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**Malaysian Forest Products Sector and Trade
Profile**

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Cherian Thomas and Thomas R. Waggener



CENTER FOR INTERNATIONAL TRADE IN FOREST PRODUCTS
UNIVERSITY OF WASHINGTON
COLLEGE OF FOREST RESOURCES AR-10
SEATTLE, WASHINGTON 98195

MALAYSIAN FOREST PRODUCTS SECTOR AND TRADE PROFILE

By:

**Cherian Thomas
Graduate Research Assistant
CINTRAFOR**

and

**Thomas R. Waggener
Director, CINTRAFOR**

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College of Forest Resources
University of Washington, AR-10
Seattle, Washington**

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PREFACE

This report is one of a series of "Country-Market Profile Reports" undertaken by CINTRAFOR in an effort to compile and make available current information about economic conditions, trade in forest products, and the forestry situation in important producer and consumer nations. This information is drawn from many published sources and statistical sources as identified in the bibliography. In addition, the authors have attempted a synthesis of important trends and developments which will likely influence future forest products production, consumption, trade and development. These interpretations represent the professional views of the authors only, and not the University of Washington or the U.S. Government.

Cherian Thomas
Thomas R. Waggener

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BASIC COUNTRY DATA — QUICK REFERENCE

LAND AREA: 330,434 square kilometres

POPULATION: 15.8 million (1985)

MAIN TOWNS: Population

Kuala Lumpur	950,000
Ipoh	300,000
Penang	250,000
Johore Bahru	250,000

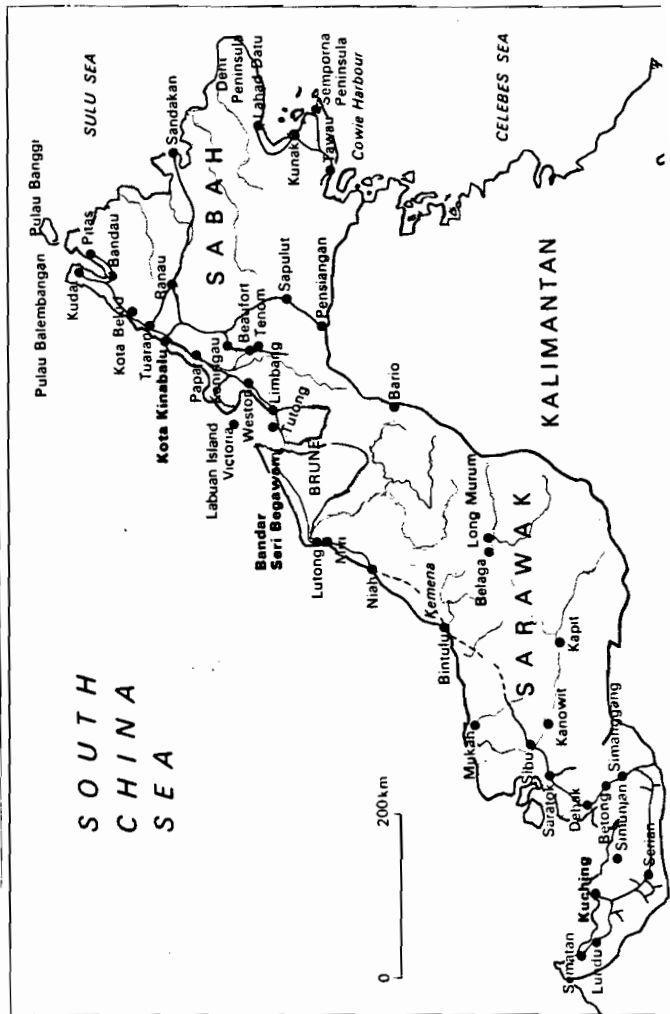
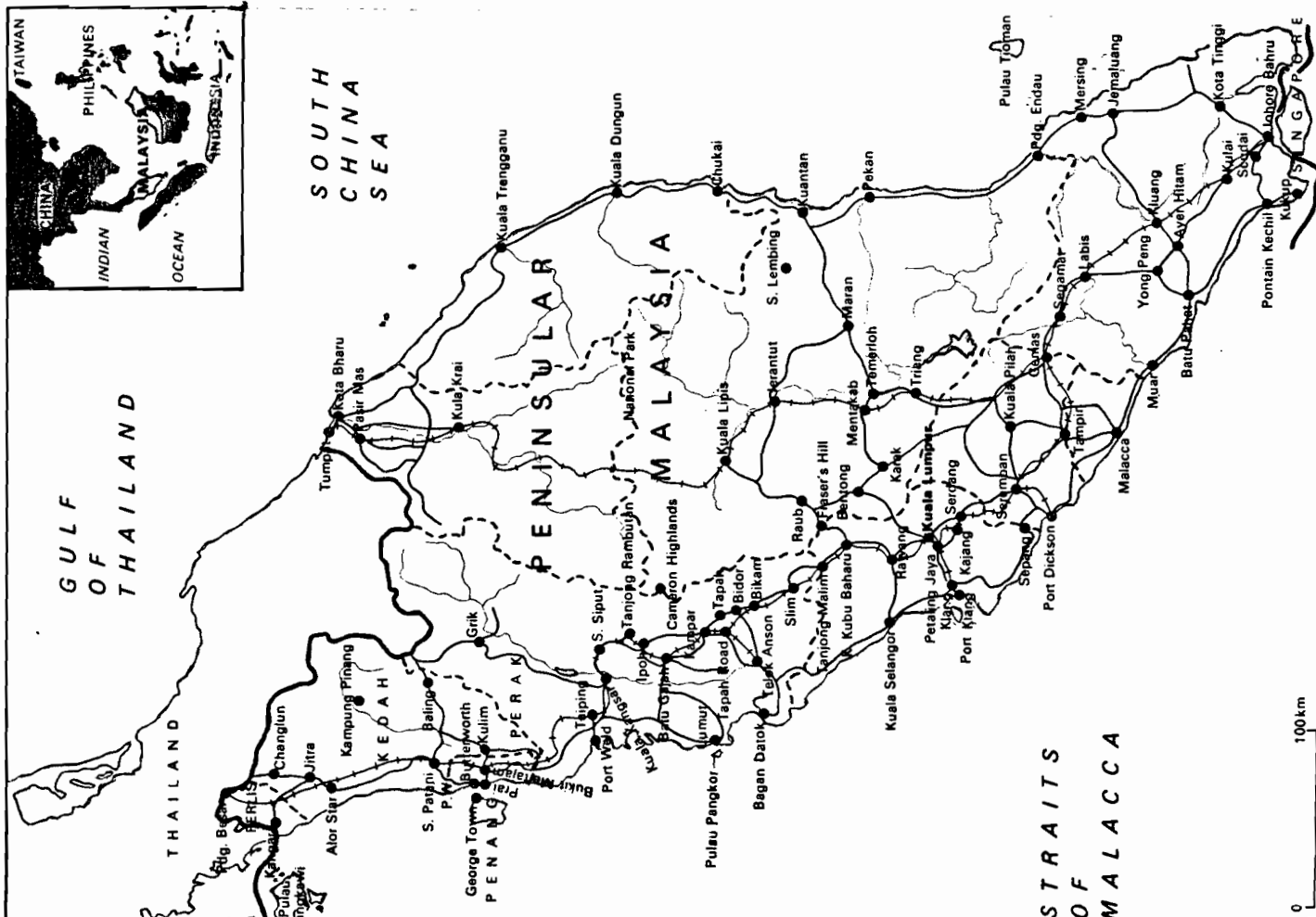
WEATHER IN KUALA LUMPUR (altitude 39 metres): hottest months April, May: 73-90 degrees F. (average daily minimum and maximum); coldest month December: 72-90 degrees; driest month July: 4 inches average rainfall; wettest month April: 11.5 inches average rainfall.

LANGUAGES: English, Malay, Chinese & Tamil.

MEASURES: Metric system with gradual conversion from UK (Imperial) avoirdupois system.

CURRENCY: Malaysian Dollar or Ringgit = 100 sen (cents). Exchange rate: US\$1 = M\$2.47 (Wall Street Journal, May 21st, 1987)

TIME: West Malaysia: 7.5 hours ahead of GMT
East Malaysia: 8.0 hours ahead of GMT



MALAYSIAN FOREST PRODUCTS SECTOR & TRADE PROFILE

1. INTRODUCTION

Malaysia has abundant natural resources, a growing manufacturing sector and a stable democratic government dedicated to development. Gross Domestic Product (GDP) was approximately US\$31.5 billion in 1985, with per capita GDP estimated at US\$2,030, slightly above that of Portugal. The World Bank defines Malaysia as an upper middle income country, and it is considerably more prosperous than its large ASEAN partners: Thailand, Indonesia and Philippines. The trade surplus in 1985 was about US\$3 billion.

The structure of the economy has become increasingly diverse, lessening its reliance on the primary commodities sector. The share of agriculture in GDP has declined from 25 percent in 1978 to 21 percent in 1985. A wide range of commodities is produced, and Malaysia holds a dominant world position in rubber, palm oil, tin, pepper and tropical hardwoods. Malaysia is also a net exporter of petroleum. Manufacturing accounted for 20 percent of GDP in 1985, and has been the main source of Malaysia's growth. Malaysia exports integrated circuits, electrical products, textiles and other manufactured goods. The country also has a diverse automobile assembly industry, as well as an indigenously manufactured car, for domestic consumption at this stage.

The country's economic performance during the 1970's was remarkable, with real growth averaging 8 percent, inflation about 5 percent, and large trade surpluses. However, the growth rate has slumped drastically since 1985, as with all other Southeast Asian nations, primarily due to the decline in oil and commodity prices. But early indications are that the economy will improve again in 1987.

Malaysia's principal trading partners are Japan, Singapore, the United States, the European Community and the Association of South East Asian Nations (ASEAN). Bilateral trade between the U.S. and Malaysia amounted to about US\$1.6 billion in 1985, with a trade surplus of about US\$240 million in Malaysia's favor.

The business and investment climate in Malaysia is relatively attractive. The government encourages foreign investment to generate

industrial growth. In particular it is seeking vertical integration in the electronics industry and investment in resource-based industries.

Forest Products

Since the 1950's Malaysia has experienced a conversion of land from forest to agricultural use comparable in its pace to that which took place in the eastern United States early in the 19th century. About two-thirds of Malaysia's land area (roughly 20 million hectares of a total of 33 million hectares) is forested today, but this proportion could fall to one-third by the end of the century if the present rate of conversion to plantation agriculture is maintained. Slow progress is being made toward a permanent forest reserve for managed timber production in interior and upland regions throughout the country. In the meanwhile log production from Malaysia's dwindling low-land forests has continued to increase.

Malaysia is the world's largest exporter of tropical hardwood timber and a major competitor in Western European, Middle Eastern and Far Eastern markets. It is, however, only a minor supplier of forest products to the United States. The country's log exports have received a boost from stringent controls on log exports imposed by Indonesia, a major regional competitor, in 1981.

Log output reached 31.3 million cubic meters in 1985, but Malaysia has excess mill capacity for production of primary forest products (sawn timber, plywood and veneer). The government is actively promoting the use of lesser known timber species, wood chips, sawdust and rubber wood in manufacturing, since these materials are largely wasted. The manufacture of more sophisticated wood products (joinery, mouldings, furniture) is being actively promoted as well. In general, primary forest products exports remained depressed in 1985 while log exports rose by about 19 percent in response to improved demand, primarily from Japan. Total export earnings from the timber sector reached about US\$1.6 billion in 1985, or 10 percent of Malaysia's total export earnings. In the first half of 1986, buoyant demand from Japan led to a firming of prices.

The domestic economy has been struggling through a period of uncharacteristically weak growth. The construction sector remained dull in 1986, leading the government to announce an ambitious housing program in 1986 involving the construction of 80,000 units of low-cost houses over the next three years. This should provide some measure

of relief to the timber industry which is now looking more toward the domestic market in view of stiff competition overseas. Further, the government's low-interest export credit refinancing scheme has been extended to sawntimber exports. For the longer term, the Government is encouraging domestic downstream processing of timber in an attempt to induce a second wave of growth, while retaining a greater share of the value added.

2. BASIC COUNTRY DATA

2.1 GEOGRAPHY & NATURAL RESOURCES

The Federation of Malaysia is divided into the two distinct regions of Peninsular Malaysia and East Malaysia, and comprises 13 states with an area of about 331,000 square kilometers, comparable in size to Finland. Its coastline extends nearly 5,000 kilometers from the Indian Ocean at the country's westernmost point to the Straits of Malacca, the South China Sea, and the Sulu Sea in the east (see map on page xiii).

Peninsular Malaysia, which was previously known as Malaya, lies at the southern tip of the Asian mainland. It is bounded by Thailand in the north and is linked by a causeway to Singapore in the south. The two East Malaysian states of Sabah and Sarawak, on the large island of Borneo, border Indonesian Kalimantan and the Kingdom of Brunei, and are separated from Peninsular Malaysia by about 700 kilometers across the South China Sea.

Most of the country is mountainous and covered by dense tropical jungles and swamps, although much of the western region of Peninsular Malaysia, which contains the bulk of the population, has been cleared and developed. The whole of the country has a tropical climate, warm and humid, with no appreciable seasonal variations through the year. Day temperatures are usually around 85 degrees Fahrenheit, but at night temperatures fall to around 72 degrees. Average annual rainfall is about 100 inches, and evenly distributed.

Kuala Lumpur, the federal capital, is situated some 42 kilometers from Port Kelang on the west coast of Peninsular Malaysia and has a population of about one million. The other principal towns in Peninsular Malaysia are Penang, an island port; Ipoh, the center of the tin mining industry; Malacca, the center of the plantation industry; and Johore Baru, a port across the straits from Singapore. Kota Kinabalu and Kuching, in East Malaysia, are the capitals and principal cities of Sabah and Sarawak respectively.

Resources & Potential

Malaysia is a country rich in natural resources, the largest being forest land. Some 62 percent of the land mass remains forested; the timber is mainly of the dipterocarpaceae and leguminosae varieties. About 30 percent of the land area is under agricultural use.

During the 1970's considerable deposits of oil and gas were found off the coasts of Peninsular Malaysia, Sabah and Sarawak. Most are in the initial stages of commercial development. Other important minerals are tin ore, bauxite and copper. Rubber, petroleum, palm oil, timber and tin are the main exports and the mainstay of the economy. Today, Malaysia is the world's largest supplier of natural rubber, palm oil, tin and tropical hardwood.

Malaysia's geographical position is also an asset from the point of view of trade. For centuries Malaysia has offered convenient ports of call for ships coming through the Straits of Malacca. This continues today, and the nation's ports provide a major share of revenues.

2.2 DEMOGRAPHIC DATA

The total population of Malaysia in 1985 was estimated at 15.8 million (Table 2.1). The World Bank, in its World Development Report 1985, projects that the population will reach 17 million by 1990. Malaysia's rate of population growth during the period 1980-1985 was 2.6 percent according to the Fifth Malaysia Plan. This was in comparison to rates of 2.3 percent for the period 1970-80 and 2.6 percent for 1960-70. The highest growth rates in the decade to 1985 were recorded in the urban centers such as Kuala Lumpur, Penang and Kota Kinabalu, following their rapid development. While a high proportion of the population still lives in rural areas, this proportion has been declining. In 1985, 63 percent of the population lived in rural areas, compared with 71 percent in 1970.

Table 2.1
MALAYSIA: POPULATION BY REGION

Region	Area (sq.km.)	Population ('000)		1980-85 Ave. Annual growth (%)
		1980	1985	
Peninsular				
Malaysia	131,587	11,473	12,968	2.5
Sarawak	124,449	1,351	1,543	2.7
Sabah	74,398	1,055	1,280	3.9
Malaysia Total	330,434	13,879	15,791	2.6

Source: Fifth Malaysia Plan (1986-90)
Compiled from: Economist Intelligence Unit, Country Profile 1986-87

The government's official policy is to achieve a population of approximately 70 million by the year 2010, a massive increase over the existing population of about 16 million in about twenty-five years. The stated rationale for this unconventional population policy is that a drastically increased population would produce a domestic market that would be capable of sustaining the growing industrial sector. The policy has met with considerable opposition within the country, from the press and intelligentsia, but the 1985 budget proceeded to institute tax incentives for larger families.

Table 2.2 shows the ethnic composition of the population of Peninsular Malaysia in 1985. The Malays accounted for 56.5 percent of the total. According to the Fifth Malaysia Plan, differing fertility trends between the races are expected to result in a continued increase in the proportion of Malays in Malaysia.

The present population of Malaysia is still relatively young with a median age of 20 years in 1985 (compared with 17 years in 1970), and with about 38 percent of its population in the 0-14 age group.

Life expectancy at birth in 1984 was 67.6 years for males and 72.7 years for females. In 1985 infant mortality rates varied from 23.0 per 1,000 of population in Kelantan State to 12.6 in the Federal Territory of Kuala Lumpur. There were 3.1 doctors, and 17 public acute care hospital beds per 10,000. In 1980 the literacy rate was 71 percent. About 1.4 percent of the employed work force were college degree holders.

Table 2.2

PENINSULAR MALAYSIA: POPULATION BY ETHNIC GROUP - 1985

	('000)	Percent
Malay	7,325	56.5
Chinese	4,248	32.8
Indian	1,312	10.1
Others	83	0.6
Peninsular Malaysia	12,968	100.0

Source: Fifth Malaysia Plan (1986-90)
 Compiled from the Economist Intelligence Unit,
 Country File, 1986-87

Language

The mix of languages and dialects rivals the racial mix. Bahasa Malaysia (Malay) is the national language of Malaysia. Since 1972 Malaysia and Indonesia have adopted a single system of spelling which is gradually coming into use. Most Malaysians are bi-lingual and many are multi-lingual.

English is widely used in commerce and industry and about half of all Malaysians can speak and write English. Many other languages are spoken, including several Chinese dialects and Indian languages.

(Primary References: U.S. State Department: Malaysia - A Country Study, 1984; The Economist Intelligence Unit, Country Profile, 1986-87)

2.3 HISTORICAL & POLITICAL BACKGROUND

Malaya was colonized by the Portuguese and the Dutch in the 16th and 17th centuries, respectively. It was only in the latter part of the

18th century that a British presence was established in the Malay Peninsula and Singapore. The 19th century saw the gradual extension of British influence and control over the Malay States. The discovery of tin and development of the rubber industry occurred during this period, and brought an influx of Chinese and Indian immigrant laborers, initially to work the mines and rubber estates, and later to provide clerical services.

The British administration was interrupted by the Japanese invasion of British Malaya in 1942. The unexpected defeat of the British brought about a revival of Malay nationalism and ultimately led to independence in 1957.

The Federation of Malaysia was established in 1963. It initially comprised the eleven states of Peninsular Malaysia, Singapore and the states of Sabah and Sarawak (situated some 700 kilometers across the South China Sea and previously called British North Borneo). Singapore withdrew from the federation in 1965 under strained circumstances. The early years of independence saw a number of difficulties including the remnants of communist insurgency from north of the border, political confrontation with Singapore and Indonesia, and friction within its unique multi-racial society. Racial tension has been one of the most important aspects of Malaysian politics since independence.

Malaysia is a constitutional Islamic monarchy with the head of state, the Yang di Pertuan Agong (the King), elected for a five-year period by the conference of state rulers, which comprises the nine ruling Sultans in Peninsular Malaysia, from the traditional 'Malay' states. The remaining four 'non-Malay' states of Malacca, Penang, Sabah and Sarawak are each headed by a governor who is appointed for a term of four years by the King. Each of the 13 states has its own constitution and assembly to handle matters not dealt with by the federal government. The authority of the federal government largely supersedes most aspects of Malaysian government, except in explicit and traditional jurisdictions such as land and forests.

The Malaysian Parliament is bi-cameral with a House of Representatives (Dewan Rakyat) and a Senate (Dewan Negara), broadly following Westminster lines. The former consists of 177 members elected in General Elections at least every five years; the Senate is composed of 26 elected members, two from each of the 13 states, and 32 members appointed by the King.

A multi-racial coalition known as the Barisan Nasional (National Front) has governed Malaysia since 1957. The largest component party of the Barisan Nasional is the United Malays National Organisation (UMNO), representing the biggest ethnic group, which has headed each coalition government since independence. The two other main parties in the coalition are the Malaysian Chinese Association (MCA) and the Malaysian Indian Congress (MIC). UMNO, however, remains the dominant coalition partner, due both to electoral majority and special perquisites accorded to the Bumiputras (literally, sons of the soil) by constitutional mandate. The present Prime Minister, and head of UMNO, Dr. Mahathir Mohamad, steered the ruling National Front coalition to a landslide victory, again, in a snap general election in August 1986, gaining a mandate for another five years. The multi-racial coalition won 148 of the 177 seats in Parliament, sufficient to retain the two-thirds majority necessary to pass constitutional amendments. The election was Malaysia's seventh since independence from the UK in 1957, and the National Front has won on every occasion.

The main opposition parties are the Democratic Action Party (DAP), attracting mostly Chinese votes, and the Parti Islam Sa-Malaysia (PAS), a fundamentalist Muslim party advocating stricter Islamization amongst the Muslim majority in Malaysia. The DAP, whose manifesto had included proposals for an end to preferential policies based on the distinction between Bumiputras and non-Bumiputras, increased their parliamentary seats from 11 to 24 in the August 1986 elections, to become the largest Opposition party. The PAS won only one seat compared with five in 1982.

Malaysia is a non-aligned country, but remains fundamentally anti-communist, a sentiment inherited from the 'emergency' (from 1948-1958, during British colonial rule), when the government won a protracted 'guerilla' war against communist insurgents. Communism lacks popular support, and it offers no real political alternative for Malaysia in these days of increasing personal wealth. Since the mid-1960's Malaysia has promoted strong ties with its Far Eastern neighbors and with the Islamic countries of the Middle East. It is a member of the Association of South East Asian Nations (ASEAN).

There are strong undertones of discontent, however, in this multi-ethnic society. This comes particularly from the Chinese who are being affected by the government's planned redistribution of wealth through the New Economic Policy (NEP). The NEP was formulated in the aftermath of the 1969 race riots with a view to reducing poverty and ending racial identification with economic roles by improving the economic standing of the Bumiputras, the indigenous Malays. The task has become

more difficult as the country's growth rates have slid and the bias of government policy in favor of the Malays has become more irksome to the non-Bumiputras.

In the short term, however, no serious disruption is expected from discontent among the non-Bumiputras. There are also signs of an emergence of religious fanaticism from an extreme Malay minority, which seems to be growing in popularity among the youth. At present, however, these are relatively minor stirrings, and the general climate is one of safety for investment.

< Primary References: U.S. State Department: Malaysia - A Country Study; The Economist Intelligence Unit, Country File, 1986-87; Business International Corp., Business Prospects in Malaysia >

2.4 CURRENCY, BANKING & CREDIT

Currency

The ringgit or Malaysian dollar is subdivided into 100 sen. The value of the ringgit is determined by a weighted basket of currencies of Malaysia's major trading partners, including the United States. The exchange rate of the ringgit in terms of the U.S. Dollar (the intervention currency) is determined in the foreign exchange market. The Central Bank of Malaysia intervenes in order to promote relative stability in the value of the ringgit in relation to the basket of currencies.

The ringgit remained relatively stable in relation to the basket of currencies up to 1984. However, it came under pressure in October 1984 when there was speculation that the currency was to be devalued, resulting in a depreciation of 3 percent. The market was only restored to order following intervention by the Bank Negara (the Central Bank) and government denials of an impending devaluation. It depreciated a further 5.6 percent against the US dollar in the year ending December 1985, and 3.9 percent in the year ending 1986 (Table 2.3). In relation to the Japanese yen, the ringgit depreciated by about 19 percent in the year to December 1985. It again came under heavy selling pressure in

July 1986 in the foreign exchange markets, but intervention by Bank Negara at the M\$2.65 = US\$1 level helped to stop the downward spiral (Fig.2-1). The Central Bank also intervened in the overnight money market to bring interest rates down from over 10 percent to about 8 percent.

Table 2.3
EXCHANGE RATE -- AVERAGE FOR PERIOD

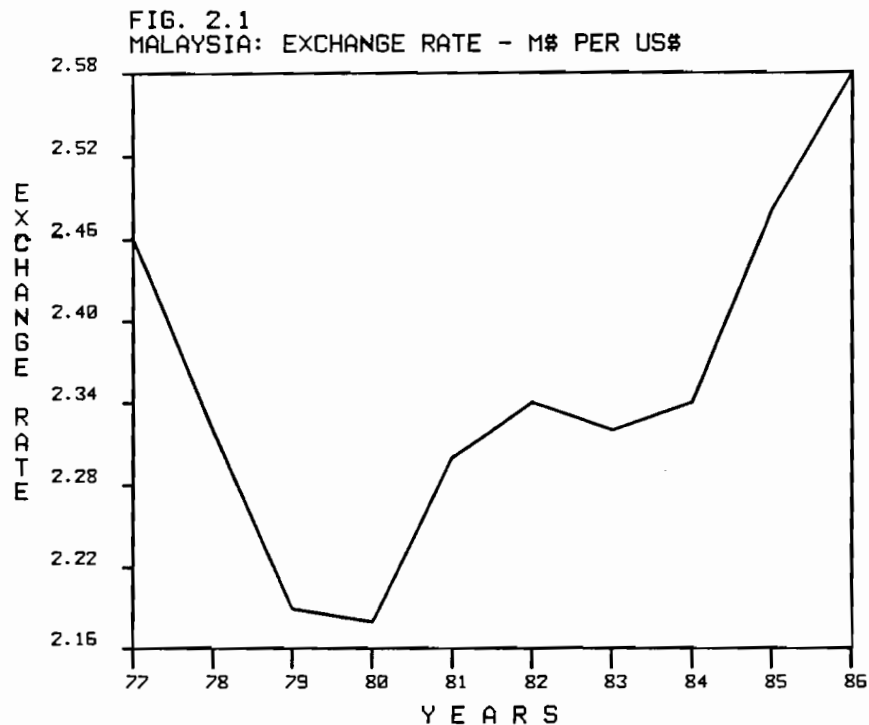
Year	M\$ per US\$
1977	2.46
1978	2.32
1979	2.19
1980	2.18
1981	2.30
1982	2.34
1983	2.32
1984	2.34
1985	2.48
1986	2.58

Source: IMF, International Financial
Statistics.

Banking

Malaysia has a well-developed and sophisticated banking system that provides an important source of capital for infrastructural and commercial development. Bank Negara, the Central Bank, is charged with the responsibility of formulating and implementing the country's monetary and banking policies within the framework of the national economic policy.

Malaysia's numerous commercial banks and branch banks, all members of the Association of Banks, are currently centered in Kuala Lumpur and other urban areas. There are 38 commercial banks of which 17 are foreign banks. American Banks represented in Malaysia include Chase Manhattan, Citibank, Bankamerica, Seafirst, Morgan Guaranty and Manufacturers Hanover Trust. The commercial banks are free to determine and quote exchange rates for all currencies to their customers. They are also permitted to deal forward in all currencies.



There are no taxes or subsidies on purchases or sales of foreign exchange. The establishment of new branches of foreign banks is no longer permitted.

Finance companies licensed as borrowing companies constitute the second most important source of private sector lending in Malaysia. There are 365 finance companies with a number of offices throughout the country. They are entitled to accept deposits other than demand deposits and are mainly engaged in instalment credit for retail sales, financing of wholesale trade, bridging finance, refinancing, leasing, factoring, and commercial, housing and personal loans.

Merchant banking is a system which emerged about 20 years ago, and is also under the scope of the Banking Act.

Medium and long term development finance is provided by the Malaysian Industrial Development Finance (MIDF), both to local and foreign investors. MIDF was organized in 1963 with the participation of the Malaysian Government and the World Bank. Other facilities offered by MIDF include underwriting of capital issues, and equity, preference share or debenture participation.

(Primary References: The Hongkong & Shanghai Banking Corp., Business Profile Series; The Economist Intelligence Unit, Country Profile, 1986-87)

2.5 PORTS, COMMUNICATIONS & MEDIA

Ocean Transport

Ocean transport performs a vital function in Malaysia's economy, which is heavily dependent on foreign trade. The need for ocean shipping further increased in the early 1960's when the country became composed of two bodies of land, the Peninsula and the East Malaysian states, separated by the South China Sea. Most of Peninsular Malaysia's foreign trade moves via Port Kelang and Penang Port (also called Butterworth) on the west coast. Recently, Port Kelang underwent a major expansion program to extend the wharves and container facilities, and the construction of specialized facilities for dry bulk material. The Penang Port completed a major wharf and container terminal construction project in 1985. The Johore Port in the south was completed in 1977 with a twin berth oil jetty for liquid bulk cargo, ocean berths and a coastal berth for dry cargo. The Kuantan Port, on the east coast, completed in 1979, has facilities for liquid, bulk and general cargo. The newest sea port is found in Bintulu, Sarawak, in East Malaysia. It was completed in 1984 to handle both general and bulk cargo traffic as well as specialized handling of liquified natural gas. The other two major ports in East Malaysia are Kota Kinabalu in Sabah and Kuching in Sarawak.

The sea ports of Kelang, Kuantan and Johore, on the Peninsula, and Kota Kinabalu, Bintulu and Kuching in East Malaysia handle most of the traffic in forest products.

Transport time from the west coast of the United States to Malaysia averages about 30 days, including normal ports of call. Most major shipping lines serve the United States-Malaysia route regularly. Malaysia has two national shipping companies, the Malaysian International Shipping Corporation (MISC) and Perbadanan Nasional Shipping (PNSL), both government-owned and operated. Almost 90 percent of all seaborne trade, however, is handled by foreign shipping.

Highway Transport

Roads and highways are well developed compared with other developing nations. Following the government's road expansion program, the total road network increased from 19,000 miles in 1980 to 28,000 miles in 1986. The number of registered motor vehicles increased rapidly at an average annual rate of 11.2 percent from 2.6 million in 1980 to 4.8 million in 1986. Motor vehicle ownership expanded to about 30 percent

of the population by 1986, the highest rate among ASEAN countries after Singapore. The government has been steadily improving public transport services, which now include the planned introduction of an aerobus and a light rail transit system to ease congestion and to complement the existing buses, minibuses and taxi services.

The highway network runs primarily north to south along the Peninsula, and generally serves all the settled areas, connecting principal commercial centers and reaching into the newly settled land development areas. The highways are the primary mode of domestic commercial transportation, and the network includes links of commercial and strategic importance between the settled western areas of Peninsular Malaysia and its less populated east coast. In July of 1986 the government announced a massive US\$1.3 billion highway development program, primarily to boost the sluggish economy. The program also signals the first major step by the government in its policy to privatize newly built trunk roads to commercial consortia.

Rail Transport

Malaysian Railways, the sole railroad system, is owned and operated by the government. The railway system, which operates on a single narrow gauge track, runs primarily north to south. There are branches which stem from the main line and connect Port Kelang, Port Dickson, Port Weld and the other major ports in Penang, Kuantan and Johore Baru. The entire system is in need of complete modernization, and modest government investment in rolling stock such as wagons, passenger coaches and shunting locomotives is gradually improving services.

Air Transport

The government attaches considerable importance to the accommodation of international flights and to the expansion of domestic aviation. The Malaysian Airlines System (MAS) operates a modern fleet of aircraft on extensive domestic and international services. The government owned airline has recently been partially privatized to generate funds to upgrade its fleet, and is expected to be entirely under private ownership in the near future. The two smaller and privately operated feeder airlines service domestic needs.

The airports at Kuala Lumpur, Penang, Johore Baru, Kota Bharu, Kota Kinabalu and Kuching handle international traffic, and are equipped to handle wide-bodied aircraft. All the other major cities are serviced by MAS as well.

Communications

Malaysia's government-owned telecommunications system is modern and efficient. It is one of the government services slated for privatization. All cities and towns are linked by telephone, and calls may be placed to most places by direct dialing. The Satellite Communications Earth Station in Kuantan links Malaysia internationally via an INTELSAT III Satellite. It provides the link for overseas telephone, telegraph, telex and facsimile circuits. There is direct dialling between Malaysia and the United Kingdom, United States, Australia, Japan and most other countries. Facilities in East Malaysia are somewhat less developed, and communications are slower.

The domestic radio and television stations, largely owned and controlled by the government, reach a wide audience, and broadcast in English, Malay, Chinese and Tamil. The sole privately owned television station exists under the functional supervision of the government, and is subject to 'self-censorship'.

There are several daily and weekly news publications, which have a wide circulation and reach readers in the major local languages. Most of the business community can be reached in the English language press. The principal publications are owned and controlled either directly by the government or by proprietary corporations belonging to the ruling political parties. The government is sensitive to criticism of its policies, and all publications function under the guardianship of the Ministry of Information, which holds the authority to summarily revoke publication licenses.

The Malaysian postal service sends out two deliveries daily in the larger commercial centers, has post offices or postal agencies within the further reaches of the country, and handles an average of 1,300 million pieces of mail a year. Airmail service between Malaysia and other nations is considered excellent.

(Primary References: U.S. Dept. of Commerce: Overseas Business Reports, Malaysia; Hongkong & Shanghai Banking Corp: Business Profile Series)

3. ECONOMIC DATA

3.1 ECONOMIC POLICY

Malaysia's economic policy emphasizes the development of the private sector, support for the indigenous Malays (Bumiputras) and a drive towards heavy industry. The government's policy has been to take an active role in commerce and industry to supplement the private sector. It established a number of commercial and industrial corporations, which in turn entered into joint ventures and joint development with local and international companies. Five-year plans are the major means of planning, and the government plays an important role in the economy through its many agencies. The main thrust of the Fifth Malaysia Plan (1986-90), which completes the final phase of the outline plan (1971-90), is moderate growth with stability. An Industrial Master Plan was also released in 1986, with the help of UNIDO.

The main policy guideline is the New Economic Policy (NEP), which was adopted in 1971 in the aftermath of race riots. It was aimed at eradicating poverty irrespective of race, and at restructuring society through a more equitable distribution of the country's wealth, primarily in favor of the more numerous Bumiputras (indigenous Malays), through trust agencies to finance Bumiputra enterprises. The major thrust of the NEP was to increase Bumiputra ownership of shares in the corporate sector to at least 30 percent by 1990, with 40 percent of the remaining shares owned by other Malaysians and the maximum foreign participation limited to 30 percent. In 1970, of the total private sector share capital in limited companies, which totalled M\$5.3 billion, Malay interests owned about 2 percent, other Malaysians 34 percent and foreigners 64 percent. By 1983 foreign ownership had declined to 28 percent of the corporate sector. The NEP goals have been falling behind schedule and recent relaxation of the foreign equity rules to encourage investment signal the abandonment of NEP goals by 1990. In May 1986 the government announced that the NEP would be temporarily suspended in areas of poor growth, and that it was

considering the exemption of enterprises manufacturing for the domestic market. Various exemptions from the shareholding quotas had already been made earlier for export oriented and high-technology industries in an effort to promote these priority areas and encourage foreign investment.

Aside from the free trade zones, where completely foreign-owned enterprises are permitted, recent announcements indicate that foreign interests will also be able to hold more than 30 percent of the equity in joint ventures, provided these ventures are based on new investment in industries using non-depletable resources. The maximum foreign ownership in certain export companies may be increased from 30 percent to 70 percent, where the primary activity is the export of locally manufactured goods.

The privatization of the national railway, the telecommunications department and the Malaysian Airline System have been under review, with the airline system already partially transferred to private ownership. Projects ranging from car parks to public housing schemes have been turned over to the private sector, and education and health services have been identified as early targets for privatization. Despite this drive towards towards privatization, there are no plans to transfer state economic development corporations to the private sector.

The government plans to speed industrialization through a series of heavy-industry developments such as steel, sponge iron, cement and petrochemicals, in order to reduce the country's economic dependence on raw materials. Because the present population of about 16 million would not be able to support the economies of scale or provide the domestic market needed for large-scale industrial development, the government advocates a population target of 70 million by the year 2010. To encourage this, family planning will no longer be emphasized, and maternity leave and benefits will extend to the fifth child.

Faced with deteriorating balance of payments and rising fiscal deficit, the government abandoned its counter-cyclical fiscal policy in mid-1982. In its attempts to reduce both the federal deficit and the current account deficit, the government has adopted austerity measures, especially with regard to development expenditure, primarily to match government expenditure more closely with available resources. The government has adopted a fairly restrictive monetary policy aimed at spurring economic growth without fuelling inflation.

In 1985 net federal borrowing, largely from foreign sources, accounted for only 21.4 percent of the total net borrowing, compared with 43.5 percent in 1984 and 51.4 percent in 1983.

(Primary References: Far Eastern Economic Review, 11-13-86 & 1-15-87;
Economist Intelligence Unit, Country Profile, 1986-87)

3.2 MACRO-ECONOMIC CONDITIONS AND INDICATORS

Malaysia's economy is largely trade-oriented. Its abundance of natural resources enabled its real GDP to grow at an annual average rate of 7.9 percent during the 1970's, along with substantial increases in per capita income. However, during the world recession of the early 1980's, the country experienced a deceleration in its real (inflation-adjusted) growth rate, until 1983 when the economy expanded by 6.3 percent. With the recovery in the world economy in 1984, GDP accelerated by 7.6 percent, aided by a 13.8 percent expansion in real exports. In 1985, however, real GDP actually fell by one percent, the first decline since independence (1957). The downturn in 1985 was for the most part the result of a substantial fall in world commodity prices, a drop in private investment expenditure and poor external demand (Table 3.1 and Fig. 3.1). Real GDP growth in 1986 is estimated to be about one percent, but a modest improvement is projected for 1987, in excess of 2 percent (Far Eastern Economic Review: 1-15-87 and 4-9-87).

Over the period 1980-85 the agricultural sector (including forestry and fishing) expanded by less than overall GDP growth, accounting for only 20.8 percent of GDP in 1985 (Fig. 3.2). Despite fairly buoyant growth in the manufacturing and construction sectors in the early 1980's, both experienced a decline in 1985, resulting in a very small net expansion over the five year period, in relation to overall GDP growth (Table 3.2). Despite the government's austerity measures government services experienced the most rapid expansion, to 12.2 percent of GDP in 1985, primarily due to obligations made in the past during more optimistic years.

Table 3.1

MALAYSIA: MACRO-ECONOMIC INDICATORS

	1981	1982	1983	1984	1985
GDP market prices M\$(bn)	57.6	62.6	69.6	79.6	77.5
Real GDP Growth percent	6.9	5.6	6.3	7.6	-1.0
GNP market prices M\$(bn)	55.6	59.7	65.2	74.2	71.8
Consumer price inflation %	9.7	5.8	3.7	3.9	0.3
Population (mn)	14.1	14.5	14.8	15.2	15.6
Unemployment rate %	4.7	4.7	5.6	6.3	7.6
Exports (total) fob US\$ (bn)	11.8	12.0	14.1	16.5	15.5
:Logs & Timber	1.6	1.9	1.8	1.7	1.6
Imports cif US\$ (bn)	11.5	12.4	13.3	14.1	12.3
Current Account US\$ (bn)	-2.5	-3.6	-3.5	-1.7	-0.7
Public External Debt US\$ (bn)	5.6	8.1	10.8	11.8	12.8
Foreign Exch.Reserves US\$(bn)	3.8	3.5	3.5	3.5	4.6
Exchange Rate (ave)M\$ per US\$	2.30	2.34	2.32	2.34	2.48
Discount Rate %	4.50	5.12	5.20	5.06	--
Money Market Rate %	3.47	7.90	8.97	8.96	7.55

Source: IMF, International Financial Statistics

Table 3.2

MALAYSIA: COMPONENTS OF GDP

(M\$ million at constant 1978 prices)

	1980	% of Total	1985	% of Total
Agric., forestry, fishing	10,189	22.9	11,914	20.8
Mining & quarrying	4,487	10.1	5,985	10.5
Manufacturing	8,742	19.6	11,263	19.7
Construction	2,066	4.6	2,738	4.8
Finance, Insur. & Commerce	3,687	8.3	5,093	8.9
Government Services	4,563	10.3	6,957	12.2
Other Services	10,778	24.2	13,200	23.1
	44,512		57,150	

Source: Ministry of Finance Economic Report 1986/87

Compiled from Economist Intelligence Unit, Country Profile, 1986-87

FIG. 3.1
MALAYSIA: GDP AT MARKET PRICES

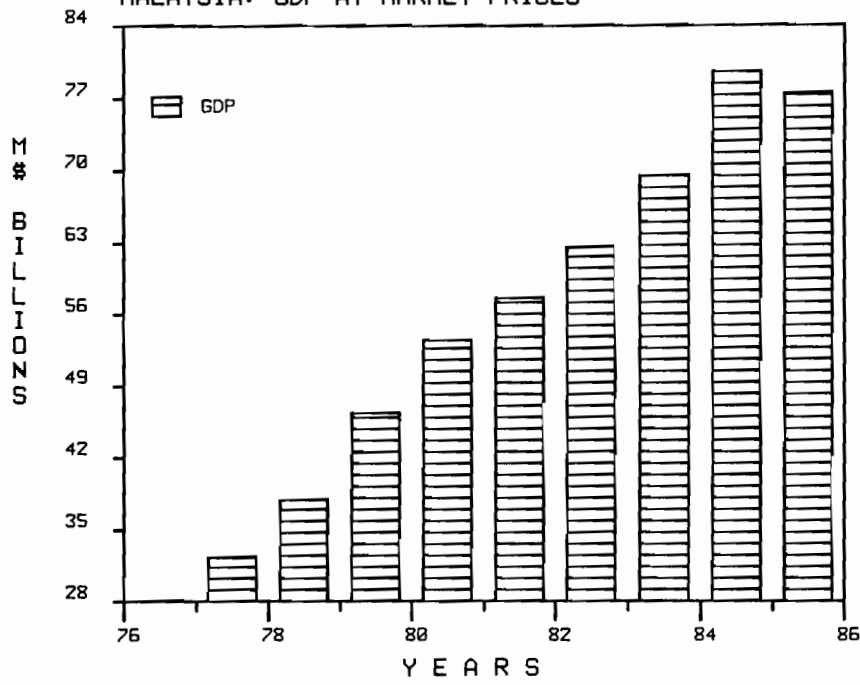
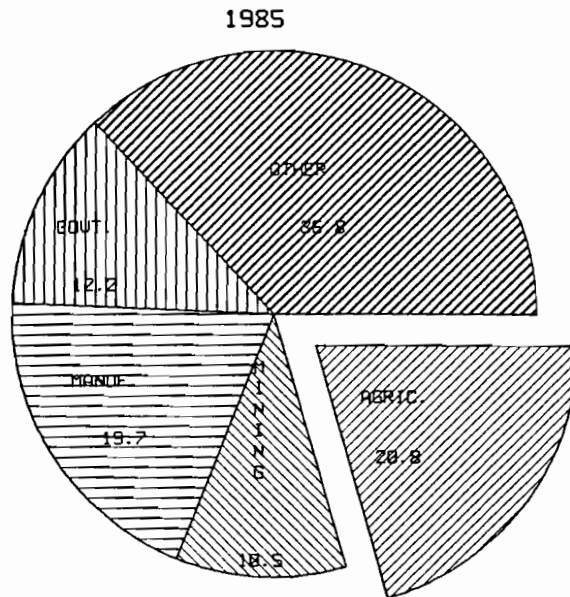


Fig. 3.2
MALAYSIA: COMPONENTS OF GDP



Public Finance & Debt

The government was able to reduce its overall deficit from 1982 to 1985, when a deficit of M\$5.7 billion was recorded compared with M\$11.2 billion in 1982. Over the same period the deficit as a ratio of GNP declined from 18.7 percent to 7.9 percent. However, the government projected the deficit to increase to M\$8.9 billion in 1986, or 13.4 percent of projected GNP, as a result of both a fall in government revenue and a 4.5 percent growth in government expenditure.

The country's public external debt has increased rapidly in recent years, from US\$3.9 billion in 1980 to US\$11.8 billion in 1984. This was primarily due to massive government borrowing, to offset the substantial current account deficits from 1981 to 1983 and to finance previously committed development programs in the face of slower growth in government revenue. An increasing dependence on market loans rather than concessionary loans has added to the debt service burden. The debt service ratio increased to 7.7 percent in 1984 but still remains low by international standards. (The Economist Intelligence Unit, Country Profile, 1986-87).

Employment

Malaysia's labor force is estimated at just below 6 million, with total employment rising by an average 2.2 percent in the period 1981-85. About three-quarters of the labor force is below the age of forty. The unemployment rate has been increasing since 1981, to 7.6 percent in 1985. According to the Finance Ministry's Economic Report for 1986/87, the unemployment rate rose to 8.7 percent in 1986, and was forecast to reach 9.5 percent in 1987 (The Far Eastern Economic Review, 11-6-86).

About one-third of the total employed population is engaged in the agriculture/forestry/livestock/fishing sector. Agricultural employment, which had remained fairly static in recent years, fell by 4.5 percent in the period 1981-85 due to recruitment difficulties in the face of the urban drift of rural workers. Both government services and the manufacturing sector employ about 15 percent each, while the construction sector accounts for about 7 percent (see Appendix A).

Energy

Malaysia is rich in energy resources including oil, natural gas and hydro-electric power. Over 90 percent of domestic and commercial energy consumption, however, is dependent on natural gas and petroleum.

The country produces its oil and gas from 23 off-shore fields, and has four refineries. Proven crude oil reserves are estimated at 2 to 3 billion barrels, with recoverable natural gas reserves amounting to 53 trillion cubic feet. The national oil company, Petronas, is responsible for the exploration and production of oil in Malaysia.

The country continues to develop its oil and gas industry to finance its development programs, but the government recognizes the need both to conserve oil and gas reserves and to diversify away from oil as the major energy source. Though not a member of the Organization of Petroleum Exporting Countries (OPEC), in recent years Malaysia has attempted to align its production policy with that of the cartel, largely to demonstrate Islamic solidarity. Since 1985, however, in response to declining government revenues and foreign exchange earnings, this policy has been relaxed, resulting in an increase in production and export. In 1985 export revenues from crude petroleum accounted for US\$3.2 billion, an 11 percent increase over 1984.

The government recently approved two projects in the search for alternative renewable energy sources, to develop the conversion of palm oil mill effluent into biogas, and palm oil into palm diesel.

Manufacturing

The country's manufacturing sector accounted for about one-fifth of GDP in 1985, and expanded by 29 percent over the period 1980-85, despite a decline of 4.3 percent in 1985 alone. The expansion was largely the result of a sustained increase in foreign orders and domestic demand along with continued industrial development, particularly in the electrical and electronic products industries. Malaysia is now the world's leading exporter of semi-conductors.

Since the 1960's the manufacturing sector has evolved from import substitution to an export-oriented industry. The mid-term review of the Fourth Malaysia Plan (1981-85) has assessed industrial capacity as being much too dependent on the export production of items such as electronics and textiles. It recommended, therefore, the development of resource-based industries processing wood, rubber, palm oil and petroleum into higher value-added goods for export. At the same time, since manufacturing is viewed as a means of achieving balanced growth, the government has also strongly backed a heavy-industry sector, despite objections that the country does not have the infrastructure to sustain it.

Construction

Since the 1970's the construction sector has made a major contribution to GDP growth, accounting for about 5 percent of GDP in 1985. This was composed of both large-scale residential and public sector development. Much of the growth has been attributed to a speculative boom in construction, a favored investment avenue, notably in Kuala Lumpur. The capital now faces a glut in hotel and commercial space.

Annual real growth in the construction sector averaged 14 percent from 1977-81, then levelled off from 1982-84 in line with the slowdown in government expenditure, and then declined by 8 percent in 1985. The decline was the result of a marked retreat in new starts on non-residential construction, due as much to the glut of commercial space as to the recession. In an attempt to stimulate the economy the government announced a massive program in mid-1986 to build 80,000 units of low-cost houses over the next three years, estimated at M\$2 billion.

< Primary References: Malaysian Central Bank, Annual Report, 1985; The Far Eastern Economic Review, various issues; The Economist Intelligence Unit, Country Profile, 1986-87 >

3.3 FOREIGN TRADE

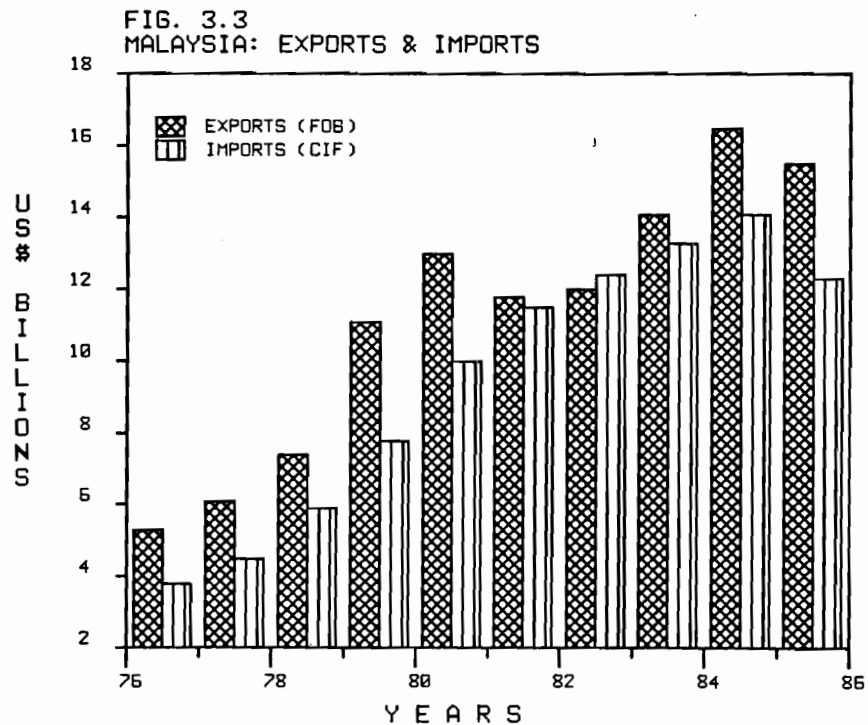
Malaysia traditionally has had a trade surplus. It is the world's leading exporter of natural rubber (40 percent of total world output), palm oil (60 percent), tropical hardwood (37 percent), tin (30 percent) and pepper (42 percent).

Following an uncharacteristically poor year in 1982, due to a significant decline in the terms of trade (a ratio of export prices to import prices), the country returned to a healthy trade balance in 1984 and 1985 of M\$5.7 billion and M\$7.8 billion, respectively. The large surplus of 1985 has been attributed to a 7 percent drop in imports, more than off-setting a one percent reduction in export revenues, despite a further decline in the terms of trade (Table 3.3 and Fig 3.3).

Table 3.3
MALAYSIA: FOREIGN TRADE
 (M\$ millions)

	1980	1981	1982	1983	1984	1985
Exports (fob)	28,172	27,109	28,108	32,771	38,647	38,328
Imports (cif)	23,451	26,604	29,023	30,795	32,926	30,558
Trade Balance	4,721	505	-915	1,976	5,721	7,770
Volume of Exports (1980 = 100)	100	97	103	114	116	122

Source: IMF, International Financial Statistics
 Compiled from Economist Intelligence Unit, Country Profile 1986-87



Japan replaced Singapore as the major destination of Malaysian exports in 1985, while Japan, the United States and Singapore provided a large proportion of imports (Tables 3.4 and 3.5).

Table 3.4
MALAYSIA: DIRECTION OF TRADE -- EXPORTS
(Percent of total)

	1983	1984	1985
Singapore	22.5	20.5	19.5
Japan	19.6	22.3	24.5
USA	13.2	13.5	12.8
Netherlands	5.5	4.1	5.8
Thailand	4.1	2.8	3.4
W. Germany	3.2	3.1	2.6
UK	2.7	2.6	2.6
Others	29.2	31.1	28.8
Total	100	100	100

Source: Central Bank Annual Report, 1985
Compiled from The Economist Intelligence
Unit, Country Profile, 1986-87.

Petroleum and petroleum products have replaced rubber as Malaysia's largest export commodity, accounting for M\$8.8 billion or 23 percent of total gross exports in 1985. Exports of logs and timber at M\$3.9 billion (10.1 percent) and palm oil at M\$4 billion (10.3 percent) were both greater than rubber exports, which at M\$2.9 billion accounted for 7.5 percent of total exports. Tin exports remained depressed at only M\$1.7 billion in 1985 (Table 3.6).

The benefit of the trade surplus has perennially been diluted by a deficit on 'invisible trade', intensified in recent years by a growing debt-service burden. The chronic 'invisibles' deficit reflects external payments for freight and insurance and out-going investment income including debt-service.

Table 3.5
MALAYSIA: DIRECTION OF TRADE -- IMPORTS
(percent of total)

	1983	1984	1985
Japan	25.2	26.2	23.0
USA	16.2	16.4	15.3
Singapore	13.9	13.1	15.8
W. Germany	5.1	4.2	4.4
Australia	4.2	4.0	4.1
UK	3.5	3.6	4.0
Thailand	3.0	3.4	3.5
Others	28.9	29.1	29.9
Total	100	100	100

Source: Central Bank Annual Report 1985
Compiled from The Economist Intelligence
Unit, Country Profile, 1986-87.

Table 3.6
MALAYSIA: COMPOSITION OF EXPORTS
(M\$ billions)

	1981	1982	1983	1984	1985	% of total
Petroleum & Products	6.92	7.69	7.87	8.74	8.82	23.0
Palm Oil	2.84	2.74	3.00	4.54	3.95	10.3
Logs & Timber	3.60	4.55	4.16	3.95	3.86	10.1
Rubber	3.71	2.66	3.66	3.67	2.87	7.5
Tin	2.14	1.48	1.72	1.16	1.65	4.3
Others	7.90	8.99	12.36	16.59	17.18	44.8
Total	27.11	28.11	32.77	38.65	38.33	100

Source: IMF, International Financial Statistics

However, the invisibles deficit fell to US\$4.3 billion in 1985 from US\$4.6 billion in 1984, with the reduction in overall trade. Domestic shipping is being encouraged in an attempt to reduce freight and insurance payments abroad. In 1985 the current account deficit was reduced to US\$0.7 billion, compared with US\$1.7 billion in 1984 and US\$3.5 billion in 1983, reflecting a decline in the rate of growth of public external debt.

Foreign exchange reserves increased considerably in 1985 to US\$4.6 billion, compared with US\$3.5 billion in both 1984 and 1983. Total reserves excluding gold stood at US\$4.9 billion at the end of 1985, a significant improvement over the previous years.

< Primary References: Malaysian Central Bank, Annual Report, 1985;
The Far Eastern Economic Review, 11-13-86, 1-15-87; The
Economist Intelligence Unit, Country Profile, 1986-87 >

4. OVERALL ECONOMIC STRATEGY

4.1 RECENT POLICY AND TRENDS

The government has begun to encourage countertrade in order to increase exports of Malaysian goods and commodities and improve the balance of trade and foreign exchange position. The two most common forms of countertrade are compensation and counterpurchase, although barter, buy-back and offset arrangements are also promoted through both government agencies and the private sector. Countertrade is not permitted, however, in commodities or in markets where there is no foreign exchange shortage or problems with market access. Commodities permitted to be imported into Malaysia under countertrade arrangements are those which are needed in substantial quantities and include chemical products, fertilizers, machinery and defense equipment.

Malaysia is the world's largest producer and exporter of tin, and traditionally has enjoyed a favorable position in world tin markets. In recent times, however, the country's controversial tin marketing policies, including an attempt to corner international trade in the commodity, have proved embarrassing to the government, such that its standing has been tarnished in several international commodity markets. Mistrust of the Malaysian government's marketing policies has carried over to the rubber market where it is again the world's leading producer. Tin prices on the Kuala Lumpur Tin Market (KLTM) have hovered around the M\$14 per kilogram mark during recent months, well below production costs in Malaysia. Before the collapse of the International Tin Council (ITC), the buffer stock floor price was M\$29.15/kg. The tin market collapsed in 1985, with trading suspended on the London Metal Exchange (LME) and the KLTM, largely because of the inability of the ITC buffer stock manager to continue financing warehouses full of the metal bought in the wake of a prolonged but unsuccessful attempt by Malaysia to corner the global tin market and push prices up. Malaysian Prime Minister Mahathir's admission in September 1986 that his government attempted to control the tin market is a fact that remains irksome to tin producing countries to this day.

In 1984 Malaysia suffered its worst ever financial scandal with the publicly held Bank Bumiputra sustaining loan losses amounting to an estimated M\$3.7 billion. A committee of enquiry was formed to examine the affairs of the Hongkong subsidiary of Bank Bumiputra (Malaysia's largest domestic bank), which incurred the losses on unsecured loans, following charges of corruption at the highest level. As a result, a number of reforms designed to strengthen the structure of the banking system have been introduced. As part of this package of reforms the Central Bank announced in 1986 that all loans on which payments had not been received for twelve months could not be included in commercial banks' accounts. Bank profits slumped severely in 1985 and 1986 due to large loan losses resulting both from the recession and over-exposure to the over-heated property market. The Central Bank is behind a M\$125 million bailout of United Asian Bank, one of Malaysia's largest banks. In August 1986 the Central Bank froze the assets of 23 of the country's 34 cooperative banks, many of which were facing difficulties following the collapse of the property market. The banking system that has emerged in the wake of these reforms is considered to be much sounder than in the frenetic days of the Southeast Asian property boom until 1984.

(Primary References: The Far Eastern Economic Review, 11-13-86;
Hongkong and Shanghai Banking Corp.: Business Profile Series)

4.2 OFFICIAL REPORTS & FORECASTS: 1987

The Central Bank's Annual Report, released in March 1987, suggests that the economy has bottomed out. Growth in GDP in 1986 was 1 percent in constant 1978 prices, compared with the 0.5 percent forecast in the 1987 budget announced in October 1986. The governor of the Central Bank (Bank Negara) said that prospects for 1987 were better, with real growth in GDP conservatively estimated to be between 1.5 percent to 2 percent. (The Far Eastern Economic Review, 4-9-87).

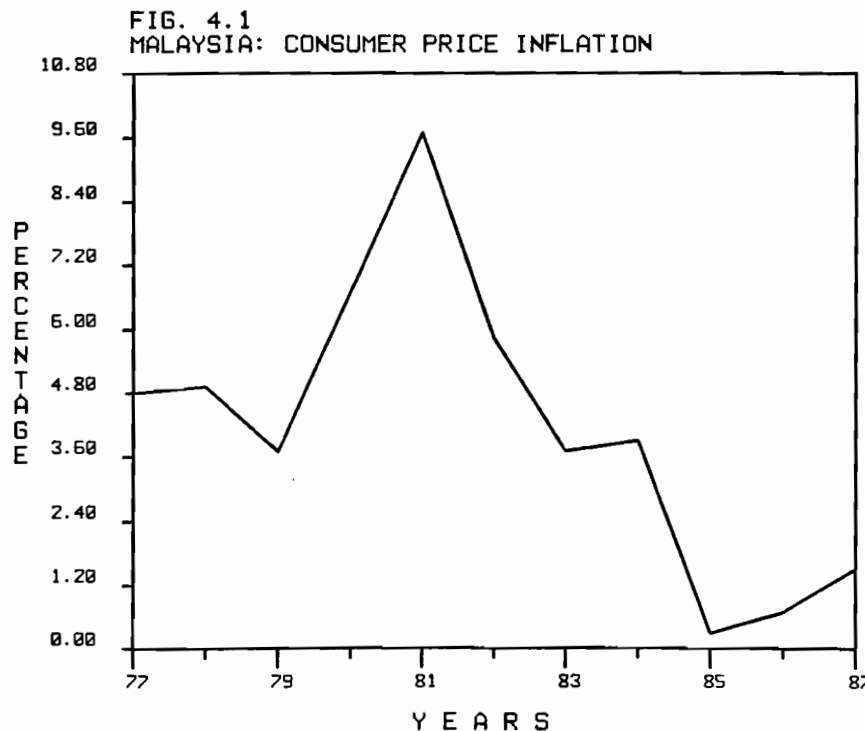
A 14.2 percent decline in the country's terms of trade in 1986 has taken its toll on national income. Per capita GNP, in current prices, declined for the second year running, from US\$1,816 in 1985 to US\$1,640

in 1986, resulting in a drop in private sector expenditure of 11 percent. However, growth in GNP in current prices is expected to rebound to 4 percent in 1987, compared with about 14 percent in 1984, the last year in which positive growth was achieved.

Capital has begun to flow back into the country and, as a result of renewed business confidence and better commodity prices, the economy appears to be recovering. The recovery in commodity prices has had a marked effect on Malaysia's balance of payments position. With exports from the manufacturing sector forecast to expand by 12 percent, the country's merchandise account is expected to show a surplus of M\$9.6 billion in 1987, compared with M\$8.4 billion in 1986.

The Malaysian dollar depreciated against a basket of currencies by 13 percent in 1986, and total external debt rose 20.5 percent to M\$51 billion. Foreign debt was 59 percent of GNP in 1986 and the debt-service ratio has risen to 17.6 percent, compared with 15.8 percent in 1985. Bank Negara is reluctant to predict whether these statistics will improve in 1987 with the recent firming of the Malaysian dollar, but suggests that it is reasonable to expect them to stabilize at around 1986 levels.

Inflation is forecast to rise moderately in 1987 along with the



recovery in the economy. Consumer price inflation is projected to reach 1.5 percent compared with 0.7 percent growth in 1986 and 0.3 percent in 1985 (Fig. 4.1). (The Far Eastern Economic Review, 5-7-87).

The Finance Minister announced several generous tax-cutting concessions in the Finance Ministry's Economic Report for 1986/87 to stimulate production in the private, export-oriented sector. The Promotion of Investments Act 1986 will be amended to lower the adjusted taxable income of export-oriented companies by up to 50 percent according to their level of exports in relation to total sales. Regardless of resident status, companies exporting 30 percent of their sales will have their effective tax rate, including development tax, reduced to 31.5 percent. Companies exporting more than 50 percent of total sales will have their tax rate drop to 22.5 percent.

Other concessions include the extension, on a selective basis for priority industries, of 'pioneer status' for new companies from five to ten years. This puts Malaysia at the top of the list with Singapore in the length of tax relief offered to pioneer companies in East Asia. (The Far Eastern Economic Review, 11-6-86).

4.3 ECONOMIC OUTLOOK

The Malaysian Central Banks's revised figure for GDP growth in 1986 was 1 percent compared with its earlier estimate of 0.5 percent, indicating that the Malaysian economy had in fact grown by twice that amount as it had registered a negative one percent growth in 1985. It also means that the country has achieved its 1987 growth forecast of one percent a year earlier than projected. The resurgence of the manufacturing sector is believed to have taken the government somewhat by surprise. The strong rebound of the manufacturing sector has been stimulated by an increase in external demand for all types of goods other than forest products. Domestic demand has yet to catch up, however. According to the Wall Street Journal, a growing demand for Malaysia's exports, coupled with a revival in the prices of the major primary commodities including crude oil, helped to place the economy on a gradual path to recovery (Wall Street Journal, 3-27-87).

The country is also in a better position with respect to the balance of payments, largely due to the fall in imports. The improving picture extends to the domestic financial front as well. Speculation on the local currency has ceased due to decisive action taken by the Central Bank (see Section 4.1 Recent Policy and Trends). Throughout the difficult recessionary period from 1985 to date, Malaysia has remained a good risk in international credit markets, particularly in light of the current international debt crisis.

The economy is expected to receive an additional boost from the government's announcement in 1986 of a plan to initiate a massive M\$3.5 billion low-cost housing and highways development program.

5. MALAYSIA'S FOREST RESOURCES

5.1 FOREST BASE

About 62 percent of Malaysia's land area is under forest cover, though this percentage varies considerably by region. The Malaysian tropical rainforest is one of the most heterogenous and complex eco-systems of the world. There are an estimated 8,000 species of flowering plants, including over 2,500 tree species, of which approximately 400 have been exported in the past. However, only 60 species can really be considered to be of commercial importance, and an even smaller number are actually traded currently in the international market.

According to a report published by the Ministry of Primary Industries the total extent of the forested area in Malaysia is about 20.4 million hectares (Table 5.1). About 30 percent of the country has been converted to agricultural use, of which rubber plantations occupy two million hectares, while oil palm plantations cover some one million hectares.

Table 5.1
MALAYSIA: FOREST AREA - 1985
(Million Hectares)

	Total Land Area	Total Area Under Forest	Percentage of Total Area
Peninsular Malaysia	13.1	6.4	48.9
Sarawak	12.4	9.4	75.8
Sabah	7.5	4.6	61.3
Total Malaysia	33.0	20.4	61.8

Source: Ministry of Primary Industries, Malaysia

The 20.4 million hectares of forested land can be classified into three basic types of flora: *dipterocarp* forests, swamp forests and mangrove forests.

- i) The mixed *dipterocarp* forests, about 17.2 million hectares in extent, are found both in the hilly regions and in the plains and contain the bulk of the tropical hardwoods.
- ii) The fresh-water and peat swamps cover about 2.5 million hectares and are found mainly in the inland plains of Peninsula Malaysia and Sarawak. The peat swamps produce valuable timber, and are the main source of Ramin.
- iii) Mangrove forests, about 0.7 million hectares in all, grow in the coastal zones, mainly in Sabah. The mangrove is a type of tree which flourishes in tidal swamps, and has little commercial value except as a source of fuelwood and in charcoal production.

Malaysian forestry specialists distinguish two classifications of forest within the total forested area of 20.4 million hectares: the National Permanent Forest Estate and State Land Forests.

National Permanent Forest Estate

The National Permanent Forest Estate was established and set aside under the National Forest Policy (1978), to be strategically located throughout the country. It was to be managed under a concept of rational land use, to protect water supplies and soil, and to provide forest amenities and a continuous future timber supply.

The National Permanent Forest Estate, estimated to be about 11.6 million hectares in extent, can be further sub-classified as Productive Forest Reserves and Protective & Amenity Forest Reserves (Table 5.2)

I. Productive Forest Reserves:

These are areas designated as permanent forest intended for sustained timber production according to set management plans, including post-harvest treatment (girdling) or enrichment planting to maximize the number of commercially desirable trees for a future harvest some fifty years hence. These Forest Reserves also encompass some unproductive forests (roughly 2

million hectares) in areas so remote or so mountainous, or characterized by such a low density of marketable timber, that they cannot be profitably harvested in the foreseeable future. The forests have generally been declared in mixed *dipterocarp*, swamp and mangrove forests, and cover an estimated 7.9 million hectares.

II. Protective & Amenity Forest Reserves:

These reserves comprise about a third (3.7 million hectares) of the total Permanent Forest Estate, generally on steep terrain and poor soils. The Protective Forests are intended for soil, water, timber and environmental conservation, and cover an estimated 2.85 million hectares. The remaining 0.85 million hectares make up the Amenity Forests, composed of national parks and wildlife reserves, intended for recreation and wildlife protection, and are situated mainly in Peninsular Malaysia.

These parks and wildlife reserves are intended to be undisturbed in perpetuity, but provisions in the National Park Act almost permitted the National Electricity Board to flood about a third of the lowland forest in the largest reserve area with a hydro-electric power dam.

Table 5.2

MALAYSIA: ESTIMATED PERMANENT FOREST BASE - 1985
(million hectares)

	Total Forest	State Land Forest	National Permanent Forest Estate		
			Total	Protective & Amenity Reserve	Productive Reserve
Peninsula	6.4	2.0	4.4	1.3	3.1
Sarawak	9.4	5.4	4.0	1.4	2.6
Sabah	4.6	1.4	3.2	1.0	2.2
Total	20.4	8.8	11.6	3.7	7.9

Compiled from: Ministry of Primary Industries, Malaysia;
Raj Kumar: The Forest Resources of Malaysia;
Foreign Agric. Service: Attache Report, 1983.

State Land Forests

While Reserve Forests are expected to be maintained in perpetuity, State Land Forests (those not set aside as reserves) will to a large extent see eventual conversion to other uses, as these lands are most amenable to conversion to plantation agriculture, unless a comprehensive national land use code governs. They comprise an area of about 8.8 million hectares, and the individual states have complete control of these better-drained lowland forests.

Ownership

Virtually all the forest land in Malaysia is owned by the individual state governments. Land alienated for private forest plantation development in Sabah, in the recent past, is the only exception. While the individual states have dedicated substantial portions of their respective forest lands towards maintaining the National Permanent Forest Estate, under the provisions of the National Forestry Policy, these forests remain under the ownership of the states (see Section 5.5). Under the Malaysian Constitution the legislative and executive authority over land and forest is defined as a state responsibility.

Administration & Management

The federal government, through the Forest Department Headquarters, a unit of the Ministry of Primary Industries, is responsible for planning, research, education and technical assistance. At the state level all executive functions are provided by the State Forest Department headed by a State Forest Director. All professional forestry officers at the various Forest Departments are federal officers deputed to the state, under the administration of the State Forest Director, and are liable for transfer to any part of the country. The field staff, on the other hand, are state employees.

Each State has its own Forest Enactment and Rules. The State Forest Departments are responsible for the administration, regulation and management of their respective jurisdictions. The forest revenue, constituting premiums, royalties and fees, belongs to the states. The task of reforestation and rehabilitation of exploited forest areas remains the responsibility of the states.

Harvesting

The principal means of wood disposal in Malaysia is through grants of forest utilization rights, known otherwise as logging concessions.

These are exclusive rights given by the state government to an individual or a corporation, to harvest only the standing trees in a designated area under specified conditions, while the state retains ownership and management of the land. The size and duration of the concession depends largely on the varying priorities of each state government and subsequent use of the land, but a typical concession is granted for ten to fifteen years. The awarding of concessions has traditionally been fraught with charges of favoritism and corruption, and politics has played a significant role. About 70 percent of all logging licences are awarded to Bumiputras (native Malays).

Processing

Most forest products industries are privately owned and operated, but the government has participated in recent times through large, integrated timber complexes.

Similarly, the export of forest products is undertaken for the most part by private individuals or corporations.

(Primary References: Ministry of Primary Industries, Malaysia: Forestry in Malaysia; Raj Kumar: The Forest Resources of Malaysia; Foreign Agricultural Service, Attache Report, 1983; Salleh Mohd Nor, 'Forestry in Malaysia', Journal of Forestry, March 1983)

5.2 DOMINANT COMMERCIAL SPECIES

The mixed tropical rainforest is characterized by the dominance of the *Dipterocarpaceae* family, which forms about 75 percent of the commercially valuable timber. These *dipterocarp* forests have a large variety of species, of different age and size classes, growing at different rates. From an economic point of view this gives rise to a high degree of uncertainty in supply, not just in terms of the type and volume of the species but also of quality.

Only about twenty-five of the 400 or so well-known species are of commercial significance. Of these the five most popular ones, Meranti,

Table 5.3
MALAYSIA: DOMINANT HARDWOOD SPECIES - CHARACTERISTICS, USES & COMPETITORS

<u>Species</u>	<u>Characteristics</u>	<u>Uses</u>	<u>Competitors</u>
I. HEAVY HARDWOODS			
Merbau Balau Chengal Tembusu Resak	(Intsia palembanica) (Shorea spp.) (Balanocarpus heimii) (Fagraea gigantea) (Vatica)	Heavy constructional timber ranging in weight from 50 to 70 lbs/cu.ft. at 15% moisture content. They are naturally durable as they contain toxic substances, e.g. alkaloids repellent to wood-destroying pests. They can be used safely without preservative treatment even where they are exposed to fungi or termites. The sapwood of these trees, however, is not durable.	Selangan Batu (Indonesian Borneo) Yakal (Philippines) Ipil (Philippines) Teak (Thailand, Burma, India) Afzelia (Africa)
II. MEDIUM HARDWOODS			
Keruing Kempas Mengkulang Kapur	(Dipterocarpus spp.) (Koompassia malaccensis) (Heritiera javanica) (Dryabalanops aromatica)	Moderately heavy, ranging in weight from about 45 to 55 lbs/cu.ft. at 15% moisture content. Some of these timbers are heavy and strong enough to be calcsified as heavy hardwood, but under tropical conditions they lack sufficient natural durability when exposed to the weather, or when in contact with the ground, unless they are properly treated. Most are naturally durable in temperate countries.	Kapur (Indonesian Borneo) Gurjun (India) Eng (Burma) Apitong (Philippines) Yang (Thailand)
III. LIGHT HARDWOODS			
Meranti Ramin Jelutong Mersawa Geronggang	(Shorea spp.) (Gonystylus bancanus) (Dyera costulata) (Anisoptera spp.) (Cratoxylon aborescens)	Relatively light in weight, ranging from 25 to 45 lbs/cu.ft. at 15% moisture content. They are general utility timbers, comparable with the softwood general utility timbers of the temperate climates. General utility includes carpentry and packaging. Many of them are not durable under external use, and do not easily absorb preservatives. Some of the Malaysian species are easy to work with, and season well.	Mahogany, Luan (Philippines) Seraya, Melapi (Ind. Borneo) Krabak (Thailand) Kauri pine (N. Zealand, Australia) Douglas fir (USA)

Compiled from: Raj Kumar, The Forest Resources of Malaysia;
Malaysian Timber Industries Board, Sawn Hardwood Timber: Classification & Grading Rules.

Keruing, Kempas, Merbau and Mengkulang constitute about 55 percent of the total output. Meranti alone accounts for almost a third. A list of the main species, their characteristics, uses and competitors is provided in Table 5.3. Timber trade is concentrated around a small number of species. Although there is evidence that the other lesser known species are equally good in their properties, commercial exploitation will be difficult unless dependable markets are assured.

The other major forest type is the swamp and mangrove forest covering about 3.2 million hectares. Over 80 percent of this type of forest is of commercial importance especially in Sarawak, which produces Ramin (*Gonystylus bancanus*), popular in Western Europe. Mangrove swamps are important in the manufacture of dissolving pulp, charcoal and poles.

Appendix B provides a detailed description of the properties and characteristics of the dominant commercial species.

5-3 HARVEST PATTERNS

Harvest patterns in the Malaysian forestry sector are characterized by selective harvesting, under-utilization of many species, and wastage. Most of the country's log exports are from the *dipterocarp* family, the leading species being Meranti, Keruing, Kapur, Kempas and Balau. Many lesser known but potentially valuable species of tropical hardwood face such a weak demand that they are not considered worth harvesting. These less desirable trees are left standing during selective logging, and are typically lost to fire during land conversion programs.

Harvesting has intensified in recent years due to the diminishing availability of easily accessible and profitable virgin forests. The newly harvested species command a lower price than the ones with established markets. This is likely to remain so until more comprehensive information on their end use applications is developed.

The Malaysian Forestry Department has reported a decrease of over two million hectares of forest land in Peninsular Malaysia over the last

fifteen years or so. In effect, this would mean that forested land is being cleared at approximately 150,000 hectares per year. Another one million hectares of forest are scheduled for agricultural conversion in Peninsular Malaysia. Land clearing in East Malaysia (Sabah in particular) is proceeding at a rapid pace as well. Shifting (slash and burn) agriculture is significant in East Malaysia, where tribal populations have cultivated hill rice for generations. Land used in this manner, by traditional right, could once perhaps have been classified as forest land, since these tribal cultivators returned to a plot only once every twenty-five years or so. However, now, population pressure in several neighboring districts has shortened the cycle to as little as ten years, reducing these lands to brush and smaller second-growth timber. An estimated 22 percent of the total area of forest land in Sabah is under shifting cultivation, while the area involved in Sarawak is about 10 percent.

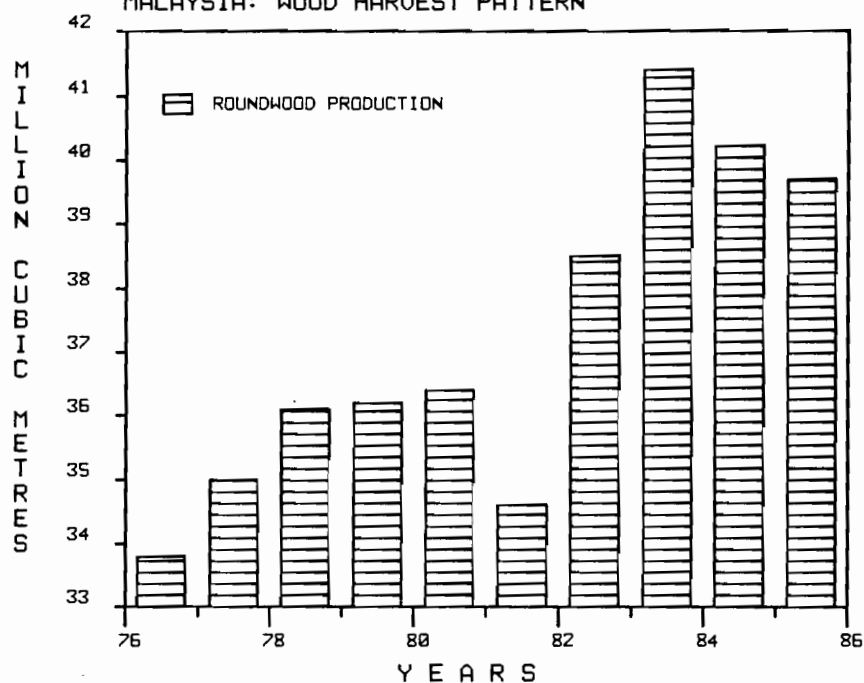
In general, yields in the East Malaysian States, which tend to have more desirable hardwood species, are higher than those in Peninsular Malaysia. Estimation of yield is difficult as little information is available on the amount of land which has been logged in a single year. A rough estimate would put yields in Peninsular Malaysia at about 30 to 40 cubic meters per hectare, with East Malaysia somewhat higher at about 50 cubic meters. Total harvest for the period 1976-1985 is summarized in Table 5.4.

Table 5.4
MALAYSIA: ROUNDWOOD HARVEST
(million cubic metres)

Year	Quantity
1976	33.8
1977	35.0
1978	36.1
1979	36.2
1980	36.4
1981	34.6
1982	38.5
1983	41.4
1984	40.2
1985	39.7

Source : FAO, Forest Products, 1985

FIG. 5.1
MALAYSIA: WOOD HARVEST PATTERN



Sarawak is the main timber producer, accounting for about 42 percent of total production. Sabah and Peninsular Malaysia produce 31 percent and 27 percent, respectively. Total log output, decreased marginally in 1985, for the third year in succession, to 39.7 million cubic meters (Fig. 5.1). To a large extent, the decline in 1985 is attributed to voluntary cutbacks by the industry in order to minimize the price decline.

Output in Peninsular Malaysia declined by 9 percent to 10.7 million cubic meters in 1985, due to deteriorating log prices and weak demand from domestic sawmillers. The fall in production was also in line with the government's policy to scale down the rate of logging. The decline in Peninsular Malaysia was offset by an increase in output from East Malaysia. Favorable weather and land clearing for agricultural development contributed to the increase. Sabah produced 12.3 million cubic meters of timber, while output in Sarawak was 16.7 million cubic meters in 1985.

Faced with predictions of the virtual exhaustion of Malaysia's exploitable timber resources before the end of the century, it might have been expected that measures would have been taken to further limit the rate of harvesting. With executive authority of forest lands

resting with the state governments, which are dependent on royalties to cover most of their operating expenses, the Federal Forestry Department has found it difficult to develop and implement strict national controls.

(Primary References: Raj Kumar: The Forest Resources of Malaysia; FAO Yearbook of Forest Products, 1985; Ministry of Primary Industries: Forestry in Malaysia; Foreign Agricultural Service, Attache Reports, 1983 & 1986)

5.4 REFORESTATION EFFORTS AND PROBLEMS

Little attempt was made to preserve Malaysia's forest resources during the 1970's, when logging rates averaged 350,000 hectares annually. Since then, however, government has taken a more active role in conservation and reforestation programs. The government attempted to reduce the annual logging rate to 150,000 hectares in 1986, compared with 180,000 hectares in 1985. It has also instituted intensified rehabilitation of logged areas through silvicultural treatment. In 1985, 82,000 hectares were treated compared to 67,000 in 1984. It is estimated that about 370,000 hectares will be treated from 1986 to 1990. Several plantation and reforestation programs have also been started in the 1980's with new, fast growing species. However, it is unlikely that reforestation plans at the current rate will totally replenish the growing stock that had been logged over the past 20 years.

Reforestation and regeneration efforts in Malaysia have primarily been in rehabilitative silviculture, and more recently in forest plantations.

Rehabilitation

Reforestation of previously logged areas had traditionally relied on natural regeneration. However, in anticipation of insufficient supplies of commercially desirable timber species, the government has

stepped up silvicultural enrichment in logged forests. Current silvicultural treatment includes:

- a) seedling generation
- b) growth enhancement
- c) selective girdling of undesirable species to make way for commercially valuable hardwood species.

It is estimated that about 300,000 hectares of logged forests have been rehabilitated in this manner.

Financial investment in forest regeneration comes exclusively from state resources, although the states reportedly spend less than 10 percent of their timber royalties on reforestation. Research, technical staff and technical advice for silvicultural programs are provided to the states by the Federal Forestry Department, at federal government expense. Nonetheless, the National Forestry Policy provides that the federal government must bear all costs of developing, regenerating and maintaining the National Permanent Forest Estate, once the land has been appropriated from the states. There has been little incentive, therefore, for substantial reforestation investment by the states, since these forests are to be transferred ultimately to federal management.

Plantations

Until the 1980's, reforestation, in terms of planting a homogenous stand of desirable timber, had been virtually non-existent in Malaysia. The investment cost was viewed as prohibitive, considering the fifty years or so required to produce a harvestable crop of tropical hardwood timber. In contrast, the annual harvest from forest land converted to oil palm plantations produced a gross value in excess of the value of the timber that could have been harvested. However, in view of the depleting forest stock and the expected shortage of marketable hardwood timber by the mid-1990's, the Federal Government has initiated several plantation projects.

Major forest plantation projects in recent years have been:

1. The Compensatory Forest Plantation Program, launched in 1982, will involve about 190,000 hectares by 1995 in Peninsular Malaysia.

The area is to be planted with quick growing general utility timber species (*Acacia mangium*, *Eucalyptus*, *Gmelina arborea*), and the first harvest is expected to yield about one million hectares of timber by 1996. The program is financed with a loan from the Asian Development Bank.

2. In Sabah, the Sabah Forest Development Authority (SAFODA), was granted 200,000 hectares of marginal forest land to rehabilitate. Of this, current plans by SAFODA are to establish about 100,000 hectares of forest plantations with quick growing species, mainly (*P.falcataria*, *Gmelina arborea* and *Acacia mangium*).
3. Elsewhere in Sabah, the Sabah Softwood Co., a joint venture between the state government and a private corporation, has been replanting previously logged areas with quick growing species (mainly *Acacia mangium*) since 1974, and plan to complete about 60,000 hectares by 1990. The Sabah Forest Industries will similarly convert another 60,000 hectares to meet the requirements of its planned integrated pulp and paper mills.

Current reforestation efforts are far from sufficient to match felling rates, however. Much concern has been expressed in the press and other forums over the threat to the environment and agriculture posed by the rapid deforestation of the country. Runoff rates on newly cleared land are very high, and the environmental impacts are numerous. Floods during rainy seasons, the silting of rivers and harbors, low river-flow during dry periods, and more pronounced dry seasons are only some of the consequences of the transformation of the region.

In the past, responsibility for reforestation of exploited forest areas rested entirely with the various state government entities. Loggers' responsibilities ended with the completion of logging activities. Now, however, part of the task of rehabilitation has been apportioned to timber concession owners. Since the mid-1970's, holders of timber concessions of more than 20,000 hectares of forest have been expected to undertake their own rehabilitation after logging, although the effects of this policy have yet to be witnessed.

(Primary References: Foreign Agricultural Service, Attache Reports, 1983 & 1986; Razali Abdul-Kader, The Current Status of Forests and Forest Industries of Peninsular Malaysia; Ministry of Primary Industries, Forestry in Malaysia.)

5.5 FOREST POLICY

For the most part, Malaysia has yet to evolve a balance between different uses of land, as has occurred in most temperate-zone countries. Land in Malaysia is an important economic and political instrument. This is the case particularly when government policy is to promote rural development and seeks to uplift a politically powerful indigenous group, the Malays, who live predominantly in rural areas. As a result, the conversion of forested land to other uses, particularly agriculture, has been largely un-coordinated and ad hoc in nature.

Malaysian development policy has given priority to the promotion of agriculture and mining since independence. Forest areas, once exploited for timber, have been excised from the forest reserve to make way for land development. The government's resettlement schemes for rubber and oil palm smallholders, under the Federal Land Development Authority (FELDA), cleared and planted nearly a million hectares in the 1970's, largely from logged lowland forests. The private sector has been permitted to convert substantial areas of forest as well, with a variety of agricultural and residential development projects. Plans to develop another 2 million hectares in the 1980's will leave very little valuable lowland forests remaining. Similarly, in East Malaysia, lowland forests are giving way to agricultural development on a large scale. Despite the good market outlook for the palm oil and cocoa plantations that are being developed, the conversion of forest land to agricultural use further reduces Malaysia's valuable forest reserves, and thus its forest products potential.

Land Use Policy

Land use policy in Malaysia is governed by the National Land Council, which is constituted of nine Cabinet Ministers and the Chief Ministers of all the 13 states in Malaysia, to formulate national policies for the utilization and control of land for mining, agriculture and forestry. The National Forestry Council (NFC) is subsidiary to the National Land Council (NLC), and drafts forestry policy for approval by the NLC. It is made up of the Directors of Forestry of Peninsular Malaysia, Sabah and Sarawak, federal cabinet ministers and state representatives.

Below are some major policies set by the National Land Council in recent years:

1. The National Land Code (1965) confirms the sole rights of state governments to alienate, reserve and permit occupation of all state land, and also to grant leases and temporary occupation permits on reserve lands. It assigns to the state governments the power to dispose of State land as they see fit, previously the exclusive rights of the hereditary Malay rulers (Sultans). Most of Malaysia's states still have Sultans, who by constitution still retain some control over the disposition of state lands.
2. The National Forest Policy (1978) is aimed at the establishment of Permanent Forest Estates to be strategically located throughout the country, to protect soil and water resources, to maintain a stable timber supply, and to provide recreational, educational and wildlife reserve forests. However, since each state has its own Forest Enactment and Rules, the National Forest Policy serves mainly to set guidelines for the states to protect and develop forest land. It does not remove ultimate authority over the forest from the states.
3. The National Park Act (1980) was formulated to preserve areas of historical, scientific and scenic interest. Malaysia has about 850,000 hectares of virgin forest set aside in National Parks today, as both Virgin Jungle Reserves and Wildlife Sanctuaries, but their protection is not mandated by law. The National Park Act states that under special considerations the states may lease or permit the use of park areas for the construction of roads, hotels, dams and reservoirs, and even for prospecting and mining.

The total area designated as Forest Estate is not permanently alienated as reserved forests. Reserve land can be gazetted (designated by official publication, analogous to a US Federal Register notice) and de-gazetted, or in other words transferred to the State Forest Land category for conversion to agriculture or other uses. The area under the reserve forest classification therefore has fluctuated constantly. For instance, the 1983/84 Economic Report by the Ministry of Finance stated that the forested area in the country at the end of 1982 was 19.7 million hectares, while the Ministry of Primary Industries estimates it at 20.4 million hectares by the end of 1985.

Timber concessions and logging licenses have been granted by the state

governments on an ad hoc basis, and politics remains a major influence in the award of these concessions. Some states have recently established a bidding system for the award of timber licenses, but in most cases royalties on logs removed from concession areas are still the primary means of charging for extracted timber. Royalty levels vary from state to state, and it is not uncommon for some states to waive these royalties altogether as the situation demands.

Production Policy

Sawmillers in Peninsular Malaysia have recently called for additional support and price incentives from the federal government, due to the diminishing supply of logs in the Peninsula. Since they are not able to compete against Japanese and South Korean buyers for East Malaysian logs in the open markets, they have proposed that the Sabah and Sarawak State governments reduce royalty rates on shipments to Peninsular Malaysia. In addition, they have called for the federal government to provide either price subsidies on log imports from East Malaysia or foreign export controls. In response, the federal government has suggested to loggers in the Peninsula to intensify harvesting of lesser known species, so as to increase log output in Peninsular Malaysia.

The export of commercially desirable timber in log form from Peninsular Malaysia is banned altogether. Sarawak grants a rebate of 50 percent of the royalty to companies who use the timber in domestic wood product manufacture. Sabah has set a variable log export tax, as much as 60 percent of the value of the log, in order to encourage more domestic sawmilling, plywood and other manufacture.

(Primary References: Raj Kumar, The Forest Resources of Malaysia;
The Far Eastern Economic Review; Foreign Agriculture Service,
Attache Reports, 1983 & 1986; Ministry of Primary Industries)

5.6 FUTURE TIMBER RESOURCE SUPPLY

In Peninsular Malaysia, Sabah and Sarawak, substantial areas of Permanent Forest Estate have been earmarked for planned exploitation with a view to achieving maximum sustainable yield. The remaining forest area, called State Land Forest, has been set aside for future land development, including cash-crop and timber plantations (see Table 5.2).

An important feature of the area earmarked for permanent commercial forest management is that a large part of it lies in soils and terrain not particularly suitable for agriculture. Much of the Permanent Forest Estates will remain on hilly terrain, rather than on lowlands, once the existing forest is harvested. Natural regeneration tends to be poor on hilly ridges, and hence artificial regeneration will be necessary to maintain present levels of productivity and quality. This could mean that the costs of production and harvesting of the next generation of forests will be higher than those incurred in the lowland forests.

Plantations

Experiments are under way to plant quick growing species such as *Pinus caribaea*. About 5,000 hectares of this pine have been planted experimentally throughout the Peninsula. In Sabah a government-private joint venture has planted over 16,000 hectares of quick growing *Acacia mangium* trees on a plantation basis. The commercial viability of these projects has yet to be ascertained, and there appears to be some hesitancy regarding adoption of the plantation scheme on a large scale. If successful, they might signal a new dimension in Malaysian forest management, with emphasis on fast growing species like the *Eucalyptus*, *Albizia*, *Gemelyna arborea* and *Acacia mangium*, which can be harvested within a period of 15 years, rather than reliance on the slow growing *Dipterocarp* family of the natural forest. This could change the economics of Malaysian forestry considerably.

Another potential source of wood supply currently being studied is rubber plantations. Rubber plantations are clear-felled once they are no longer profitable, usually after about twenty years of latex extraction. If commercially viable, the rubberwood thus extracted could add an estimated 4.2 million tons to the lumber market in Malaysia. Rubberwood furniture is currently being marketed in the US, Japan and Europe. With a projected decline in the area planted with

rubber (to 1.9 million hectares in 1990), due to reduced world demand for natural rubber, there will undoubtedly be continued efforts by Malaysia to promote the acceptance of rubberwood.

In 1983 the government announced a scheme to encourage farmers to grow teak, one of the major timber revenue sources of Burma and Thailand. Both of these countries are currently having problems meeting demand. About 2,000 hectares have been planted on an experimental basis by the Kedah State Government. Teak, however, takes about 30 years to mature.

In general, the reforestation and rehabilitation of upwards of 500,000 hectares of previously forested land amount to an impressive and massive undertaking. Apart from trying to reinforce the important contribution of timber exports at a time when other commodities like tin and rubber are in the doldrums (see following section) the Government also wishes to maintain self-sufficiency in meeting domestic timber needs.

< Primary References: Ministry of Primary Industries, Forestry in Malaysia; Raj Kumar: The Forest Resources of Malaysia; Foreign Agricultural Service, Attache Reports, 1983 & 1986 >

6. FOREST PRODUCTS PRODUCTION & TRADE

6.1 THE FOREST PRODUCTS INDUSTRY

Malaysian government policy is aimed at the active promotion of further domestic processing of native timber. The primary policy devices used to achieve this goal are taxes and outright bans on sawlog exports, along with investment incentives for investment in desired timber processing activities. The result of these policies has been that more than 95 percent of Peninsular Malaysia's log production receives at least primary processing before export. However, more than half the country's wood production is still exported in log form, since investment in processing in Sabah and Sarawak has lagged behind that of Peninsular Malaysia (Table 6.1).

Table 6.1
MALAYSIA: INDUSTRIAL ROUNDWOOD UTILIZATION
(million cubic meters)

	1984	1985	Estimate 1986
Production	31.1	31.3	33.0
Imports	.2	.1	.1
Total Supply	31.3	31.4	33.1
Exports	16.7	19.8	21.0
Domestic Use	14.6	11.6	12.1
Percent Exported	53.4%	63.1%	63.4%

Compiled from: FAO Forest Products Yearbook 1984/5;
FAS Attache Report: 1986

After thirty years of active logging and sawmilling, these two categories of production remain the dominant feature in the Malaysian timber industry. The bulk of exports is in the form of logs and sawn timber, comprising about 86 percent of total forest products exports in 1984 (Table 6.2). The government is seeking more added value timber exports, including mouldings, joinery and furniture. However, the lack of infrastructure and small local markets in the two East Malaysian states of Sabah and Sarawak will likely result in a continuation of the existing scale of log and sawn timber exports.

Table 6.2
MALAYSIA: EXPORT OF MAJOR TIMBER PRODUCTS
(Percentage of export value: fob)

	1973	1984
Sawlogs	67.9	73.2
Sawn timber	21.6	13.0
Plywood, veneer, boards	1.4	4.0
Mouldings, furniture, etc	9.1	9.8
Total	100.0%	100.0%
Timber Products Export Value M\$ billions	1.8	4.2

Source: Ministry of Primary Industries,
Malaysia.

In 1985 the forestry sector contributed M\$3.86 billion or 10.1 percent of Malaysia's exports, and has played an important role in the country's economic development. According to Malaysia's Fifth Development Plan covering the period 1986 to 1990, the timber processing sector is projected to grow by only 4 percent, while the nation's manufacturing sector as a whole is expected to rise by 6.4 percent over the plan period.

In line with government efforts to secure higher added value in the timber industry and increased export earnings, significant progress has been achieved in domestic processing of timber into higher-value products (Table 6.3). In line with political and socio-economic

realities, however, a large extent of government effort has been in the promotion of small-scale industries in the forest products sector, based on hitherto minor forest products such as rattan and bamboo in the manufacture of rattan furniture and handicrafts. The government hopes that these measures will realign the ownership structure of the timber industry to achieve the objectives of the New Economic Policy (NEP). Ownership of the larger-scale timber processing and trading industries has hitherto been largely concentrated in the hands of the Chinese. Forestry sector employment has averaged 120,000 for several years, about 50 percent of which were concentrated in logging.

Table 6.3
MALAYSIA : MAJOR PROCESSING ESTABLISHMENTS

	Number of Mills	
	1972	1985
Sawmills	504	999
Plywood/veneer	34	48
Furniture	863	2,000
Mouldings & joinery	68	161
Blockboard	3	12
Chipboard	n.a.	4
Particleboard	1	1
Wood-wool cement	1	1
Wood preservation	n.a.	98

Source: Ministry of Primary Industries;
Malaysian Timber Industry Board;
Raj Kumar, The Forest Resources
of Malaysia.

Malaysia's world wood trade lies predominantly in three commodities: sawlogs, sawnwood and plywood, though other products like mouldings and board products are becoming important. The main concern of this report, therefore, is with sawlogs, sawmill and plywood/veneer sectors. Appendix C provides detailed production and consumption data.

(Raj Kumar, The Forest Resources of Malaysia; Ministry of
Primary Industries; FAS Attache Reports, 1983 & 1986)

6.2 SAWLOG SECTOR

6.2.1 Industry Structure

For the most part, logging concessions are granted by the state government to individuals or corporations, for them to harvest the standing trees in a designated area, while the state retains ownership of the land. In a few cases, however, parcels of forest land have been alienated to concessionaires, such that they are able to retain the land for agricultural development once the forest resources have been exploited.

A recent trend has been to grant small parcels of timber concessions, usually less than 8,000 hectares, to individuals, while larger areas of up to 50,000 hectares are granted to public and private corporations. It is estimated that in 1980, about a hundred licenses were granted to large concessionaires and about six hundred logging licenses were awarded to individuals and small private corporations.

6.2.2 Production

Sawlog production in Malaysia peaked at 33 million cubic meters in 1983, and in line with the government's policy to scale down the rate of logging, declined to 31 million cubic meters in 1985 (Table 6.4). The decline was also attributed to deteriorating log prices and weak demand from overseas markets. Despite a projected increase in production in 1986 in response to firmer prices and rising demand from overseas markets (Fig. 6.1), output of sawlogs is expected to decline to 28.3 million cubic metres by 1990.

6.2.3 Domestic Market

Due to the diminishing supply of logs in Peninsula Malaysia, log consumers in the Peninsula have recently requested price supports from the federal government. Since they are not able to compete with foreign buyers for logs from East Malaysia, they have proposed that the East Malaysian states reduce their royalty rate on logs shipped to the Peninsula.

The average price of Malaysian sawlogs declined by about 14 percent in 1985. The shortage of logs, coupled with weak log prices, has forced loggers to tighten credit terms while timber processors have tended toward stricter inventory controls.

Table 6.4
 MALAYSIA: HARDWOOD LOGS - PRODUCTION & CONSUMPTION
 (thousand cubic meters)

	1984	1985	Estimate 1986
Production	30,997	31,130	32,815
Imports	1	0	0
Total Supply	30,998	31,130	32,815
Exports	16,668	19,771	21,000
Domestic Consumption	14,330	11,359	11,815

Compiled from: FAO Yearbook of Forest Products;
 Foreign Agricultural Service, Attache Report, 1986

6.2.4 Trade

Peninsular Malaysia, with a well-developed processing infrastructure and a ban on exports of desirable timber species, ships only a small percentage of its annual log harvest, mainly to Singapore. Sabah and Sarawak export over 80 percent of their timber output in the round.

Peninsular Malaysia began restricting log exports from 1972, when 10 species were banned for export. The number of restricted species increased gradually until 1985, when it imposed an almost total ban on the export of timber. Certain species and sizes (diameter less than 41 cm.) may still be exported, but a permit is required. Sabah permits a preferential royalty rate of 7 percent on the fob value of processed timber exported from the state, compared to an export royalty rate of as much as 60 percent for unprocessed timber. In Sarawak, the state government grants a rebate of 50 percent of the royalty on logs that are to be processed locally.

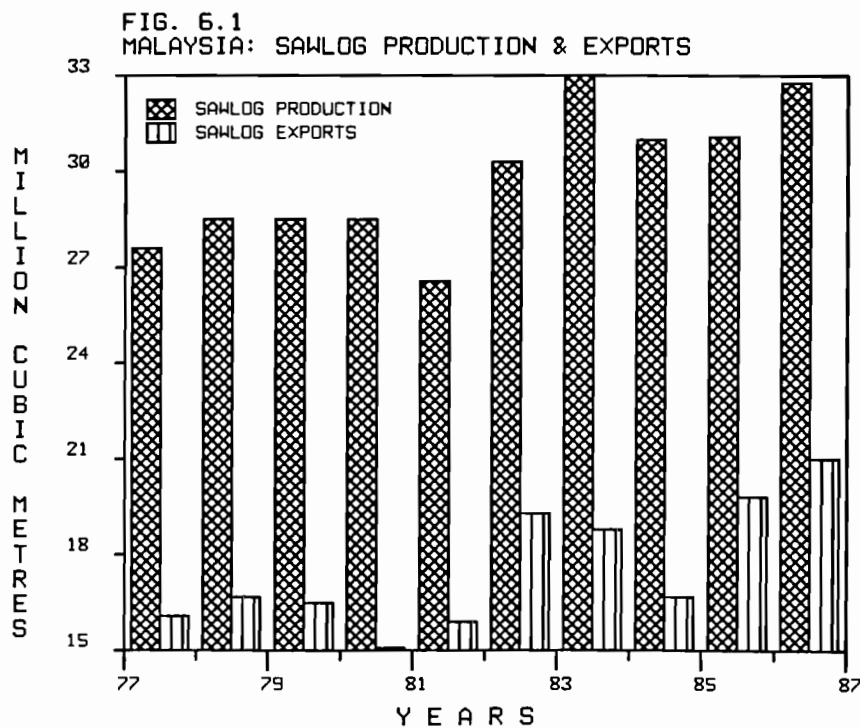
About 60 percent of Malaysia's log exports are shipped to Japan (Table 6.5). Sabah and Sarawak, which produce almost all the logs that are exported, have also begun to diversify into other East Asian markets such as South Korea and Taiwan. But Sabah's reliance on the Japanese market for three-quarters of its exports puts the state in a vulnerable

position. The state could face severe difficulties if, as expected, Japan increases its imports of softwood from the US, with a possible reduction in plywood import duties.

Table 6.5
MALAYSIA: EXPORT OF SAWLOGS BY REGION - 1985
(thousand cubic meters)

	Peninsular Malaysia	Sabah	Sarawak	Total Malaysia
Japan	3	6,336	5,817	12,156
Taiwan	0	492	2,474	2,966
S.Korea	0	1,053	1,834	2,887
China	0	230	668	898
Hong Kong	3	119	413	535
All Others	14	36	280	330
Total	20	8,266	11,486	19,772

Source: Ministry of Primary Industries, Malaysia.
Compiled from: Foreign Agricultural Service, Attache Report, 1986



6.3 SAWMILL SECTOR

6.3.1 Industry Structure

Sawmills were among the earliest processing industries to be established in Malaysia. The number of mills has expanded rapidly in recent years, particularly in Peninsular Malaysia, as a result of increasing demand for Malaysia's sawn timber in overseas markets. Peninsular Malaysia has by far the largest number of sawmills and the greatest proportion of total sawn timber output, despite only a 27 percent share of the country's forest products (Table 6.6). The licensing of new sawmills in Peninsular Malaysia has been frozen, but sawmills are still being licensed in Sabah and Sarawak, because of demand for the abundant supplies of high quality timber in East Malaysia.

Table 6.6
MALAYSIA: SAWMILLS BY REGION - 1985

	% of Total Wood Output	% of Total Lumber Output	Number of Sawmills
Peninsular Malaysia	27	76	663
Sabah	31	18	213
Sarawak	42	6	123
Total	100	100	999

Compiled from: Ministry of Primary Industries, Forestry
in Malaysia;
Malaysian Timber Industry Board.

Due to the deterioration of the timber market, several of the smaller sawmills were forced to cease operations in Peninsular Malaysia in 1985, reducing the total number of operating sawmills to 585. By mid-1986 the number of active mills in the Peninsula had further fallen to 504. However, the total ban of log exports from Peninsular Malaysia imposed by the government in 1985 is expected to alleviate this severe shortage of logs and to bring the inactive mills back on stream.

Most of the existing medium-sized sawmills in Malaysia are equipped

with 50- or 60-inch breakdown saws with automatic log carriage. The larger, more modern sawmills are typically equipped with one 72-inch auto log carriage and two 60-inch band saws with auto carriage.

6.3.2 Production

Output of lumber in Malaysia declined by 6 percent to 5.5 million cubic meters in 1985 (Table 6.7). It was attributed to weak demand from domestic as well as overseas markets, rising production costs and declining prices, and an acute shortage of logs in Peninsular Malaysia. Output dropped by 6.7 percent to 300,000 cubic metres in Sarawak, but in Sabah lumber production increased by 16 percent to 1 million cubic meters. Lower royalty rates on processed logs made it more lucrative to utilize domestic sawmill capacity in Sabah.

Table 6.7

MALAYSIA: SAWNWOOD - PRODUCTION & CONSUMPTION
(thousand cubic meters)

	1984	1985	Estimate 1986
Production	5,889	5,541	5,737
Imports	60	33	30
Total Supply	5,949	5,574	5,767
Exports	2,816	2,740	2,830
Domestic Consumption	3,133	2,834	2,937

Compiled from: FAO Yearbook of Forest Products;
Foreign Agricultural Service, Attache Report, 1986

In anticipation of an increase in overseas demand, particularly from the Netherlands and Belgium, the 1986 output is estimated at 5.7 million cubic meters compared with 5.5 million in 1985 (Fig. 6.2). Despite this small increase in 1986, however, total output is expected to decline by an average of 0.7 percent per year, by 1990, to 5.3 million cubic meters.

6.3.3 Domestic Market

Domestic utilization of hardwood lumber in 1985 is estimated at 2.8 million cubic meters, down 9.6 percent from the previous year. Consumption in 1986 is estimated at 2.9 million cubic meters. It is not expected to grow substantially until 1988.

An estimated 60 percent of domestic lumber consumption in Malaysia is utilized by the construction and building industry (Table 6.8), which experienced rapid growth during the 1970's. But in 1984 and 1985, sales of residential buildings have been sluggish due in part to the overall slowdown in the economy. Commercial construction, however, has registered impressive gains in this period, spurred by a boom in hotels.

For the next few years, however, an existing over-supply of office space and hotel rooms, particularly in Kuala Lumpur, will probably slow the construction of commercial buildings somewhat. In the residential market, medium-cost houses, priced between M\$50,000 and M\$100,000 are expected to dominate. Low-cost houses of around M\$25,000 are expected to experience a surge following the announcement by the Federal government in 1986 to set aside M\$2 billion to finance the construction of 80,000 units.

Table 6.8
MALAYSIA: DOMESTIC LUMBER CONSUMPTION
BY INDUSTRY - 1985
(Million cubic meters)

	Percentage of Total
Construction & Building	60
Boatbuilding & mouldings, etc	15
Furniture & fixtures	10
Boxes, crates & pallets	3
Other	12
	100 %

Source: Asian Timber, News

6.3.4 Trade

Lumber constitutes the largest component of processed forest products exported by Malaysia. Malaysian lumber is exported to more than 60 countries, but Singapore remains an intermediate destination for about 35 percent of all lumber exports. The United States is a relatively minor market.

The largest markets for Malaysian sawn lumber exports in 1985 were Singapore, the Netherlands and Japan (Table 6.9). Exports declined slightly from 2.8 million cubic meters in 1984 to 2.7 million in 1985. Sluggish construction activity in Malaysia's major lumber markets, Singapore and Western Europe in particular, was considered to be the main cause of the decline. Exports to Singapore declined by 22 percent, due to the general economic slowdown there, as well as to increased direct trade between Malaysia and other consuming countries, by-passing Singapore.

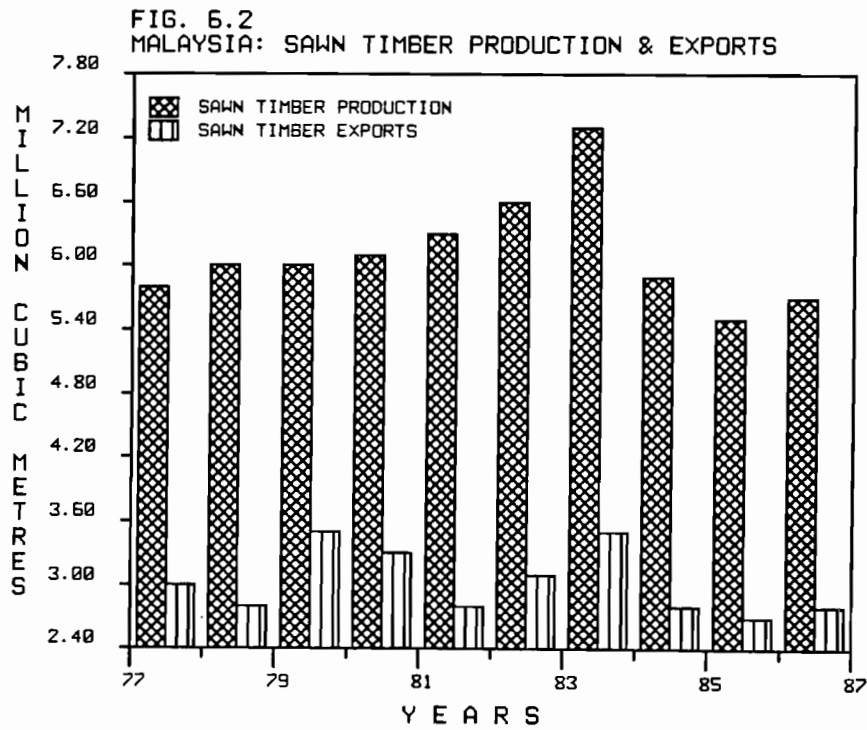
Table 6.9
MALAYSIA: EXPORT OF SAWNWOOD BY REGION - 1985
(thousand cubic meters)

	Peninsular Malaysia	Sabah	Sarawak	Total Malaysia
Singapore	575	99	2	676
Netherlands	292	129	22	443
Japan	81	142	12	235
Belgium	91	23	13	127
Australia	80	46	1	127
Thailand	59	66	0	125
All Others	438	478	91	1,007
Total	1,616	983	141	2,740

Source: Ministry of Primary Industries, Malaysia.
Compiled from: Foreign Agricultural Service, Attache Report, 1986.

6.3.5 Main Species Utilized

The main species of sawnwood produced in Malaysia include Kempas, Keruing, Merbau, Mersawa, Meranti, Balau, Chengal, Geronggang and Tembusu. See Appendix B for a description of the characteristics of some of these species.



6.4 PLYWOOD & VENEER SECTOR

6.4.1 Industry Structure

There are about forty mills producing plywood and veneer in Peninsular Malaysia, and eight in East Malaysia (Table 6.10). As with the sawmill sector, the plywood industry in Peninsular Malaysia has reached the point where the availability of suitable timber is insufficient for existing industry capacity. Future growth is expected to come from Sabah and Sarawak, where there are abundant supplies of suitable timber.

Most of the plywood/veneer plants are small firms which produce 2,000 to 3,000 panels per day (based on 4mm panels). Less than five mills produce between 8,000 to 10,000 panels per day. The minimum economic size in the current world market is considered to be between 15,000 and 20,000 panels per day. It is unlikely that the Government will approve new licenses for the construction of additional mills, except in the case of large, integrated timber complexes, particularly in East Malaysia.

Table 6.10
MALAYSIA: PLYWOOD/VENEER MILLS BY REGION - 1985

	% of Total Wood Production	Number of Mills
Peninsular Malaysia	27	40
Sabah	31	4
Sarawak	42	4
Total	100	48

Compiled from: Ministry of Primary Industries,
Forestry in Malaysia;
Malaysian Timber Industry Board.

6.4.2 Production

The Malaysian plywood/veneer industry underwent another difficult year in 1985, due primarily to weak overseas demand from an over-supply in the market. Production declined by 13 percent to 1.2 million cubic meters (Table 6.11). Demand from overseas markets is not expected to improve in 1986, and production of veneer and plywood is therefore estimated to remain much the same as in 1985 (Fig. 6.3).

Competition with Indonesian producers is a major concern throughout Malaysia's plywood industry. Indonesian plywood producers are often accused of dumping plywood on world markets, causing prices to drop. There were about 100 Indonesian plywood mills in production during 1985.

Malaysian plywood and veneer mills cut back production in 1985, but were able to maintain a sizeable world share of the market on the strength of consistency in product quality and reliability in fulfilling its contractual obligations.

Table 6.11
MALAYSIA: PLYWOOD & VENEER - PRODUCTION & CONSUMPTION
(thousand cubic meters)

	1984	1985	Estimate 1986
Production	1,385	1,206	1,202
Imports	46	16	13
Total Supply	1,431	1,222	1,215
Exports	938	779	755
Domestic Consumption	493	443	460

Compiled from: FAO Yearbook of Forest Products;
FAS, Attache Report, 1986

6.4.3 Domestic Market

As in the lumber market, the largest end-user of plywood/veneer in Malaysia is the building and construction sector, accounting for an estimated 70 percent of the market. The furniture and joinery industry uses about 20 percent.

Domestic consumption of plywood/veneer in 1985 was 443,000 cubic meters compared with 493,000 cubic meters in 1984, a contraction of about ten percent. The weak demand was attributed to the general slowdown in the construction sector. The government's recent announcement to build 80,000 low-cost houses per year over the next three years brightens the prospects of increased utilization of plywood and veneer.

6.4.5 Trade

Laminates and veneers were among the few categories of processed wood products that Malaysia used to import in any significant quantity. They were mainly face veneers, teak and common plywood, and panelling with plastic and other surfaces, products generally not yet manufactured in Malaysia. However, in response to the threat to the domestic manufacture of plywood posed by cheaper imports, the government raised the import duty on plywood from 25 percent to 45 percent in 1984. Imports have virtually come to a halt since then.

Due to the competition from Indonesia, exports of Malaysian plywood and veneer fell sharply by 17 percent to 779,000 cubic metres in 1985, and are expected to decline further in 1986.

Plywood and veneer exports go predominantly to Singapore, Japan and South Korea (Table 6.12). As with sawn timber, the largest share of Malaysia's plywood exports go to Singapore for resale in other markets. Britain is the most important final destination for Malaysian plywood, with exports to West Asia experiencing the most rapid growth. Very little plywood is exported to the US.

6.4.5 Main Species Utilized

The main species of timber used for plywood and veneer production are Bintangor (*Calophyllum* spp), Geronggang and Mengkulang.

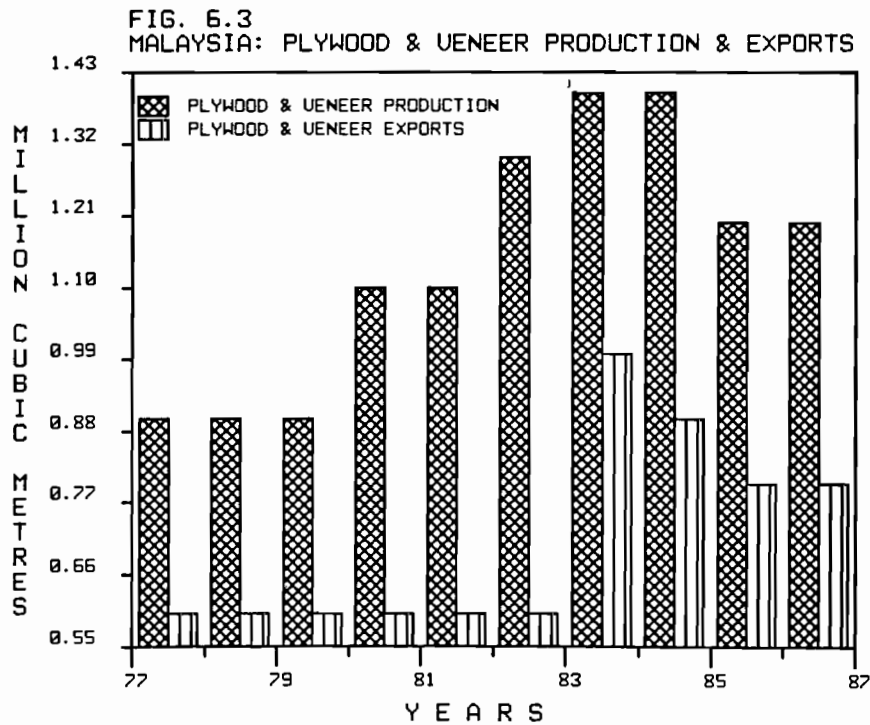
Table 6.12

MALAYSIA: EXPORT OF PLYWOOD & VENEER BY
REGION - 1985

(thousand cubic meters)

	Malaysia
Singapore	163
Japan	155
S. Korea	124
United Kingdom	62
Taiwan	48
All Other	227
Total	779

Source: Min. of Primary Industries, Malaysia.
Compiled from: FAS Attache Report, 1986.



6.5 PULP AND PAPER SECTOR

6.5.1 Industry Structure

Construction has begun both in Peninsular and East Malaysia on three large, publicly financed pulp and paper mills. They are part of integrated complexes including sawn timber and plywood mills, and are expected to come on-stream by 1986-1987. However, their production schedules have been temporarily held back due to the downturn in the economy.

6.5.2 Production

To date, Malaysia produces insignificant quantities of pulp and pulp products. Since the domestic manufacturing industry is at its inception, there is very little data available. Table 6.13 contains FAO estimations, but the data is incomplete.

Table 6.13
MALAYSIA: PULP AND PAPER PRODUCTS - PRODUCTION & CONSUMPTION
(thousand metric tons)

	1977	1978	1979	1980	1981	1982	1983	1984	1985
Production	20	38	46	--	51	51	--	80	
Imports	226	250	260	256	303	288	280	--	311
Exports	3	13	10	5	--	--	--	--	--

Source: FAO Yearbook of Forest Products, 1985

6.5.3 Domestic Market

Pulp and paper manufacture has been identified by the Government as a priority investment sector, especially in view of the large amount of wood waste available. The bulk of the supply of pulp and paper in

Malaysia, comprising domestic production and imports, is made up of newsprint and wrapping, packing and other paper products.

6.5.4 Trade

Almost the entire Malaysian pulp and paper stock has been imported to date, principally from Canada, Scandinavia and Australia.

6.6 BOARD PRODUCTS SECTOR

6.6.1 Industry Structure

This area of processing remains open for investment throughout Malaysia because the raw material inputs are from under-utilized log cores and wood chips. The government is also encouraging the development of more sophisticated wood by-products such as a wood/cement combination board for housing construction, which is already being produced locally to a small extent.

To date three companies have obtained approval for the manufacture of hardboard, of which only one has currently begun production. Particle board and chip board are the only board products known to be manufactured in Malaysia in significant quantities. There are five manufacturing plants.

6.6.2 Production & Consumption

All of the board products taken together make up only a small fraction of Malaysia's forest products output. Very little information is published regarding the manufacture of particle board, chip board and other board products in Malaysia. Table 6.14 provides only an estimation of recent production and consumption trends. Official production data is not available, and even the Malaysian Timber

Industry Board (MTIB) does not appear to have much information on this sector.

This industry is considered a potential threat to plywood, increasingly displacing plywood in the construction of local buildings.

It is assumed that most hardboard is imported, largely from Thailand. Insulation board is also imported, mainly from Europe and Brazil.

Table 6.14
MALAYSIA: BOARD PRODUCTS - PRODUCTION & CONSUMPTION
(thousand cubic meters)

	1984	1985	Estimate 1986
Production	166	140	100
Imports	16	222	208
Total Supply	182	362	308
Exports	7	43	50
Domestic Consumption	175	319	258

Source: Ministry of Primary Industries, Malaysia.
Compiled from: FAS, Attache Report, 1986

6.7 MOULDINGS AND JOINERY SECTOR

6.7.1 Industry Structure

A total of 161 companies have obtained approval to produce wood mouldings in Malaysia to date, and about half of these are presently in production.

6.7.2 Production & Consumption

The timber mouldings and joinery sector is a relatively mature business in that it first began production in Malaysia around 1965, centered mainly in Peninsular Malaysia. The availability of suitable lumber for moulding manufacture has been a problem, but it has been solved to some extent by imports of wood from East Malaysia and Indonesia.

The annual output of mouldings is currently estimated at 200,000 cubic meters, the bulk of which, about 180,000 cubic meters, is for export markets.

The export of mouldings has fallen off since 1980, with a decline in demand in key markets, particularly Australia, but also in East Asia and the United States. Malaysia still retains significant exports of mouldings and dowels to East Asia and the United States.

6.7.3 Main Species Used

The main species used in the manufacture of mouldings and joinery are Kempas, Keruing, Balau, Meranti, Chengal, Tembusu, Geronggang, Merbau and Bintangor. See Appendix B for a description of the characteristics of some of these species.

(Primary References for wood products sectors: Raj Kumar, The Forest Resources of Malaysia; Foreign Agricultural Service, Attache Reports, 1983 & 86; Ministry of Primary Industries, Forestry in Malaysia; Malaysian Timber Industry Board, Timber Trade Review)

6.8 MARKETING CHANNELS

The marketing and promotion of Malaysia's forest products trade is the responsibility of three semi-autonomous marketing boards, supported by fees collected on wood exports. These organizations, the Malaysian Timber Industry Board (MTIB), the Sarawak Timber Industry Development Corporation (STID) and the Sabah Marketing Corporation (SAMA) provide a wide range of services to assist in the marketing of forest products. Their responsibilities include participation in international trade fairs; providing advisory services and business contacts to members; collecting and publishing production, price and trade statistics; publishing technical timber guides and directories; organizing cooperative shipping arrangements, cargo consolidation and freight booking; and assisting small-scale enterprises in negotiating supply contracts.

The MTIB undertakes market research and provides liaison service with international and regional (ASEAN) trade and research organizations. The MTIB, STID and SAMA are empowered to establish subsidiary corporations to facilitate the processing and export of Malaysian wood products. The MTIB has also set up a Timber Freight Bureau (TFB) to provide chartering and warehousing services for timber exports.

Organizing trade missions is a substantial part of the activities of the MTIB. Trade missions concentrate on established developed country markets. A technical mission was sent to the European Community in 1985 to provide clarifications on the amendments to the Malaysian Grading Rules and to inform environmentalists about the planned development and conservation of forests in Malaysia.

Timber exporters in Peninsular Malaysia are now able to export via Kuantan Port on the east coast of the Peninsula. Formerly most exports were shipped via west coast ports such as Port Klang and Penang. East Malaysian timber products are shipped through the ports of Kota Kinabalu in Sabah and Kuching in Sarawak.

7. FOREIGN INVESTMENT & TRADE OPPORTUNITIES

7.1 INVESTMENT GUIDELINES & POLICIES

Foreign investors in Malaysia are permitted to establish a branch or a local company, or enter into a joint venture with a Malaysian party. The government welcomes investment of foreign capital, particularly in manufacturing, but encourages the formation of joint ventures with local interests, in order to increase Malaysian participation in industrialization. Under the New Economic Policy, where industrial undertakings involve dependence on the domestic market, or involve the extraction and primary processing of non-renewable resources, maximum benefit must accrue to Malaysians. Foreign partners are welcomed if they have the necessary technology, but are expected to assist in the transfer of expertise and technology to Malaysians.

Foreign majority ownership is permitted only in projects manufacturing mainly for export. Consideration is given to 100 percent foreign owned equity in such projects.

Major investment policies include the following provisions:

Investment Guarantee Agreements

The purpose of the Investment Guarantee Agreements is to ensure against non-commercial risks such as nationalization, and to allow for remittances of profits and repatriation of capital. Malaysia has concluded agreements with most Western European nations and the United States, and a number of similar agreements are being negotiated with other countries.

Foreign Investment Committee

The Foreign Investment Committee (FIC) formulates policy guidelines on foreign investment for all sectors of the economy to ensure that the

objectives of the New Economic Policy are met. The approval of the FIC is required for any proposed acquisition by foreign interests of substantial fixed assets, any proposed acquisition of 15 percent or more of the voting power by any one foreign interest, any proposed acquisition of control of any Malaysian companies or businesses through any form of joint venture, and any other proposed acquisition of assets or interests exceeding M\$1 million whether by Malaysian or foreign interests.

Capital Issues Committee

Before a company makes a public offering of its shares, it must issue a prospectus with the approval of the Capital Issues Committee and register with the Registrar of Companies.

Industrial Coordination Act

The Industrial Coordination Act requires a person engaged in any manufacturing activity to obtain a license from the Ministry of Trade and Industry. The objectives of the Act are basically to ensure orderly development and growth in the manufacturing sector, to guide the private sector with the government's implementation policies, and to gather necessary data on the manufacturing sector.

< Primary References: Malaysian Industrial Development Authority: Malaysia, Your Profit Centre in Asia; The Hongkong & Shanghai Banking Corp: Business Profile Series >

7.2 INVESTMENT INCENTIVES

Free Trade Zones

The Malaysian government has established a number of Free Trade Zones (FTZ) throughout the country, in order to simplify procedures and encourage the setting up of export-oriented manufacturing facilities. FTZs offer minimum customs control and formalities in the import of raw materials, parts, machinery and equipment. However, to obtain a permit

to operate in the FTZs, the concern is required to export its entire output, or in certain circumstances, not less than 80 percent of production, while raw materials and components have to be imported.

Pioneer Status

Companies which intend to produce goods not already manufactured in Malaysia on a scale suitable to the economic requirements of the country, or which intend to manufacture wholly for export, or where its establishment is vital to public interest, are entitled to Pioneer Status. Pioneer Status grants income tax holidays ranging from five to ten years depending on fixed capital expenditure.

An additional year of tax relief is given for each of the following:

- a. if the plant is sited in a development area,
- b. if the product/industry has priority status,
- c. if local content is at least 50 percent.

Labor Utilization Relief

Labor Utilization Relief (LUR) allows similar tax exemptions as under Pioneer Status, except that the LUR is based on the number of full-time paid employees. Exemptions are as follows: two years for 51 to 100 full-time employees, three years for 101 to 200, four years for 201 to 350, and five years for 351 and above. An extension of one year each is given for the following: location in a development area, a priority product/industry and at least 50 percent local content.

Locational Incentive

The Locational Incentive (LI) scheme was introduced to encourage the dispersal of industries away from the present urban concentrations. A project in a LI area may be considered for tax relief for five to eight years, depending on its fixed capital expenditure or the number of full-time employees. An extension of one year each is given when the investment includes a priority product/industry, and at least 50 percent local content.

Investment Tax Credit

The Investment Tax Credit (ITC) can be granted to companies not utilizing Pioneer Status, Labor Utilization Relief or Locational Incentive. The ITC is of particular benefit to projects requiring

large investments and having long gestation periods. The amount of tax credit given is not less than 25 percent of the total capital expenditure incurred. The amount of credit will be increased by an additional 5 percent for each of the following: location in a development area, priority product/industry, and at least 50 percent local content.

Export Incentives

Three types of export incentives are available to export-oriented companies:

1. Export Allowance: 5 percent of the fob value of all export sales may be deducted from taxable income.
2. Accelerated Depreciation Allowance (ADA): if at least 20 percent of total production is exported, a company is entitled to an ADA of 40 percent per annum and an additional 20 percent initial allowance for modernizing existing production techniques or setting up a modern plant.
3. Tax deductions for overseas promotion expenses.

(Primary References: Hongkong and Shanghai Banking Corporation: Business Profile Series; Malaysian Industrial Development Authority: Malaysia, Your Profit Centre in Asia)

7.3 TRADE & EXCHANGE REGULATIONS

Exchange Regulations

Commercial banks have the authority to approve payments to non-residents. Prior approval is necessary for payments by Malaysian residents to non-residents exceeding M\$10,000 each. Export proceeds from Malaysia need to be repatriated to Malaysia in a specified currency or in Malaysian dollars exchanged for a specific currency with

a special form required for exports valued at M\$5,000 or more. Non-resident companies in Malaysia are permitted to borrow up to M\$500,000 from all sources in the country and are required to seek permission only for amounts in excess of this figure.

Exchange control permission is not required for non-residents to undertake direct or portfolio investment in Malaysia. Likewise, exchange control permission is not necessary for a company in Malaysia to maintain inter-company accounts with associated companies, branches or companies outside Malaysia, provided that the proceeds from the export of Malaysian goods and from loans extended to the Malaysian company are excluded from the inter-company accounts.

Technology Transfer

Agreements for transfer of technology are subject to prior approval from the Ministry of Trade and Industry. "Down payments" for technical know-how are discouraged as they commit the local company at the outset without any guarantee of successful commercial production. Capitalization of know-how is also discouraged by the government.

Employment of Foreign Personnel

"Key Posts", which can be held indefinitely by foreigners, are considered for companies whose foreign capital investment is M\$500,000 or more. In the case of executive posts requiring specific professional qualifications and practical experience not available in Malaysia, expatriates may be employed up to a maximum of ten years, provided Malaysians are trained to take over.

Imports

Malaysia has imposed import duties of 20 to 25 percent on most wood products to protect producers. Exceptions are made for important inputs to wood product manufacture. For instance, there is no duty for face veneer sheets for plywood, or for ramin logs (used in mouldings manufacture). In addition, wood products manufacturers in Peninsular Malaysia may obtain duty exemptions for any other roundwood or sawn timber deemed essential for their operations, with the concurrence of the Malaysian Timber Industry Board.

Exports

Malaysia does not provide export subsidies for wood products. As of January 1st, 1986, however, the national bank's export credit refinancing scheme has been extended to include sawn timber. It provides financing for up to three months prior to shipment of an export order at a preferential 5 percent interest rate. Exporters receive the same terms for up to three months following shipment of the goods. This program, which operates through commercial banks, allows each exporter a credit limit of M\$5 million. The national bank sets a credit limit for each bank and for each qualifying manufacturing and exporting firm as well.

There are no wood export duties except for a 15 percent charge designed to encourage domestic processing of roundwood. Because this export duty is not high enough to keep foreign buyers from bidding logs away from domestic mills, there is also a ban on the export of all the preferred timber species from Peninsular Malaysia.

(Primary References: The Economist Intelligence Unit, Country Profile, 1987-87; The Hongkong & Shanghai Banking corporation, Business Profile Series; Malaysian Industrial Development Corp: Malaysia, Your Profit Centre in Asia.)

7-4 INVESTMENT OPPORTUNITIES

Investment opportunities in Malaysia's timber-based industries include the following:

1) Integrated Timber Complexes

The objective of establishing these complexes is to minimize wastage of wood in timber processing operations. It is estimated that about 70 percent of tree volume is wasted. Products manufactured in such complexes range from sawn timber and plywood to prefabricated houses, doors, window frames, wall panels, etc. Establishment of such complexes is encouraged, especially in the East Malaysian states of Sabah and Sarawak.

2) **Wood Waste Utilisation**

Mill wood residues, estimated at 134 million cubic feet per annum in Malaysia, could be used for the manufacture of fiberboard, particleboard, mouldings, wood briquet, wood wool, activated carbon and laminated wood products.

3) **Other Timber Products**

The manufacture of knock-down furniture, wooden toys, sporting equipment, souvenirs and other joinery products is also given high priority.

Blockboard and particleboard remain open for investment throughout Malaysia because the raw material inputs are under-utilized log cores and wood chips. The government is also encouraging the development of more exotic wood by-products such as a wood/cement combination board for the housing industry.

< Malaysian Industrial Development Authority: Malaysia, Your Profit Centre in Asia >

7.5 TAXATION

Taxes are levied under the Income Tax Act of 1967. They are payable within 30 days of receipt of notice of annual tax assessment from the Department of Inland Revenue. Malaysia has comprehensive bilateral double taxation agreements with many countries including most of the Commonwealth nations, Western Europe and Australia. A number of similar agreements are being concluded with other countries.

Corporate Tax

Companies in Malaysia are normally subject to 40 percent Company Tax, a 5 percent Development Tax (a total of 45 percent), and an Excess

Profits Tax of 5 percent (levied when the chargeable income of a company exceeds 25 percent of the shareholders' funds or M\$200,000, whichever is greater). As previously discussed in Section 7.2, however, under the Investment Incentives Act of 1968, Malaysia offers a comprehensive range of investment incentives for both domestic and foreign companies. These provisions have been specially designed to grant relief from taxation in various forms. No distinction is made between local and foreign companies in granting these investment incentives.

Interest Income

Interest income derived from investments made in Malaysia, and paid to non-residents, is exempt from the 15 percent withholding tax for most approved and licensed investment avenues. In addition, all interest earned by individuals from fixed deposits exceeding twelve months is exempt from tax.

Sales Tax

Sales tax is levied on certain imported and locally manufactured goods, either at the time of import or at the time the goods are sold. The normal ad valorem rate is 5 percent for most goods. This tax is in addition to import duties for imported goods. Import duties are used to protect new industries in Malaysia, although exemptions are often granted for raw materials and components, depending on whether the finished products are sold on the domestic market or exported, and for building and construction materials.

7.6 OUTLOOK

As long as Malaysian government policy dictates that the country remain a net exporter of forest products, it is unlikely that a significant volume of US wood products will be imported into Malaysia. There is presently a very limited import market for veneer panels, reconstituted wood, firbe building board and certain species of temperate hardwood for the manufacture of high quality furniture. Import duties and raw

material export controls virtually guarantee the local market for construction timber to local producers.

Opportunities that do exist are for products not yet manufactured in Malaysia. Here, however, US exports face stiff competition from other Asian suppliers. Where temperate hard or soft wood is demonstrably superior to available tropical hardwood species in locally fabricated products, these raw materials may also find import opportunities in Malaysia. If such uses for US woods can be identified, Malaysian manufacturers could avail themselves of the duty exemptions on saw logs and sawn timber.

APPENDIX A

MALAYSIA: LABOUR FORCE & EMPLOYMENT (millions)

	1981	% of Total	1985	% of Total
Agric., Forestry & Fishing	1,934	38.4	1,853	33.9
Mining & Quarrying	76	1.5	60	1.1
Manufacturing	787	15.6	828	15.1
Construction	310	6.2	379	6.9
Finance, Insur. & Commerce	84	1.7	102	1.9
Government Services	723	14.4	820	15.0
Other Services	1,117	22.2	1,427	26.1
Total Employment	5,031	100.0	5,469	100.0
Total Labor Force	5,281		5,917	
Unemployment Rate	4.7%		7.6%	

Source: Ministry of Finance, Economic Report 1986/87
 Compiled from Economist Intelligence Unit, Country Profile 1986-87

APPENDIX B: SPECIES

B.1 LIGHT RED MERANTI -- *Shorea* spp.

Family: *Dipterocarpaceae*

Light Red Lauan Group

Other Common Names: Saya (Thailand), Red Seraya (Sabah), Meranti Merah (Indonesia), White Lauan (*S. almon* and some species of *Parashorea* and *Pentacme*), Almon, Mayapis (Philippines).

Distribution: Malaysia, Indonesia and the Philippines, usually at low altitudes on well drained soils.

General Characteristics: A large tree reaching a height of 150 to 200 ft.; well-shaped boles clear to 90 ft. and more; trunk diameters 3 to 6 ft; sometimes buttressed.

Heartwood variable from almost white to pale pink to dark red; or pale brown to deep brown; sapwood lighter usually with a greyish tinge, distinct. Grain usually interlocked, sometimes somewhat straight; texture coarse; slightly lustrous; usually without characteristic odor or taste.

Weight: Basic specific gravity (ovendry weight/green volume) sorted to range from 0.33 to 0.52, averaging about 0.40; air-dry density 25 to 40 pcf, averaging 32.

Drying and Shrinkage: Seasons well with little or no degrade; there is, though, a tendency to warp, particularly in thin stock. Kiln schedule T6-D4 is suggested for 4/4 stock and T3-D3 for 8/4. Shrinkage green to oven-dry: radial 4.6%; tangential 8.5%; volumetric 14.3%. Movement in service is rated as small.

Mechanical Properties: (First two sets of data base on the 2-in. standard; the 3rd set on the 2-cm. standard.)

Janka side hardness 570 to 665 lb for dry material. Forest Products Laboratory toughness 270 in.-lb for green and 216 in.-lb for dry material (2-cm specimen).

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (34)	7,350	1,340	3,720
12%	11,100	1,630	5,500
Green (37)	7,710	1,650	4,200
14%	10,830	1,970	6,000
Green (35)	9,150	1,400	4,600
12%	12,750	1,520	7,250

Working Properties: Easy to work with both hand and machine tools; nailing and gluing satisfactory; takes a good finish; resin and oil exudation is not a problem.

Durability: Heartwood generally rated as non-durable in ground contact and is susceptible to dry-wood and subterranean termite attack; sapwood liable to powder-post beetle attack.

Preservation: Heartwood varies from resistant to very resistant to preservative treatments; sapwood usually moderately resistant.

Uses: Light structural work, furniture components, joinery, plywood, cabinetwork, flooring, concrete form work, and general utility wood.

B.2 DARK RED MERANTI -- *Shorea* spp.

Red Lauan Group

Other Common Names: Nemusu (Peninsular Malaysia), Alan (East Malaysia), Dark Red Seraya, Red Lauan, Meranti Ketuko (Indonesia), Tangile (Philippines), Saya (Thailand).

Distribution: Malaysia, Indonesia and Philippines, usually at low altitudes on well drained soils.

General Characteristics: A large tree reaching a height of 200 ft and more with a straight cylindrical bole; trunk diameters 5 to 6 ft., over moderately large and high buttresses.

Heartwood dark brown, medium to deep red, sometimes with a purplish tinge, commonly with white dammar or resin streaks; sapwood pinkish, rather poorly defined. Texture rather coarse; grain interlocked, sometimes straight; luster low, without characteristic odor or taste.

Weight: Basic specific gravity (ovendry weight/green volume) averages about 0.55; air-dry density 42 pcf. In Sabah, this grouping of *Shorea* requires an air-dry weight of over 40 pcf.

Drying and Shrinkage: Moderately slow drying with a tendency to warp; thick material may check and end-split. Kiln schedule T6-D4 is suggested for 4/4 stock and T3-D3 for 8/4. Shrinkage green to ovendry: radial 3.8%; tangential 7.9%; volumetric 13.3%. Movement in service is rated as small.

Mechanical Properties: (First set of data based on the 2-cm. standard; second and third sets on the 2-in. standard)

Janka side hardness 780 to 825 lb. air-dry. Forest Products Laboratory toughness 292 in.-lb. for green (2-cm. specimen).

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (17)	9,900	1,400	4,920
12%	13,300	1,650	7,670
Green (37)	8,420	1,640	4,350
17%	11,130	1,750	5,750
Green (34)	7,800	1,430	3,880
12%	11,500	1,690	6,000

Working Properties: Easy to work with hand and machine tools, dresses to a smooth finish, some tearing of interlocked grain; good gluing and nailing properties; takes a good finish.

Durability: Heartwood is only rated as moderately durable and should not be used in high hazard areas; sapwood liable to attack by powder-post beetles. Not resistant to marine borers.

Preservation: Generally rated as resistant to preservative treatments; sapwood reported to be moderately resistant, varying with species.

Uses: Veneer and plywood, joinery, flooring, furniture and cabinet work, general construction, boatbuilding.

B.3 *Agathis* spp.

Family: *Araucariaceae*

Other Common Names: Damar Minyak (Peninsular Malaysia), Bindang (Sarawak), Menghilan (Sabah), Tolong (Brunei), Almacia (Philippines) Kauri Pine (New Zealand).

Distribution: Widely distributed in Malaysia, Indonesia, Indochina, Philippines, and extending to New Guinea, New Zealand and Fiji. Found from sea level to high altitudes.

General Characteristics: Varies with species but may reach a height of 200 ft. with trunk diameters of 5 to 7 ft., sometimes reaching 10 ft. and more. Boles are straight, cylindrical, without buttresses, and clear for long lengths.

Heartwood pale cream, golden brown, to dark reddish or yellowish brown if resinous; usually not distinct from the sapwood. Lustrous; grain mainly straight; texture fine and uniform; generally without distinctive odor or taste (*A.australis* has a faint pleasant odor).

Weight: Basic specific gravity (ovendry weight/green volume) 0.41 to 0.47; air-dry density 30 to 36 pcf.

Drying and Shrinkage: The timber is reported to season well with little or no degrade. Kiln schedule T7-B3 is suggested for 4/4 stock (*A.alba*) and kiln schedule T10-D5S for 4/4 stock (*A. australis* and *A. vitiensis*). Shrinkage green to ovendry: radial 4.2%; tangential 6.0% (*A.alba*).

Mechanical Properties: (First two sets of data based on the 2-in. standard, and the thirds set on the 2-cm. standard).

Side hardness 480 to 760 lb for green material and 700 to 870 lbs. at 12% moisture content.

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (34)	6,600	1,330	2,840
12%	11,750	1,650	5,900
Green (15)	7,790	1,570	3,370
12%	13,070	1,890	5,600
Green (35)	8,570	1,400	4,040
12%	13,600	1,600	6,900

Working Properties: The timber works easily with hand and machine tools, finishes with a clean, smooth surface; good nailing and screwing properties; good veneer peeling characteristics; paints and polishes well; easy to glue.

Durability: Generally reported to be non-durable and vulnerable to termite attack; prone to blue stain. Heartwood of *A. australis* is moderately durable in ground contact.

Preservation: Usually treatable by standard preservation techniques.

Uses: Vats and tanks, pattern-making, millwork, boatbuilding, furniture components, face veneers, shingles, pencil slats. Trees are tapped for their copal, used in varnishes and lacquers (*A.alba*).

B.4 RAMIN -- *Gonystylus* spp.

principally *G. bancanus*

Family: *Gonystylaceae*

Other Common Names: Melawis (Malaysia), Garu Buaja (Indonesia), Lanutan-Bagio (Philippines).

Distribution: Found in the peat swamp forests of Malaysia, through parts of Sumatra and the Philippines.

General Characteristics: A tall tree free of branches to 50 to 60 ft., bole straight, cylindrical, sometimes fluted at the base; trunk diameter commonly to 2 ft.

Heartwood and sapwood creamy white to pale straw, not differentiated. Grain generally straight or shallowly interlocked; texture fairly fine and even; low in luster. The wood has an unpleasant odor when freshly cut and this may return if dried wood becomes wet. It is suggested that this occurs only in pond-stored logs.

Weight: Basic specific gravity (ovendry weight/green volume) 0.52; air-dry density 41 pcf.

Drying and Shrinkage: Dries readily with little warp but with a marked tendency for end-splitting and surface checking; end coating of boards is suggested. Kiln schedule T3-C2 is suggested for 4/4 stock and T2-C1 for 8/4. Shrinkage green to ovendry: radial 4.3%; tangential; 8.7%; volumetric 13.4%. Movement in service is rated as large.

Mechanical Properties: (First set of data based on the 2-cm. standard; second set on the 2-in. standard)

Janka side hardness 640 lbs for green material and 1,300 lbs for dry. Amsler toughness 193 in.-lb. at 12% moisture content (2 cm).

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (35)	10,300	1,470	5,620
125	19,400	2,030	10,500
12% (52)	17,700	2,170	8,650

Working Properties: The timber is easy to saw and machine, dresses smoothly, glues and finishes satisfactorily. The wood has a marked tendency to split on nailing.

Durability: The wood is highly susceptible to attack by decay fungi; prone to blue stain; not resistant to termite attack. Freshly felled logs are liable to immediate attack by ambrosia beetles.

Preservation: The wood is easily treated using either open-tank or pressure-vacuum systems; absorptions are over 25 pcf (creosote).

Uses: Furniture, joinery, mouldings, paneling, flooring, turnery, plywood, nonstriking handles (brooms), dowels, picture frames; a general utility wood.

B.5 KERUING -- *Dipterocarpus* spp.

Family: *Dipterocarpaceae*

Other Common Names: Lagan, Keroeing (Indonesia), Eng, In (Burma), Yang, Heng (Thailand), Dau (Vietnam, Cambodia), Gurjin (India).

Distribution: Widely scattered throughout the Indo-Malayan region. More than 70 species make up this group, and they are marked collectively. Timbers from Malaysia contain a large number of species and are not variable in properties.

General Characteristics: Varies with species but commonly reach heights of 100 to 200 ft. with clear, cylindrical boles 70 ft. long; trunk diameters 3 to 6 ft., commonly with a small buttressed base.

Heartwood varies from light to dark red or brown to dark brown, sometimes with a purple tint; usually well defined from the grey or buff sapwood. Texture moderately coarse; grain straight or shallowly interlocked; luster low; strong resinous odor when freshly cut, without taste. Resin exudation may be troublesome. Silica content variable, generally less than 0.5%.

Weight: Basic specific gravity (ovendry weight/green volume) mostly 0.57 to 0.65; air-dry density 45 to 50 pcf.

Drying and Shrinkage: Dries slowly, often with considerable degrade due to checking and warp and sometimes collapse. Resin exudation is common, particularly at high temperatures. Kiln schedule T3-D2 is suggested for 4/4 stock and T3-D1 for 8/4. Shrinkage green to air-dry: radial 2.5% to 5.5%; tangential 7.5% to 11.5%. Movement in service is medium to large.

Mechanical Properties: (2-in. standard)

Janka side hardness about 1,520 lbs for dry material. Forest Products Laboratory toughness 240 in.-lb for green material (2-cm. specimen).

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (34)	8,500	1,750	4,050
12%	16,700	2,510	8,600
Green (9)	11,900	1,700	5,690
12%	19,900	2,080	10,500

Working Properties: Generally saws and machines well, particularly when green. Blunting of cutters moderate to severe due to silica content. Sometimes difficult to glue. Resin adhering to machinery and tools may be troublesome. Resin may also interfere with finishes.

Durability: Durability varies with species. Generally classified as moderately durable, but heartwood is susceptible to termite attack. Though silica content may be high, resistance to marine borers may be erratic.

Preservation: Sapwood and heartwood are both rated as moderately resistant to preservative treatments using either open tank or pressure systems.

Uses: General construction work, framework for boats, flooring, pallets, chemical processing equipment, veneer and plywood, suggested for railroad cross-ties if treated.

B.6 KAPUR -- *Kryobalanops* spp.

Family: *Dipterocarpaceae*

Other Common Names: Keladan (Malaysia), Kapoer (Indonesia), Borneo Camphorwood (Great Britain).

Distribution: Malaysia, Borneo and Sumatra; mostly on well-drained soils, often grows gregariously.

General Characteristics: Very large trees to a height of 200 to 250 ft. with straight clear boles 90 to 100 ft. in length above well-developed buttresses; trunk diameters often 3 to 5 ft., and may reach as much as 11 ft.

Heartwood reddish brown; clearly demarcated from the whitish- to yellowish-brown sapwood, rather narrow. Texture moderately coarse; grain straight to shallowly interlocked; luster high; without distinctive taste, but with a strong camphor-like smell when freshly cut, which is lost after exposure; contains resin ducts that normally do not exude over wood surfaces. Silica content 0.12% to 0.91% is reported.

Weight: Basic specific gravity (ovendry weight/green volume) usually 0.57 to 0.65; air dry density 45 to 50 pcf.

Drying and Shrinkage: Dries rather slowly and with only slight cup and some shake. Kiln schedule T10-D4S is suggested for 4/4 stock and T8-D3S for 8/4 (*D.lanceolata*). Shrinkage green to ovendry: radial 4.6%; tangential 10.2%. Movement in service is rated as medium.

Mechanical Properties: (First set of data based on the 2-cm. standard; second set on the 2-in. standard).

Janka side hardness 1,230 lbs for dry material.

Moisture Content	Bending Strength	Modulus of Elasticity	Maximum Crushing Strength
	Psi	10,000 Psi	Psi
Green (35)	11,700	1,580	5,980
12%	16,900	1,930	9,630
Green (9)	12,150	2,305	6,740
15%	16,480	2,710	8,940

Working Properties: The wood works fairly well with hand and machine tools; blunting of cutters may be severe particularly when machining dry wood because of silica content. Slight gumming may take place during sawing. Nails and screws well. Wet wood will stain in presence of iron. Glue lines reported not durable in exterior plywood bonded with phenolic adhesives.

Durability: Heartwood is rated resistant to attack by decay fungi but is reported to be vulnerable to termites; sapwood liable to powder-post beetle attack.

Preservation: Heartwood is extremely resistant to preservative treatments; sapwood is rated permeable.

Uses: Heavy construction work, furniture components, flooring, cores and backs of plywood (glues well with urea formaldehyde), boat framing, joinery.

(Primary Reference: Indonesian Forest Products Sector & Trade Profile, CINTRAFOR, University of Washington)

APPENDIX C: FOREST PRODUCTS PRODUCTION & CONSUMPTION

Table C.1
MALAYSIA: INDUSTRIAL ROUNDWOOD UTILIZATION
(million cubic meters)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	Forecast 1986
Production	29.3	30.2	30.2	30.2	28.3	32.1	34.8	31.1	31.3	33.0
Imports	0	.1	.1	.1	.1	.1	.1	.2	.1	.1
Total Supply	29.3	30.3	30.3	30.3	28.4	32.2	31.9	31.3	31.4	33.1
Exports	16.9	17.2	16.8	15.8	16.5	20.0	19.5	16.7	19.8	21.0
Domestic Use	12.4	13.1	13.5	14.5	11.9	12.2	12.4	14.6	11.6	12.1

Compiled from: FAO Yearbook of Forest Products, 1977-83
FAS Attache Report: 1984-86

Table C.2
MALAYSIA: SAWLOG UTILIZATION
(million cubic meters)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	Forecast 1986
Production	27.6	28.5	28.5	28.5	26.6	30.3	33.0	31.0	31.1	32.8
Imports	0	0	0	0	0	0	0	0	0	0
Total Supply	27.6	28.5	28.5	28.5	26.6	30.3	33.0	31.0	31.1	32.8
Exports	16.1	16.7	16.5	15.1	15.9	19.3	18.8	16.7	19.8	21.0
Domestic Use	11.5	11.8	12.0	13.4	10.7	11.0	14.2	14.3	11.3	11.8

Compiled from: FAO Yearbook of Forest Products, 1977-83
FAS Attache Report: 1984-86

Table C.3

MALAYSIA: SAWN WOOD UTILIZATION

(million cubic meters)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	Forecast 1986
Production	5.8	6.0	6.0	6.1	6.3	6.6	7.3	5.9	5.5	5.7
Imports	.2	.2	.2	.2	.1	.1	.1	.1	0	0
Total Supply	6.0	6.2	6.2	6.3	6.4	6.7	7.4	6.0	5.5	5.7
Exports	3.0	2.8	3.5	3.3	2.8	3.1	3.5	2.8	2.7	2.8
Domestic Use	3.0	3.4	2.7	3.0	3.6	3.6	3.9	3.2	2.8	2.9

Compiled from: FAO Yearbook of Forest Products:1977-83
FAS Attache Report: 1984-86

Table C.4

MALAYSIA: PLYWOOD & VENEER UTILIZATION

(million cubic meters)

	1977	1978	1979	1980	1981	1982	1983	1984	1985	Forecast 1986
Production	.9	.9	.9	1.1	1.1	1.3	1.4	1.4	1.2	1.2
Imports	0	0	0	0	0	0	0	0	0	0
Total Supply	.9	.9	.9	1.1	1.1	1.3	1.4	1.4	1.2	1.2
Exports	.6	.6	.6	.6	.6	.6	1.0	.9	.8	.8
Domestic Use	.3	.3	.3	.5	.5	.7	.4	.5	.4	.4

Compiled from: FAO Yearbook of Forest Products:1977-83
FAS Attache Report: 1984-86

BIBLIOGRAPHY

1. International Monetary Fund, Financial Statistics, DATABANK data base, University of Washington, Seattle, Wa.
2. Quarterly Economic Review of Malaysia: Annual Supplement 1985. The Economist Intelligence Unit, Economist Publications Ltd.
3. Quarterly Economic Review of Malaysia: No.1, 1986. The Economist Intelligence Unit, The Economist Publications Ltd.
4. Quarterly Economic Review of Malaysia: No.3, 1986. The Economist Intelligence Unit, The Economist Publications Ltd.
5. Country Profile, Malaysia, 1986-87, The Economist Intelligence Unit, The Economist Publications Ltd.
6. Foreign Agricultural Service, U.S. Dept. of Agriculture, Attache Report, Malaysia: Annual Forest Products Report, 1983.
7. Foreign Agricultural Service, U.S. Dept. of Agriculture, Attache Report, Malaysia: Annual Forest Products Report, 1986.
8. Wall Street Journal, News.
9. Asian Timber, News
10. Tropical Timbers, News.
11. The Far Eastern Economic Review, Asia Yearbook, 1986.
12. The Far Eastern Economic Review. News.
13. Malaysian Industrial Development Authority, Foreign Investment Incentives and Guidelines, 1985.
14. The Hongkong & Shanghai Banking Corporation, Business Profile Series: Malaysia.

15. Price Waterhouse, Doing Business in Malaysia, Information Guide, 1984.
16. U.S. Dept. of Commerce, Foreign Economic Trends: Malaysia, 1986.
17. U.S. Dept. of Commerce, Overseas Business Reports, 1985.
18. Malaysian Timber Industry Board, Sawn Hardwood Timber, Classification & Grading Rules, 1984.
19. Malaysian Timber Industry Board, Timber Trade Review.
20. Raj Kumar, The Forest Resources of Malaysia, Oxford Univ. Press.
21. FAO, Yearbook of Forest Products, 1985, DATABNK data base, University of Washington, Seattle, Wa.
22. Business International Corp., Research Report: Business Prospects in Malaysia, 1983.
23. Ministry of Foreign Affairs, Malaysia, Economic Policy and Agricultural Development Planning Review, 1985.
24. U.S. State Department: Malaysia -- a Country Study, 1984
25. Malaysian Central Bank (Bank Negara): 1985 Annual Report.
26. Ministry of Primary Industries, Malaysia: Forestry in Malaysia.
27. Indonesian Forest Products Sector and Trade Profile, CINTRAFOR, University of Washington.
28. Razali Abdul-Kader: The Current status of Forests and Forest Industries of Peninsular Malaysia.
29. Journal of Forestry: Forestry in Malaysia, Salleh Mohd. Nor.
30. Australian Forest Industries Journal: The Forests and Forest Industries of Sarawak, R.A. Sebire.

