expansion of the product range was undertaken, particularly by the MNCs, in the manufacture of improved or new products, as a result of R&D undertaken in parent companies worldwide. New products transferred to the local manufacturing facilities included prefill catheters, urological kits, safety needles and safety syringes.

**(g) Support Industries and Services**

9.15 With the growth of the industry, linkages with local suppliers of support services and products expanded. These services included sterilisation (gamma and ethylene oxide), clean room engineering, packaging, precision engineering, logistics and distribution. Local suppliers of parts and components also benefited from the growth of the industry. The suppliers included those in sterile medical packaging, medical compounds, contract moulding and assembly, machinery fabrication, and tool and die making. A number of local small and medium enterprises (SMEs) were able to design and supply customised automated machinery to the industry.

### **SECTION III PROSPECTS**

9.16 The industry is driven by global demand, as a result of increasing global population and longer life expectancy, as well as growing affluence. This has contributed to a rising demand for better healthcare delivery modes. Leaders in the industry are the USA, Europe and Japan, which also constitute the major markets for medical devices. Apart from the major markets, fast growing regions for medical devices include Latin America and Asia, especially the People's Republic of China and India, due to their large populations and improving healthcare systems. In the Asian region, apart from Japan and the People's Republic of China, Republic of Korea is a major market for medical devices, followed by Taiwan, Malaysia, Thailand and Singapore. Malaysia holds niche position as a major exporter of rubber based products (medical gloves and catheters).

9.17 The development of innovative medical technologies has contributed to the introduction of new medical products and the expansion of production of medical devices globally. The trend in technology in medical devices, which has been based on chemical, mechanical and electrical engineering, is moving into innovative and leading edge technologies. Such technologies reflect the convergence of information and communication technology (ICT), nanotechnology, materials science, cell and tissue biology, and devices engineering.

9.18 Major trends which will shape the demand for medical devices globally include:

- Combination products

The application of combination products, such as drugs and biologics, used in combination with medical devices, is growing rapidly in the

medical field. These combination products are generally complex in nature, but allow the fundamentally different components to work in concert to potentially enhance their safety and effectiveness. Such products include cardiovascular devices (for example, drug coated heart valves), tissue implants, orthopaedic devices coated with anti-inflammatory agents and drug eluting stents.

- Shift towards home healthcare

Home-care and self-care products are one of the fastest growing segments of the industry, particularly in developed countries. Gradually, a wide range of health and social services will be delivered at home to the disabled, chronically ill, or terminally ill patients. Home-care products include telemedicine devices installed in homes, user-friendly home-use monitoring devices, with biosensor chips, digital signal processing hearing aids and disposable hearing aids.

- In-vitro diagnostic devices

The unveiling of the human genome project in the USA and increased knowledge of molecular interactions in the human body have enabled more markers of diseases to be discovered at a fast rate. Clinical laboratories in hospitals will gradually evolve from wet chemistry, staffed by biomedical scientists, to fully automated laboratories, staffed by engineering technicians. The future trend will also stress on 'near patient' testing or point-of-care testing. Point-of-care testing will be the norm in emergency units, out-patient clinics and operating theatres. In addition, 'home-use' diagnostics for monitoring the effectiveness of drugs, compliance with therapy and eliminating testing errors by conducting more frequent and faster tests, will be required. These new developments will increase the demand for a wide range of in-vitro diagnostic devices.

- Cardiovascular devices

The worldwide market for cardiovascular devices is expected to increase, due to aging population and rising affluence, as well as prevalence of unhealthy lifestyles. The development of cardiovascular devices will continue to be undertaken at a fast pace, with R&D being important for bringing new products to the market place. R&D activities include further improvements (miniaturisation and additional functions) of implantable devices.

- Orthopaedic devices

As life expectancy of the world's population increases, a greater number of orthopaedic devices (such as artificial hips, knees and joints) with longer lasting durability, are expected to be required. The growing

prevalence of osteoarthritis is expected to accelerate the growth of the orthopaedics market. Ceramic-on-metal artificial joints and plastic coated joints are expected to be further developed to meet the requirements for more robust, longer lasting and less damaging implants to surrounding tissues.

- 9.19 Given Malaysia's strength in infrastructure and a wide base of support industries and services for the industry, there is potential for the expansion of the industry into the manufacture of higher end medical devices, directly or through outsourcing activities. Expansion in the manufacture of medical gloves and catheters is expected to continue, with the increasing occurrence of communicable diseases, such as acquired immune deficiency syndrome (AIDS) and severe acute respiratory syndrome (SARS), as well as the demand for better healthcare services and rapid development of medical technologies. There is potential for Malaysia to be a leader in the production of more sophisticated medical devices for niche markets, such as coronary catheters and clean room medical gloves.
- 9.20 Several support industries and services are already available in the country. These include precision engineering, electronics, tool and die making, automation support, contract moulding and assembly, medical compounds, medical packaging, software companies, metal and plastic sheet fabrication, printed circuit board assembly and institutional testing facilities. Other support services available include sterilisation and logistics support services. There is potential for the further expansion of these services to support the growth of the medical devices industry.
- 9.21 As emphasis continues to be given by the Government in promoting enhanced quality of life through providing better healthcare systems and health services, greater opportunities will be created for investments in the industry. With the increasing provision of healthcare services, such as hospital services, and medical and dental services, and the added focus on promoting health tourism, the demand for medical devices is expected to increase as well.

## **SECTION IV CHALLENGES**

### **(a) Institutional Support for Regulatory Compliance**

- 9.22 Compliance with standards and regulations for medical devices is important to ensure quality, safety and reliability, and attract foreign direct investments (FDIs) into the industry. Effective enforcement of the standards and regulations will also enhance the perception on and acceptance of locally produced medical devices and assist local manufacturers in strengthening their ability to compete in the global market and improve their market position.

- 9.23 The Ministry of Health has drafted the regulations on the production and importation of medical devices. The registration system will be implemented in stages. The first phase for voluntary registration of establishments for medical devices was launched in January, 2006. Mandatory registration and full enforcement of the regulations are expected by 2008.
- 9.24 Major MNCs producing medical devices and products for export are already conforming to internationally recognised standards, such as those administered by Food and Drug Administration (USA) and Department of Health, United Kingdom (UK). Thus, conformance to the Malaysian regulations will not pose any major problems to them. However, for Malaysian-owned companies, including SMEs, the introduction of the regulations will pose a major challenge, in terms of costs and adjustments in their operations to meet the compliance requirements. The requirements include labelling, specific requirements for sterilisation, toxicological testing and clinical evaluation, and quality management system. Institutional support will also be required to assist the SMEs to upgrade their manufacturing facilities to comply with the standards.

**(b) Shortage of Skilled Workforce**

- 9.25 The industry is driven by new medical technologies and requires skilled personnel in diverse biomedical and engineering disciplines to support its growth. The disciplines include advanced materials, tissue engineering, nanotechnology, microelectronics, software development and ICT. New expertise and skills for complex products need to be developed and enhanced. The shift towards the production of higher value medical devices requires skilled personnel, equipped with knowledge of medical technologies, who are presently in short supply in the country. Examples of such skilled personnel include process control and polymer engineers, as well as professionals, experts and technicians experienced in medical technologies (latex technology, plastics technology, and polymer and coating technologies).

**(c) Competitiveness through Research and Development**

- 9.26 The global environment for the industry has become more competitive. There is a need for local manufacturers to place greater emphasis on the development of products, as well as innovations and improvements of products and processes, to remain competitive. New medical technologies will continue to drive medical innovations in the industry. Normally, these technological developments are led by major MNCs. Local manufacturers have not ventured, on a major scale, through R&D, to improve or develop products and processes. Nevertheless, Malaysian Rubber Board provides R&D support to local companies in medical gloves.

- 9.27 The major segment of the industry is mainly concentrated in the manufacture of medical gloves. Malaysia is a major exporter of medical gloves and catheters. Nevertheless, to remain competitive and sustain its lead in medical gloves and catheters, the segment will need to move up the value chain into product and process R&D and enhance its technical capabilities in the design and development of products, as well as the acquisition of innovative technologies.
- 9.28 To further encourage the manufacture of higher end medical devices, which entails high technologies, there is a need to promote greater investments among MNCs, to attract them to locate higher end medical devices, including their R&D facilities, to Malaysia. At the same time, local companies will need to be encouraged to seek out potential partners having innovative technologies and expertise, for technology collaborations and business expansion.

## SECTION V STRATEGIES AND POLICIES

### TARGETS

- 9.29 Malaysia has the potential to be a major producer and exporter of medical devices. To achieve this objective, concerted efforts will be undertaken by both the Government and the private sector. During the IMP3 period, total investments in the industry are targeted at RM19.4 billion, while exports of medical devices and products are targeted to reach RM18.4 billion in 2020 (Table 9.4).

TABLE 9.4

### PROJECTIONS FOR THE MEDICAL DEVICES INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	<i>(RM billion)</i>				<i>Average Annual Growth (%)</i>
Investments	4.1	6.2	9.1	19.4	9.2
Investments per year	0.8	1.2	1.8	1.3	n.a <sup>1</sup>
Exports (end period)	9.0	13.9	18.4	18.4	8.6

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

## STRATEGIC THRUSTS

9.30 Four strategic thrusts have been set for the industry:

- (1) broadening the range of products towards the higher-end category;
- (2) promoting FDIs and domestic investments in the industry;
- (3) expanding the range of support industries and services for the industry; and
- (4) strengthening the institutional support for enhancing human resource development, R&D and compliance to international standards and regulations.

### (1) BROADENING THE PRODUCT RANGE

9.31 Further development of the industry will be encouraged, taking advantage of the availability of the potential market, increasing demand for better healthcare products and services, and promotion of health tourism. The focus of the development will be on expansion and diversification. In its efforts to broaden the product range, the industry will take into consideration developments at the global level. Internationally, the industry encompasses a wide range of products, which is changing rapidly, with new developments in medical research and technologies, and increasing consumer demand. In striving for a higher contribution of total factor productivity (TFP) growth to productivity, the industry will be encouraged to diversify into the production of higher value medical devices and products. Areas of focus include the development of own brand names and higher quality and speciality gloves.

9.32 Driven by new medical technologies, efforts on developing the capacities and capabilities of skilled personnel will be intensified in the various disciplines, including biomedicine, biotechnology, healthcare and engineering, to facilitate companies in undertaking more capital and technology-intensive operations. The industry will be encouraged to upgrade the technology and ICT applications, moving from basic processes to those involving more innovative and leading edge technologies.

9.33 In tandem with the trend in demand, the following growth areas will be promoted:

- combination products;
- home-care and self-care products;
- in-vitro diagnostic devices;
- cardiovascular devices;
- orthopaedic devices; and
- medical and surgical equipment and instruments.

9.34 In the short term, the focus of the development of the industry will be on the shift towards higher technology products, where the industry will be encouraged to strengthen its technological capabilities. The areas include:

- developing new and more sophisticated medical gloves;
- moving into higher end catheters with improved performance;
- leveraging upon Malaysia's strength in electronics to fabricate electronics-based parts for original equipment manufacturers (OEMs) of medical devices; and
- moving into higher end orthopaedic products, contact lenses, and other medical and surgical instruments and appliances.

In the medium to long term, the focus of the product development will be on medical and surgical equipment, high end diagnostic devices, medical imaging equipment and high end hospital and laboratory equipment.

## (2) PROMOTING INVESTMENTS

9.35 Malaysia will be positioned as an outsourcing destination and a major producer of medical devices in the global supply chain. Potential manufacturers will be encouraged to become global suppliers of parts and components for major medical equipment companies. Towards realising this objective, the following strategies will be adopted:

- promote the development of an integrated cluster of manufacturers of medical devices and medical technology companies, with support services, such as product testing, injection moulding and precision engineering and fabrication;
- encourage global manufacturers of medical devices to leverage upon the existing domestically available expertise of the plastics, precision engineering and electronics industries to source components and parts from Malaysia, as well as assemble and develop medical sub-assemblies and systems, and undertake the manufacture of diagnostic medical devices;
- promote and enhance the participation of SMEs in supporting the industry, as sub-vendors to the main suppliers of the MNCs;
- encourage existing manufacturers of medical devices and manufacturers with related technologies to diversify their product range and develop related products;
- encourage locally established companies and MNCs to form strategic alliances or joint ventures to invest in the high end range of medical devices and equipment; and

- strengthen the infrastructure support by making available secure, reliable and cost-effective supply of high quality utilities, including telecommunications, electricity, gas and water, to meet existing and future demands of the industry.

### **(3) SUPPORT INDUSTRIES AND SERVICES**

9.36 Efforts will be undertaken to enhance the development of existing support industries, such as precision engineering, electronics, tool and die making, automation support, contract moulding and assembly, and metal and plastic sheet fabrication, to support the growth of the medical devices industry. The efforts include:

- giving priority to the promotion of the growth of the support services required, in particular, ICT and software development. In addition, support services by local research institutes and universities to the MNCs based in Malaysia, in conducting joint R&D, product designing and testing, and clinical trials for medical devices, will be undertaken;
- encouraging MNCs to outsource the production of parts and components to local suppliers and transfer technology through strategic alliances, to expand the support industries and services required for the industry;
- encouraging greater cooperation between the industry and the medical profession, through access to research and testing units, and interactions with medical professionals and inventors of medical equipment and devices; and
- intensifying the promotion of healthcare services, which include hospital services, and medical and dental services, as well as health tourism, to enhance the overall capacities and capabilities in the industry.

### **(4) STRENGTHENING THE INSTITUTIONAL SUPPORT**

9.37 Institutional support will be provided to enhance R&D and human resource development, and assist in the compliance to international standards and regulations. The measures include:

- providing assistance to encourage R&D activities and the development of product design capabilities, new processing technologies and indigenous medical technologies and devices;
- encouraging institutions of higher learning, including vocational and technical schools, to include in their curricula relevant courses, such as medical technology, practical biomedical engineering, biophysics, manufacturing of medical devices and materials sciences;

- fostering greater collaboration between the industry, universities and research institutes to strengthen the development of indigenous technologies and new medical devices;
- encouraging linkages between the medical devices industry and petrochemical industry in the development and application of relevant technologies, such as latex, plastics, and polymer and coating technologies. Linkages with the electronics industry will also be promoted in developing technologies for electro-diagnostic medical devices;
- strengthening the registration of medical devices in Malaysia, with the establishment of a dedicated Medical Device Bureau under the Ministry of Health, to assist, guide and facilitate manufacturers in matters related to the development and promotion of the industry;
- providing support to manufacturers for compliance with local and international standards and regulations to expand exports, including making available information on regulations and requirements overseas;
- reinforcing the maintenance of a national system of controls and regulations relating to the quality, safety, efficacy and timely availability of medical devices, to enhance the perception of the quality of locally produced medical devices;
- further improving the system of registration for patents, trademarks and intellectual properties, based on the World Intellectual Property Organisation; and
- undertaking efforts to remove or minimise the regulatory barriers to trade in medical devices, through expediting the conclusion of mutual recognition arrangements (MRAs) on a bilateral and regional basis.

**Chapter**

**10**



**TEXTILES AND APPAREL  
INDUSTRY**





# TEXTILES AND APPAREL INDUSTRY

## SECTION I OVERVIEW

10.01 The textiles and apparel industry registered progress and continued to be a growth industry. During the period of the Second Industrial Master Plan (IMP2), 1996-2005, the industry contributed to growth, in terms of enhancement of production capabilities, increases in exports and investments, and development of linkages:

- the apparel sub-sector has developed capabilities in contract manufacturing. Contract manufacturers in the sub-sector have shifted from producing low-end products to medium and high-end products;
- overall exports increased by an average annual rate of 4.9 per cent from RM6.8 billion in 1996 to RM10.3 billion in 2005;
- total approved investments in the industry amounted to RM4.9 billion, of which RM4.1 billion were in the textiles sub-sector and RM852.5 million, the apparel sub-sector; and
- the industry has established linkages with other industries, such as chemicals, machinery and equipment, paper packaging, logistics, automotive and construction. It also supports the development of the ethnic fabrics segment, which produces clothing materials, such as *batik* and *songket*.

10.02 During the period of the Third Industrial Master Plan (IMP3), 2006-2020, initiatives will be undertaken in key areas to promote investments, sustain exports and market share of targeted growth areas in textiles and apparel, and enhance the industry's overall competitiveness.

## SECTION II PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Status of the Industry

10.03 The industry comprises two main sub-sectors:

- textiles, which cover primary textiles, including activities such as polymerisation, spinning, weaving, knitting and wet processing; and

- apparel, which include garments and clothing accessories (labels, buttons, zippers and packaging).

The industry does not cover the leatherwear and footwear sub-sectors.

10.04 During the IMP2 period, the number of textiles and apparel companies increased by 33.7 per cent from 445 in 1996 to 595 in 2005. Of the total number of companies in 2005, 253 were textiles companies and 342 apparel companies (Table 10.1).

TABLE 10.1

**NUMBER OF COMPANIES IN TEXTILES AND APPAREL IN OPERATION IN 1996 AND 2005**

	1996	2005	1996-2005
	<i>Number of Companies</i>		<i>Change (%)</i>
<b>Total</b>	<b>445</b>	<b>595</b>	<b>33.7</b>
Textiles	164	253	54.3
Apparel	281	342	21.7

Source: Ministry of International Trade and Industry

Breakdown of the 595 companies in operation, as at 2005:

- 24 companies operated wet processing plants, involving bleaching, dyeing, printing and specialised finishing, such as wrinkle-free and anti-bacteria. A small number of these companies were also involved in weaving and knitting operations;
- 120 companies were involved in manufacturing knitted fabrics, of which 50 knitting mills were operated by small and medium enterprises (SMEs). The knitting activities produced a wide range of knitted fabrics, knitwear, knitted collars and cuffs, and socks;
- 289 companies, of which 80 per cent were SMEs, produced woven and knitted apparel. These companies were basically export oriented and mainly involved in contract manufacturing for international brand names;
- 76 companies produced textiles accessories. These companies were basically SMEs, manufacturing a wide range of accessories, such as zippers, buttons, sewing threads, elastic webbings, collars and cuffs, interlinings, laces, drawstrings and embroidery articles; and
- 86 companies produced other textiles related products, such as rugs, carpets, floor mats, bed sheets, bags and curtains.

- 10.05 Companies in the textiles sub-sector included multinational corporations (MNCs). The companies produced textiles and textile accessories, such as yarns and woven fabrics, for both the local and export markets. The apparel sub-sector is capable of manufacturing products with internationally renowned brand names. Contract manufacturers have shifted from producing low-end products to medium and high-end products. Out of 400 contract manufacturers, 235 or 58.8 per cent produced high-end products for the export market. Value-added of the sub-sector ranged between 30 per cent and 50 per cent, compared with 15 per cent and 35 per cent before the IMP2 period.
- 10.06 The industry is concentrated in specific geographical areas, mainly in Batu Pahat (Johor) and Pulau Pinang. About 60 per cent of the apparel companies are located in Batu Pahat and contributed about 40 per cent of the export earnings of the industry in 2005. Activities undertaken include spinning, weaving, knitting, dyeing and finishing, and garment making. Most of the companies involved in polymerisation, spinning and weaving are located in Pulau Pinang, Selangor and Perak.

#### (b) Investments

- 10.07 During the period 1996-2005, approved investments amounted to RM4.9 billion, involving 396 projects (Table 10.2). Of the total investments, 202 projects, valued at RM4.1 billion, were in the textiles sub-sector and 194 projects (RM852.5 million), in the apparel sub-sector. Foreign investments amounted to RM2.8 billion or 57 per cent, while domestic investments, RM2.1 billion (43 per cent).

TABLE 10.2

#### APPROVED INVESTMENTS IN TEXTILES AND APPAREL PROJECTS

	1996-2000	2001-2005	1996-2005
<b>Total investments (RM million)</b>	<b>2,828.6</b>	<b>2,116.9</b>	<b>4, 945.5</b>
<b>Total projects (number)</b>	<b>218</b>	<b>178</b>	<b>396</b>
<b>Textiles (RM million)</b>	<b>2,466.3</b>	<b>1,626.7</b>	<b>4,093.0</b>
Foreign (RM million)	1,785.0	783.3	2,568.2
Domestic (RM million)	681.3	843.4	1,524.7
Project (number)	105	97	202
<b>Apparel (RM million)</b>	<b>362.3</b>	<b>490.2</b>	<b>852.5</b>
Foreign (RM million)	117.1	163.2	280.2
Domestic (RM million)	245.2	327.0	572.2
Project (number)	113	81	194

Source: Malaysian Industrial Development Authority

**(c) Productivity**

10.08 During the IMP2 period, productivity of the industry, as measured by sales value per employee, increased by 4.1 per cent, from RM95,014 in 1996 to RM128,030 in 2005. This was largely attributed to a higher growth in synthetic textiles and knitting mills. Productivity also increased due to the outsourcing of labour-intensive activities to lower cost producing countries, such as Viet Nam, Lao PDR and Cambodia.

**(d) Exports**

10.09 At the global level, during the period 2000-2004, the industry registered an average annual growth of 2.9 per cent to reach US\$2.3 trillion (RM9 trillion). In 2004, in terms of global market value, apparel and accessories was the leading sub-sector, with a share of 44.1 per cent, while textiles accounted for 43.4 per cent. By region, Asia-Pacific accounted for 50.9 per cent of the global market share, followed by Europe, at 20.6 per cent, and the United States of America (USA), at 16.3 per cent.

10.10 During the IMP2 period, Malaysia's exports of textiles and apparel grew at an average annual rate of 4.9 per cent, from RM6.8 billion in 1996 to RM10.3 billion in 2005. Exports of textiles increased by a higher growth of 6.2 per cent, from RM3.4 billion in 1996 to RM5.4 billion in 2005. Exports of apparel expanded by a lower growth of 3.7 per cent, from RM3.4 billion in 1996 to RM4.9 billion in 2005 (Table 10.3).

TABLE 10.3

**EXPORTS OF TEXTILES AND APPAREL**

	1996	2000	2005	1996-2005 Average Annual Growth (%)
	<i>(RM million)</i>			
<b>Total</b>	<b>6,816.0</b>	<b>10,265.3</b>	<b>10,289.1</b>	<b>4.9</b>
Textiles	3,406.4	5,019.9	5,407.8	6.2
Apparel	3,409.7	5,245.5	4,881.2	3.7

Sources: Ministry of International Trade and Industry, and Department of Statistics

10.11 Major export markets for Malaysian textiles and apparel included the USA, the European Union (EU) and Canada (Table 10.4). Up to the end of 2004, exports to these markets were subject to quotas under the World Trade Organisation (WTO) Agreement on Textiles and Clothing. The quotas were abolished since the beginning of 2005. The average rate of import duties on textiles and apparel in the USA was 16 per cent, while that of the EU was 12 per cent.

TABLE 10.4

## MAJOR EXPORT MARKETS FOR TEXTILES AND APPAREL

Sub-sector	1996	2000	2005	1996-2005
	(RM million)			Average Annual Growth (%)
<b>Textiles</b>				
EU	328.6	367.2	446.1	3.1
Turkey	38.6	79.9	573.5	51.7
USA	137.0	294.6	220.4	3.3
Canada	28.8	24.6	16.4	-5.7
<b>Apparel</b>				
USA	1,519.8	2,947.0	2,707.2	6.0
EU	790.7	1,103.4	970.0	1.6
Canada	107.0	188.2	107.5	-1.2
Turkey	0.3	1.8	64.6	100.4

Sources: Ministry of International Trade and Industry, and Department of Statistics

## (e) Imports

10.12 During the IMP2 period, imports of textiles and apparel increased by an average annual rate of 1.1 per cent, from RM4.1 billion in 1996 to RM5 billion in 2005 (Table 10.5). Major imported items were textile yarns, and woven and knitted fabrics. The import of the raw materials, mostly textiles, was due to the shortage of the materials locally, in terms of quantity and quality. Major sources of imports were the People's Republic of China, at RM1.4 billion, Taiwan (RM597 million) and Japan (RM499 million).

TABLE 10.5

## IMPORTS OF TEXTILES AND APPAREL

	1996	2000	2005	1996-2005
	(RM million)			Average Annual Growth (%)
<b>Total</b>	<b>4,134.2</b>	<b>5,036.3</b>	<b>5,033.6</b>	<b>1.1</b>
Textiles	3,733.3	4,507.2	4,052.0	-0.2
Apparel	400.9	529.1	981.6	9.9

Sources: Ministry of International Trade and Industry, and Department of Statistics

**(f) Employment**

10.13 During the IMP2 period, employment in the industry increased by an average annual rate of 0.8 per cent, from 208,700 workers in 1996 to 214,800 in 2005. Within the industry, the apparel sub-sector was more labour-intensive. In terms of skilled workforce, the textiles sub-sector employed a greater number of skilled personnel.

**(g) Technology**

10.14 The textiles sub-sector applied relatively high technology and automated machines. In the apparel sub-sector, about 20 per cent of the manufacturers used computer-aided design (CAD) and computer-aided engineering (CAE) systems in their production processes. The low utilisation was due to the high cost of acquiring the equipment and related systems. During the IMP2 period, a grant of RM3.2 million, under the Technology Acquisition Fund, was provided to companies to develop enterprise resource planning. This system enabled the companies to plan their entire operations, from sourcing of raw materials to order fulfilment.

**SECTION III PROSPECTS****(a) Industry Outlook**

10.15 The future of the Malaysian textiles and apparel industry is dependent upon consolidation, upgrading of existing facilities, reducing costs and improving efficiency to remain competitive. In 2005, Malaysia was ranked 37th largest exporter of textiles and apparel in the world. The removal of quotas creates opportunities for the industry to increase its exports. To remain competitive in the global market, the industry needs to focus on exports of functional fabrics having special features, such as wrinkle-free and anti-bacteria, and high-end apparel, such as blazers and bridal gowns. Presently, the industry faces competition from countries which have entered into free trade agreements (FTAs) with the major markets, such as the USA, Japan and the People's Republic of China.

10.16 The industry has been identified as one of the 11 priority sectors under the Association of Southeast Asian Nations (ASEAN) initiative for greater economic integration. Malaysia is the country coordinator for identifying initiatives to deepen the integration of the industry. Initiatives which have been identified include:

- improving Customs procedures;
- reducing non-tariff barriers;
- undertaking collaboration in marketing; and
- promoting intra-ASEAN investments and outsourcing.

## (b) Growth Areas

10.17 Growth areas for the industry include:

- textiles
  - high quality fabrics - manufacture of functional fabrics, which have features such as fire resistant, anti-bacteria, wrinkle-free and ultraviolet protection;
  - industrial textiles - manufacture of more intermediate products and accessories for other industries, such as car seats, conveyor belts and geo-textiles, for export; and
  - home textiles - manufacture of household products using local designs and high quality fabrics, such as curtains and bed sheets, for export;
- apparel
  - high-end apparel, such as those with quick dry and silky touch features, bridal gowns and blazers; and
- ethnic fabrics
  - examples are *batik* and *songket* - new designs for *batik* and motifs for *songket*, and usage of *batik* for home textiles products.

## SECTION IV CHALLENGES

### (a) Global Competition

10.18 With the removal of quotas, effective from the beginning of 2005, there is increasing global competition from lower cost producers, such as the People's Republic of China and India. After 1 January 2008, Malaysian exporters of textiles and apparel will need to be prepared to meet intense competition in the US market, when the USA is expected to completely remove quotas for the People's Republic of China.

### (b) Dependence on Contract Manufacturing

10.19 Contract manufacturers contributed 90 per cent of the exports of apparel. Malaysian contract manufacturers are known for quality and prompt delivery in the manufacture of up-market brands. There is a need to capitalise on the experience gained through contract manufacturing to undertake own-design manufacturing in the apparel sub-sector. There is also a need to progress further into higher value-added activities, such as own branding, product planning and marketing.

10.20 Brand development and promotion is becoming increasingly important in positioning Malaysia's apparel in the global marketplace. To develop Malaysian brand apparel, the sub-sector requires effective market promotion and distribution channels (physical and online) to extend the supply chain beyond the Malaysian market. The greater utilisation of the Brand Promotion Grant will assist the industry in developing indigenous brands.

**(c) Lack of Design and Development Activities**

10.21 Design and development (D&D) activities will be able to continually create and develop new products to address specific needs of the industry. Presently, the industry relies on foreign D&D expertise for engineering designs and manufacturing processes. The limited activities in D&D in the industry, especially among SMEs, are due to the lack of technical experts and financing. There is also a limited number of design houses and designers in Malaysia. Most of the design houses are located in major fashion centres in the developed countries. The apparel sub-sector can be strengthened by establishing more design houses in Malaysia and organising more fashion shows locally and internationally. Such efforts will contribute in promoting the industry, including locally designed ethnic fabrics.

**(d) Technologies**

10.22 The greater utilisation of automation and information and communication technology (ICT) will enable the industry, among others, to develop new designs, reduce labour costs, enhance product quality, expedite production processes and shorten delivery time. To remain competitive, the industry will need to consider applying advanced technologies, such as automatic cutting machines and 3-dimensional body scanners for size measurement. Current technologies available in the industry are:

<b>Process</b>	<b>Technology</b>
Fibre production	Robotics
Spinning	Automated spinning machines
Weaving	Automated weaving machines
Knitting	Computerised machines
Dyeing, printing and finishing	Nanotechnology
Industrial textiles	Automated processes
Apparel manufacturing	CAD, computer-aided manufacturing (CAM) and enterprise resource planning

**(e) Lack of Skilled Workforce**

10.23 There is a shortage of technical expertise and trained and skilled personnel in the industry, such as textiles technologists, designers, chemists, colour specialists and maintenance technicians. There is also a mismatch in the supply of the human resource, where qualifications of graduates do not meet the industry's requirement. Skilled personnel required by the industry include international textiles and apparel merchandisers and marketers, fashion designers for textiles and apparel, computer graphic designers, textiles machinery technicians, including for maintenance, calibration and fine tuning, and specialists in dyestuffs and auxiliaries.

10.24 Presently, only a limited number of specialised textiles-related courses are offered by local colleges and universities. In addition, only a few institutions conduct training courses to meet the need for specific skilled workforce by the industry. The formulation and implementation of industry specific skills training programme is important to enable the personnel to handle the more sophisticated computer-based automated processes. Based on the needs of the industry, among the new courses which need to be introduced by local technical colleges and universities include:

- fibre chemistry and applications in textiles;
- spinning technology;
- weaving and knitting technologies;
- dyeing, printing, pre-treatment and finishing chemistry and their applications;
- textiles economic and cost management;
- textiles environment control and treatment technology; and
- quality assurance, and control process and management.

**(f) Weak Linkages between Sub-Sectors and Support Industries**

10.25 Intra-linkages between the sub-sectors of the industry have not been sufficiently developed. Producers of textiles accessories still manufacture buttons, zippers, elastic webbings, sewing threads and interlinings with limited varieties, which do not meet the requirement of new fashion apparel. There are opportunities for the industry to enhance linkages between the sub-sectors and subsequently move towards higher value-added activities. Linkages between the industry and other related and support industries, such as chemicals, machinery and equipment, logistics, plastics and paper packaging, will also need to be improved upon to enable the industry to integrate its activities along the value chain for the timely manufacture and delivery of higher value-added textiles and apparel.

## SECTION V STRATEGIES AND POLICIES

### TARGETS

10.26 Textiles and apparel are expected to remain important export products for Malaysia. The contribution of the industry to the national economy will remain significant, in terms of investments and export earnings (Table 10.6). Highlights of the targets:

- the industry is expected to attract total investments of RM13.7 billion. Investments are projected to increase in the textiles sub-sector, mainly for the manufacture of synthetic textiles and functional fabrics; and
- exports are targeted to grow at 5.8 per cent, from RM13.4 billion in 2010 to RM24 billion in 2020. The increase in exports will be contributed by the textiles sub-sector, particularly yarns and woven fabrics.

TABLE 10.6

#### PROJECTIONS FOR THE TEXTILES AND APPAREL INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	(RM billion)				Average Annual Growth (%)
Investments	4.0	4.6	5.1	13.7	3.1
Investments per year	0.8	0.9	1.0	0.9	n.a. <sup>1</sup>
Exports (end period)	13.4	18.2	24.0	24.0	5.8

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

### STRATEGIC THRUSTS

10.27 Six strategic thrusts have been set for the further development of the industry:

- (1) intensifying the promotion of investments in higher value-added textiles and apparel, including key support services;
- (2) sustaining the market share in textiles and apparel and promoting exports of the targeted growth areas;
- (3) intensifying regional integration of the industry;

- (4) enhancing domestic capabilities and facilitating the utilisation of ICT and new technologies;
- (5) enhancing the skills of the workforce in designing, production and marketing; and
- (6) strengthening the institutional support for the further development of the industry.

**(1) PROMOTING INVESTMENTS IN HIGHER VALUE-ADDED TEXTILES AND APPAREL**

10.28 Present investment policies will be continued to attract investments in the industry, particularly in the synthetic-based textiles sub-sector. Products and services which will be promoted include:

- industrial and home textiles, including industrial webbings, geo-textiles, non-woven fabrics of various applications, laces, car seats and upholstery fabrics;
- functional fabrics with special features, such as anti-bacteria, fire resistance, water proof, wrinkle-free and ultraviolet protection;
- higher value-added fabrics and apparel, including *batik* and *songket*. Strategies and policies for *batik* and *songket* include:
  - encouraging new designs and products of high value-added *batik* and *songket* for the export market;
  - intensifying the promotion of *batik* and *songket* locally and internationally;
  - enhancing the competitiveness of manufacturers of *batik* and *songket* through the utilisation of ICT and new technologies in design, production and marketing; and
  - promoting investments in the manufacture of high quality *batik* and *songket* for the export market; and
- key support facilities and services include:
  - design houses and fashion centres;
  - specialised dyeing and finishing facilities;
  - centralised waste treatment plants;
  - exhibition services for textiles and apparel; and
  - distribution centres.

## **(2) SUSTAINING THE MARKET SHARE AND PROMOTING EXPORTS**

10.29 To promote the export of textiles and apparel, the industry will be encouraged to expand existing markets and explore new markets, such as Japan, the USA, Canada, the EU, West Asia, Africa and Latin America. Measures in sustaining present market shares and promoting exports in new markets include:

- encouraging greater participation in international exhibitions and establishing a dedicated textiles and apparel portal to facilitate trading;
- improving market presence of the industry through the setting-up of sales and distribution offices overseas to enhance the response by manufacturers with direct sourcing;
- promoting in-coming buying missions for fabrics and apparel at international apparel and trade fairs in Malaysia;
- promoting brands through collaboration with international fashion houses;
- linking with major fashion centres and design houses;
- enhancing market access through FTAs;
- encouraging outsourcing of labour-intensive activities; and
- attracting buying houses to locate in Malaysia.

## **(3) INTENSIFYING REGIONAL INTEGRATION**

10.30 The Malaysian textiles and apparel industry will be encouraged to undertake measures to enable it to benefit from ASEAN's efforts in integrating the industry regionally through:

- outward investments (including relocation of high cost operations to lower cost producing countries);
- regional sourcing of parts and components, and support services;
- expediting the implementation of bilateral and regional cooperation programmes, such as introducing 'green lane' facility, reducing non-tariff barriers and harmonising customs procedures for textiles and apparel; and
- exporting support services, such as printing, dyeing and finishing.

## **(4) ENHANCING DOMESTIC CAPABILITIES AND FACILITATING THE UTILISATION OF TECHNOLOGIES**

10.31 Measures to enhance domestic capabilities and facilitate the utilisation of technologies include:

- providing assistance to encourage industrial adjustment and consolidation through mergers and acquisitions (M&As), and restructuring of operations;

- encouraging the utilisation of nanotechnology and biological processes for dyeing, printing and finishing; and
- promoting the application of advanced systems in technology, such as enterprise resource planning, CAD, CAM and CAE.

## **(5) ENHANCING SKILLS**

10.32 Focus will be given to enhance the skills in designing, production and marketing. Measures include:

- providing training programme through internship and apprenticeship scheme, including facilitating industry attachment of graduates specialising in textiles and apparel designs;
- encouraging collaboration between local and foreign colleges and universities in providing twinning diploma or degree programmes in textiles science and technology; and
- promoting on-the-job training and industrial practical training.

## **(6) STRENGTHENING THE INSTITUTIONAL SUPPORT**

10.33 Measures in strengthening the institutional support for the industry include:

- upgrading the existing textiles and apparel production area into a specialised and integrated zone, in collaboration with the State Government. The identified zone will be strengthened with the development of facilities, such as:
  - centralised waste treatment plants;
  - 'green lane' facility;
  - utilisation of Port of Tanjung Pelepas (PTP) as load and distribution centre, and for exports; and
  - warehousing and distribution centre; and
- providing assistance to the Malaysian Textiles and Apparel Centre, through the allocation of RM2 million under the Ninth Malaysia Plan (RMK-9), to upgrade the existing facilities and expand the skilled training courses of the centre.

# Chapter

# 11



## **MACHINERY AND EQUIPMENT INDUSTRY**





# MACHINERY AND EQUIPMENT INDUSTRY

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Chapter 11  
Machinery and Equipment Industry

## SECTION I OVERVIEW

- 11.01 The machinery and equipment industry assumes an important role in the industrial development of the country, in view of its extensive linkages to major economic sectors, such as manufacturing, construction, transportation, mining and agriculture. The industry produces a wide variety of machinery and equipment for various uses, such as power generation, specific industry processing, metalworking and general industrial activities. The industry supports a large number of small and medium enterprises (SMEs), which are capable of producing machinery and equipment for both domestic and export markets. In turn, the industry is supported by a wide range of important engineering services, which mainly involve SMEs. These engineering services cover machining; metal casting; sheet metal working; heat treatment; general fabrication; design, development and prototyping; and testing and certification services.
- 11.02 The industry expanded during the period of the Second Industrial Master Plan (IMP2), 1996-2005, in tandem with the growth of the manufacturing and agriculture sectors, especially electrical and electronics (E&E), automotive and agro-based industries. The industry has also progressed towards the production of high technology and high value-added machinery and equipment for the E&E, agriculture and agro-based, and other resource based industries. The production of such machinery and equipment utilises both imported technologies (through joint ventures, technology transfers and technology acquisitions) and technologies developed locally. The industry has achieved some degree of import substitution and exporting in areas where it has the competitive advantage. Nevertheless, the industry continues to depend on imports of highly automated production machinery and equipment for the E&E and automotive industries, as well as a wide range of general industrial machinery and equipment not produced locally.
- 11.03 During the period of the Third Industrial Master Plan (IMP3), 2006-2020, the industry is expected to expand further, in tandem with the growth of the major economic sectors, in particular, manufacturing and agriculture. The industry will focus on the development of high technology machinery and equipment, and specialised machinery and equipment for specific industries. The industry will capitalise on its strength, in terms of high quality production and emerging innovative capabilities. While production will continue to meet domestic demand, the export market will provide the impetus for the continued growth of the industry.

## SECTION II PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Structure of the Industry

11.04 The machinery and equipment industry is broadly grouped under four main categories:

- power generating machinery and equipment, including electric generating sets, turbines, engines, boilers and power plants;
- specialised machinery and equipment for specific industries, which is further divided into major sub-categories, such as machinery and equipment for agriculture, food and beverage, E&E, oil and gas (offshore and onshore), woodworking and plastic processing;
- metalworking machinery and equipment, which include:
  - metal-cutting computer numerical control (CNC) machine tools, such as milling machines, lathe machines and electro-discharge machines; and
  - metal-shaping and sheet-metal working machine tools, such as shearing and slitting machines, turret punches, laser cutting machines, press brakes, and hydraulic and power presses; and
- general industrial machinery and equipment, which include elevators, air-conditioning plants, cranes, pressure vessels, cooling towers and construction machinery and equipment.

In addition, machinery and equipment parts and components form an integral part of the industry. These parts and components, which include moulds and dies, jigs and fixtures, actuators, motors, gear boxes and control systems, are required by all the four main categories.

11.05 During the IMP2 period, the number of approved machinery and equipment manufacturing companies in operation increased from 118 in 1995 to 410 in 2005 (Table 11.1). A majority of the approved companies in operation (87.5 per cent) were involved in producing specialised machinery and equipment, and general industrial machinery and equipment. During the second phase of the IMP2 period (2001-2005), with the acquisition of technology, nurturing of innovation and development of inherent industrial knowledge, the industry diversified into the production of specialised or special purpose high technology machinery and equipment. These machinery and equipment are generally custom-made, requiring research and development (R&D), engineering design and development, adaptation and modification to suit the needs of specific industries, especially palm oil, rubber, E&E, and oil and gas industries. The industry has been able to progress, with low levels of protection, to become cost competitive in both the domestic and export markets.

TABLE 11.1

**COMPANIES IN OPERATION IN THE MACHINERY AND EQUIPMENT INDUSTRY**

<i>Category</i>	<i>1995</i>	<i>2005</i>
<b>Total</b>	<b>118</b>	<b>410</b>
General industrial M&E <sup>1</sup> and parts	64	182
Specialised M&E for specific industries	48	177
Power generating M&E	5	33
Metalworking M&E	1	18

*Note:* <sup>1</sup> Machinery and equipment

*Source:* Malaysian Industrial Development Authority (Survey)

11.06 More than 80 per cent of the companies involved in the machinery and equipment industry and engineering support industries fall under the category of SMEs. The machinery and equipment manufacturing companies generally focus on core activities, such as design and development (D&D), software development, assembly, system integration, and testing and calibration, while their requirements for parts and components are outsourced. Due to the outsourcing of parts and components, the activities undertaken by the companies themselves do not require high investments. The companies are also involved, to a limited extent, in R&D. In the engineering support industry, where costs of operating machinery and equipment are high, companies generally keep their operations small and focused. The progressive opening up of the industry, together with the provision of enhanced incentives and other forms of assistance, has assisted SMEs in upgrading their technological capabilities.

**(b) Investments**

11.07 Total approved investments in the industry during the IMP2 period amounted to RM4.9 billion, of which RM2.6 billion or 52 per cent comprised domestic investments, and RM2.3 billion (48 per cent), foreign investments (Table 11.2). A total of 555 projects were approved, with a proposed employment of 27,885 persons.

11.08 Main categories which attracted most of the investments were specialised machinery and equipment, and general industrial machinery and equipment. Together, they accounted for about 87 per cent of the total investments and 90 per cent of the approved projects. Investments in specialised machinery and equipment for specific industries registered an increase of 142.7 per cent, from RM607 million in the first phase of the IMP2 period (1996-2000) to RM1.5 billion in the second phase (2001-2005). This reflected a shift by the industry towards the production of high technology and high value-added machinery and equipment for the E&E, agriculture and agro-based, and other resource based industries.

TABLE 11.2

**APPROVED INVESTMENTS IN THE MACHINERY AND EQUIPMENT INDUSTRY**

<i>Product Category</i>	<i>1996-2000</i>	<i>2001-2005</i>	<i>1996-2005</i>
<b>Total investments (RM million)</b>	<b>2,127</b>	<b>2,767</b>	<b>4,894</b>
Domestic (RM million)	1,029	1,524	2,553
Foreign (RM million)	1,098	1,243	2,341
<b>Number of projects<sup>1</sup></b>	<b>201</b>	<b>354</b>	<b>555</b>
<b>Employment (persons)</b>	<b>12,099</b>	<b>15,786</b>	<b>27,885</b>
<b>General industrial M&amp;E<sup>2</sup> and parts</b>			
Total investments (RM million)	1,222	949	2,171
Number of projects	101	157	258
Employment (persons)	6,341	7,110	13,451
<b>Specialised M&amp;E for specific industries</b>			
Total Investments (RM million)	607	1,473	2,080
Number of Projects	82	159	241
Employment (persons)	4,421	7,826	12,247
<b>Metalworking M&amp;E</b>			
Total investments (RM million)	224	213	437
Number of projects	10	13	23
Employment (persons)	652	378	1,030
<b>Power generating M&amp;E</b>			
Total investments (RM million)	74	132	206
Number of projects	8	25	33
Employment (persons)	685	472	1,157

Notes: <sup>1</sup> Exclude engineering supporting industry projects, such as moulds and dies, machining and metal casting

<sup>2</sup> Machinery and equipment

Source: Malaysian Industrial Development Authority

**(c) Imports and Exports**

11.09 During the IMP2 period, Malaysia continued to rely on imports to supplement its requirements for machinery and equipment. Imports increased by an average annual rate of 1.5 per cent, from RM26.7 billion in 1996 to RM32.4 billion in 2005 (Table 11.3). These were mainly machinery and equipment which Malaysia did not have the capacities to manufacture, due to either the advanced technological requirements or the wide-ranging needs of industries, such as oil and gas, E&E, textiles and agro-based industries.

11.10 While the country continued to rely on imports for a wide range of machinery and equipment not manufactured locally, an increasing number of local manufacturers have been able to expand into the export market. Exports of machinery and equipment increased more than three-fold, from RM5.1 billion in 1996 to RM18.3 billion in 2005. Major categories of machinery and equipment exported were general industrial and specialised machinery and equipment, mainly to the People's Republic of China, Singapore, Thailand and the United States of America (USA).

TABLE 11.3

## EXPORTS AND IMPORTS OF MACHINERY AND EQUIPMENT

Category	1996		2000		2005		1996-2005	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	(RM billion)							Average Annual Growth (%)
<b>Total</b>	<b>5.1</b>	<b>26.7</b>	<b>7.4</b>	<b>27.9</b>	<b>18.3</b>	<b>32.4</b>	<b>15.1</b>	<b>1.5</b>
Specialised M&E <sup>1</sup> for specific industries	2.4	12.0	2.8	13.2	8.2	12.5	14.7	0.2
General industrial M&E and parts	2.1	9.2	3.5	9.8	7.2	12.6	14.1	4.1
Power generating M&E	0.3	2.5	0.6	1.7	1.8	3.9	23.4	3.0
Metalworking M&E	0.3	3.0	0.5	3.2	1.0	3.4	16.3	-2.4

Note: <sup>1</sup> Machinery and equipment

Source: Compiled by Ministry of International Trade and Industry

**(d) Major Categories****(i) Specialised Machinery and Equipment**

11.11 Presently, there are 207 companies producing a wide range of specialised machinery and equipment for the manufacturing and agriculture sectors. Within the manufacturing sector, the growth of the machinery and equipment industry was largely driven by the demands of E&E, telecommunications, agro-based and food processing industries. Presently, Malaysia is the leading manufacturer of automation equipment for the E&E industry in the Association of Southeast Asian Nations (ASEAN) region. There are 20 companies in operation, producing advanced handling systems, with full automation and incorporating intelligent robots.

11.12 In addition, the specialised machinery and equipment category also includes:

- 46 companies, producing machinery and equipment, including parts, components and modules, for the food and beverage, palm oil, and rubber and rubber products industries. The companies are also involved in the manufacture of packaging machinery, required by these industries;

- 14 companies, producing plastics extrusion machines, polyethylene terephthalate bottle blow moulding machines, film blowing machines and various woodworking machinery for the local timber processing and furniture industries; and
- 15 companies, producing machinery and equipment for the agriculture sector, such as *padi* separators, aquaculture equipment, rotaslashers, rotavators, diggers, fertiliser spinners, sprayers and feedmill machinery.

**(ii) Metalworking**

11.13 Presently, there are 19 companies producing mechanical and hydraulic presses, press brakes, shearing machines and other metalworking machines. They include both foreign-owned and locally-owned companies.

**(iii) Power Generation**

11.14 Most of the larger power generation machinery and equipment used in power generation plants, such as gas turbines, utility boilers, hydraulic turbines and large alternators, are imported. Nevertheless, some of the medium sized power generation machinery and equipment are manufactured locally. There are 22 local manufacturers producing power generation machinery and equipment, serving both the domestic and export markets:

- 15 manufacturers of industrial boilers; and
- 7 companies producing industrial generator sets for use in refineries, oil and gas exploration platforms, petrochemical plants and other commercial operations.

**(iv) General Industrial Machinery and Equipment**

11.15 Significant progress was achieved in the manufacture of material handling machinery and equipment, such as cranes and elevators. Presently, there are six manufacturers of cranes and three manufacturers of elevators in the country. Internationally, Malaysia is recognised as a major supplier of high speed heavy lifting tower cranes and pedestal cranes for the oil and gas industry. Malaysia is also the leading manufacturer in ASEAN for pressure vessels, process equipment and modules for chemical, petrochemical, and oil and gas industries. Presently, there are more than 85 manufacturers of equipment, such as bulk storage containers, process columns, towers and reactors, and heat exchangers.

**(v) Support Industries**

- 11.16 According to the Malaysian Mould and Die Association, the number of mould and die manufacturers in operation has more than doubled, from 150 companies in 1996 to 400 in 2005. The bulk of the present production is limited to the manufacture of medium range moulds and dies for the electronics and semiconductor industry, and moulds weighing less than 10 tonnes for the automotive and plastics industries. Presently, about 20 per cent of the manufacturers are capable of producing some precision and complex, as well as large, moulds and dies.
- 11.17 The establishment of the Mould and Die Design Centre, under SIRIM Berhad, was initiated in the Eighth Malaysia Plan. The centre, which became operational in mid-2005, is responsible for the development and enhancement of design capabilities of the local mould and die industry, through the provision of services in R&D, design, engineering and prototyping, technical support, consultancy and advisory services, and technology transfers. SMEs in mould and die making, which lack the financial resources to acquire the software required for the design of moulds and dies, can utilise the software and other high cost services at the centre, at nominal charges.
- 11.18 An increasing number of companies are also involved in the production of modules, and parts and components, including the fabrication of frames and superstructures. Some of the companies have also started to sub-assemble customised modules, using outsourced parts and components to meet the requirements of their customers. However, in view of the limited demand and lack of economies of scale, most of the standard modules, and parts and components are imported.

**(vi) Support Services**

- 11.19 Engineering support services for industries, including machinery and equipment, cover casting, forging, machining and heat treatment, metal stamping and shaping, surface treatment and finishing, and other services. Although these services mainly support the E&E and automotive industries, they have also begun to support the machinery and equipment industry as well. Many of these services have undergone significant improvements, in terms of capabilities and quality. The improved services are machining, die-casting, metal stamping and shaping, surface treatment and finishing, and metal fabrication.
- 11.20 Some services, important for the machinery and equipment industry, are in need of improvement. These are metal forging, iron and steel casting, and heat treatment services. The iron and steel casting foundries and heat treatment service providers are upgrading their facilities and capabilities, to meet the stringent demands of the machinery and equipment industry. However, in view of the small and diverse demands of the industry, local metal forging companies, although capable, are not keen to cater to the industry.

11.21 In addition, there are more than 50 independent companies, providing testing and certification services for materials and components. However, there are no independent local service providers of testing facilities for complete machinery and systems. Most of the testing and calibration services for the locally manufactured machinery and equipment are undertaken in-house.

**(e) Research and Technology Development**

11.22 There were relatively limited relevant R&D activities undertaken in machinery and equipment, related to materials, processes, components and end products, both in the public and private sectors. In the public sector, R&D activities in machinery and equipment were undertaken by research institutes, such as SIRIM Berhad, Malaysian Agricultural Research and Development Institute (MARDI), Malaysian Palm Oil Board (MPOB), Malaysian Rubber Board and Forest Research Institute of Malaysia. Most of the R&D activities undertaken by these institutes were in the design and development of prototypes of machinery and equipment, to address localised mechanisation requirements.

11.23 Rasah Machinery and Equipment Technology Centre, established by SIRIM Berhad and which became operational in January 2005, is equipped with the state-of-the-art machinery and equipment in the core areas of machine design and engineering support technologies, for the design and development of industrial machinery and equipment. Main areas of assistance of the Centre include:

- contributing towards improving the competitiveness of the industry, through the adaptation of advanced manufacturing systems;
- providing assistance in R&D, design, analysis and prototyping, consultancy, technical and engineering support, trial and pilot production of parts and components, testing and evaluation, technology dissemination and incubation for new projects and ideas;
- serving as the national reference centre for the machinery and equipment, and related engineering support industries; and
- assisting in developing a critical mass of entrepreneurs in machine design, engineering and contract manufacturing.

11.24 In terms of technology development and adoption, only a limited number of companies developed and utilised latest technologies in design and engineering, machining and fabrication, assembly and system integration, software development, and testing and evaluation. Foreign experts were engaged to meet most of the requirement for skilled personnel. For those machinery and equipment companies which were more technologically capable, they had

adopted advanced manufacturing technologies in their operations. The technologies adopted included computer-aided design (CAD) and computer-aided manufacturing (CAM) for designing; CNC machinery for machining, cutting and bending; automated welding equipment and automated materials handling equipment. However, the use of highly advanced techniques, such as dedicated 3-dimensional CAD for machine assembly design, computer-aided engineering (CAE) for design simulation and analysis, and product data management for machine design data management, was not prevalent yet. These technologies are generally costly and not economical for companies, especially SMEs, to acquire.

### SECTION III PROSPECTS

- 11.25 The future development of the industry in Malaysia will be driven by technological advances, process specialisation and customer requirements for shorter throughput times, faster delivery and lower costs. These demands will compel manufacturers to leverage upon their strengths in core activities, such as R&D, D&D, software development, system integration, assembly, and testing and calibration. The more capital-intensive manufacturing of parts and components, and modules will need to be outsourced to keep costs low. Increases in demand and costs of production will necessitate further outsourcing of assembly, and testing and calibration operations to original equipment manufacturer (OEM) companies.
- 11.26 With increasing competition from lower cost producing countries, the industry is expected to gradually phase out the manufacture of low-end machinery and equipment. In turn, it will strengthen its design, development and innovation capabilities in the production of high technology machinery and equipment, and specialised machinery and equipment for specific industries. Malaysia has a distinct cost advantage vis-à-vis most developed countries in the manufacture of high technology and specialised machinery and equipment, in both the domestic and export markets. Local machinery and equipment manufacturers have the capability to adopt, upgrade and further develop existing technologies to higher levels.
- 11.27 Machinery and equipment which have the potential for regional and global markets include:
- **regional market**  
machine tools, moulds and dies, plastics processing machinery and equipment, robotics and automation equipment, food processing machinery and equipment, and medical devices and equipment; and

- **global market**

machinery and equipment for the E&E, oil and gas, palm oil and rubber processing industries; cranes; elevators; machinery and equipment modules, parts and components; and complete processing plants. Presently, these machinery and equipment are supplied to the regional market and have acquired international recognition.

## SECTION IV CHALLENGES

11.28 The industry had registered growth during the IMP2 period, as reflected by the increase in the number of companies in production and exports during the period. To achieve further growth, main challenges to be addressed by the industry include lack of R&D and locally developed technologies, as well as shortage of high level technical workforce.

### (a) High Precision and Specialised Machinery and Equipment

11.29 In view of its extensive linkages to other sectors of the economy, the growth of the machinery and equipment industry will need to be enhanced, to meet rising demands for specialised and high precision machinery and equipment. Areas and activities within other economic sectors which have potential for growth, such as wafer processing, nanotechnology based manufacturing, biotechnology and food processing, require further technological enhancements in machinery and equipment. This is to meet increased requirements for specific features, such as high precision and advanced intelligent operations, high speed and user-friendly operations, and environment-friendly and energy-efficient processes.

### (b) Higher Value-Added Activities

11.30 In general, the main cost elements in the manufacture of machinery and equipment are the costs of technology, D&D, customised components, standard components, assembly, testing and evaluation, and calibration. The total cost of standard components in a machinery or equipment varies, depending on the design. In most specialised and high technology machinery and equipment, this cost is low. However, it increases for general application and low technology machinery and equipment. It is not viable for new companies to focus on the production of these standard components, as they have to compete with other reputable and established component manufacturers. These established manufacturers command global sales and are cost competitive, due to the advantage of economies of scale.

11.31 The machinery and equipment industry in Malaysia will, therefore, need to move up the value chain and focus on the higher value-added cost elements. These include the development of technology, D&D, fabrication of customised components, assembly, testing and evaluation, and calibration.

**(c) Foreign Investments**

- 11.32 Most of the producers of high technology machinery and equipment are in the developed countries in Europe, the USA, Japan and Republic of Korea. To become a regional producer and exporter of machinery and equipment, Malaysia will need to attract these companies to expand their operations to Malaysia, especially for specialised machinery and equipment for high end manufacturing processes, machinery and equipment for the oil and gas industry, metalworking machinery and equipment, and precision testing equipment. Multinational corporations (MNCs) and other foreign-owned companies will need to be encouraged to invest in and make Malaysia their gateway to ASEAN and Northeast Asian regions for their products.
- 11.33 The industry is also identified as a growth industry in other ASEAN countries, especially Singapore and Thailand, and countries such as the People's Republic of China and India. These countries have their own comparative advantages, which will pose competition to Malaysia in attracting foreign investments. To compete, Malaysia will need to enhance its support industries and services, and workforce capabilities. Foreign investors, including those in the machinery and equipment industry, take into consideration intellectual property (IP) protection laws, efficient support industries and capable workforce, apart from incentive packages, in deciding investment locations. Presently, IP protection laws in Malaysia are recognised by foreign investors as being adequate.

**(d) Market Expansion**

- 11.34 With increasing global competition, industries will further progress towards automation and modernisation of production processes. This will provide considerable market opportunities for the manufacture of machinery and equipment, to support the growing needs of various industries in the areas of automation and machinery upgrading. However, domestic machinery and equipment manufacturers will need to upgrade their technological capabilities and avail themselves of the latest technologies, through joint ventures and other business collaborations. In addition, with market liberalisation, domestic manufacturers are expected to face greater competition from imports of machinery and equipment from lower cost producers.
- 11.35 Local demand for machinery and equipment, which is diverse and small, limits the development of the industry, if confined to the domestic market. To sustain and enhance its development, the industry will need to expand its market overseas, through extensive marketing and promotion activities, including branding. For the export market in less developed regions, initiatives are required to enhance the marketability of certain types of machinery and equipment, such as palm oil and rubber processing plants. The initiatives include the need to adopt and provide total solutions in production operations, as well as overall business development of the industry for which the machinery and equipment are used.

**(e) Regional Centre for Production, Trading and Distribution**

11.36 The further development of the industry requires the expansion of domestic demand for support services. To facilitate this expansion, Malaysia will need to be developed as the regional production, trading and distribution centre for machinery and equipment. This will create synergies between machinery and equipment manufacturing with other related services, such as trading, warehousing, marketing, distribution, repair, maintenance, reconditioning and upgrading. These activities will need to be complemented with common facilities, such as testing and calibration services, R&D and training. Efforts will need to be undertaken to attract major foreign machinery and equipment manufacturers to establish their production, trading and distribution operations in Malaysia. This will provide outsourcing opportunities for local manufacturers of machinery and equipment, modules, parts and components.

**(f) Human Resource Development**

11.37 The industry faces a shortage of two important groups of the workforce:

- engineers with capabilities in D&D in the fields of mechanical, E&E and chemical engineering; software development; system integration; food technology; metallurgy; material technology; and agriculture technology; and
- technicians with expertise in CNC machining, welding and fabrication, precision casting, machine assembly, integration and testing, and servicing and maintenance.

11.38 Presently, collaboration between universities and the industry in addressing the human resource needs of the industry is limited. There are also insufficient structured programmes for placement, apprenticeship and internship to improve the quality and capabilities of graduate engineers for the industry. There is a shortage of tailored courses for the development of competencies in specialised fields, including mechatronics and control systems, machine building and system integration, software development, instrumentation, and repair and maintenance.

**(g) Research and Development**

11.39 The industry lacks R&D in developing prototypes and their subsequent commercialisation. To enable Malaysia to develop a niche in the global machinery and equipment industry, R&D activities will need to be intensified. There will also be a need to nurture domestic capabilities in the areas of design, development and prototyping.

**(h) Malaysian Standards**

11.40 Malaysia's national standards for machinery and equipment are limited to the safety of operations. Most developed countries have comprehensive standards, not only on safety, but also the quality of production. Such standards facilitate

the countries in exporting, gaining market entry and meeting compatibility requirement with other machinery and production systems. In recent years, some of these countries have used their standards as a non-tariff protective measure.

11.41 The absence of Malaysian Standards, based on international standards, compels local machinery and equipment manufacturers to comply with standards in export destination countries. The requirement to comply with different standards will add costs to locally produced machinery and equipment, making them less competitive. There is a need to adopt and adapt a suitable international standard, for example, 'Harmonised Standards' (adopted by European Committee for Standardisation for the EU countries), as the Malaysian Standard for the industry.

**(i) Small and Medium Enterprises**

11.42 Most local machinery and equipment manufacturers are SMEs. These companies lack the resources and capabilities to undertake R&D and acquire advanced and complete technologies. The industry lacks the support of specific R&D institutes dedicated to assist SMEs in the industry. The financial resources of these enterprises for the commercialisation of innovations are also limited.

## SECTION V STRATEGIES AND POLICIES

### TARGETS

11.43 Malaysia has the potential to be a major regional producer and exporter of machinery and equipment. During the IMP3 period, 2006-2020, investments for the industry have been targeted at RM30.8 billion, while exports are targeted to grow at an average annual rate of 6.7 per cent to RM48.3 billion in 2020 (Table 11.4).

TABLE 11.4

### PROJECTIONS FOR THE MACHINERY AND EQUIPMENT INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	<i>(RM billion)</i>				<i>Average Annual Growth (%)</i>
Investments	8.7	10.0	12.1	30.8	3.7
Investments per year	1.7	2.0	2.4	2.1	n.a. <sup>1</sup>
Exports (end period)	26.9	36.5	48.3	48.3	6.7

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

## STRATEGIC THRUSTS

11.44 Six strategic thrusts have been set for the further development of the industry during the IMP3 period:

- (1) promoting Malaysia as a regional production, trading and distribution centre for machinery and equipment;
- (2) intensifying the development and promotion of selected specialised and high technology machinery and equipment;
- (3) strengthening the engineering support industries and support services;
- (4) developing Malaysian Standards for machinery and equipment;
- (5) developing a sufficient highly skilled workforce; and
- (6) strengthening the institutional support for the further development of the industry.

### (1) PROMOTING MALAYSIA AS A REGIONAL PRODUCTION, TRADING AND DISTRIBUTION CENTRE

11.45 Malaysia will be developed as:

- regional production centre for selected high technology and specialised machinery and equipment; and
- regional trading and distribution centre for machinery and equipment.

11.46 Suitable areas, within the integrated reach of logistics for manufacture and distribution, will be identified and designated for machinery and equipment related activities. These areas will be developed as free commercial zones, complete with integrated facilities, covering:

- logistics support;
- warehousing and distribution;
- marketing and trading;
- training centres;
- R&D and technical support centres;
- testing and calibration; and
- business development and other related activities.

Major leasing companies will be encouraged to set up joint venture operations in Malaysia to assist in the promotion of the distribution activities.

## (2) DEVELOPING AND PROMOTING SPECIALISED AND HIGH TECHNOLOGY MACHINERY AND EQUIPMENT

11.47 Development and promotion activities will be intensified, focusing on the following growth areas:

- metalworking machine tools;
- materials handling equipment
  - robotics and factory automation equipment; and
  - elevators and cranes;
- specialised machinery
  - machinery and equipment for the E&E industry;
  - printing and bookbinding equipment;
  - food processing machinery;
  - agriculture machinery;
  - plastics processing machinery; and
  - process equipment and plants for oil and gas;
- packaging machinery; and
- fuel cell power generators for stationary domestic applications.

## (3) STRENGTHENING ENGINEERING SUPPORT INDUSTRIES AND SUPPORT SERVICES

11.48 To complement the development of the industry, measures will be undertaken to strengthen the engineering support industries and support services:

- moulds and dies;
- iron and steel casting;
- heat treatment;
- machining;
- parts and components, modules and sub-assemblies;
- testing, calibration and certification;
- R&D, D&D and other technical support;
- repair, maintenance, reconditioning and upgrading of machinery and equipment; and
- total business solutions.

Special support programmes, in the form of business advisory services and other assistance, will be developed to nurture SMEs involved in the industry.

#### (4) DEVELOPING MALAYSIAN STANDARDS

11.49 An international standard on safety and quality will be adopted to develop Malaysian Standards for machinery and equipment, including parts, components and materials. These standards will be modified to suit Malaysia's requirements. The Government will make it mandatory for all machinery and equipment, whether locally produced or imported, to comply with the Malaysian Standards on safety. Malaysia will also initiate mutual recognition agreements (MRAs) on safety and quality standards for machinery and equipment, with its bilateral and regional partners, to safeguard domestic industries and facilitate exports to these countries.

#### (5) DEVELOPING HIGHLY SKILLED WORKFORCE

11.50 With the support and coordination of various institutions of higher learning, research institutes and technical training centres, sufficient human resources with the relevant knowledge, competencies and skills will be produced. Emphasis will be given in the areas of engineering design, software development and programming, machine assembly and integration, servicing and maintenance, machining, welding and fabrication, and precision casting.

11.51 Productivity in the industry will be further enhanced through a higher contribution from its total factor productivity (TFP) growth. Initiatives on the TFP growth include:

- upgrading the quality of the workforce;
- increasing market access and acceptance of the machinery and equipment;
- enhancing the development in technology and encouraging the adoption of management systems and standards to meet international requirements; and
- encouraging collaborations between institutions of higher learning and the industry to promote the matching of skilled requirements, commercialisation of R&D and prototyping. These will assist the industry in expanding into new markets with higher value-added products.

#### (6) STRENGTHENING THE INSTITUTIONAL SUPPORT

11.52 Initiatives to enhance domestic capacities and capabilities, in respect of R&D and technology, include:

- encouraging collaboration between Government research institutes and institutions of higher learning with the industry, to achieve more co-ordinated R&D on specific niche areas in machinery and equipment. Examples of such collaborations are:
  - MARDI and *Universiti Putra Malaysia* for food and agriculture machinery and equipment;

- SIRIM Berhad, Technology Park Malaysia and *Universiti Malaya* for metalworking machine tools; and
- MIMOS Berhad and *Universiti Sains Malaysia* for electrical and electronics machinery and equipment.

Universities will be encouraged to establish centres of excellence for specific fields in machinery and equipment; and

- strengthening existing research and technical centres which undertake R&D activities in machinery and equipment. Strengthening will be undertaken in terms of expertise and facilities in the related fields in machinery and equipment. Relevant research and technical centres include Rasah Machinery and Equipment Technology Centre, MARDI and MPOB.

11.53 The Government will consider the establishment of a dedicated technical institute to undertake R&D on technology innovations and applications for machinery and equipment, including business development and commercialisation. The institute will be equipped with testing, prototyping and incubation facilities. The institute will also offer technical consultancy services to SMEs involved in the industry.

11.54 Assistance will be considered to promote:

- activities within the designated regional production, trading and distribution centres, including relocation of manufacturing and services activities into these areas;
- development of the targeted high technology and specialised machinery and equipment;
- development of the engineering support industries and support services; and
- utilisation of locally manufactured machinery and equipment, including moulds and dies.

**Chapter**

**12**



**METALS INDUSTRY**





## SECTION I OVERVIEW

12.01 The metals industry assumes an important role in Malaysia's industrialisation and economic development. The industry provides materials required for the development of the manufacturing and construction sectors. The focus of development of the industry has been substantially on the iron and steel sub-sector. During the period of the Second Industrial Master Plan (IMP2), 1996-2005, progress was achieved by the sub-sector, in terms of capital investments, technology applications, employment opportunities and export contribution. Major developments of the sub-sector included:

- establishment of integrated steel mills for the production of flat products;
- promotion of automation in production processes to reduce the dependence on labour; and
- diversification to higher-end products, such as high carbon and alloy structural steel, stainless steel and specialised steel for tools and dies.

12.02 During the period of the Third Industrial Master Plan (IMP3), 2006-2020, the iron and steel sub-sector is expected to expand its downstream activities into a wider range of high value-added products. In view of the global market challenges, the sub-sector will be encouraged to enhance managerial and technological capabilities to produce innovative and high quality products at competitive prices for the domestic, as well as, export markets.

## SECTION II PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Status of the Industry

12.03 The metals industry consists of two sub-sectors:

- ferrous metals sub-sector, comprising cast iron and cast steel, commonly referred to as 'iron and steel'; and
- non-ferrous sub-sector, covering aluminium, copper, tin, lead, zinc, nickel and alloys.

The iron and steel sub-sector can be categorised into two product groups:

- long products, including steel bars, sections and wire products. Sections and wire products are mainly used in the construction and civil engineering industry; and
- flat products, namely, hot-rolled coils (HRC), cold-rolled coils (CRC) and coated steel coils. They are used as intermediate raw materials for making products such as furniture, oil and gas, electrical and electronics (E&E), machinery and equipment, automotive parts and components, and fabricated products.

There are 42 plants, with a total estimated installed capacity of 24.3 million tonnes, which are involved in upstream activities, in making products such as billets, slabs, HRC and CRC. In the downstream activities, there are 677 establishments, including small and medium enterprises (SMEs), with a total installed capacity of more than 11 million tonnes, which are involved in making products such as wire mesh, bolts and nuts, and welding electrodes (Table 12.1).

### **(b) Production**

12.04 During the IMP2 period, the production of major iron and steel products registered an average annual growth of 3.2 per cent, from 9.6 million tonnes in 1996 to 12.7 million tonnes in 2005 (Table 12.2). The growth was attributed to the gradual increase of domestic demand, resulting from the economic recovery after the financial crisis in 1997. The establishment of an integrated steel mill in 2000 enabled the industry to produce HRC. In 2005, the installed capacity for HRC was 2.5 million tonnes. With the operation of three cold-rolled mills, the installed capacity for CRC increased to 2.1 million tonnes. Generally, the present production of the sub-sector is sufficient to meet most of the domestic requirements, including low carbon CRC for downstream manufacturing activities, except for certain specifications and grades of long and flat products.

### **(c) Exports**

12.05 During the IMP2 period, the total exports of iron and steel products increased by an average annual rate of 6.8 per cent, from 1.6 million tonnes in 1996 to 2.9 million tonnes in 2005 (Table 12.3). Major export items included billets, bars, wire rods and flat products, such as HRC, CRC and metallic coated steel sheets. During the Asian financial crisis in 1997, there was a contraction in the domestic construction industry, leading to a decline in the local demand for iron and steel products. This led manufacturers to explore opportunities in the export markets. There was an increase in the external demand after 1997, particularly by Viet Nam, Singapore, Thailand and the United States of America (USA). The export performance was sustained in the post-1997 period.

TABLE 12.1

## STRUCTURE OF THE IRON AND STEEL SUB-SECTOR, 2005

<i>Group</i>	<i>Products</i>	<i>Installed Capacity ('000 tonnes)</i>	<i>Number of Establishments</i>
	<b>Total</b>	<b>35,335</b>	<b>719</b>
<b>Upstream</b>			
Primary products	Billets	5,250	6
	Slabs	2,500	1
	Direct-reduced iron	1,200	1
	Blooms	750	1
	Hot-briquetted iron	720	1
Rolling and finished products	Rolled products	7,180	20
	Hot-rolled coils	2,500	5
	Cold-rolled coils	2,140	3
	Plates	850	2
	Medium to heavy sections	700	1
	Light sections	500	1
	<b>Sub-total</b>	<b>24,290</b>	<b>42</b>
<b>Downstream</b>			
Secondary products-long	Wire mesh	500	40
	Galvanised wires	250	6
	High carbon	154	4
	Bolts and nuts	150	15
	Hard drawn wires	120	40
	Nails	84	14
	Shafting bars	60	7
	Welding electrodes	40	10
	Others	120	6
Secondary products-flat	Steel service centres	5,100	40
	Steel and cement-lined-pipes	2,300	31
	Galvanising	700	5
	Pipe fittings	200	4 <sup>1</sup>
	Colour coatings	517	9
	Roll formers	500	45
	Tin plates	250	1
	Fabricators	n.a. <sup>2</sup>	400 <sup>1</sup>
	<b>Sub-total</b>	<b>11,045</b>	<b>677</b>

Notes: <sup>1</sup> Estimated figure

<sup>2</sup> Not available

Source: Malaysian Iron and Steel Industry Federation

TABLE 12.2

## PRODUCTION OF MAJOR IRON AND STEEL PRODUCTS

Products	1996	2000	2005	1996-2005 Average Annual Growth	Capacity Utilisation
	('000 tonnes)			(%)	
<b>Total</b>	<b>9,581</b>	<b>9,630</b>	<b>12,673</b>	<b>3.2</b>	<b>n.a.</b>
<b>Crude steel</b>					
Billets, blooms and slabs	3,210	2,755	4,200	3.0	77.6
Hot briquetted iron and direct reduced iron	1,172	1,240	1,700	4.2	87.6
<b>Long</b>					
Bars	2,346	1,723	1,700	-3.6	n.a.
Wire rods	795	1,011	1,300	5.6	n.a.
Sections	240	175	300	2.5	27.2
<b>Flat</b>					
Hot-rolled sheets and strips	n.a. <sup>1</sup>	738	1,500	15.0	66.0
Pipes and tubes	685	695	580	-1.9	n.a.
Cold-rolled sheets and coils	480	488	500	0.4	27.5
Plates	70	11	250	15.0	34.1
Other metallic coated sheets	120	340	250	8.5	17.3
Galvanised sheets	273	293	243	-1.3	n.a.
Tin plates	190	161	150	-2.6	54.0

Note: <sup>1</sup> Not available

Source: Malaysian Iron and Steel Industry Federation

#### (d) Imports

12.06 There was a decline in the total imports of iron and steel products during the IMP2 period by an average annual rate of 7.4 per cent, from 5.4 million tonnes in 1996 to 2.7 million tonnes in 2005 (Table 12.4). The decline was a result of lower domestic demand and availability of HRC locally. Main sources of imports were Japan, Taiwan and Republic of Korea. Major import items included heavy sections, pipes and fittings, plates, coated sheets, seamless pipes and tubes, and stainless steel products.

TABLE 12.3

## EXPORTS OF MAJOR IRON AND STEEL PRODUCTS

Products	1996	2000	2005	1996-2005
	('000 tonnes)			Average Annual Growth (%)
<b>Total</b>	<b>1,570</b>	<b>1,724</b>	<b>2,857</b>	<b>6.8</b>
<b>Crude steel</b>				
Billets, blooms and slabs	23	5	601	43.6
Hot briquetted iron and direct reduced iron	1,057	329	400	-10.3
<b>Long</b>				
Wire rods	12	253	276	41.6
Sections	24	43	40	5.8
Bars	79	59	35	-8.7
<b>Flat</b>				
Hot-rolled sheets and strips	n.a. <sup>1</sup>	100	650	45.0
Pipes and tubes	199	285	400	8.0
Other metallic coated sheets	5	226	200	50.6
Galvanised sheets	8	285	90	30.8
Plates	24	25	70	12.6
Cold-rolled sheets and coils	120	98	60	-7.5
Tin plates	19	16	35	7.0

Note: <sup>1</sup> Not available

Source: Malaysian Iron and Steel Industry Federation

**(e) Investments**

12.07 As a result of Government policies and an increasing demand for higher quality products in the domestic and regional markets, investments in new and expansion projects shifted from re-rolling activities to capital-intensive upstream activities, including the manufacture of billets and higher value-added iron and steel flat products, such as HRC and CRC. Approved investments in the sub-sector during the IMP2 period totalled RM24.7 billion, of which RM16.2 billion or 66 per cent were domestic investments, and RM8.5 billion or 34 per cent, foreign investments (Table 12.5).

TABLE 12.4

## IMPORTS OF MAJOR IRON AND STEEL PRODUCTS

Products	1996	2000	2005	1996-2005
	('000 tonnes)			Average Annual Growth (%)
<b>Total</b>	<b>5,430</b>	<b>3,420</b>	<b>2,719</b>	<b>-7.4</b>
<b>Crude steel</b>				
Billets, blooms and slabs	911	30	199	-15.6
Hot briquetted iron and direct reduced iron	n.a. <sup>1</sup>	15	15	n.a.
<b>Long</b>				
Sections	568	231	550	-1.0
Wire rods	201	147	15	-25.0
Bars	124	86	10	-24.5
<b>Flat</b>				
Cold-rolled sheets and coils	587	872	850	4.2
Hot-rolled sheets and strips	1,370	832	600	-8.8
Pipes and tubes	441	252	180	-9.5
Plates	920	264	120	-20.3
Galvanised sheets	166	450	70	-9.2
Other metallic coated sheets	132	181	60	-8.4
Tin plates	10	60	50	19.6

Note: <sup>1</sup> Not available

Source: Malaysian Iron and Steel Industry Federation

TABLE 12.5

## APPROVED INVESTMENTS IN THE METALS INDUSTRY

	1996-2000	2001-2005	1996-2005
<b>Total investments (RM billion)</b>	<b>9.1</b>	<b>15.6</b>	<b>24.7</b>
Foreign (RM billion)	2.6	5.9	8.5
Domestic (RM billion)	6.5	9.7	16.2
Projects (number)	152	198	350

Source: Malaysian Industrial Development Authority

12.08 During the period, 244 projects were implemented, involving total investments of RM8.5 billion. The investments were in new projects and expansion or diversification projects. Of the total number of projects, 147 were for the production of iron and steel products and 97, non-ferrous metal products. Among major investment projects implemented were the establishment of:

Project	Investments (RM million)
(i) Plant for HRC	1,600
(ii) Plants for direct-reduced iron and hot-briquetted iron	854
(iii) Plants for billets, steel wire rods and bars	375

**(f) Consumption**

12.09 There were fluctuations in the domestic consumption of iron and steel products during the IMP2 period. The impact of the financial crisis in 1997 caused the domestic consumption to decrease significantly by 45 per cent to 4.5 million tonnes in 1998 (Table 12.6). Consumption recovered from 1999 up to 2001. However, during 2002 and 2003, consumption registered declines between 3 per cent to 6 per cent. This was attributed to the slow growth of the construction sector.

TABLE 12.6

**CONSUMPTION OF IRON AND STEEL PRODUCTS**

Year	<i>Long Products<sup>1</sup></i>	<i>Flat Products</i>	<i>Total</i>	<i>Average Annual Growth (%)</i>
	<i>(million tonnes)</i>			
1996	4.2	3.9	8.1	9.6
1997	4.4	3.8	8.2	1.5
1998	2.0	2.5	4.5	-45.0
1999	2.4	3.6	6.0	32.9
2000	3.0	3.8	6.8	12.9
2001	3.1	4.2	7.3	6.8
2002	3.6	3.3	6.9	-6.0
2003	3.3	3.4	6.7	-3.0
2004	3.8	4.0	7.8	16.2
2005	3.4	3.7	7.1	-8.0

Note: <sup>1</sup> Include bars, wire rods and sections

Source : Malaysian Iron and Steel Industry Federation

12.10 Based on apparent steel consumption per capita in 2004, Malaysia was one of the highest users of steel among ASEAN countries. However, Malaysia's apparent steel consumption per capita of 303 kilograms in 2004 was lower, compared with other industrialised countries, such as Republic of Korea, at 974 kilograms, Taiwan (965 kilograms), and Japan (592 kilograms).

**(g) Employment**

12.11 During the IMP2 period, employment in the industry registered an average annual growth of 1.8 per cent, from 14,222 persons in 1996 to 15,960 in 2005. The growth was attributed to the establishment and operation of new facilities and the expansion of existing plants.

**(h) Research and Development**

12.12 Local manufacturers conduct research primarily for improvements in products and value-added processes. They heavily depend on foreign research and development (R&D) in advanced technologies, production processes and operating practices. There are efforts made by the industry to utilise local research institutions to conduct R&D on product development. However, the facilities available at these institutions are not able to support the full requirements of R&D, but more towards the testing of materials.

**(i) Linkages**

12.13 As iron and steel is a basic material required by most industries, the sub-sector has developed linkages, especially in manufacturing and construction. Strong linkages have been established between the capital-intensive upstream activities of the sub-sector and the higher value-added downstream manufacturing activities, such as those in the E&E, machinery and transport equipment industries.

## **SECTION III PROSPECTS**

**(a) Industry Outlook**

12.14 Iron and steel will continue to remain important engineering and construction materials. Industries are not expected to substitute iron and steel with other competing materials, such as plastics, aluminium, glass and ceramics, on a substantive scale. In addition, the rise in the energy cost will have a lesser impact on the sub-sector, compared with plastics, aluminium, glass and ceramics industries.

12.15 During the IMP3 period, the sub-sector is expected to expand its downstream activities to produce a wider range of higher value-added products to meet market requirements. Based on the trends of imports and domestic consumption,

there are opportunities for expansion and development in the production of heavy gauge galvanised coils, metallic coated coils and tubes of certain grades and specifications. The sub-sector is expected to continue to grow, in view of the following developments:

- although the People's Republic of China is already an important producer and consumer in the global steel market, it is not expected to be a net exporter of iron and steel products in the medium term. Higher growth of the economy of the country, which has driven up steel demand, will provide market opportunities for high grade construction steel and flat products, which need to be sourced globally; and
- tariffs for iron and steel products under the ASEAN Free Trade Area (AFTA) will be eliminated in 2010. The liberalisation of regional steel markets provides market opportunities for Malaysia's producers. By targeting the regional market, competitive local producers will be able to expand their export market, thereby increasing the capacity utilisation of their plants.

## **(b) Growth Areas**

12.16 The domestic demand for long products, especially steel bars, sections, angles and other wire products, will continue to depend on the growth of the construction and manufacturing activities. The sub-sector has yet to explore and develop a wider range of products and new applications of existing products.

12.17 Potential growth areas for iron and steel products, to meet the requirements in the construction sector and the production of parts and components for automotive and marine transport, and machinery and handling equipment, include:

### **(i) Construction Sector**

#### ***Project coverage***

- Industrial Building Systems will be promoted for domestic residential houses, apartments, modular factories and commercial buildings; and
- pre-fabricated houses and modular factories in components (knocked-down form) have the potential to be developed and exported;

#### ***Product coverage***

- roofing sheets, trusses, door and window frames, wall claddings, hollow sections, welded and seamless pipes and wire products, such as rivets, screws, bolts and nuts;

**Materials required**

- CRC, galvanised iron, pre-painted coils and sheets, mild steel coils, stainless steel coils and wire rods;

**(ii) Parts and Components for Automotive and Marine Transport****Project coverage**

- automotive and marine transport;

**Product coverage**

- automobiles, commercial and special vehicles for farm transport and machinery;
- container barges for palm oil and petrochemicals; and
- small coastal vessels;

**Materials required**

- special steel, including alloy steel, stainless steel, cold-rolled sheets, mild steel plates, galvanised sheets, tubes, welding wires, steel tyre cords, tyre bead wires, fine steel wires, springs and fasteners;

**(iii) Machinery and Handling Equipment****Project coverage**

- food processing;
- palm oil mills;
- air conditioning and refrigeration;
- oil and gas, and petrochemicals; and
- power plants;

**Product coverage**

- boilers, pressure vessels, dish ends, heat exchangers, reactors, columns, silos and tanks, rotary kilns, filters, conveyors and cranes, and machinery and equipment; and
- related processes involved, including heat and surface treatment, welding, galvanising and machining; and

### ***Materials required***

- mild steel plates, boiler plates, stainless steel plates, wire products, welding wires, seamless pipes, fittings and fasteners.

## **SECTION IV CHALLENGES**

12.18 Taking into consideration the global market trend, the domestic iron and steel sub-sector has the potential to produce innovative and high quality products at competitive prices, to enable local producers to compete in the domestic and international markets. Growth prospects of the sub-sector largely depend on its ability to meet user requirements of the manufacturing and construction sectors in both the domestic and export markets.

### **(a) Increasing International Competition**

12.19 There will be increasing competition from other steel producing countries, such as the People's Republic of China, India and countries in the Commonwealth of Independent States. These countries are becoming major producers and exporters of iron and steel products. They will continue to influence the performance of domestic manufacturers. The growth in global output is expected in an environment of stiff competition among lower-cost producing countries. Since 2003, the People's Republic of China has been the largest global producer of steel, with production reaching 300 million tonnes in 2005. Other major producers are Japan, with production of 112.7 million tonnes, followed by the USA (98.9 million tonnes), Russia (65.6 million tonnes), Republic of Korea (47.5 million tonnes) and Germany (46.4 million tonnes).

12.20 Instability in the supply of raw materials and prices of steel products will continue to put pressure and produce an impact on domestic manufacturers. In respect of scrap, major suppliers are the USA and Japan, while major users are the steel industries in Taiwan, Republic of Korea and the People's Republic of China. Malaysia generates about 1.6 million tonnes of scrap annually, accounting for about one-third of the total consumption of the material.

### **(b) Limited Domestic Demand**

12.21 The sub-sector has been essentially domestic oriented. The domestic market for both upstream and downstream activities is relatively small and is not able to absorb the entire installed capacity of 35.3 million tonnes, comprising 24.3 million tonnes for upstream activities and 11 million tonnes for downstream activities. In addition, domestic manufacturers face difficulties to remain competitive in the regional and international markets, due to a lack of economies of scale and limited range of high quality products for the export markets. For the long-term viability of the sub-sector, high capital investments are required

in both technology and large scale production capacity for upstream producers. However, the viability of such investments will be dependent on the ability of the manufacturers to increase their exports.

**(c) Value Chain**

12.22 There is a need for upstream and downstream activities of the sub-sector to be integrated to provide linkages, since there are many processes along the value chain, producing products at various stages. The major challenge, therefore, is for the upstream manufacturers to produce quality iron and steel products at competitive prices for further processing by downstream manufacturers.

**(d) Optimising Benefits from Free Trade Agreements**

12.23 The implementation of various free trade agreements (FTAs) by Malaysia with selected trading partners will produce a long term impact on investments and trade. The investment regimes of both Malaysia and FTA partners will be progressively liberalised. In respect of trade, market access through preferential treatment is the major potential benefit. The challenge for the local iron and steel manufacturers is to capitalise on the potential benefits from the FTA arrangement, by enhancing their capabilities to meet the technical requirements of the market. Presently, local manufacturers are not in a position to capitalise on the potential opportunities, due to their inability to comply with the standards. The sub-sector is also facing increased competition from imports, as a result of the reciprocity nature of the FTAs.

**(e) Mandatory Standards**

12.24 The absence of mandatory standards has caused difficulties in ensuring the required quality for locally produced and imported products. There is, therefore, a need for the introduction of legislation and the establishment of the institutional infrastructure to enforce standards on steel products.

**(f) Shortage of Skilled and Qualified Workforce**

12.25 The sub-sector is faced with a shortage of technically skilled workforce, especially at the production level. The sub-sector has to depend on the employment of foreign workers, as well as expatriates at certain levels. Many potential entrants are reluctant to join the sub-sector, which is viewed as not conducive, in comparison with other industries. There is, therefore, a need for the sub-sector to invest in creating a better working environment to improve the image of the sub-sector, to be able to attract a greater number of young professionals, with technical skills, and managerial and leadership capabilities. It will also have to collaborate with training institutions to train potential entrants into the sub-sector.

### (g) Research and Development

12.26 There is a need for R&D efforts to focus on technology applications, and product and process improvements, especially in the development of new materials and improved applications of steel products for various areas, including construction and engineering. There is a need for collaboration between the sub-sector and local research institutes, especially in technology and product development. The sub-sector will need to identify areas in which research support can be provided by the relevant institutions.

## SECTION V STRATEGIES AND POLICIES

### TARGETS

12.27 The metals industry is expected to continue to contribute to the development of Malaysia's economy. During the IMP3 period, investments of the industry have been targeted at RM44.2 billion and exports are expected to reach RM50.6 billion in 2020 (Table 12.7).

TABLE 12.7

### PROJECTIONS FOR THE METALS INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	(RM billion)				Average Annual Growth (%)
Investments	9.4	14.4	20.4	44.2	9.3
Investments per year	1.9	2.9	4.1	2.9	n.a. <sup>1</sup>
Exports (end period)	28.2	38.3	50.6	50.6	7.3

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry

### STRATEGIC THRUSTS

12.28 Six strategic thrusts have been set for the further development of the iron and steel sub-sector during the IMP3 period:

- (1) enhancing the competitiveness of the industry to support the growth of the manufacturing and construction sectors;
- (2) sustaining and expanding the exports of iron and steel products for existing and new markets;

- (3) promoting new applications of steel in selected industries;
- (4) encouraging collaborations between producers and users of steel, and upstream and downstream manufacturers;
- (5) attracting new investments in niche areas in the sub-sector; and
- (6) developing a skilled and qualified workforce.

**(1) ENHANCING THE COMPETITIVENESS OF THE INDUSTRY TO SUPPORT THE MANUFACTURING AND CONSTRUCTION SECTORS**

12.29 The competitiveness of the iron and steel sub-sector will be enhanced through:

- making available the supply of raw materials and intermediate components at competitive prices, for both domestic and export-oriented producers;
- undertaking progressive liberalisation of the import of iron and steel products required for downstream activities; and
- undertaking a review of the excess capacity situation on a continuous basis to enable the plants to produce at more competitive costs.

**(2) MAINTAINING AND EXPANDING EXPORTS FOR EXISTING AND NEW MARKETS**

12.30 Greater efforts in exporting will be undertaken in selected products, where the sub-sector has achieved competitive advantage in the domestic market. Measures to enhance market access include:

- implementing export targeting strategies in potential ASEAN markets for selected iron and steel products, through the utilisation of the trade facilitation arrangement;
- undertaking market liberalisation through FTAs; and
- encouraging the sub-sector to adopt and comply to international standards.

12.31 The sub-sector will be encouraged to forge cooperation and collaboration, joint ventures and other similar arrangements among ASEAN producers to provide leverage for future growth and expansion. This is aimed at minimising unhealthy competition and promoting the overall competitiveness among ASEAN producers to realise optimum benefits from AFTA.

12.32 Malaysian Standards on iron and steel products will be developed, in collaboration with the industry. Efforts will also be undertaken to:

- introduce and enforce mandatory standards on iron and steel products; and
- enter into mutual recognition arrangements (MRAs) with trading partners.

These initiatives are important to facilitate trade and prevent the import of sub-standard products.

### **(3) PROMOTING NEW APPLICATIONS OF STEEL IN SELECTED INDUSTRIES**

12.33 The sub-sector will be encouraged to promote new applications of steel in the manufacturing, construction and transportation industries, as well as engineering activities. For further downstream manufacturing activities, products with potential are components related to the automotive, oil and gas, E&E, and machinery and equipment industries.

### **(4) ENCOURAGING COLLABORATIONS BETWEEN PRODUCERS AND USERS OF STEEL, AND UPSTREAM AND DOWNSTREAM MANUFACTURERS**

12.34 Cooperative efforts, on a long term basis, between producers and main users of iron and steel products will be undertaken, focusing on the potential usage of steel as a cost-saving and energy-saving material for both industrial and consumer products. Such strategic efforts will be supported by global research standards and practices, and expertise. Continuous educational and promotional programmes will be undertaken, through collaborations between industry associations, research institutes and professional bodies, both locally and abroad.

12.35 The promotion of strategic linkages between upstream and downstream manufacturers will be undertaken to facilitate the growth of downstream processing activities, through technical advisory services, R&D on processing technologies and applications of new materials. Innovative and new products will be developed, in line with changing market demands.

### **(5) ATTRACTING NEW INVESTMENTS IN NICHE AREAS**

12.36 The Government will continue to promote investments in the production of iron and steel products with growth potential. The products include steel tyre cords, alloy structural steel, high pressure reinforced hose wires, specialised steel for tools and dies, seamless steel pipes, structural hollow sections, fine steel wires, oil and gas pipes, cold formed heavy gauge sections and stainless steel coils.

12.37 In respect of other metals, the construction of the Bakun dam in Sarawak, with an energy capacity of 2,400kw, will be the major pulling factor for new investments in aluminium smelting.

## (6) DEVELOPING A SKILLED AND QUALIFIED WORKFORCE

12.38 Measures to develop a skilled and qualified workforce for the sub-sector include:

- strengthening existing technical institutes to enhance their capacities and capabilities, and considering the establishment of new institutes, to meet human resource requirements of the sub-sector. Industry associations, in collaboration with manufacturers, are encouraged to work with established institutes to conduct training programmes, for example, apprenticeship scheme; and
  
- encouraging the sub-sector to increase automation in production processes to enhance productivity. The Government will continue to review the existing support programmes and incentives to promote this initiative.

**Chapter**

**13**



**TRANSPORT EQUIPMENT  
INDUSTRY**





## SECTION I OVERVIEW

13.01 The transport equipment industry has contributed significantly to Malaysia's industrial development. Its contributions include investments, technology development, expansion of domestic capabilities and creation of linkages. The industry comprises three sub-sectors:

- automotive, including motor vehicles (passenger and commercial vehicles), motorcycles, and parts and components;
- marine transport, comprising ship building, heavy engineering works and ship repairing; and
- aerospace, covering activities such as maintenance, repair and overhaul; manufacture of parts and components; and manufacture of light aircraft.

The three sub-sectors also undertake activities which are related to defence. The main focus of the defence related activities is on the manufacture and maintenance of vehicles to meet military needs and achieve a certain degree of self reliance. The sub-sectors may either produce specific equipment for defence, for example, weapons, as well as common user items for both military and non-military purposes, for example, trucks and boats, as well as products in information and communication technology (ICT).

13.02 During the period of the Second Industrial Master Plan (IMP2), 1996-2005, progress was achieved in the sub-sectors:

- Automotive
  - increase in production by more than two-fold, mainly in passenger cars;
  - development of technology and enhancement of engineering capabilities and skills upgrading;
  - ability to develop and produce Malaysia's own engine for passenger cars;
  - increase in investments; and
  - significant increase in the number of manufacturers in parts and components, with several of them having gained access to export markets;

- Marine transport
  - development of capabilities in marine engineering design and technological upgrading;
  - construction of small ships and boats, including leisure craft and yachts, as well as undertaking of ship repairing activities, such as maintenance and overhauling of vessels; and
  - increase in exports, comprising mainly small leisure and recreational vessels, as well as tug boats and pusher craft; and
  
- Aerospace
  - development of the capacity of local companies to undertake maintenance work for aircraft and engines in electronics overhaul, and repair and modification; and
  - manufacture of aircraft parts and components by some companies.

The sub-sectors were able to meet part of the transport requirements for defence. The manufacture of vehicles for military purposes, such as trucks, transporters and armoured vehicles, and the maintenance of military vehicles were undertaken by the sub-sectors.

13.03 During the period of the Third Industrial Master Plan (IMP3), 2006-2020, major areas of focus of the sub-sectors are:

- Automotive

Emphasis will be on the development of a viable production and distribution centre for automotive vehicles, and parts and components in the region. Efforts to be undertaken include enhancing domestic capabilities through rationalisation and consolidation, and promoting global market orientation.

- Marine transport

Efforts will focus on enhancing domestic capabilities in the building of smaller vessels and maintenance, repair and overhaul activities.

- Aerospace

Areas of focus include the manufacture of light aircraft, development of technological capabilities in parts and components, and strengthening of maintenance, repair and overhaul activities.

## SECTION II AUTOMOTIVE SUB-SECTOR

### OVERVIEW

13.04 During the IMP2 period, the bulk of production in the sub-sector was concentrated on passenger cars. In 2005, production of passenger cars totalled 521,384 units or 92.5 per cent of the total domestic production of motor vehicles. In the same year, Malaysia recorded the highest sales for passenger cars (including vans, multi-purpose vehicles, sports utility vehicles and four-wheel drive vehicles) in ASEAN, accounting for 50.7 per cent of the total sales of passenger cars in the region.

### STRUCTURE OF THE SUB-SECTOR

13.05 The sub-sector comprises the production of passenger cars, commercial vehicles and motorcycles. Presently, there are four manufacturers and 10 assemblers of motor vehicles, and one manufacturer and nine assemblers of motorcycles. The manufacture and assembly of motor vehicles are supported by 590 manufacturers of parts and components, of which 32 have been identified by PROTON as Tier-1 vendors. These vendors have developed the capacity to design and raised their levels of production to reap economies of scale.

13.06 The production and capacity utilisation of the sub-sectors in 2005 were:

- in respect of the production of passenger cars, two of the manufacturers accounted for 62.3 per cent of the total production of passenger cars. The production of multi-purpose vehicles by the assemblers increased by two-fold;
- within the commercial vehicles segment, production of trucks and buses of gross weight less than 20 tonnes accounted for 88.3 per cent of the total production of commercial vehicles;
- for motorcycles, the manufacturer and assemblers produced 61 models, in the category of 150cc and below. Efforts are being undertaken by the manufacturer and assemblers to increase exports. The value of exports of motorcycles amounted to RM117.7 million; and
- in terms of capacity utilisation, manufacturers and assemblers of passenger cars and commercial vehicles utilised 63.2 per cent of their installed capacity, while those of motorcycles, 42 per cent.

## PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Production

13.07 Production of motor vehicles increased by two-fold, from 291,520 units in 1996 to 563,408 units in 2005 (Table 13.1). The breakdown of the production, in terms of passenger cars and commercial vehicles was:

- passenger cars comprised the bulk of the increase in the production, from 258,474 units or 88.7 per cent of the total production of motor vehicles in 1996 to 521,384 units (92.5 per cent) in 2005. The increase in the production was due to the introduction of new models and the enhancement in the designs of existing models, as well as effective promotion and availability of attractive financing packages. In addition, there was a shift in the demand towards vehicles with higher engine capacities, reflecting higher purchasing power of consumers and a change in consumer preference for multi-purpose vehicles, sports utility vehicles and four-wheel drive vehicles; and
- production of commercial vehicles increased from 33,046 units in 1996 to 42,042 units in 2005. Production of trucks, with gross weight of less than 20 tonnes, accounted for 79.6 per cent of the total production of commercial vehicles in 2005.

TABLE 13.1

### PRODUCTION OF MOTOR VEHICLES

Segment	1996	2000	2005
	(units)		
<b>Total</b>	<b>291,520</b>	<b>359,196</b>	<b>563,408</b>
<b>Passenger vehicles<sup>1</sup></b>	<b>258,474</b>	<b>340,518</b>	<b>521,384</b>
Manufacturers	177,368	290,222	334,763
Assemblers	81,106	50,296	186,621
<b>Commercial vehicles</b>	<b>33,046</b>	<b>18,678</b>	<b>42,024</b>
Manufacturers	nil	3,994	7,231
Assemblers	33,046	14,684	34,793

Note: <sup>1</sup> Include vans, multi-purpose vehicles, sports utility vehicles and four-wheel drive vehicles

Source: Reclassified, based on data from Malaysian Automotive Association

13.08 Production of motorcycles expanded from 333,249 units in 1996 to 446,742 units in 2005 (Table 13.2). MODENAS, which commenced its operations in 1996, focused on the production of motorcycles with engine capacity of 150cc and below.

TABLE 13.2

## PRODUCTION OF MOTORCYCLES

Segment	1996	2000	2005
	(units)		
<b>Total</b>	<b>333,249</b>	<b>255,731</b>	<b>446,742</b>
Assemblers	317,715	154,889	346,156 <sup>1</sup>
Manufacturer	15,534	100,842	100,586

Note: <sup>1</sup> Include non-members of Motorcycles and Scooter Assemblers Association of Malaysia

Sources: Motorcycle and Scooter Assemblers Association of Malaysia and Ministry of International Trade and Industry

13.09 During the period, the production of automotive parts and components recorded a significant increase, as reflected in the production index, which rose from 202.9 points in 1996 to 359 points in 2005. The increase was attributed to major manufacturers of automotive parts and components expanding their production to meet the domestic demand, as well as for exports. Major automotive parts and components produced included high value-added products, such as shock absorbers, steering linkages and wire harnesses.

**(b) Sales**

13.10 The total sales of motor vehicles increased by almost two-fold, from 364,788 units in 1996 to 551,042 units in 2005. Passenger cars constituted the biggest market, with a share of 96.4 per cent in 2005, compared with 89 per cent in 1996. Sales of commercial vehicles decreased from 39,900 units in 1996 to 20,008 units in 2005. (Table 13.3).

TABLE 13.3

## DOMESTIC SALES OF MOTOR VEHICLES

Segment	1996	2000	2005
	(units)		
<b>Total</b>	<b>364,788</b>	<b>343,173</b>	<b>551,042</b>
<b>Passenger vehicles<sup>1</sup></b>	<b>324,888</b>	<b>330,306</b>	<b>531,034</b>
Manufacturers	230,281	275,945	324,638
Assemblers	94,607	54,361	206,396
<b>Commercial vehicles</b>	<b>39,900</b>	<b>12,867</b>	<b>20,008</b>
Manufacturers	n.a. <sup>2</sup>	3,224	5,275
Assemblers	39,900	9,643	14,733

Notes: <sup>1</sup> Include vans, multi-purpose vehicles, sports utility vehicles and four-wheel drive vehicles

<sup>2</sup> Not applicable

Source: Reclassified, based on data from Malaysian Automotive Association

13.11 Sales of motorcycles increased from 330,233 units in 1996 to 452,224 units in 2005. The market continued to be dominated by motorcycles with engine capacity of 150cc and below, which accounted for 99.9 per cent of the total sales of motorcycles in 2005 (Table 13.4). Demand for motorcycles with higher engine capacity was nominal, due to higher prices.

TABLE 13.4

## SALES OF MOTORCYCLES

Segment	1996	2000	2005
	(units)		
<b>Total</b>	<b>330,233</b>	<b>256,780</b>	<b>452,224</b>
Assemblers	316,226	154,818	352,510
Manufacturer	14,007	101,962	99,714

Sources: Motorcycle and Scooter Assemblers Association of Malaysia and Ministry of International Trade and Industry

13.12 Sales of parts and components grew from RM2.7 billion in 1996 to RM5.9 billion in 2005. The growth in sales was partly a result of the increase in the demand by local manufacturers and assemblers of motor vehicles and expansion to the export market.

**(c) Productivity**

13.13 During the IMP2 period, productivity of the industry, based on sales value per employee, grew at an average annual rate of 2.3 per cent, increasing from RM319,180 in 1996 to RM390,690 in 2005 (Table 13.5). Within the industry, productivity in the manufacture of motor vehicles grew at an average annual rate of 2.3 per cent, and parts and components, 6.7 per cent.

TABLE 13.5

## PRODUCTIVITY OF THE TRANSPORT EQUIPMENT INDUSTRY

Sales Value per Employee	1996	2000	2005
	(RM '000)		
<b>Overall</b>	<b>319.2</b>	<b>382.5</b>	<b>390.7</b>
Automotive vehicles	502.9	635.2	658.3
Parts and components	155.2	213.6	204.6

Source: National Productivity Corporation

**(d) Linkages**

13.14 The sub-sector has developed extensive inter-industry linkages, particularly distribution, logistics, financing, insurance and car dealership. Within the industry linkages, the sub-sector has contributed to the development of related products in electronics, metals, plastics, rubber, chemicals and textiles.

13.15 The establishment and operations of PROTON and PERODUA have led to significant Bumiputera participation in the automotive sub-sector. As at 2005, there were 1,303 dealers, of whom 506 or 38.5 per cent were Bumiputera dealers. In respect of distribution, maintenance and services of vehicles, the level of Bumiputera participation was at 38 per cent.

**(e) Exports**

13.16 Exports of automotive products increased from RM1 billion in 1996 to RM2.8 billion in 2005. Parts and components comprised 75.9 per cent of the total exports of the sub-sector in 2005 (Table 13.6).

TABLE 13.6

**EXPORTS OF AUTOMOTIVE PRODUCTS**

Segment	1996		2000		2005		1996-2005 Average Annual Growth (%)
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	
<b>Total</b>	<b>1,013.1</b>	<b>100.0</b>	<b>1,545.8</b>	<b>100.0</b>	<b>2,820.7</b>	<b>100.0</b>	<b>12.0</b>
<b>Passenger vehicles</b>	<b>477.9</b>	<b>47.2</b>	<b>344.7</b>	<b>22.3</b>	<b>411.2</b>	<b>14.5</b>	<b>-0.3</b>
CBUs <sup>1</sup>	475.5	46.9	336.8	21.8	396.3	14.0	-0.6
CKDs <sup>2</sup>	2.4	0.2	7.9	0.5	14.9	0.5	29.1
<b>Commercial vehicles</b>	<b>13.8</b>	<b>1.4</b>	<b>51.3</b>	<b>3.3</b>	<b>151.5</b>	<b>5.4</b>	<b>32.1</b>
CBUs	12.3	1.2	50.6	3.3	138.3	4.9	31.3
CKDs	1.5	0.1	0.7	neg. <sup>3</sup>	13.2	0.5	49.1
<b>Motorcycles</b>	<b>9.7</b>	<b>1.0</b>	<b>131.3</b>	<b>8.5</b>	<b>117.7</b>	<b>4.2</b>	<b>36.8</b>
CBUs	9.7	1.0	129.4	8.4	27.5	1.0	18.3
CKDs	nil	nil	1.9	0.1	90.2	3.2	n.a. <sup>4</sup>
<b>Parts and components</b>	<b>511.7</b>	<b>50.5</b>	<b>1,018.5</b>	<b>65.9</b>	<b>2,140.3</b>	<b>75.9</b>	<b>16.3</b>

Notes: <sup>1</sup> Completely built-up units

<sup>2</sup> Completely knocked-down units

<sup>3</sup> Negligible

<sup>4</sup> Not applicable

Source: Department of Statistics and compiled by Ministry of International Trade and Industry

13.17 Increases were recorded in the exports of automotive parts and components, commercial vehicles and motorcycles. However, exports of passenger vehicles decreased. The breakdown of the export performance was:

- exports of automotive parts and components increased from RM511.7 million in 1996 to RM2.1 billion in 2005. Major components exported were steering wheels and columns, rims, bumpers, brakes, radiators, shock absorbers and clutches, mainly to Taiwan, Thailand and Singapore;
- exports of commercial vehicles increased from RM13.8 million in 1996 to RM151.5 million in 2005. Export destinations in 2005 were Hong Kong, Singapore and Australia;
- exports of motorcycles increased from RM9.7 million in 1996 to RM117.7 million in 2005. The export volume, however, comprised only 2.4 per cent of the total domestic production of motorcycles. In 2005, 76.6 per cent of the total exports of motorcycles comprised completely knocked-down units (CKDs). Among major export destinations in 2005 were Sri Lanka, Greece and Singapore;
- exports of passenger vehicles decreased from RM477.9 million in 1996 to RM411.2 million in 2005. The volume of exports in 2005 represented 2.8 per cent of the total production of passenger vehicles; and
- while there was a reduction in the export of completely built-up units (CBUs) of passenger vehicles, there was an increasing trend in the export of CKDs. This reflected the strategy of domestic manufacturers in venturing into offshore production. Among major destinations for the export of passenger cars in 2005 were the United Kingdom (UK), Singapore and Iran.

**(f) Imports**

13.18 In tandem with the expansion of the sub-sector, imports of automotive products increased from RM7.2 billion in 1996 to RM11.1 billion in 2005 (Table 13.7). The imports comprised passenger and commercial vehicles, motorcycles and parts and components:

- for passenger vehicles, imports grew from RM4.3 billion, accounting for 59.3 per cent of the total imports of the sub-sector in 1996, to RM4.9 billion (44.3 per cent) in 2005. The bulk of the imports in 2005 comprised CKD packs, amounting to RM3.8 billion or 78.1 per cent of the total imported value of passenger vehicles. Among the major sources of imports in 2005 were Japan, Republic of Korea and Germany;

- the import value of commercial vehicles in 2005 was RM1.7 billion, the same import value as in 1996. Among the major sources of imports in 2005 were Japan, Republic of Korea and the People's Republic of China;
- for motorcycles, imports increased from RM1.9 million in 1996 to RM122.1 million in 2005. CKDs comprised 92 per cent of the imports, to cater for the requirement of domestic production. Major sources of imports were Taiwan, Thailand and the People's Republic of China; and
- the import value of automotive parts and components increased from RM1.3 billion in 1996 to RM4.4 billion in 2005. Parts and components comprised 39.7 per cent of the total imports of automotive products in 2005. Major sources of imports were Thailand, Japan and Germany.

TABLE 13.7

## IMPORTS OF AUTOMOTIVE PRODUCTS

Segment	1996		2000		2005		1996-2005 Average Annual Growth (%)
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	
<b>Total</b>	<b>7,197.2</b>	<b>100.0</b>	<b>6,205.8</b>	<b>100.0</b>	<b>11,083.6</b>	<b>100.0</b>	<b>5.7</b>
<b>Passenger vehicles</b>	<b>4,267.5</b>	<b>59.3</b>	<b>3,900.0</b>	<b>62.8</b>	<b>4,905.9</b>	<b>44.3</b>	<b>1.6</b>
CKDs <sup>1</sup>	3,544.2	49.2	3,366.8	54.3	3,833.3	34.6	0.5
CBUs <sup>2</sup>	723.3	10.1	533.2	8.6	1,072.6	9.7	7.2
<b>Commercial vehicles</b>	<b>1,673.3</b>	<b>23.2</b>	<b>774.7</b>	<b>12.5</b>	<b>1,654.3</b>	<b>14.9</b>	<b>3.4</b>
CKDs	621.2	8.6	756.8	12.2	1,515.7	13.7	12.1
CBUs	1,052.1	14.6	17.9	0.3	138.6	1.3	-14.9
<b>Motorcycles</b>	<b>1.9</b>	<b>neg.<sup>3</sup></b>	<b>10.2</b>	<b>0.2</b>	<b>122.1</b>	<b>1.1</b>	<b>15.8</b>
CKDs	nil	nil	4.7	0.1	112.3	1.0	15.7
CBUs	1.9	neg.	5.4	0.1	9.8	0.1	17.2
<b>Parts and components</b>	<b>1,254.5</b>	<b>17.5</b>	<b>1,520.9</b>	<b>24.5</b>	<b>4,401.3</b>	<b>39.7</b>	<b>16.5</b>

Notes: <sup>1</sup> Completely knocked-down units

<sup>2</sup> Completely built-up units

<sup>3</sup> Negligible

Source: Department of Statistics and compiled by Ministry of International Trade and Industry

### (g) Investments

13.19 During the IMP2 period, the total investments approved amounted to RM10.4 billion, of which domestic investments accounted for RM7.9 billion or 76.3 per cent (Table 13.8). Of the total investments, 50.4 per cent were in parts and components. Major projects in the manufacture of parts and components were mainly in engines and parts, body panels, bumpers, transmission systems, wire harnesses, brake systems and fabrication of vehicle bodies. As at 2005, total realised investments in the sub-sector amounted to RM19.4 billion, of which 54 per cent were in passenger cars. The investments included the establishment of three new assembly plants, valued at RM2.8 billion.

TABLE 13.8

#### INVESTMENTS IN THE AUTOMOTIVE SUB-SECTOR

	1996-2000			2001-2005			1996-2005		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
	(RM million)								
<b>Total</b>	<b>2,201.6</b>	<b>1,031.9</b>	<b>3,233.5</b>	<b>5,746.4</b>	<b>1,443.2</b>	<b>7,189.6</b>	<b>7,947.9</b>	<b>2,475.2</b>	<b>10,423.1</b>
Passenger vehicles	642.1	241.2	883.3	2,925.5	406.9	3,332.4	3,567.6	648.1	4,215.7
Commercial vehicles	92.7	6.0	98.7	122.8	23.7	146.4	215.5	29.7	245.2
Motorcycles <sup>1</sup>	92.1	27.7	119.8	480.4	109.5	589.9	572.5	137.2	709.7
Parts and components	1,374.6	757.1	2,131.7	2,217.7	903.1	3,120.9	3,592.3	1,660.2	5,252.5

Note: <sup>1</sup>For period 1997-2005

Source: Malaysian Industrial Development Authority

### (h) Research and Development and Technology Development

13.20 Research and development (R&D) activities were mainly undertaken by the national manufacturers, namely, PROTON and PERODUA. The development of PROTON's own engine and PERODUA's own designed car, utilising local expertise and capabilities, was the result of substantive R&D activities undertaken in the country, in collaboration with their respective foreign counterparts. Presently, PROTON and PERODUA employ a total of 990 engineers, who are directly involved in the R&D activities.

### (i) Employment

13.21 Employment in the sub-sector increased at an average annual rate of 5.9 per cent, from 38,409 persons in 1996 to 58,327 in 2005 (Table 13.9). Employment

was mainly in the manufacture of parts and components, as well as motor vehicles:

- in the parts and components segment, employment increased from 16,131 persons in 1996 to 29,861 in 2005. This was attributed to an increase in the number of manufacturers, as well as an expansion in the production level by both existing and new manufacturers;
- in the motor vehicles segment, employment expanded from 15,879 persons in 1996 to 22,541 in 2005; and
- employment in the motorcycles segment decreased from 6,399 persons in 1996 to 5,925 in 2005.

TABLE 13.9

**EMPLOYMENT IN THE AUTOMOTIVE SUB-SECTOR**

Segment	1996		2000		2005		1996-2005
	Employment (persons)	Share (%)	Employment (persons)	Share (%)	Employment (persons)	Share (%)	Average Annual Growth (%)
<b>Total</b>	<b>38,409</b>	<b>100.0</b>	<b>40,679</b>	<b>100.0</b>	<b>58,327</b>	<b>100.0</b>	<b>5.9</b>
Parts and components	16,131	42.0	20,349	50.0	29,861	51.2	7.4
Motor vehicles	15,879	41.3	15,114	37.2	22,541	38.6	5.7
Motorcycles	6,399	16.7	5,216	12.8	5,925	10.2	1.0

Source: Department of Statistics

**PROSPECTS**

**(a) Sub-Sector Outlook**

13.22 Production in the sub-sector will continue to comprise mainly passenger cars. However, the base of the sub-sector will need to be expanded to include special purpose vehicles. The long term viability of the sub-sector depends on its ability to expand into regional and global markets. Progressive liberalisation will compel the sub-sector to enhance its competitiveness to face competition from imports:

- the measure taken by Malaysia to lower the import duty for CBU vehicles from ASEAN to 5 per cent will provide opportunities to increase exports of automotive products to the ASEAN region; and
- beyond ASEAN, bilateral and regional free trade agreements (FTAs), which have been concluded and those which are being negotiated, will create more export opportunities for Malaysian automotive products.

13.23 The sub-sector needs to diversify its production, through upgrading and adapting new technologies, towards the production of hybrid vehicles. In addition, the sub-sector will need to build its capabilities in designing and producing critical parts and components. The diversification and upgrading of capabilities can be achieved through the development of competitive vendors or outsourcing arrangements.

**(b) Growth Areas**

13.24 Potential areas for development will be in the designing and manufacture of critical components. The components include engines, transmission systems and automotive electronics components. Another potential area is in the designing and manufacture of special purpose vehicles.

**(i) Engines**

13.25 In recent years, engine development is primarily focused on fuel conservation and emission control. As part of the efforts to meet global requirements, areas of development include fuel efficient engines and alternative fuel engines, such as 'green' engines and vehicles operating on liquefied petroleum gas, compressed natural gas and fuel cell. The focus will need to be on developing other range of small and medium capacity engines for commercial vehicles, marine applications and power generation.

**(ii) Transmission Systems**

13.26 Transmission systems are another critical component in the transport equipment and machinery industries. The ability to design and manufacture transmission systems is important for deepening the development of the automotive sub-sector. There is potential to develop local capabilities in producing parts and components for transmission systems, initially for the machinery and equipment industry.

**(iii) Automotive Electronics Components**

13.27 Automotive electronics components account for about 90 per cent of functional innovations in new vehicles. The development of softwares which control the electronics systems is becoming increasingly important. Main areas of electronics applications are:

- global positioning re-tracking system, navigation system, safety system and telematics;
- by-wire technologies, such as traction, transmission, steering and braking;

- personalised facilities, such as setting seat position and voice control ignition; and
- lighting and security systems.

**(iv) Special Purpose Vehicles**

13.28 Presently, the sub-sector focuses on passenger cars. There are opportunities to design and manufacture special purpose vehicles, including ambulances, fire engines, farm and all terrain vehicles and armoured and military vehicles.

**CHALLENGES**

13.29 Issues faced by the sub-sector include:

- increasing global and regional competition;
- lack of economies of scale;
- overdependence on the domestic market;
- inadequate technology development;
- limited R&D;
- lack of testing capabilities and facilities;
- compliance to international standards;
- shortage of skilled workforce; and
- poor industry linkages.

**(a) Increasing Global and Regional Competition**

13.30 Globally, the industry is dominated by 12 major producers, especially in the manufacture of passenger cars and commercial vehicles. These major producers have acquired and merged with other automotive manufacturers to enable them to reduce costs, through the development of common platforms, sharing of distribution networks to expand the markets and development of new models and technologies. The oligopolistic nature of the global automotive industry poses a major challenge to domestic automotive producers.

13.31 ASEAN, with a population size of 560 million, provides a vast market potential for the automotive industry. Global automotive manufacturers have been positioning themselves in the region, to take advantage of the full implementation of the ASEAN Free Trade Area (AFTA). The presence of these global automotive manufacturers in the region intensifies competition to the domestic automotive producers. Presently, the installed capacity for motor vehicles in ASEAN is

3.4 million units per annum. In 2005, total production in ASEAN was 1.9 million units, resulting in an excess capacity of 44 per cent. This situation will compel domestic automotive manufacturers in the ASEAN countries to export, which will pose greater competition to domestic producers.

- 13.32 Changing global and regional competition, arising from international and multilateral agreements, has necessitated Malaysia to undertake progressive liberalisation in the sub-sector. Under AFTA, Malaysia has fulfilled its commitment to reduce import duties of CBUs from 70-190 per cent to 20 per cent, and CKDs, from 25 per cent to zero per cent, beginning 1 January 2005. The import duty rates on CBUs were reduced further to 5 per cent, with effect from 22 March 2006.

**(b) Lack of Economies of Scale**

- 13.33 In this sub-sector, scale of production is important to gain cost competitiveness. For companies with extensive global networks, economies of scale can be achieved through cross-border investments and sharing of production in several countries. Presently, domestic producers are faced with excess capacity, in view of the limited domestic market. As a consequence, the scale of production of the domestic manufacturers of parts and components, which largely depend on the national car manufacturers, are also affected. The challenge for the manufacturers of parts and components is to integrate into the regional and global supply chains, in both original equipment manufacturer (OEM) and replacement equipment markets.

- 13.34 With respect to the production of military vehicles, domestic demand is limited and exports will be constrained, due to different specifications and requirements. Production of these customised vehicles will be based more on strategic consideration, rather than commercial viability.

**(c) Overdependence on Domestic Market**

- 13.35 The domestic automotive sub-sector is too dependent on the local market and lacks global market orientation. For the long term growth of the sub-sector, it is important for the sub-sector to explore opportunities in the region. In 2005, out of the total production of 563,408 units of passenger cars and commercial vehicles, only 2.8 per cent were exported. While export destinations were diversified, the sub-sector lacks focus on market penetration. Similarly, exports of motorcycles comprised only 2.4 per cent of the production of motorcycles in 2005.

- 13.36 For the manufacturers of parts and components, the full abolition of the mandatory deleted items since 2004 had helped to enhance their competitiveness, except for manufacturers of parts and components which supply to only single motor vehicle manufacturer or assembler. To enhance the competitiveness of

this category of vendors, an adjustment programme is required to upgrade their capabilities. There is a need for the domestic producers to aim to become competitive suppliers of parts and components in the ASEAN region.

**(d) Inadequate Technology Development**

- 13.37 Domestic advancement in technology in the motor vehicles segment is confined to a certain category of engines. Critical and high value parts and components, such as engines, transmission systems and vehicle electronics components, are still being imported. Regular technology upgrading and introduction of new designs are important to increase the sale of motor vehicles. Global motor vehicle manufacturers are able to produce new models with latest technology applications more frequently, compared with domestic producers.
- 13.38 Alternative technology will become the main feature of the future automotive industry. This is mainly due to the declining reserves and increasing price of fossil fuel. In line with this development, the challenge for the automotive manufacturer is to venture into the development of vehicles using alternative fuels, such as fuel cells, solar cells, bio-fuel and compressed natural gas.
- 13.39 For the motorcycles segment, the local assemblers are dependent on technology supplied by their respective foreign principals. In the case of MODENAS, while there is some degree of technology transfer, the company needs to keep abreast with new technology development, and the design and sourcing of parts and components to remain competitive.

**(e) Limited Research and Development**

- 13.40 R&D activities are aimed at enhancing the competitiveness of Malaysian made motor vehicles. Presently, while local manufacturers and assemblers of motor vehicles undertake R&D activities, their total expenditures on R&D are still small, compared with other global automotive producers. Manufacturers of parts and components based in the country, which have the capacity and capability to design, develop and export their products, are Tier-1 suppliers, which are mostly foreign-owned. Local suppliers, which are mostly in Tiers-2 and 3, lack the capacity and capability in R&D, and are dependent on the design technology from the automotive manufacturers. To remain competitive, global producers are increasingly outsourcing their non-critical R&D activities. A similar arrangement will need to be undertaken by domestic manufacturers.

**(f) Lack of Testing Facilities and Capabilities**

- 13.41 Most local suppliers, which require testing facilities, are dependent on the facilities of foreign automotive manufacturers or independent product testing facilities abroad. Although the Automotive Component Centre at SIRIM Berhad has been established, it is able to meet only part of the requirement of the

industry. To reduce the development cost of parts and components and shorten delivery time, there will be a need to make available comprehensive facilities, including for tooling, moulding and testing, in the country.

**(g) Compliance to International Standards**

13.42 New requirements on standards will be imposed by the developed markets for automotive products. The European Union (EU) will impose recyclability requirements for parts and components by the end of 2006, Euro-5 for motor vehicles beginning 2008 (which requires stricter emissions limits on cars powered by either petrol or diesel engines) and greater use of biodegradable parts and materials in the manufacture of motor vehicles. Global automotive manufacturers are already undertaking measures to comply with these requirements. To facilitate efforts in increasing exports, local manufacturers will need to comply with these standards, as well as other emerging global standards.

**(h) Shortage of Skilled Workforce**

13.43 The development and training of critical skills are important to produce the required skilled workforce. The skills include designing and styling, mechatronics, computer-aided design (CAD) and computer-aided manufacturing (CAM) engineering, product design engineering, production engineering and software engineering. These skills will be required in large numbers, as the sub-sector expands in the future. Presently, courses provided by training institutes are inadequate, in scope and numbers, resulting in a mismatch vis-a-vis the requirement of the sub-sector.

**(i) Limited Industry Linkages**

13.44 Cluster development in the sub-sector has registered progress, with the establishment of several automotive centres, such as in Shah Alam, Tanjung Malim, Pekan, Pegoh and Gurun. However, the infrastructure and related facilities, such as testing and logistics, and support services, are inadequate for the full development of a competitive automotive cluster. In respect of automotive components, there is a need to further exploit the opportunity of developing greater linkages with other industries, such as electronics, plastics, metals and rubber.

## **STRATEGIES AND POLICIES**

### **NATIONAL AUTOMOTIVE POLICY**

13.45 The National Automotive Policy is the foundation, upon which strategic thrusts, strategies and policies for the sub-sector have been formulated and charts the direction for the sub-sector in the IMP3. The Policy is designed to facilitate

the required transformation and optimal integration of the sub-sector into regional and global industry networks within the increasingly liberalised and competitive global environment. The development objectives of the Policy are:

- promoting a competitive and viable domestic automotive sub-sector, in particular, the national car manufacturers;
- promoting Malaysia as a regional automotive centre, focusing on niche areas;
- promoting a sustainable level of economic value-added and enhancing domestic capabilities;
- promoting a higher level of exports of vehicles, as well as parts and components, which are competitive, in the global market;
- promoting competitive and broad based Bumiputera participation in the sub-sector; and
- safeguarding the interests of consumers, in terms of value for money, safety and quality of the products and services.

## STRATEGIC THRUSTS

13.46 In line with the objectives of the National Automotive Policy, nine strategic thrusts have been set in the IMP3 for the further development of the sub-sector:

- (1) providing Government support, based on sustainable economic contribution;
- (2) increasing the scale of operations through rationalisation to enhance the competitiveness of the sub-sector;
- (3) promoting strategic linkages with international partners;
- (4) developing Malaysia as a regional hub, focusing on niche areas and complementary activities;
- (5) promoting investments in the growth areas;
- (6) intensifying skills upgrading;
- (7) strengthening the institutional support for the sub-sector;
- (8) encouraging and promoting the participation of the sub-sector in regional and global supply chains; and
- (9) enhancing the competitiveness of manufacturers of parts and components.

## **(1) PROVIDING GOVERNMENT SUPPORT, BASED ON SUSTAINABLE ECONOMIC CONTRIBUTION**

13.47 The Government will continue to nurture and support the development of the sub-sector, aimed at optimising the sustainable economic contribution of the sub-sector. A sustainable level of economic contribution relates to the type and level of value-added activities, which will be competitive for the domestic market and for exports in a fully liberalised environment. The level of support will also be correlated to the level of economic contribution and value-added. In this context, a large scale manufacturing concern, with exports and high industry linkage, will be favoured, relative to a mere assembly operation, with little value-added activities. Similarly, greater emphasis will be given to sales, distribution and after sales activities, compared with mere importation of vehicles.

13.48 The areas of support are in the scale of operations, industry linkages and the development of local, including Bumiputera, capabilities. Support will be in the form of access to the Industrial Adjustment Fund and R&D grants. The provision of these grants and incentives will be based on pre-agreed conditions and timely achievement of key performance indicators.

## **(2) INCREASING THE SCALE OF OPERATIONS THROUGH RATIONALISATION TO ENHANCE COMPETITIVENESS**

13.49 For the sub-sector in general, all firms across the value chain will be encouraged to focus on achieving a scale of operations which will contribute towards their long term competitive viability. The Government will encourage initiatives on rationalisation in the sub-sector, to create a leaner and more sustainable industry structure. In this respect, the Government will promote the rationalisation of the sub-sector through the two national manufacturers in the high-volume car segment. The rationalisation will involve the manufacturers achieving sufficient scale by rationalising their models and platforms portfolio, and industry linkages. The rationalisation at the level of the vehicle manufacturers will consequently enable rationalisation at the level of the producers of parts and components, which will lead to greater scale, skills and improved quality.

## **(3) PROMOTING STRATEGIC LINKAGES WITH INTERNATIONAL PARTNERS**

13.50 The Government will continue to encourage firms in the sub-sector to collaborate with major foreign companies to establish strategic partnerships. Apart from sharing scale of operations and resources, such strategic alliances will create opportunities and provide access for domestic firms to enter the global automotive supply chains. It will assist manufacturers to adopt best management practices, processes and procedures to deliver products with higher quality standards, which are necessary in gaining access to international markets.

#### **(4) DEVELOPING MALAYSIA AS A REGIONAL HUB, FOCUSING ON NICHE AREAS AND COMPLEMENTARY ACTIVITIES**

13.51 The Government aims to position Malaysia as a regional centre for manufacturing and assembly, by encouraging existing firms to strengthen their commitment in Malaysia. The Government will encourage existing vehicle manufacturers to rationalise the models assembled in Malaysia, scale up focused production and deepen industry linkages, to export competitively. The expansion of these firms and the deepening of industry linkages will also lead to a greater scale of operations and improved quality of the parts and components, thereby improving the overall viability of the sub-sector.

#### **(5) PROMOTING INVESTMENTS IN THE GROWTH AREAS**

13.52 There is potential to promote investments in the new growth areas, including:

- fuel efficient engines and alternative fuel engines;
- transmission systems;
- automotive electronics components; and
- special purpose vehicles.

Incentives will be considered for new investments in the growth areas and companies locating at designated production centres.

#### **(6) INTENSIFYING SKILLS UPGRADING**

13.53 Training and skills upgrading will contribute in enhancing the productivity and product quality of the sub-sector. Measures in training and skills upgrading include:

- formulating a dedicated training programme in automotive technologies, such as 3-dimensional CAD and CAE systems for design simulation and analysis, programming of robots, factory automation and other embedded controllers, and mechanical and electronics systems integration;
- increasing the number of courses in automotive engineering and design at diploma and degree levels. Students will be required to undergo practical training in the industry, as part of the course curricula; and
- collaborating with the bilateral and regional FTA partners in providing training for skills upgrading, improvement of local training curricula and the establishment of advanced training centres for the sub-sector in Malaysia.

## **(7) STRENGTHENING THE INSTITUTIONAL SUPPORT**

13.54 Existing institutions will be strengthened to provide the necessary support in further developing the sub-sector. The measures are:

### ***(i) Establishment of an Automotive Institute***

13.55 In most developed countries, an automotive institute provides the necessary leadership in developing their automotive sub-sector. Similarly, Malaysia will establish such an institute to undertake the lead role in the further development of the sub-sector. The institute will undertake technical and economic research necessary for the formulation of policies for the sub-sector. In addition, the institute will be the reference point for information and database on the sub-sector, including new technological developments.

### ***(ii) Upgrading of the Facilities for Testing***

13.56 The testing facilities for parts and components at SIRIM Berhad will be upgraded into a national testing centre for automotive parts and components. The centre will provide comprehensive facilities, such as impact, crash and road simulation; light distribution and other technical tests.

### ***(iii) Strengthening the Role of Trade and Industry Associations***

13.57 The relevant trade and industry associations will be encouraged to strengthen their organisational structure, including a dedicated secretariat and facilities, to undertake their functions more effectively, among others, in providing regular and timely feedback to the Government.

## **(8) PROMOTING THE PARTICIPATION OF THE SUB-SECTOR IN THE REGIONAL AND GLOBAL SUPPLY CHAINS**

13.58 As the size of the domestic market is limited, automotive manufacturers, especially the high volume national manufacturers and assemblers, and manufacturers of parts and components will be encouraged to increase their exports. Measures to increase exports include:

- establishing offshore production facilities in the importing countries for the assembly of vehicles;
- encouraging Malaysian vehicle manufacturers to include their vendors in their operations abroad;
- encouraging brand promotion by the domestic manufacturers to strengthen the global image, increase market acceptance and nurture brand loyalty in the export markets;

- establishing Malaysia as a base for operational headquarters (OHQs) of major automotive manufacturers in the distribution of motor vehicles and parts and components for the region;
- optimising the opportunities under the ASEAN integration initiatives through the adoption of various measures, such as undertaking mutual recognition arrangements (MRAs) and simplifying customs regulations to facilitate regional trade in automotive products; and
- promoting Malaysia as a competitive outsourcing centre for automotive parts and components.

13.59 The sub-sector has the potential to participate in the regional and global supply chains through:

- strengthening the existing production centres with greater linkages between manufacturers and assemblers, vendors, research institutes and the academia;
- enhancing the distribution of automotive vehicles and parts and components, domestically and internationally, through strengthening the support services, such as logistics, warehousing and distribution networks;
- enhancing inter-sectoral linkages with other manufacturing industries, such as steel, plastics, rubber, chemicals, glass and manufacturing related services;
- enhancing Malaysia's image as a competitive and reliable producer of parts and components by capitalising on the presence of major Tier-1 vendors operating in the country; and
- encouraging Malaysian production centres to collaborate and complement their activities with those of other automotive clusters at the bilateral and regional levels.

#### **(9) ENHANCING THE COMPETITIVENESS OF THE MANUFACTURERS OF PARTS AND COMPONENTS**

13.60 The presence of competitive manufacturers of parts and components will provide support to the sub-sector. Measures in enhancing the competitiveness of the manufacturers of parts and components include:

- promoting the development and manufacture of common parts and components to avoid duplication and achieve economies of scale;
- rationalising the operations of the manufacturers of parts and components through mergers and acquisitions (M&As);

- upgrading the capital equipment to produce parts and components of the required quality;
- promoting and facilitating the establishment of more joint ventures in the manufacture of parts and components; and
- encouraging the manufacturers of parts and components to comply with international requirements, including the adoption of international automotive standards for biodegradable and recyclable parts and components.

## SECTION III MARINE TRANSPORT SUB-SECTOR

### OVERVIEW

13.61 The marine transport sub-sector has contributed to the development of engineering design capabilities, technological upgrading and establishment of linkages to other industries and services. The linkages with other industries include steel and glass. The linkages with other services include logistics, financing and insurance, storage, bulk-breaking of goods and port services.

13.62 During the IMP2 period, focus of the shipbuilding and ship repairing segments were on:

- construction of small ships and boats, and vessels of up to 30,000 dead weight tonnes (DWT), including leisure craft and yachts;
- efforts to promote ship repairing activities, such as maintenance, overhauling and refurbishing of vessels; and
- fabrication and assembly works of offshore structures, in line with the increase in activities in oil and gas exploration.

13.63 During the IMP3 period, the development focus of the sub-sector includes:

- enhancing domestic capabilities in the building of smaller vessels of up to 30,000 DWT;
- encouraging greater involvement in ship repairing and maintenance activities;
- increasing activities in the fabrication of offshore structures; and
- intensifying skills upgrading.

### STRUCTURE OF THE SUB-SECTOR

13.64 The marine transport sub-sector comprises two segments:

- shipbuilding segment, which includes the building of cargo vessels, ferries, tug boats, leisure craft and yachts and fabrication of offshore

structures and floating structures, such as fire-floats, dredgers and floating cranes. The segment has the capability in the production of vessels of up to 30,000 DWT; and

- ship repairing segment, which includes the maintenance, repair and overhaul of ships, boats and leisure craft. The segment has the facilities to repair vessels of up to 400,000 DWT.

There are 56 companies with manufacturing licences undertaking the building and repairing of commercial and naval vessels. In addition, there are more than 30 smaller shipyards, producing mainly wooden hulls for fishermen and traders, small ferries, tugboats, barges, standby vessels and patrol boats, leisure craft, yachts, cruisers and speedboats.

## PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Exports

13.65 During the IMP2 period, the total exports of marine transport products grew from RM882 million in 1996 to RM2.2 billion in 2005 (Table 13.10). Exports of production platforms amounted to RM1.9 billion in 2005, followed by yachts and other vessels (RM140.1 million), and tugs and pusher craft (RM125.6 million). In 2005, major export destinations were Nigeria, with exports valued at RM527 million, Singapore (RM510 million) and Myanmar (RM236 million).

TABLE 13.10

### EXPORTS OF MARINE TRANSPORT PRODUCTS

Products	1996		2000		2005		1996-2005
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Average Annual Growth (%)
<b>Total</b>	<b>882.0</b>	<b>100.0</b>	<b>162.9</b>	<b>100.0</b>	<b>2,214.6</b>	<b>100.0</b>	<b>10.1</b>
<b>Major Exports</b>							
Production platforms	847.5	96.1	44.7	27.4	1,913.6	86.4	9.8
Yachts and other vessels for pleasure or sports	21.3	2.4	101.3	62.2	140.1	6.3	18.7
Tugs and pusher craft	3.1	0.4	9.2	5.7	125.6	5.7	33.0

Source: Department of Statistics

**(b) Imports**

13.66 Imports of marine transport products increased by an average annual rate of 3.6 per cent, from RM2.3 billion in 1996 to RM3.2 billion in 2005 (Table 13.11). Major import items were cruise ships, ferry boats, cargo ships and barges, together amounting to RM2.2 billion in 2005. Other import items were production platforms, at RM857.2 million, and tugs and pusher craft (RM64.4 million). Major sources of imports were Japan, at RM1.6 billion, Republic of Korea (RM581 million) and the Netherlands (RM328 million).

TABLE 13.11

**IMPORTS OF MARINE TRANSPORT PRODUCTS**

Products	1996		2000		2005		1996-2005
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Average Annual Growth (%)
<b>Total</b>	<b>2,345.7</b>	<b>100.0</b>	<b>783.8</b>	<b>100.0</b>	<b>3,237.2</b>	<b>100.0</b>	<b>3.6</b>
<b>Major Imports:</b>							
Cruise ships, ferry boats, cargo ships and barges	1,836.4	78.2	750.0	95.6	2,207.2	68.2	3.9
Production platforms	439.5	18.7	6.5	0.8	857.2	26.5	2.4
Tugs and pusher craft	12.0	0.5	2.5	0.3	64.4	2.0	33.3
Yachts and other vessels for pleasure or sports	39.8	1.6	7.3	0.9	16.2	0.5	-6.8

Source: Department of Statistics

**(c) Investments**

13.67 During the IMP2 period, the sub-sector recorded total investments of RM750.2 million (Table 13.12). Investments were in shipbuilding, ship repairing and the manufacture of metal fabricated products, mainly for the oil and gas industry. Most of the investments in the sub-sector were from domestic sources, including public corporations and State Governments. In 2005, investments in the sub-sector totalled RM97.6 million. All the projects were located in Sabah and Sarawak. One major project, valued at RM70.1 million, was in shipbuilding and ship repairing activities and the manufacture of metal fabricated products, mainly for the oil and gas industry.

TABLE 13.12

## INVESTMENTS IN THE MARINE TRANSPORT SUB-SECTOR

	1996-2000	2001-2005	1996-2005
<b>Total investments (RM million)</b>	<b>482.2</b>	<b>268.0</b>	<b>750.2</b>
Domestic (RM million)	390.5	256.8	647.3
Foreign (RM million)	91.7	11.2	102.9
<b>Projects (number)</b>	<b>23</b>	<b>24</b>	<b>47</b>

Source: Malaysian Industrial Development Authority

**(d) Financing**

13.68 As projects in the sub-sector are capital and high technology intensive, with a long gestation period, financial assistance is mainly provided and coordinated by the Government through *Bank Negara Malaysia* and *Bank Pembangunan Malaysia Berhad*. Several financing programmes and schemes, such as long term loans at concessionary rates, guarantees and revolving credits, are provided to the sub-sector.

13.69 The Government, through *Bank Pembangunan Malaysia Berhad*, provides two funds to promote the sub-sector:

**(i) Malaysian Shipping Finance Fund**

Through the fund, established in 1993, the Government aims to:

- encourage new entrepreneurs in international shipping;
- increase the number of Malaysian registered vessels plying international routes, thereby raising the Malaysian seaborne carrying capacity; and
- address the invisible freight deficits in the national Balance of Payments Account.

The fund, with an allocation of RM1.3 billion, comprises two facilities:

- Ship Financing Facility (RM800 million), funded wholly by *Bank Negara Malaysia* in the form of soft loans; and
- Shipping Venture Fund (RM500 million), managed through Global Maritime Ventures Berhad, a wholly-owned subsidiary of *Bank Negara Malaysia*.

(ii) ***New Shipping Financing Fund***

The objective of the fund, with an allocation of RM1 billion, is to provide further financial assistance for the acquisition of new and second-hand vessels registered in Malaysia, as well as enable local shipyards to upgrade their existing infrastructure and expand their capacity. Vessels which are eligible for financing under the fund include dry bulk carriers, liquid bulk carriers and specialised vessels, such as cement clinker carriers, car carriers, container vessels and offshore support vessels.

(e) **Employment**

- 13.70 In 2005, the sub-sector employed 25,250 workers, mainly in smaller shipyards, which were more labour-intensive. The sub-sector had also contributed to the development of specialised skills and technological capabilities, in areas of engineering design, metallurgy, corrosion control, machining, welding and fabrication.

**PROSPECTS**

- 13.71 The sub-sector will continue to provide linkages to other related services, such as insurance, banking and finance, logistics and port services. In addition, a more developed marine transport sub-sector, especially in ship repairing and maintenance, is important in supporting the development of the shipbuilding industry, including defence related marine transport products.
- 13.72 The areas of focus of the development of the sub-sector are:
- production of small vessels for recreation and sports, including leisure craft;
  - increase in ship repairing and maintenance activities;
  - production of vessels of 30,000 DWT and below for coastal shipping;
  - fabrication of off-shore structures; and
  - production of tugs and pusher craft for exports.

There is potential for the manufacture of marine equipment and hardware components, for both the domestic and export markets. Demand is expected to increase in the area of engineering and precision equipment, such as propellers and shafts, magnetic compasses, maritime cables and other related products.

- 13.73 Exports of the sub-sector are expected to grow, due to the development of related facilities. The completion of more marina bays, intensive tourism promotions and changing lifestyles of the population in the region will create a greater demand for leisure craft. Similarly, increase in economic activities, particularly coastal shipping and port development, will create a higher demand for tugs and pusher craft.

## CHALLENGES

### (a) Increasing Global and Regional Competition

- 13.74 The local shipbuilding segment continues to focus on vessels below 30,000 DWT. Even within this segment, it faces stiff competition from the People's Republic of China and Republic of Korea. These countries have the capabilities to build ships below, as well as above, 30,000 DWT. Global competition is also posed by other major ship producing countries, such as Japan and Greece, which possess highly skilled workforce and vast capital to manufacture ships of varying capacities.

### (b) Rising Costs of Raw Materials

- 13.75 High costs of components and materials affect the growth of the sub-sector. The high costs are due to the non-availability of certain raw materials locally. Shipbuilding requires substantial quantities of steel plate at competitive prices and acceptable quality. Most of these steel plates, of different specifications and grades, are imported. Importers of steel plates are faced with fluctuations of prices and supply for different specifications and grades.

### (c) Excess Capacity

- 13.76 Presently, there is an excess capacity in the domestic shipbuilding segment. In most shipyards, the capacity utilisation is below 50 per cent. This has affected the cost competitiveness of the segment. Presently, the largest shipyard has installed a ship lift facility of 70,000 DWT, which enables it to build vessels of up to 30,000 DWT. The shipyard also has the facility to repair vessels of up to 400,000 DWT.

### (d) Shortage of Qualified Personnel

- 13.77 The sub-sector faces a shortage of expertise and skilled workforce in the areas of maritime design and architecture, engineering skills, including tool and die making, machining and casting, and other related services. There is a shortage of skilled personnel, such as instructors and trainers in ship handling simulation, hydrographical surveyors, cartographers and oceanographers. The shortage is mainly due to a lack of interest among students to pursue study and training in maritime-related field. Presently, there are only two local institutions which offer education and training in the maritime field, namely *Universiti Teknologi Malaysia* and *Akademi Laut Malaysia*.

**(e) Inadequate Technology**

13.78 The sub-sector has to adapt to changes in technologies and boat construction engineering to remain competitive. The sub-sector has not ventured significantly in the construction of vessels using composite materials. In respect of the construction of special purpose vessels, for example, highly sophisticated navy vessels, collaboration is required with foreign technology suppliers. It also involves a high level of imported quality materials, components and specialised equipment, as well as defence related technical training. Most of the domestic shipyards are small and lack the capital to invest in R&D in the related field and technology upgrading.

**(f) Lack of Infrastructure and Support Facilities**

13.79 The lack of comprehensive infrastructure and support facilities has imposed a constraint on the sub-sector in achieving economies of scale. The main support activities required are engineering support, as well as port related services at the shipyards.

**STRATEGIES AND POLICIES****STRATEGIC THRUSTS**

13.80 Five strategic thrusts have been set for the long term viability of the marine transport sub-sector:

- (1) enhancing domestic capabilities in the building of smaller vessels, ship repairing and maintenance activities;
- (2) intensifying the upgrading of skills and engineering capabilities;
- (3) strengthening infrastructure and support facilities;
- (4) strengthening the institutional support; and
- (5) expanding activities in the fabrication of offshore structures.

**(1) ENHANCING DOMESTIC CAPABILITIES IN THE BUILDING OF SMALLER VESSELS, SHIP REPAIRING AND MAINTENANCE ACTIVITIES**

13.81 The shipbuilding segment will focus on the building of smaller vessels of 30,000 DWT or below. This will build upon the capabilities, expertise and facilities which have already been developed. For the ship repairing segment, existing facilities for ship repairing and maintenance activities will be encouraged to be upgraded through the installation of equipment with advanced technologies and the enhancement of the competency of existing skilled personnel.

13.82 For defence related marine transport products and services, the Government implements the offset policy, which involves the training and transfer of technology to Malaysian personnel, on the operation and maintenance of the marine transport products, from foreign manufacturers. The policy enables companies to acquire defence related technologies on shipbuilding and ship repairing from abroad, which otherwise will be both expensive and difficult to source.

**(2) INTENSIFYING THE UPGRADING OF SKILLS AND ENGINEERING CAPABILITIES**

13.83 Measures to strengthen the upgrading of skills and engineering capabilities include:

- providing more technical programmes to upgrade the technical skills of the local shipyards;
- encouraging the upgrading of the skills in ship designing and engineering, metallurgy and corrosion control;
- promoting the attachment of experts in existing training institutes; and
- collaborating with major shipbuilding countries in the upgrading of skills in marine transport.

**(3) STRENGTHENING THE INFRASTRUCTURE AND SUPPORT FACILITIES**

13.84 Support services which will be strengthened include related support activities, such as the supply of special grades and specifications of steel plates, manufacture of tools and dies, and machining and casting, as well as other services. Measures which will be undertaken include:

- developing the skills and capabilities in marine designing and architecture, R&D and marketing;
- encouraging the upgrading of the machinery and equipment to produce parts and components of the required standards and quality; and
- identifying common parts and components which can be developed or multi-sourced to reduce the costs of production.

**(4) STRENGTHENING THE INSTITUTIONAL SUPPORT**

13.85 Initiatives to enhance domestic designing capabilities will be pursued through the offset programmes and cooperation projects under the various FTAs. Sufficient funds will be made available to finance projects undertaken by domestic shipyards. Other assistance will be considered to minimise the financial burden faced by the sub-sector.

## (5) EXPANDING THE ACTIVITIES IN THE FABRICATION OF OFFSHORE STRUCTURES

13.86 Measures to be implemented include:

- promoting the development of skills in the design and fabrication of offshore production platforms for use in coastal and international waters; and
- encouraging domestic fabricators of offshore structures to participate in international projects.

## SECTION IV AEROSPACE SUB-SECTOR

### OVERVIEW

13.87 Various development initiatives have been undertaken in the aerospace sub-sector, which include the acquisition of advanced technologies and upgrading of engineering capabilities in areas such as electronics, materials manufacturing, systems integration and space telecommunications. The sub-sector is also involved in the development and utilisation of composite materials for the aviation segment.

13.88 The sub-sector has the potential to enhance its technological capabilities in the manufacture of aerospace related products and the provision of aerospace related maintenance, repair and overhaul services. Collaboration will be encouraged with major aerospace companies, in terms of certification, licensing and joint ventures. Malaysia will continue to be developed as an outsourcing centre for aerospace products and services.

### STRUCTURE OF THE SUB-SECTOR

13.89 The sub-sector comprises two segments:

- aviation segment, which has developed a wide range of capabilities in both civil and military aviation. The capabilities range from the modification and overhaul of engines and components to the maintenance of light and heavy aircraft. The segment is also involved in the manufacture of selected aircraft parts and components; and
- space segment, which has contributed to the development of the telecommunications and entertainment industries, through the launching of Malaysian MEASAT satellite. A second satellite, RAZAK-SAT, will be launched. A space astronaut programme is also being undertaken.

13.90 Presently, there are two companies involved in the assembly of light aircraft, seven, in the manufacture of aircraft parts and components and 28, in maintenance, repair, and overhaul activities, for both civilian and military aircraft. Products manufactured locally include aircraft seats, metal parts, composite structures and aircraft fixed leading edge lower panels, as well as inboard outer fixed leading edge panels. Domestic companies have acquired the skills and capabilities to undertake maintenance works for aircraft and engines; components and avionics integration; electronics; and maintenance, repair, and overhaul services.

## PERFORMANCE DURING THE SECOND INDUSTRIAL MASTER PLAN

### (a) Exports

13.91 Exports of the sub-sector declined from RM2.5 billion in 1996 to RM1.4 billion in 2005 (Table 13.13). Major exports of aerospace products were parts and components, amounting to RM1.4 billion, followed by small aircraft and spacecraft launch vehicles (RM24.6 million) and aircraft launching gears, desk arrestors or similar gears (RM7.9 million). Main export destinations in 2005 were the USA, which absorbed exports valued at RM348 million, Singapore (RM310 million) and the UK (RM305 million).

TABLE 13.13

### EXPORTS OF AEROSPACE PRODUCTS

Products	1996		2000		2005		1996-2005 Average Annual Growth (%)
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	
<b>Total</b>	<b>2,462.1</b>	<b>100.0</b>	<b>1,150.9</b>	<b>100.0</b>	<b>1,439.6</b>	<b>100.0</b>	<b>-7.8</b>
<b>Major Exports</b>							
Parts and components	499.1	20.3	734.4	63.8	1,399.3	97.2	51.3
Helicopters, aeroplanes, spacecraft (including satellites) and sub-orbital and spacecraft launch vehicles	1,960.3	79.6	411.7	35.8	24.6	1.7	-18.8
Aircraft launching gears, desk arrestors or similar gears, ground flying trainers and parts of the firegoing articles	1.9	0.1	3.0	0.3	7.9	0.5	-7.8

Source: Department of Statistics

**(b) Imports**

13.92 Imports by the sub-sector increased from RM3.5 billion in 1996 to RM4.1 billion in 2005 (Table 13.14). Main import items were parts and components, amounting to RM2.9 billion, followed by aeroplanes, helicopters, satellite and spacecraft launch vehicles (RM1.1 billion). Main sources of imports in 2005 were the USA, at RM1.7 billion, Germany (RM1.4 billion) and Singapore (RM311 million).

TABLE 13.14

**IMPORTS OF AEROSPACE PRODUCTS**

Products	1996		2000		2005		1996-2005
	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Value (RM mil)	Share (%)	Average Annual Growth (%)
<b>Total</b>	<b>3,518.2</b>	<b>100.0</b>	<b>1,848.9</b>	<b>100.0</b>	<b>4,080.2</b>	<b>100.0</b>	<b>-4.3</b>
<b>Major Imports</b>							
Parts and components	415.3	11.8	852.8	46.1	2,949.8	72.3	28.2
Helicopters, aeroplanes, spacecraft (including satellites) and sub-orbital and spacecraft launch vehicles	3,097.2	88.0	939.5	50.8	1,112.5	27.3	-15.6
Aircraft launching gears, desk arrestors or similar gears, ground flying trainers and parts of the firegoing articles	4.0	0.1	54.1	2.9	15.5	0.4	9.2

Source: Department of Statistics

**(c) Investments**

13.93 During the IMP2 period, 20 projects were approved in the sub-sector, with investments amounting to RM5.3 billion. Foreign investments contributed RM4.4 billion, or 83.1 per cent of the total investments in the sub-sector, and domestic investments, RM890.8 million (Table 13.15). In 2005, major projects approved were:

- remanufacture of aircraft landing gears and parts and components; and
- remanufacture of aircraft high pressure compressor airfoils.

TABLE 13.15

**APPROVED INVESTMENTS IN THE AEROSPACE SUB-SECTOR**

	1996-2000	2001-2005	1996-2005
<b>Total investments (RM million)</b>	<b>1,210.6</b>	<b>4,067.1</b>	<b>5,277.7</b>
Foreign (RM million)	462.2	3,924.7	4,386.9
Domestic (RM million)	748.4	142.4	890.8
<b>Projects (number)</b>	<b>12</b>	<b>8</b>	<b>20</b>

Source: Malaysian Industrial Development Authority

**(d) Employment**

13.94 In 2005, there were 5,300 workers employed in the sub-sector, an increase of 6 per cent from 5,000 workers in 1996. Additional employment opportunities were created, as a result of the increase in the number of projects commencing their operations in the second phase of the IMP2 period, 2001-2005.

**PROSPECTS****(a) Sub-Sector Outlook**

13.95 The potential in the regional and global markets for maintenance, repair and overhaul services is substantial. The domestic aerospace sub-sector has developed the capabilities in the maintenance, repair and overhaul activities and the manufacture of aircraft parts and components. With the expected growth in aerospace activities in ASEAN, there are opportunities to export aerospace related products and services to the region and initiate joint ventures in aerospace projects. Domestic companies will need to take advantage of the opportunities to develop into becoming major service providers for both civilian and military aircraft. The sub-sector has acquired complex core technologies, which have potential applications in other industries. There is a need to undertake joint research activities in product development of the sub-sector.

13.96 Employment opportunities for skilled workers will continue to be created in high value-added activities. The introduction of aerospace courses in local institutions of higher learning will generate interest among students and contribute towards meeting the skills requirement.

**(b) Growth Areas**

13.97 Malaysia has the potential to manufacture light aircraft and undertake maintenance, repair and overhaul services for international clients. With the

expanding aircraft fleet in the Asia Pacific region and the availability of domestic facilities for production and services, the sub-sector is expected to gain an increasing share of the regional aviation market.

- 13.98 Maintenance, repair and overhaul services can be divided into five main activities, which cover engine overhaul, airframe heavy maintenance, components maintenance, line maintenance and airframe modifications. These activities have expanded to include the modification of engines, components overhaul, testing of instruments and components, calibration facilities, and line and heavy maintenance for both civil and military aircraft. Maintenance, repair and overhaul services for advanced aircraft require higher levels of initial investments in facilities and equipment. During the next decade, maintenance, repair and overhaul activities will increase in sophistication, requiring more electronics, software and a higher level of skills in systems integration in the segment.
- 13.99 Other activities, such as the assembly of light aircraft; manufacture of parts, components and accessories; modification and conversion of aircraft; and refurbishment and remanufacture of aircraft equipment, parts, components and accessories, are expected to expand, with the development of the sub-sector. New activities, such as the development of small satellites and aerospace technology parks, and expansion of existing activities, for example, maintenance, repair and overhaul services, will become important sources of revenue generation. They will enable imports to be reduced, resulting in a lowering of expenditures on aerospace and related services by both the private and public sectors.
- 13.100 Within the sub-sector, the aviation segment provides the impetus for the development and utilisation of composite materials. The segment has the potential to be a new source of growth. In this respect, local companies will need to acquire international standards and certifications to be able to manufacture parts and components for commercial and military aircraft.

**(c) Markets**

- 13.101 In the long-term, the sub-sector is expected to grow at the rate of 4-5 per cent per annum. The estimated annual value of the global aerospace market is between US\$34 billion and US\$40 billion. Efforts will need to be intensified to increase the export of composite materials and advanced components, covering both OEM and replacement equipment markets.

**CHALLENGES**

**(a) Increasing Regional and Global Competition**

- 13.102 The sub-sector faces increasing competition from major manufacturers and service providers in the world. Quality, cost effectiveness and efficient delivery

in all areas of aerospace activities are important for the continued viability of the sub-sector. Maintenance, repair and overhaul activities are facing increasing competition from countries in the region.

**(b) Shortage of Skills and Professional Workforce**

13.103 The availability of sufficient skilled and professional personnel is important to enable the activities and operations in the sub-sector to be undertaken efficiently, as well as effective transfer of technologies. In view of rapid technological developments in the sub-sector, skills required are in avionics; mechanical, electrical and electronics; computer aeronautic and aeronautic engineering. A number of local institutions of higher learning and training institutes provide relevant degree courses, such as aeronautical engineering and air traffic control. However, there are still a number of key areas which are not covered by the curricula of these educational institutions, such as advanced control systems and multi-bodies dynamics.

**(c) Inadequate Technology Development**

13.104 Progress in technology development was limited. The sub-sector relied heavily on foreign technologies through strategic collaboration. Presently, there are only a few companies involved in the development of technologies, due to the high risk and costs of investments, limited market and competitive nature of the sub-sector. Nevertheless, the development of composite materials used in the production of parts and components by domestic producers meets the requirement of the sub-sector, in line with the future trend and demand.

**(d) Limited Support Activities**

13.105 The sub-sector requires well established support activities, such as parts and components, designing capabilities, and high precision tooling and equipment, for the long term viability of the sub-sector. Presently, the sub-sector, while trying to maintain a high level of quality and standards and be cost competitive, is constrained by a lack of economies of scale, which leads to the sub-sector being unable to reduce the costs of production.

**(e) Supply of Raw Materials**

13.106 The sufficient supply of strategic raw materials for the sub-sector, for example, titanium, will influence the cost, quality and timely delivery of finished products. The materials required for the sub-sector can be exacting and costly, and hence, involve high investment costs. However, cost competitiveness can be achieved by exploring alternative sources of the raw materials and parts and components, which can be obtained at more acceptable prices, while maintaining the quality.

**(f) Market Access**

13.107 The market for aerospace products and services relies heavily on established aircraft manufacturers in the developed countries. Strategies which can be adopted by manufacturers from developing countries to gain access into the regional and global aerospace markets include establishing joint ventures and strategic partnerships, and undertaking initiatives on technology collaborations.

## **STRATEGIES AND POLICIES**

### **STRATEGIC THRUSTS**

13.108 The aerospace sub-sector has been identified as one of the new sources of growth in the Ninth Malaysia Plan (RMK-9), 2006-2010. The Government will continue to provide support to the sub-sector. Measures to further develop and promote the sub-sector under the IMP3 period include:

- (1) developing and promoting potential growth areas in the sub-sector;
- (2) strengthening domestic capabilities;
- (3) promoting support services; and
- (4) developing Malaysia as an outsourcing centre for aerospace products and support activities.

#### **(1) DEVELOPING AND PROMOTING POTENTIAL GROWTH AREAS**

13.109 Measures will be undertaken to develop and promote potential growth areas which have competitive strength. The areas of focus include:

- nurturing domestic manufacturers of parts and components to support the production of small aircraft;
- continuing to focus on the manufacture of light aircraft, such as recreational and military trainer aircraft, while promoting the manufacture of small commercial and military aircraft;
- strengthening the maintenance, repair and overhaul activities through equipping the service providers with advanced technologies and upgrading the skills to undertake the activities;
- capitalising on the development of the space segment, such as the astronaut programme and building of satellites, which is expected to provide spin-off effects on scientific research and the development of the telecommunications industry; and
- promoting domestic and foreign investments in the potential growth areas.

## (2) STRENGTHENING DOMESTIC CAPABILITIES

13.110 Measures to enhance the domestic capabilities of the sub-sector include:

- encouraging M&As among the service providers in maintenance, repair and overhaul activities to provide a wider range of services;
- promoting the development of softwares by utilising digital technology in aerospace;
- providing more technical training programmes and specific advanced courses relevant to the sub-sector to upgrade the skills and knowledge of the workforce; and
- strengthening collaborations with foreign manufacturers and service providers. As an example, offset programmes will be leveraged upon to enable effective transfer of technologies. In addition, strategic collaborations with foreign aerospace companies will be promoted to acquire advanced technologies.

## (3) PROMOTING SUPPORT SERVICES

13.111 Measures to promote the development of support services include:

- providing ground and support services at the airports to light aircraft users, in both business and leisure activities;
- encouraging local companies to upgrade their capabilities and venture into the production of support equipment and toolings; and
- promoting greater collaborations with major companies in support services, for example, in the area of certification, through licensing and joint ventures.

## (4) DEVELOPING MALAYSIA AS AN OUTSOURCING CENTRE

13.112 Measures to develop Malaysia as an outsourcing centre for aerospace products and support services include:

- promoting and facilitating the establishment of more joint venture companies in Malaysia, especially in parts and components; and
- encouraging more passenger and cargo carriers to have their regional base in Malaysia, which will provide more opportunities to domestic service providers to undertake maintenance, repair and overhaul activities on their aircraft.

## SECTION V DEFENCE RELATED ACTIVITIES

### STRATEGIES AND POLICIES

#### DEFENCE INDUSTRY BLUEPRINT

13.113 The Defence Industry Blueprint will guide the development of the Malaysian defence industry. The primary focus of the Blueprint is to achieve a certain degree of self reliance and ability to provide strategic support in sustaining the defence capabilities of the nation.

13.114 Major thrusts and action plans in the Blueprint are:

- **Human Resource and Competency Development**

A comprehensive and cohesive human resource development plan will be formulated to develop critical competencies, to enable the industry to undertake its role in the nation's defence.

- **Technology Development**

The industry will be encouraged to continue to upgrade technologies, either through R&D or technology acquisitions or transfers. To enable the Malaysian defence industry to have continuous access to advanced technologies for use by the Malaysian Armed Forces, a comprehensive programme will be formulated and undertaken to acquire technological capabilities, either through indigenous development or technology transfers from foreign partners, including international collaborations.

- **Industry Development**

Focus will be given on developing the competency, technology and competitiveness of the defence industry. The requirement of the Malaysian Armed Forces on transportation equipment products will be capitalised in the development of the transport equipment industry.

- **Domestic Defence Requirement**

The Policy on National Defence Procurement will be applied to provide greater opportunities to qualified domestic defence contractors in obtaining projects and being involved in determining major defence requirements. This measure will make it obligatory for OEMs to transfer related technologies and capabilities to local companies. The domestic defence procurement process will be leveraged upon as a tool in acquiring strategic technologies, as well as in the development of the Malaysian defence industry.

- **International Marketing**

Greater efforts will be undertaken to take advantage of the global defence spending. Such efforts will create opportunities for companies involved in defence related activities to develop their technological and business capabilities to enable them to compete globally. These capabilities include internationally recognised standards and qualifications.

## SECTION VI TARGETS FOR THE TRANSPORT EQUIPMENT INDUSTRY

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13.115 Targets for investments and exports have been set for the transport equipment industry, covering the three sub-sectors, namely, automotive, marine transport and aerospace, during the IMP3 period, 2006-2020:

- investments totalling RM42.3 billion for the entire period, or RM2.8 billion per annum; and
- exports reaching RM22.7 billion by the end of 2020 (Table 13.16).

TABLE 13.16

### PROJECTIONS FOR THE TRANSPORT EQUIPMENT INDUSTRY

	2006-2010	2011-2015	2016-2020	2006-2020	2006-2020
	<i>(RM billion)</i>				<i>Average Annual Growth (%)</i>
Investments	10.3	14.1	18.0	42.3	7.0
Investments per year	2.1	2.8	3.6	2.8	n.a. <sup>1</sup>
Exports (end period)	12.7	17.2	22.7	22.7	6.8

Note: <sup>1</sup> Not applicable

Source: Ministry of International Trade and Industry