

Deforesting Malaysia

**The Political Economy and Social Ecology of
Agricultural Expansion and Commercial Logging**



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Abbreviations

ANDP	Adjusted Net Domestic Product
BBTC	British Borneo Timber Company
BNBC	British North Borneo Company
CHOGM	Commonwealth Heads of Government Meeting
CLR	Collector of Land Revenue
EIA	Environmental Impact Assessment
EPU	Economic Planning Unit
FAO	Food and Agriculture Organization
FELCRA	Federal Land Consolidation and Rehabilitation Authority
FELDA	Federal Land Development Authority
FRIM	Forest Research Institute Malaysia
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GNP	gross national product
HYV	high yielding (crop) variety
IADP	Integrated Agricultural Development Programme
IMP	Industrial Master Plan
ITTA	International Tropical Timber Agreement
ITTO	International Tropical Timber Organization
KADA	Kemubu Agriculture Development Authority
KPD	Korporasi Pembangunan Desa
LCC	Land Capability Classification
LCDA	Land Custody and Development Authority
MADA	Muda Agricultural Development Authority
MRP	minor rural project
MITB	Malaysian Timber Industry Board
MUS	Malaysian Uniform System
NAP	National Agriculture Policy
NCR	Native Customary Rights

NDP	National Development Policy
NEP	New Economic Policy
NFA	Nanzai Freight Association
NFC	National Forest Council
NGO	non-government organization
NLC	National Land Council
PBDS	Parti Bansa Dayak Sarawak
PBS	Parti Bersatu Sabah
PDA	Petroleum Development Act
PFE	Permanent Forest Estate
R&D	research and development
RDA	regional development agency
RDC	Rural Development Corporation
RFB	Rubber Fund Board
RIDA	Rural Industrial Development Authority
RISDA	Rubber Industry Smallholders Development Agency
RRI	Rubber Research Institute
SAB	Sabah Action Blueprint
SAFODA	Sabah Forestry Development Authority
SALCRA	Sarawak Land Consolidation and Rehabilitation Authority
SAMA	Sabah Marketing Authority
SEDCO	Sabah Economic Development Corporation
SF	Sabah Foundation
SFD	Sabah Forestry Department
SFDC	state forestry development corporation
SFI	Sabah Forest Industries
SLDB	Sabah Land Development Board
SLDB	Sarawak Land Development Board
SLF	State Land Forest
SMS	Selective Management System
SPB	Sabah Padi Board
TPA	Totally Protected Area
UMNO	United Malays National Organization
UNKO	United National Kadazan Organization
USNO	United Sabah National Organization
VJR	Virgin Jungle Reserve
WWF	World Wide Fund for Nature
WWFM	World Wide Fund Malaysia

Preface

Relatively lightly populated until the mid-nineteenth century, Malaysia's population grew with significant immigration from neighbouring lands as well as from China and India. Population growth received a tremendous boost from the heightened world demand for tin and, even more, after the introduction of natural rubber from Brazil into then British Malaya with the growth of the automobile industry in the United States and Europe.

British control and integration into the growing world market economy encouraged increased agricultural, and other, especially mineral, production for external markets as well as greater food production for those engaged in non-food producing pursuits. This further encouraged immigration, not only of indentured and, later, freer wage labour for plantation agriculture and mineral extraction, but also of immigrant settlers willing to open up new land for agriculture. Hence, while some of the immigrant population went into non-agricultural activities, especially mining and services, others settled into agricultural cultivation, some for subsistence and others for sale, or, more usually, some combination of both. Non-food or cash crops were grown entirely for sale. Such agricultural commodity production was often led by smallholders, but plantations grew far more rapidly with the various advantages offered by colonial and post-colonial regimes. Thus did the first great wave of the modern deforestation of Malaysia begin, stretching well past the first quarter of the twentieth century – an outcome primarily of agricultural expansion in rubber cultivation under plantations and smallholdings.

A second great wave of deforestation, particularly in Peninsular Malaysia, began after independence in 1957, initially driven by land development schemes under aegis of state agencies – a largely successful attempt to provide land to the landless and land-poor without land reform. Based on rubber and, subsequently, oil palm, these schemes

accomplished the deforestation of the bulk of the remaining accessible forest areas on terrain and soil suitable, sometimes marginally so, for conversion to agricultural use. This wave, in the peninsula, extended well into the 1980s, and continues in the east Malaysian states of Sabah and Sarawak.

This second wave was also driven by the development of commercial logging, haltingly at first in the 1950s and 1960s and then picking up pace from the 1970s well into the 1990s. There was and still is an overlap between commercial logging and the land development schemes, as areas slated for the latter were first given over to logging, and then converted to agricultural use.

As with the first great wave, this second wave, too, saw important regional variations in the areas which came together as the Federation of Malaysia in 1963. While there continue to be important variations within Peninsular Malaysia – the entity which gained independence as the Federation of Malaya – the more significant differences are between the peninsular and the states of Sabah and Sarawak on the island of Borneo, each almost as large as the territory of the peninsula. For this reason, this study is organised in terms of these three entities. Despite this regional organization, the study was guided by consideration of the common and various factors influencing decision making on agricultural expansion as well as commercial logging, including the role of international agricultural and timber markets. At one level, these factors can be stated in generic terms applicable virtually anywhere in the world – popular pressures, poverty, land hunger, public revenue considerations, the state-business nexus and the search for political support and legitimacy, not to mention outright venality, on the domestic side, and global demand, international business pressures and organization of the global political economy on the international side. Yet, such factors take effect through domestic and local political and economic structures, the distribution of political power and the state of civil society.

Hence, any serious consideration of the impact of market forces and policy interventions by governments and/or other institutions on agricultural expansion and deforestation is necessarily complex. Not least, these impacts vary over time (e.g. with different sensibilities about the environment or quality of life) and space (i.e. in different environmental circumstances), by crop, tree type or production costs,

among cultivators and loggers or others involved with forest clearance, with varying market and political power or influence. No simplistic model or linear explanation can hope to explain the complex interacting factors influencing agricultural expansion and forest degradation regardless of time, place and people.

There is now a voluminous literature dealing with agricultural development worldwide. It is generally acknowledged that most recent agricultural expansions have been primarily driven by market forces – often as modified by government policies, usually to achieve food security or to retain rural political support. For Malaysia, there is a huge literature describing the growth of agriculture, especially commercial cultivation, usually organized by crop and, more rarely, in terms of land use. A very important feature of much of this literature has been the official distinction between smallholders, owning less than a hundred acres (equivalent to about forty hectares) of land, and estates or plantations of over a hundred acres, with the former often considered traditional. The official focus on this distinction has resulted in relative neglect of other important differences in Malaysian agriculture, e.g. between small and large smallholders or between tenants and landowners. Although early Malaysian agriculture was dominated by rice, much commercial cultivation has involved tree crops such as rubber, oil palm and cocoa, with different ecological implications than the annual or seasonal grain crops cultivated in relatively open fields.

Although little practiced these days, except perhaps in Sarawak, and to a lesser extent, Sabah, swidden agriculture has often been erroneously blamed as principally responsible for deforestation of primary forests in recent times. Shifting or swidden cultivation is premised on an appreciation tropical ecological cycle. Its current image is that of random and destructive “slash and burn” farming. Most swidden farmers clear secondary forest, rather than primary forest, leaving land to fallow for “recovery” from agriculture, including forest regeneration. Much contemporary swidden cultivation only extends primary deforestation by others such as loggers. The cycle of forest regeneration is crucial for the maintenance of swidden farming. Swidden agriculture is thus considered to be a time tested traditional, sustainable and ecological compatible agricultural practice. Some would argue that fallow involves afforestation, though fallow would also imply

subsequent secondary deforestation during subsequent rounds of farming. Of course, changes in land rights, the expansion of sedentary commercial expansion and logging have all decreased the amount of forest available, thus decreasing fallow cycles and exacerbating some problems associated with deforestation. The typical simplified dichotomy between shifting cultivation and "modern agriculture" is potentially misleading as shifting cultivation practices are constantly evolving. Swidden farmers also adapt to changes and new technologies. Hence, shifting cultivators may also engage in what may otherwise be deemed "modern agriculture".

The limits to agricultural expansion in Malaysia have apparently been defined by the availability of arable land, understood in terms of fertility, terrain, irrigation/"irrigability" and accessibility. By the early 1990s, the federal government authorities deemed that these limits were being reached in Peninsular Malaysia, leaving Sabah and especially Sarawak as the remaining frontiers for further agricultural expansion. In the nineties as well, federal land development agencies were no longer as privileged as before in gaining access to land under state government jurisdiction. In fact, private capital will no longer face competition from such federal agencies which have in any case been corporatized to operate along privatized lines, except perhaps in Sabah and Sarawak, where the future of government land development agencies is less clear, although it is likely that they too will share the fate of the federal agencies.

However, this privatization of future agricultural development will not necessarily reduce the politicization – and corruption – of agricultural development since there is still no real market or auctioning process for state land that might be suitable for agriculture. The absence of such a transparent market has meant that the capture of land resource rents will continue to be politically determined, with the state (more accurately, the state governments which enjoy jurisdiction over land and most other natural resources in Malaysia) likely to capture only a small portion of the total available resource rents.

At the same time, two other factors continue to shape the pathways of further agricultural expansion. One of these is specific to Malaysia; the second is a general fact in economic history that carries consequences for the first. In recent years, the major constraint to further agricultural expansion is no longer land, but rather labour

availability. A situation close to full employment has meant the reduced supply of low-wage labour, and has placed constraints on increased reliance on foreign or immigrant labour. Since the latter half of the 1980s, an increasing proportion of work in plantations and even smallholder agriculture, as well as land development (clearance, planting, infrastructure and house construction, etc.) has been undertaken by immigrant labour. The debate on whether there is indeed a labour shortage, rather than a shortage at the prevailing low wage takes place in the shadow of the general fact.

Starting with Raul Prebisch and W. Arthur Lewis, a venerable and sizeable literature has argued that the external terms of trade of raw material-producing economies have declined against those of manufactured goods-exporting economies, and that tropical economies' external terms of trade have deteriorated against those of temperate economies. For example, Lewis argued that the external terms of trade for rubber deteriorated from an index of 100 to 16 between 1916 and 1966. Such trends have obvious implications for the sectoral price of labour, for investment and re-investment, and for choice of crop. Consequently, rubber production grew slowly from the sixties, mainly because of land development schemes, hit a plateau from the later seventies and then went into a steep decline from the mid-1980s, despite tremendous productivity gains due to replanting with higher yielding clones. Employment in the plantation component of the sector fell by one-half between the mid-1980s and mid-1990s. Existing rubber land was increasingly replanted with oil palm, while new agricultural land was also mainly planted with the "golden crop". The saga of cocoa in Sabah is a concise recapitulation of the rubber story. Rapid expansion from the later 1970s into the 1980s has been followed by a precipitous decline in the 1990s.

Despite such changes in crop, it is important to note the significance of inertia, especially with tree crop production. Once agricultural investments have been made, and the crops planted, it is neither easy nor costless for the agriculturalist to simply switch to more lucrative crops, even with favourable soil, climatic and other conditions. The agricultural investor is often obliged to remain committed to the investments regardless of subsequent circumstances and developments detrimental to the planted crop, as the opportunity costs of crop-switching may be too high. Hence, switching between agricultural tree crops involves longer term as well as other considerations.

Furthermore, there are serious information problems for small-holder agriculture. For instance, despite much improved post-independence agricultural extension services, the productivity of rubber smallholdings has lagged behind that of the plantations. Where land productivity of smallholdings was higher before the war, it is now significantly lower, mainly due to better plantation capacity to capture the gains from rubber research and development. This seems to be less true of oil palm cultivation, where the skill requirements also seem to be less.

A combination of agrarian circumstances – lower productivity, lower output quality and hence lower prices, increasingly uneconomic farm sizes, an ethnically limited market for most smallholding land – and the increased availability of more attractive off-farm opportunities resulted in the growing abandonment of smallholding farm land, especially in the peninsula, from the late seventies.

At the same time, beginning in the 1960s and especially in Peninsular Malaysia, there has been the opening up of forests for agricultural schemes for the landless and land-poor under the aegis of federal land development agencies. While ownership is vested in smallholdings, these schemes are operated as quasi-plantations, with recent developments further reinforcing their plantation-like character. Hence, paradoxically, over the past three decades, Peninsular Malaysia has simultaneously experienced both the abandonment of “uneconomic” farmland and other smallholdings and the tremendous opening up of forests for agricultural expansion. There are also significant variations between the different regions of the country in this regard. For example, in Sarawak, the development of agricultural schemes along quasi-plantation lines was, until recently, primarily carried out on what was in fact swidden land under long fallow, that is old secondary forest, whereas in the Peninsula, it mainly entailed the opening up of primary forest.

In recent years, forest agriculture has been encouraged in extensively logged-over or deforested areas in the hope that this will contribute towards more sustainable forestry. There are a few such teak, or more commonly, acacia-planted forests, but the desirability of some of the preferred species, especially acacia, has been strongly disputed; in any case, such forest agriculture still accounts for a very small proportion of total logged land.

There is another more interesting development. Since the eighties, the timber potential of old rubber trees has been developed commercially, realizing an additional gain from the tree crop originally planted for its latex output, with no anticipation of possible timber earnings. This recent development has strengthened the argument that tree crops, particularly rubber agriculture, have had very different ecological implications compared to grain crop agriculture. Ignoring the biodiversity, natural forest foliage and toxic agricultural chemical pollution arguments for forest conservation, proponents of tree crop agriculture have argued that deforestation in favour of tree crop agriculture is desirable on environmental grounds, or at least less undesirable compared to other agriculture (especially swidden and grain crop), or other forms of land development, especially involving built environment.

Finally, there is the issue of shifting cultivation as the major cause of deforestation. In an attempt to defend itself against accusations that its involvement in commercial logging has been partly responsible for forest destruction, Mitsubishi published a comic book (or *mangga*) claiming that the primary blame lies with shifting cultivators. What Mitsubishi failed to acknowledge is that this form of agriculture has been practised in the tropics for centuries, if not millennia, and is a sustainable method of agriculture, provided the population density is low enough and the forest is allowed to regenerate before being cultivated again. Of course, if shifting cultivation is left unchecked in the context of a growing swidden farming population, primary forests will be adversely affected and extant land under swidden will be degraded with shortened fallow. If fallow periods are sufficient, however, secondary growth in the tropics can become so luxuriant as to deceive the untrained eye; indeed, biodiversity may even be enhanced with the increased nutrient supply.

Nevertheless, shifting cultivators do make use of new roads, particularly logging-roads, to penetrate deep into the forest to gain access to new land. This may stem from local over-population, resource deprivation or the allocation of the best available land to plantation interests, leaving farmers to fend for themselves, sometimes forcing them to return to previously cultivated land before it has had time to recover. It can also stem from the plain desire for land with road access. Native systems of land tenure, as they have survived in the

larger context of colonial and post-colonial land law and policies, and in a changed context of the monetization of land values, may also encourage such practices as a means to establish land claims.

In other words, although the direct effects of commercial logging on forests are considerable, its ramifications can result in far greater damage. Such ramifications include not only the activities of swidden communities and the social changes wrought by the logging economy but also the conversion of logged over forest to other uses.

This study began as an investigation of the contribution of agricultural expansion to deforestation in Malaysia. However, commercial logging has become so important to Malaysia, especially since the 1970s, that we have added a chapter on the matter. In the 1980s, for example, timber and wood products were second only to petroleum in terms of their contribution to Malaysian export earnings, i.e. well ahead of palm oil and rubber, even though the peninsula was considered essentially logged out and a ban was imposed on timber exports. The ban was extended to Sabah in the early 1990s for similar reasons before Sarawak timber exports also began to decline later in the decade as a result of a combination of circumstances. Since at least the 1990s, some of the larger and most successful Malaysian commercial loggers have moved abroad to new frontiers in Southeast Asia, the South Pacific, Africa and South America, with equally devastating consequences for tropical forests elsewhere (Jomo 2002). However, as the study makes clear, there is no simple model that can account for the dynamic of agricultural expansion, commercial logging and deforestation, nor is there any simple accounting of the outcome applicable to all circumstances.

Note

Any discussion of deforestation and forestry policy will need to use existing definitions of key terms. However, different institutions and authors use them rather differently. For example, Barraclough and Ghimire (mimeo, p. 12) note disagreement over the basic question of what constitutes a forest area in their survey of the literature from the Food and Agriculture Organization (FAO). Indeed, the term "deforestation" has also not always been used consistently. In its strictest sense, it means a complete change, involving conversion of

land use, from forest to some other use. But another less strict use of the term refers to degradation of a forest area. As Barraclough and Ghimire (mimeo) point out, this would mean that even depletion of forest biomass, and not just tree cover, would constitute deforestation. A broad definition of deforestation could therefore include:

- Conversion of land use from forest;
- Depletion of forest bio-mass, not just tree cover; and
- Other degradation of forests (for example, via logging).

The following discussion takes a broad view and uses key terms and concepts such as forest, deforestation, sustainability, etc. in their more encompassing sense in order to capture a fluid reality, but one which generally has seen a broad trend towards deforestation in the strictest sense of the term.

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Malaysia: An Introduction

The federation of Malaysia was formed in 1963. The federation politically unified all former British colonies in the Southeast Asia region, with their distinct geographies, different histories and varied cultures, except for Brunei. Singapore seceded in 1965. Federation has involved the evolutionary development of common administrative and legal institutions. But as will become evident, diversity continues to be important. Thus, in considering the relationship between agricultural expansion and deforestation in Malaysia, separate attention will be paid to three different regions, namely Peninsular Malaysia, Sabah and Sarawak. Since agricultural expansion and deforestation are inextricably bound up with matters of topography, climate, history, demography, politics, economic development and culture, this chapter will briefly introduce some of the more relevant Malaysian commonalities and differences.

PHYSICAL GEOGRAPHY

Contemporary Malaysia comprises the southern portion of the Malay Peninsula (usually referred to as Peninsular Malaysia and, previously, as Malaya), as well as Sabah and Sarawak in north-western Borneo or Kalimantan. The country covers a total land area of 330,433 square kilometres (sq. km), of which Sabah accounts for 73,620 sq. km and Sarawak for 123,985 sq. km. Sabah and Sarawak, located on the north-western side of the island of Borneo, are separated from the peninsula by over 500 km of the South China Sea. Together, the two Borneo states account for about 60 per cent of Malaysia's total land area,¹ but only a fifth of its population of 23 million.

At its longest, Peninsular Malaysia extends 740 km (460 miles) from the northernmost state of Perlis, that borders Thailand, to the Johor (Jebau) Straits to the south. Sabah and Sarawak stretch some 1,120

Map 1.1 Three Regions of Malaysia



km (700 miles) from Tanjung Datu (Sarawak) in the southwest to Hog Point (Sabah) in the northeast. Map 1.1 shows Peninsular Malaysia and the two Borneo states of Sabah and Sarawak.

The country lies just north of the equator and the predominant climate ranges from equatorial to tropical monsoon, with distinct seasons for the southwest and northeast monsoons, which blow alternately during the course of a year. The northeast monsoon prevails from approximately November to April and the southwest monsoon between May and October, with the periods of transition between the two monsoons marked by precipitate rainfall. The northeast monsoon, coming from across the South China Sea, is responsible for heavy rains on the east coast of the peninsula, frequently causing floods – particularly between November and February – and also the wet season in Borneo, especially Sabah. On the peninsula, the highest annual rainfall exceeds 5,000 millimetres (mm). In the north, there is a distinct dry season that gradually diminishes as one moves south. The sea level mean daytime temperature throughout Malaysia is around 27°C, with daily fluctuations of 5° to 10° between day and night. Temperatures remain at these levels throughout the year. Through the spine of the peninsula, the Main Range of mountains rises to over 2,100 metres. Many rivers originate in these mountains, the main ones being the Pahang, Perak and Kelantan rivers. Floods have been common on the major rivers of the East Coast, particularly the Kelantan river, and have increasingly become a regular feature of littoral or downstream urban areas.

The peninsula has two main soil types: (1) igneous, metamorphic and sedimentary rocks and sedentary soils of the hills and mountains; and (2) alluvial deposits. Sedentary soils are generally deep, often extending 20 metres (m) or more into the ground, and can therefore support deep-rooting trees, such as rubber. Alluvial soils, on riverine or coastal plains, generally differ in terms of texture, drainage capability and nutrient levels. Oil palm, rubber and rice are among the crops commonly grown in the riverine alluvial soils. In sandy alluvial areas, coconut is a common crop. The clay soils of coastal areas suit a range of crops: rice, oil palm, coconut, cocoa, coffee, and other minor crops, including bananas, tapioca, vegetables and sugarcane. The other important category of alluvial soils is organic soils, with peat (organic material at various stages of decomposition) being the main material.

Pineapple is the most common crop grown on these soils, mainly found in Johor, Perak and Selangor.

In Sabah, a low-lying alluvial coastal plain, between 20 to 40 miles wide, lies inland from a predominantly mangrove-fringed shoreline. This plain is bordered by an intermediate area, sometimes called the "hill country", with average elevations well below 1,000 feet (ft). A third region is formed by the interior highlands, where summit levels mostly range between 4,500 and 7,500 ft. These highlands, called the Crocker Range, culminate in the spectacular granite peak of Mount Kinabalu (13,455 ft). The ruggedness of Sarawak's interior region has meant that rivers often provide the only means of transportation, while difficulty of both access to and cultivation of land explains the low population densities in these areas. In general, Sabah and Sarawak have little fertile land for agriculture, even though much of the territory is intrinsically no less suitable for rubber cultivation than on the peninsula. However, the two states have an abundance of forest products and a variety of mineral deposits. Thus, "geographical facts alone cannot wholly explain the retardation of this region as compared to the Peninsular" (Fisher 1964: 662).

HISTORY

The earliest of the contemporary inhabitants of Malaysia were the *Orang Asli* (literally meaning "original people") of the Peninsula, and others such as the Punan of Sarawak and the Rungus of Sabah. Their presence within Malaysia's modern boundaries probably dates back over five millennia. Various influxes of Malays took place centuries later. The earliest of these immigrants had established themselves in the peninsula by 1,000 BC. They were followed by others, some of whom came with more advanced farming techniques and other new knowledge.

The history of Malaysia and of its peoples has been influenced by its strategic geographical location at a major maritime trade crossroads, as well as by its tropical climate regulated by the monsoons. By the first century of the Christian era, the inhabitants of the country had established regular trading contacts with the world beyond Southeast Asia, specifically with China and the Indian sub-continent. Through migration, trade or conquest, the region was subjected to major Hindu

and Buddhist influences. These influences were later supplanted by Islam which was introduced and spread by Indian and Arab traders from around the 13th century.

The golden age of Malay civilization is said to have occurred in the 15th century in the Malay kingdom of Malacca on both sides of the Straits of Malacca. The fall of Malacca to the Portuguese in 1511 marked the beginning of European colonialism. Meanwhile, in Borneo, the inhabitants of what are now Sabah and Sarawak lived degrees of relatively autonomous existence, although the Sultanates of Brunei and Sulu exercised varying authority over them until the middle of the 19th century.

European power in the region was largely limited to long-distance trade until British interests extended into production at the end of the 19th century. From their trading bases in Penang (1786), Malacca (1815) and Singapore (1819), later collectively known as the Straits Settlements (SS), British influence and power spread to other parts of the peninsula. During the same era, the contemporary states of Sabah and Sarawak began to take shape as separate entities as British adventurers acquired territory at the expense of the Brunei and Sulu sultanates. James Brooke consolidated his personal control over parts of Sarawak from 1841, while in Sabah, acquisitions by various individuals were consolidated by the Chartered Company of British North Borneo in 1881.

The interests, priorities, conduct and practices of these administrations were markedly different, not least in their policies towards agriculture and forestry. In Malaya, the expansion of the rubber industry during the early part of the 20th century was crucially important to the British empire. Such agricultural expansion was not significant in either Sabah or Sarawak then. These historical differences have been of critical relevance to the dynamics of agriculture and forestry policies in the three different regions, as will be seen later.

The fall of Malaya and British Borneo to the Japanese in 1941-42 shattered the myth of Western colonial supremacy. Although the British resumed authority in Malaya after 1945 (and directly took over Sabah and Sarawak as Crown colonies), they faced a more politically volatile climate, with strong nationalist sentiments and pressures for independence. Malaya gained independence in August 1957. Meanwhile, Sabah and Sarawak continued to be directly administered by the

British Colonial Office until the formation of Malaysia in September 1963. Brunei had also been involved in the discussions to establish the federation, but withdrew at the last moment, while Singapore left the federation in August 1965 to become an independent republic.

DEMOGRAPHY

According to the national census, Malaysia's population was 18.4 million in 1991 and 22.2 million in 2000. In 1991, Sabah² had a population of some 1.8 million (9.8 per cent of the total Malaysian population), Sarawak, 1.7 million (9.3 per cent), and the peninsula, 14.9 million (80.9 per cent). The census conducted in 2000 reported 17.7 million in the Peninsula (79.9 per cent of Malaysia's total), 2.0 million in Sarawak (9.1 per cent), and 2.4 million in Sabah (11.0 per cent). Malaysian census population estimates are summarized in Table 1.1.

The demographic growth of Malaysia is shown in Table 1.1, with different dynamics at work in the three regions. Between 1980 and 1991, Malaysia's population grew at an overall annual rate of 2.6 per cent, with Sarawak and Sabah recording higher growth rates. Sarawak's

Table 1.1 Malaysia: Population by Region, 1891-2000

<i>Year</i>	<i>Peninsula</i>	<i>Sabah</i>	<i>Sarawak</i>	<i>Malaysia</i>
1891	—	67,062	—	—
1911	2,339,051	—	—	—
1931	3,787,758	—	—	—
1947	4,908,086	—	546,385	—
1951	—	334,141	—	—
1957	6,278,758	—	—	—
1960	—	454,412	744,529	—
1970	8,809,557	653,604	976,269	10,439,430
1980	11,426,600	1,011,000	1,307,600	13,745,200
1991	14,852,700	1,808,800	1,718,400	18,379,900
2000	17,740,609	2,449,389	2,012,616	22,202,614

Sources: *Malaysia: General Report of the Population Census, 1970, 1980, 1991, 2000.*

growth rate was around 3.7 per cent, while Sabah's was 5.5 per cent, the highest for all the Malaysian states. Population growth also varied among the various ethnic groups. In Peninsular Malaysia, the growth rate among Malays was higher than for other major ethnic groups.

In contrast to other areas of the world with greater population pressure, Malaysia still has relatively few people for its land size despite its rapidly growing population. In other words, population densities are still relatively low, with the states of Sarawak and Sabah having the lowest population densities in the country. The higher population growth rate for Sabah is due, in large measure, to the higher number of immigrants, especially from neighbouring Philippines and Indonesia, drawn to the comparatively better economic conditions in Sabah. Indeed, nearly a quarter of Sabah's inhabitants in the 1991 census were counted as non-Malaysians, of whom more than 98 per cent were from Indonesia or the Philippines. The comparable figures for Peninsular Malaysia and Sarawak were 2.1 per cent and 1.0 per cent respectively. The overall ethnic mix of Malaysia's population is shown in Table 1.2, while ethnic breakdowns in the three regions of Peninsular Malaysia, Sabah and Sarawak in 2000 are given in Table 1.3.

Table 1.2 Malaysia: Distribution of Citizens by Ethnic Group, 1970-2000

<i>Ethnic Group</i>	<i>1970</i>	<i>1980</i>	<i>1991</i>	<i>2000</i>
Malaysian Citizens	10,881.5	13,136.1	16,812.3	21,889.9
<i>Percentages</i>				
<i>Bumiputera</i>	—	59.2	61.3	65.1
Malay	56.0	48.6	50.7	53.4
Other Bumiputera	—	10.7	10.6	11.7
Chinese	34.3	31.7	27.5	26.0
Indians	8.7	8.4	7.8	7.7
Others	0.9	0.6	3.4	1.2

Note: Population distribution by ethnicity for 1970 only covers Malays, Chinese, Indians and Others. No data was available on Other Bumiputera or Indigenous Groups.

Sources: *Malaysia: General Report of the Population Census, 1980*: Summary Table 4; *Malaysia: General Report of the Population Census, 1991*: Table 2.12; *Malaysia: Population Distribution and Basic Demographic Characteristics, 2000*: Table 2.1 and 2.2; *Malaysia: Vital Statistics Time Series, 1963-1998*: Table A1.3.

Table 1.3 Malaysia: Citizens by Ethnic Group and Region, 2000

<i>Region</i>	<i>Ethnic Group</i>	<i>Number (’000)</i>	<i>Percentage Distribution</i>
Peninsular Malaysia	Malaysian Citizens	17,832.6	100.0
	<i>Bumiputera</i>	11,135.7	62.4
	– Malay	10,885.7	61.0
	– Other <i>Bumiputera</i>	250.0	1.4
	Chinese	4,833.1	27.4
	Indian	1,680.1	9.4
	Others	133.7	0.7
Sabah and Labuan	Malaysian Citizens	2,048.6	100.0
	Malay	332.5	16.2
	Kadazan-Dusun	484.8	23.7
	Bajau	347.2	16.9
	Murut	85.1	4.2
	Other <i>Bumiputera</i>	399.5	19.5
	Chinese	271.6	13.3
Sarawak	Others	127.9	6.2
	Malaysian Citizens	2,008.8	100.0
	Malay	462.3	23.0
	Iban	603.7	30.1
	Bidayuh	166.8	8.3
	Melanau	113.0	5.6
	Other <i>Bumiputera</i>	117.7	5.9
	Chinese	537.2	26.7
	Others	8.1	0.4

Source: *Malaysia: Population Distribution and Basic Demographic Characteristics, 2000*: Tables 2.1, 2.16, 3.10 and 3.11.

These demographic statistics are manifest in the differing cultural practices of the various ethnic groups and their different roles and influences in society. For example, a significant proportion of the indigenous populations in Sabah and Sarawak still practise shifting cultivation, usually combined with some sedentary cash-cropping. Cultural practices, land administration, ownership and productivity also differ, and are often at variance with more “modern” notions of “development”. The conflicts between these indigenous practices and more commercial agricultural norms and practices will occupy much of our later discussion.

At this juncture, some comment needs to be made on the term *Bumiputera*. Officially, Malaysia's ethnic groups fall into two main categories: those with cultural affinities indigenous to the immediate region, classified as *Bumiputera*, and those whose cultural affinities lie further, mainly those of Chinese and Indian origin. By this classification, *Bumiputera*³ consists of the "Malay" and aboriginal groups in Peninsular Malaysia, as well as the Malay and other indigenous populations of Sabah and Sarawak. As can be seen from Table 1.3, in the Borneo states, there are many ethnic groups significant enough for the census to specifically identify – that is, 10 ethnic categories in Sarawak and 25 in Sabah – in addition to the classification "Malays" and "Other *Bumiputera*"

Religious categorization has also been relevant in Malaysia's polity. In Malaysia, Malay ethnicity is legally defined by the profession of Islam, among other things; by constitutional definition, all Malays are Muslims. This is not the case for other demographically significant *Bumiputera* groups. For example, the Kadazan in Sabah and the Iban in Sarawak are predominantly Christian. There have been concerns and fears that government policies promote Islam and Malay culture over the religions and culture of others, including other *Bumiputera* groups, with positive discrimination in favour of the *Bumiputera* seen as primarily favouring Muslim Malays.⁴ Given the significantly different demographic compositions of Sarawak and Sabah, these policies have affected various indigenous groups, of whom the majority are farmers, rather differently.

The non-*Bumiputera* category chiefly refers to those of ethnic Chinese and Indian origin. Most Chinese and Indian immigrants entered Malaya during the late 19th and early 20th centuries, drawn or even brought by prospective economic opportunities and British colonial policies. Again, the differing ethnic profiles of the three regions reflect their different colonial experiences, in particular, the different ways in which the colonial administrations sought to "develop" the land, not least through the large-scale importation of foreign labour. Thus, in Malaya (Peninsular Malaysia), the widespread development of the tin and rubber industries saw the importation of millions of people, especially from China and India. Sarawak and Sabah, on the other hand, had distinct histories, with different consequences for immigration, land settlement and agricultural expansion.

Indeed, the historical demography of Malaysia requires us to treat the three regions separately – to properly acknowledge the different historical experiences of agricultural land development.

POLITICS AND GOVERNMENT

The formation of the federation of Malaysia was clearly inspired by the British, who were anxious to consolidate their former possessions and colonies in Southeast Asia under one reliable umbrella at a time when more radical nationalist challenges threatened to undermine British interests in the region. Malaysia's formation was not without controversy. The Cobbold Commission, set up by the British to gauge likely reactions to the proposal in Sarawak and Sabah, could only report minority support for the idea. This implied that at the outset, there were many in Sabah and Sarawak who were suspicious of merging under such auspices with a bigger entity. The fear was probably that they would continue to be dominated by and for others, with London substituted for Kuala Lumpur.

The expanded federation continued to be a constitutional monarchy, with a parliamentary system ostensibly adapted from the British model, and three tiers of government: federal, state and local (municipal). Elections to federal and state legislatures are still held at least once every five years, while elections at the municipal level were abolished in the mid-1960s. Malaysia's federal constitution defines the powers of the three tiers of government. Although the federal government sets overall policies for finance, education, defence, development and other "national" matters, state governments have authority over access to and use of natural resources, such as land, forests, water and minerals.

With the Petroleum Development Act (PDA) of 1974, however, the federal government gained complete control over petroleum and natural gas resources, to the detriment of the oil-rich states, including Sabah and Sarawak. The third tier, that is local government, is mainly responsible for the administration of municipal services and administration within gazetted districts and municipalities. This division of powers and the political dynamics between federal and state governments are crucial to understanding issues relating to land and forest resources in Malaysia.

These dynamics are complicated, and the following brief summary must necessarily simplify the many nuances that make up the intriguingly, complex scenario that is the Malaysian polity. Certain distinguishing features of Malaysia's political landscape are clearly of relevance. First, the federal government has always been run by a ruling coalition of mainly communally-based parties, in which the Peninsular Malaysia-based United Malays National Organization (UMNO) has been dominant.⁵ These two aspects – of seeming Malay federal and government dominance – have had crucial implications for Malaysia, particularly Sabah and Sarawak.

Early fears in Sabah and Sarawak that federal government dominance might over-ride the interests of the East Malaysian states led to the enunciation of "Twenty Points" as conditions for entry into the federation. The Twenty Points represented an initiative by some leaders of Sabah and Sarawak to protect them against feared federal government excesses, by ensuring the two state governments certain additional areas of administrative autonomy. The federal government has not fully recognized the twenty points in practice, and many would claim that the tacit agreement has been breached. Instead, the federal government leadership has cultivated political alliances to garner support in Sarawak and Sabah, currently relying on Muslim and Chinese leaders as its principal allies.

The extent to which the federal government has been prepared to perpetuate such dominance has been demonstrated by events in Sarawak and Sabah since 1963. For example, in 1966, retroactive constitutional amendments were made to legitimize Kuala Lumpur's intervention to replace Stephen Kalong Ningkan, an Iban, as Sarawak's Chief Minister. This was eventually followed by an uninterrupted period of Muslim-Melanau domination of Sarawak politics, despite their small minority (less than five per cent) status.

The recent history of Sabah has also been dominated by federal government interference to replace recalcitrant state governments, beginning with Tun Mustapha's United Sabah National Organization (USNO) government in 1976. After the mainly Christian Kadazan-dusun Parti Bersatu Sabah (PBS) supported the national opposition during the 1990 general election, the federal government reaction was harsh. Federal allocations were slashed, the timber revenue contribution to the state economy was limited, the Chief Minister was

arraigned on corruption charges and peninsula-based parties were set up in Sabah to undermine the PBS. The process of wresting the state government from PBS was completed in early 1994, when most PBS elected state representatives crossed over, giving the UMNO-led coalition a majority.

Such intervention is indicative of the determination of the federal government to ensure co-operative state governments in Sabah and Sarawak.⁶ There has also been growing sensitivity over the financial relationship between the federal and state governments, especially following the 1974 Petroleum Development Act (PDA) arrangements on oil and gas revenues. Although both states are rich in these resources, Sabah and Sarawak receive only five per cent of petroleum and gas royalties, with the rest accruing to the federal government. This has encouraged and provided a pretext for both Sarawak and Sabah state governments to further exploit their other natural resources, ostensibly to make up for foregone petroleum revenue. The political dynamics that follow from federal-state relations help clarify the ways in which federal policies, especially policies involving agriculture and forestry practices, have been implemented and received at state level.

The gerrymandered delineation of parliamentary constituencies has enabled the Malay vote as well as Sabah and Sarawak to disproportionately influence the outcome of any federal election. Hence, responsiveness to Malay voters' concerns has long been of paramount importance to retaining government power. But towards the end of the 1960s, many within UMNO were of the opinion that not enough was being done to help the Malays,⁷ and that other ethnic groups, especially the Chinese, had been given too much advantage by post-colonial government policies. Without economic nationalization, the corporate sector of the Malaysian economy, foreign-dominated from colonial times, remained under foreign control after political independence. Yet, with Malaysia's ethnic pre-occupations, such control was not as visible as the more ubiquitous ethnic Chinese wealth, whose presence had become more pronounced after independence.

The federal government has promulgated five-year plans since the 1950s. The re-election of the ruling coalition since 1955,⁸ which has rarely been in any serious danger of being ousted, has ensured considerable policy continuity. As we shall see in the following chapters,

a major priority of the federal government from the 1950s through the 1970s was rural development. This mainly involved building basic infrastructure and implementing projects in a society that was still overwhelmingly rural, of whom more than half were still living in poverty in 1970.

In 1969, following the general election in which the ruling coalition suffered significant losses, ethnic rioting and a palace coup within UMNO led to changes in UMNO, federal government leadership and policy. The introduction of the New Economic Policy (NEP) was premised on the perception that: (1) the Malays (in Peninsular Malaysia) had not benefited enough from the country's development, (2) poverty levels remained unacceptably high, and (3) corporate ownership needed to be restructured so that Malay participation would be increased to at least 30 per cent by 1990. Meanwhile, a new export-oriented industrialization policy had already been introduced from the late sixties as import-substitution had been quickly exhausted. To achieve national unity, primarily understood as improving Malay-Chinese relations in the Peninsular Malaysia context, the NEP sought to achieve inter-ethnic economic parity by eliminating the identification of economic function with ethnicity through positive discrimination initiatives in favour of the *Bumiputera*, and in order to reduce poverty.

The political agenda underpinning the NEP was, arguably, of limited relevance to Sabah and Sarawak. Policies developed for the peninsula were extended to the Borneo states with little regard for the different circumstances there, including the different demographic structures, causes and patterns of poverty, and nature of economic development in Sabah and Sarawak. As we shall see, the underlying assumptions and approaches to agricultural land development programmes, as well as to forestry, have been remarkably similar across the three regions. The varying circumstances of each region have, however, produced different results from similar policies.

Sabah and Sarawak have had higher incidences of poverty than most other Malaysian states, while their poverty profiles differ significantly from those in the peninsula. For example, the two Borneo states have had far fewer wet rice farmers and rubber smallholders than the peninsula, both absolutely and proportionately. Also, the Sarawak and Sabah shares of federal funds have generally been below the levels of other states. In this sense, the two Borneo states have

been experiencing net losses since joining the federation, especially due to the loss of most of their potential oil and gas revenues (Wee 1995). Not surprisingly then, the two state governments have insisted on controlling their other natural resources, including land and forestry policies, ostensibly for their own welfare.

On a whole range of economic welfare and social indicators (including the provision of basic utilities, health and educational status), the two states lag behind Peninsular Malaysia (Wee 1995). Transport and communications infrastructure in the two states is much inferior to that in the peninsula, partly due to the more rugged terrain. Riverine communications systems are still very important in Borneo, especially Sarawak, because of the limited development of alternative transport systems. This state of affairs has resulted in more difficult access to health care and educational facilities, which, in turn, has resulted in higher school dropout rates, generally poorer educational provision, and limited access to health clinics and hospitals, i.e. generally poorer human resource development. Indicators, including maternal mortality rates, infant mortality rates and malnutrition among children below the age of seven, are all worse than the overall statistics for Malaysia (Wee 1995; Malaysia: Ministry of Health; Malaysia 1971, 1981 and 1991). Such circumstances have increased the pressure on state government expenditure and, consequently, on revenues.

POVERTY

Since it is often suggested that deforestation is related to poverty, it is important for us to assess the extent to which poverty has been prevalent and has motivated forest clearance. However, in Malaysia, the government's commitment to poverty eradication may well have provided an important rationale for deforestation, whether for government revenue generation or for agricultural expansion. The resource rents gained by the government from logging or land development have been collected ostensibly to be deployed to reduce poverty and inter-ethnic economic disparities, i.e. in pursuit of NEP objectives, though in fact, they have largely enriched powerful politicians and their business allies.

Official figures report a poverty rate of some 68 per cent in the agriculture sector in 1970. This included 65 per cent among rubber

smallholders, 30 per cent among oil-palm smallholders, 53 per cent among coconut smallholders, 88 per cent among paddy farmers and 73 per cent among fishermen. There has been significant overall progress in meeting the poverty reduction targets of the NEP, as Table 1.4 demonstrates. The government claims that such reductions have been due to various poverty reduction programmes that, importantly, included "new land development". There have been continuing differences between poverty rates in the peninsula compared to those in Sabah and Sarawak, suggesting that the Malays in Peninsular Malaysia, for whom the policy was first conceived⁹ have benefited more from the NEP.

Official definitions of poverty have been the source of some controversy. Some have argued that the income levels used to determine poverty have been set arbitrarily, while others insist that a monetary income measure overestimates rural poverty, especially among communities whose subsistence activities and utilization of local natural (e.g. forestry and fishery) resources reduce their dependence on cash incomes. While it does not differentiate between urban and rural poverty line incomes, the Malaysian government has different poverty line incomes for the three regions reflecting different living costs; nevertheless, official figures consistently indicate greater levels of poverty in Sabah and Sarawak.

Table 1.5 shows that the development of the manufacturing sector in Peninsular Malaysia has seen corresponding employment growth, far ahead of developments in Sarawak and Sabah, where the continued importance of the primary sector is reflected in terms of employment as well as contribution to gross domestic product (GDP). All three regions have experienced growing urbanization,¹⁰ due to growing non-agricultural urban employment. As the *Mid-term Review of the Sixth Malaysia Plan* put it: "Employment in the agricultural sector declined at 3.1 per cent per annum as a result of slower output growth. On the labour supply side, the sector continued to face labour shortages as a result of movement of labour into other sectors and the reluctance of local labour to be employed in agricultural activities" (Malaysia 1993a: para 2.33). There has also been a significant and growing number of immigrant foreign workers now employed, legally or illegally, in the agricultural and timber sectors in Peninsular Malaysia, Sabah and Sarawak.

Table 1.4 Malaysia: Poverty by Region and Location, 1976, 1984, 1987, 1990, 1997, 1999

	Sabah			Sarawak			Peninsular			Malaysia		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
1976	19.2	58.6	51.2	16.3	60.0	51.7	15.1	42.8	35.1	15.4	45.7	37.7
1984	14.3	38.6	33.1	8.2	37.3	31.9	8.2	24.7	18.4	8.5	27.3	20.7
1987	16.4	39.9	35.3	7.5	29.0	24.7	8.1	22.4	17.3	8.4	24.7	19.3
1989	14.7	39.1	34.3	4.9	24.7	21.0	7.3	19.3	15.0	7.5	21.8	17.1
1997	n.a.	n.a.	22.1	n.a.	n.a.	7.5	n.a.	n.a.	n.a.	2.4	11.8	6.8
1999	n.a.	n.a.	20.1	n.a.	n.a.	6.7	n.a.	n.a.	n.a.	3.8	13.2	8.1

Note: n.a. – not available.

Sources: Wee (1995: Table 5.6); *Mid-Term Review of the Seventh Malaysia Plan, 1996-2000*; *Eighth Malaysia Plan, 2001-2005*, Table 3.1.

Table 1.5 Malaysia: Employment by Sector and Region, 1970-1998 (percentages)

Sector	Sabah			Sarawak			Peninsular Malaysia		
	1970	1980	1990	1998	1970	1980	1990	1998	1998
Primary	30.1 ¹	36.0 ¹	67.6	37.6	68.3	56.3	47.6	34.6	48.1
Secondary	25.1 ²	39.4 ²	11.6	20.8	6.5	10.6	15.1	22.2	8.1
Manufacturing	21.4 ³		9.9	12.1	5.0	6.8	9.1	12.6	7.1
Construction	3.6		1.8	8.0	1.5	3.8	6.0	8.8	1.0
Tertiary	44.8	24.5	20.8	41.6	25.2	33.1	37.3	43.1	43.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes: ¹ Excludes logging; ² Includes logging; ³ Includes engineering/workshop.

Sources: Department of Statistics, Sabah; Department of Statistics, Sarawak; Department of Statistics, Malaysia.

GOVERNMENT POLICIES AND ECONOMIC PERFORMANCE

Two major changes in the Malaysian economy are especially relevant for this study. First, it has undergone significant structural transformation, with relatively slower growth of the primary sector. Indeed, by 1991, the government envisioned "a fully industrialized nation" by the year 2020. Second, there has been significant transformation within the primary sector. But such transformations have not been uniform across Malaysia, and regional disparities, involving agriculture and logging, have been very noteworthy.

The expansion of the Malaysian economy, from the time of British colonial rule, has mainly involved the expansion of commodity (most significantly, tin and rubber) production. Thereafter, the country's economic expansion continued with the development and exploitation of even more natural resources (petroleum, gas and timber), as well as diversification into other cash crops (such as oil palm and cocoa).

This type of primary commodity exports-led policy has been paralleled by an industrialization policy that has placed heavy stress on manufacturing for export since the 1970s. Malaysia's openness to the global economy, involving both agriculture and forestry, has been transformed as a consequence.

Malaysia's impressive growth since 1956 is reflected in Table 1.6, which shows the growth of the Malaysian economy since the mid-fifties. Indeed, by 1993, the gross national product (GNP) per capita was estimated to be RM8,350, or about US\$3,274 at the exchange rate then (RM refers to Malaysian ringgit, the Malaysian unit of currency. US\$1 = RM3.80 since September 1998) (Ministry of Finance 1993; *Economic Report, 1993/1994*: 7-9).

Not surprisingly, the strong growth has been accompanied by rapid structural transformation. This transformation of the economy is reflected by its changing sectoral composition, as shown in Table 1.7.

The relative decline of agriculture has been matched by the steady rise of manufacturing's contribution to the economy. Following the adoption of an export-oriented industrialization policy from the 1970s, the last three decades have seen the secondary sector (manufacturing and construction) grow much faster than the primary sector, with the tertiary sector keeping pace with overall GDP growth. During 1961-70, primary sector growth averaged 6.2 per cent, compared to 12.2 per cent for the secondary sector and 8.2 per cent for

Table 1.6 Malaysia: Annual GDP Growth Rates, 1956-2000 (constant prices)

Period	1956-60	1961-65	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95	1996-2000
Year 1	3.0	1.4	6.2	6.5	10.8	6.9	1.2	8.7	8.2
Year 2	2.5	6.9	1.0	9.4	7.8	5.9	5.4	7.8	8.0
Year 3	0.5	5.5	4.2	11.7	7.0	6.3	8.9	8.3	-6.7
Year 4	4.5	5.8	10.4	8.3	9.2	7.8	8.7	8.5	5.8
Year 5	9.5	5.6	5.0	0.8	7.8	-1.0	9.8	9.5	8.5
Average	4.1	5.0	5.4	7.3	8.6	5.8	6.5	8.6	4.6

Sources: Bank Negara Malaysia, 1979, *Economic Report*, various years, Bank Negara Malaysia, *Monthly Statistical Bulletin*, Table VI.2.

Table 1.7 Malaysia: Composition of GDP, 1955-2000 (percentages)

<i>Year</i>	<i>Agri- culture</i>	<i>Mining</i>	<i>Manufac- turing</i>	<i>Construc- tion</i>	<i>Services</i>
1955	40.2	6.3	8.2	3.0	42.3
1965	31.5	9.0	10.4	4.5	44.6
1975	27.6	4.6	16.4	3.8	47.6
1985	20.8	10.5	19.7	4.8	44.2
1990	18.7	9.8	26.9	3.6	41.0
1995	10.3	8.2	27.1	4.4	50.0
1996	9.8	7.7	29.1	4.7	48.7
1997	9.2	7.3	29.9	4.6	49.0
1998	9.6	7.9	27.9	4.0	50.6
1999	9.4	7.2	30.0	3.6	49.8
2000	8.7	6.6	33.4	3.3	48.0

Sources: Bank Negara Malaysia, *Annual Report*, Ministry of Finance, *Economic Report*, various years.

the tertiary sector. In the following decade, the average growth rates were 7.2 per cent, 12.4 per cent and 7.8 per cent respectively.

Thus, although there has been strong diversification away from the primary sector, this has not meant agricultural stagnation. These overall figures obscure diverse regional developments. Table 1.8 shows the breakdown of GDP by sectoral origin for Sabah, Sarawak and Peninsular Malaysia.

Clearly, the primary sector (consisting of agriculture, forestry, fishing and mining) continues to be relatively more significant in the two East Malaysian states than in the peninsula. In Sabah, for instance, the primary sector has contributed over half of GDP, even increasing its share despite agriculture's declining GDP share throughout the country since 1970. In Sarawak, the primary sector's share of GDP increased from 40 per cent in 1970 to 51 per cent in 1980 and 1990. In stark contrast, the contribution of the primary sector in the peninsula declined from 36 per cent of GDP in 1970 to 23 per cent in 1990, while the contribution of the manufacturing sector more than doubled, from 14 to 30 per cent. In other words, Malaysia's industrialization has been heavily centred in the peninsula, while regional dynamics in terms of agricultural growth and land use have remained quite different.

Table 1.8 Malaysia: Gross Domestic Product by Sector and Region, 1970-2000

Region	Sabah				Sarawak				Peninsular Malaysia				Malaysia			
	1970	1980	1990	1998	1970	1980	1990	1998	1970	1980	1990	1998	1970	1980	1990	2000
Agriculture	53	37	37	32	37	27	24	12	30	22	16		32	24	9	9
Mining	-	19	19	9	4	24	27	28	6	8	7		6	10	10	7
Manufacturing	3	3	8	14	4	8	17	23	14	22	30		12	20	27	33
Construction	6	5	5	3	5	6	4	7	4	5	3		4	4	4	3
Services	38	36	31	28	50	35	28	24	46	43	44		46	42	40	48

Sources: *Second Outline Perspective Plan, 1991-2000* (Malaysia 1991b: Table 4.6); *Fifth Malaysia Plan, 1986-1990* (Malaysia, 1986: Table 5.2); *Seventh Malaysia Plan, 1996-2000* (Malaysia, 1996: Table 2.5); *Eighth Malaysia Plan, 2001-2005* (Malaysia 2001: Table 2.6); *Sarawak Yearbook of Statistics, 1999* (Table 10.2), *Sabah Yearbook of Statistics, 1999* (Table 10.2).

Despite rapid industrialization, primary commodities are still the main export earners, but the specific sources of export earnings have changed. From the heavy reliance on rubber and tin in colonial times (the two accounted for almost three-quarters of total export earnings in 1955), petroleum became the major export earner in the 1980s, followed by timber, palm oil and rubber. Manufacturing has become more important in the 1990s, but a good share of exported manufactures is resource-based.

If one looks at export profiles by region, Sabah and Sarawak are relatively less diversified compared to Peninsular Malaysia. The 18 most important export items from Sabah in 1990 comprised 84 per cent of total exports by value, while the 19 leading exports from Sarawak comprised 89 per cent, compared to the top 27 items from Peninsular Malaysia accounting for only 52 per cent of export receipts. Further, the two East Malaysian states have been heavily dependent on just four export items, namely logs, sawn timber, crude petroleum and liquefied natural gas, with very limited export revenues from processing raw materials. Indeed, until recently, most of Sabah's and Sarawak's timber exports have been in the form of raw logs, with relatively little value added.

A natural resource accounting study for the federal government's Economic Planning Unit (EPU) showed that about one-third of gross investments could be attributed to resource rents from various natural resource sectors, such as timber, minerals, soils and other forest products, but not fisheries and agricultural land (EPU 1993: Volume 4, Executive Summary). Hence, the contribution of natural resources to the growth of the Malaysian economy between 1971 and 1989 was fairly sizeable. Calculations of Adjusted Net Domestic Product (ANDP) suggest positive growth, meaning that there were other sources of growth in the national economy apart from natural resource rents (EPU 1993).

CONCLUSION

This brief survey has highlighted geophysical, historical, demographic, political and economic factors shaping contemporary Malaysia. Both agriculture and forestry have played significant roles in the economy, but their impacts, both in terms of land use as well

as society and the environment, need to be differentiated by region, given the different histories and economic structures in Peninsular Malaysia, Sabah and Sarawak. The primary sector is still the main contributor to GDP in the economies of Sabah and Sarawak. Its implications for agricultural expansion and deforestation are the focus of the separate regional chapters (3 to 5). The next chapter reviews agriculture and forestry in the country, further highlighting regional differences and the significance of federal-state responsibilities for the two sectors.

Notes

1. The states of Sabah and Sarawak were referred to as East Malaysia, although this term is now officially frowned upon, apparently because its use might accentuate an East-West divide.
2. It should be noted that statistics for Sabah often include figures for the island of Labuan, with a population of 55,000 in 1991, which was controversially given to the federal government by Sabah Chief Minister Harris Salleh in 1984. It is now centrally administered as a federal territory.
3. Bumiputera is a Malay word that approximately translates as "sons of the soil".
4. Although freedom of worship is guaranteed under the Constitution, non-Islamic proselytization among Muslims is forbidden, as is the conversion of Muslim Malays to other religions.
5. In the 1995 general election, Peninsular Malaysia accounted for 155 out of the 192 federal parliament seats; Sarawak had 25 seats and Sabah eleven. The constituent parties of the ruling coalition have also differed between Peninsular Malaysia, Sabah and Sarawak. In the peninsula, the more significant members of the coalition, besides UMNO, have been the Malaysian Chinese Association (MCA), the Malaysian Indian Congress (MIC), and the mainly Chinese Gerakan. Sabah and Sarawak have had a more complicated history of political party formation, alliances and splits, but a crucial component has been relations between Kuala Lumpur and the respective state governments in Sabah and Sarawak. Of importance here is the way in which the UMNO-dominated federal government has promoted Muslim politicians and parties in Sabah and Sarawak, even to the point of direct intervention in state level politics.
6. This is true of any state for that matter, although the ways in which the federal government has treated Kelantan, after an opposition victory in

- the 1990 state elections, and Terengganu, also taken over by the opposition in 1999, have been quite different. The difference mainly stems from the (remote) possibility that Sabah and Sarawak could become home to secessionist independence movements, adding different dynamics to the situation.
7. Chief among whom was the present Prime Minister, Mahathir Mohamad, who was expelled from the party for his criticisms of the leadership then.
 8. With a majority in excess of two-thirds, i.e. sufficient to make changes to the Federal Constitution. The opposition parties had only 30 of the 192 seats after the 1995 elections.
 9. Many academic studies dealing with poverty, income and wealth distribution in Malaysia suggest a relationship between class and ethnicity. A gross caricature of the ethnic distribution of the labor force at the end of the 1960s would suggest Chinese dominated towns and petty businesses, Indians in plantations and public works, and a mainly Malay peasantry. Government programmes to alleviate poverty (including land and agricultural development) were mainly intended for Malay farmers.
 10. The overall rate of urbanization in Malaysia stood at 50.7 per cent in 1991, up from 26.8 per cent in 1970. The figures for Sabah and Sarawak in 1991 were 33.2 per cent (up from 16.9 per cent) and 37.6 per cent (up from 15.5 per cent) respectively, still significantly lower than for Peninsular Malaysia.

Agriculture and the Forests

We now turn to agriculture and forestry in Malaysia. Here, some history, institutional arrangements, public policies and other influential factors such as external trade are considered. Again, we differentiate among the three regions of Peninsular Malaysia, Sabah and Sarawak, to each of which we later devote separate chapters. We first look at agriculture before turning our attention to the forests.

AGRICULTURAL DEVELOPMENT

Historical evidence suggests that the *Orang Asli* of Malaya and *Orang Ulu*¹ of the Borneo states have inhabited the interior and coastal areas of these territories since Palaeolithic times [Aitken *et al.* (1982) cites Dunn (1964) and Tweedie (1970)]. These communities were usually small and faced little population pressure. Over time, many of these people settled down from hunting and gathering activities to practice shifting cultivation. Aitken *et al.* (1982) concluded that soil disturbances associated with such practices were minimal, with planting carried out in ways suited to the climate and seasons. Settlers apparently recognized the limited fertility of tropical rainforest soils, and guarded against over-exploiting the inherently poor forest soils. Kochumen (1966) estimated that such land probably reverted to forest cover after 50 years. In such circumstances, many have argued that sustainable agricultural practices have existed for some centuries, but such recognition, as we shall see, has not been forthcoming from various modern governments of the twentieth century.

Although shifting cultivation was widely practiced in all three regions in the past, such practices are believed to be limited to a small number of *Orang Asli* in Peninsular Malaysia today, involving a rather negligible area of land. In contrast, greater areas of land in Sabah and Sarawak have been under shifting cultivation recently. Although the

actual areas involved are a matter of some debate, it is believed that some 3.2 million hectares (ha) in Sarawak (about a quarter of total land area) and some 3.65 million ha in Sabah (about half the land area) have been under shifting cultivation (Gillis 1988), making it the most extensive agricultural practice in both states.

The greater extent of such practices in Sabah and Sarawak in contemporary times derives from the different histories and rather different rural populations of these regions compared to Peninsular Malaysia. Many indigenous communities in the two Borneo states still rely on primarily subsistence-oriented hunting, gathering and shifting cultivation. Many still depend to a great extent on the forests to supply their basic needs. The chapters that follow summarize the different ways in which the pre-independence authorities have treated them.

However, it needs to be mentioned here that federal and state governments have a broad desire for sedentary agricultural expansion, opposing shifting cultivation, which is seen as wasteful. Both federal and state governments have promoted large-scale land development schemes, including plantation agriculture, both private and public, as well as smallholdings under the auspices of government agencies. The impact of such agricultural expansion and constraints on shifting cultivation, as well as their consequences for local (rural) populations and on forests are key issues for this study. Such agricultural land development arrangements are briefly reviewed here.

Commercial Agricultural Development

Plantation Agriculture

Large-scale commercial plantation agriculture began in earnest in Peninsular Malaysia in the early 20th century. However, some commercial plantations were introduced as early as the latter part of the 18th century, if not earlier, when British colonial powers were first extending their influence. Pepper was one of the first crops to be commercially grown, and forests were cleared for this purpose in Penang (Aitken *et al.* 1982: 105). Other important plantation crops included tapioca, gambier, sugarcane and coffee, grown mostly by Chinese farmers (Lee Poh Ping 1980).

The introduction of rubber led to large-scale deforestation to clear land for rubber plantations. Vincent and Hadi (1991) trace the beginning of rubber plantations in the peninsula from 1896. Voon

(1992) estimated that there were already 964 rubber estates by 1911 with a total area of 549,000 ha. In the first quarter of the twentieth century, over a million hectares were planted with rubber. Much land already under shifting cultivation may have been planted with rubber. However, most new plantations probably began operating after clearing primary forests. Hence, the growth of plantation agriculture, mainly financed by foreign – primarily British – capital, was clearly a major factor in forest loss and clearance.

Initiatives to develop large-scale plantations in Sabah and then Sarawak only became significant in the 1980s, nearly a century after Peninsular Malaysia. This has largely been under the auspices of the respective governments of the East Malaysian states, through specific state agencies responsible for land development and resettlement schemes. More recently, there has been some expansion by private plantation companies in Sabah (and, to a lesser degree, Sarawak) as land in the peninsula has become too scarce or too expensive, or both. But in both states, the areas affected are still limited, due to less favourable topography, with the impact on forest clearance and forest loss not nearly as large, cumulatively, as in the peninsula.

Smallholder Farmers

The predominantly Malay smallholder farming communities of Peninsular Malaysia were originally involved in subsistence agriculture. However, as awareness spread concerning the likely returns to be derived from cultivation for the market, these communities began planting rubber. They sometimes sold cultivated land to well-financed rubber plantation interests, especially in the early 20th century. The rubber boom also attracted immigrant settler communities to the sparsely populated peninsula from other parts of the Malay archipelago as well as from the immigrant Chinese community, e.g. those displaced by the mechanization of tin mining. In the period 1900-10, the boom in rubber prices saw the average spot price of RSS1 rubber rise from about RM2.36/kg in 1900 to RM5.55/kg in 1906, and to RM12.00/kg in August 1910. Meanwhile, the cost of producing rubber was rarely above RM1.50/kg (Barlow 1978: 25).

Despite colonial government constraints on smallholder responses to the new opportunities (discussed in more detail in the next chapter), the area under smallholdings expanded from 18,200 ha in 1890 to

103,600 ha by 1911, and accounted for over 40 per cent of all land planted with rubber by 1932. By 1961, the total area under rubber smallholdings exceeded that under rubber plantations, partly due to the subdivision of estates to take advantage of the post-colonial reversal of colonial-era anti-smallholder policy biases. By the late 1960s, there was an estimated rubber smallholder farming population of almost 500,000. Heavy reliance on volatile commodity prices meant that such communities were quite vulnerable. In bad times, large sections of the rubber smallholder population fell into poverty.

In Sabah and Sarawak, the development of smallholdings proceeded in a much more *ad hoc* fashion before the 1980s. Thus, much smaller areas were planted. While earlier high returns did induce some farmers in both states to cultivate rubber, other cash crops, such as cocoa (in Sabah) and pepper (in Sarawak), have had big followings. In 1990, only about 11,200 ha in Sarawak was under pepper smallholdings,² while some 206,000 ha were under cocoa smallholdings in Sabah.³ All these farmers were vulnerable to fluctuations in the prices of these commodities. Meanwhile, shifting cultivators in both states have developed mixed farming practices, cultivating both food as well as cash crops.

In Malaysia, the increased importance of smallholder rubber production was reflected in the smallholders' 84 per cent share of planted rubber land and 78 per cent of output due to the lower productivity gap (by some 20 per cent) of smallholdings compared to estates. The hope is that new clones and more effective technology transfer from the Rubber Research Institute (RRI) and other government agencies dealing with smallholders will increase their incomes, thus ensuring that smallholdings become more viable. Smallholder oil palm cultivation is less widespread, accounting for only 9.1 per cent (some 220,000 ha) of all the land under oil palm (Malaysia 1996: 86, 88).

Government Land Development Schemes

The most pressing social policy concern in the three regions since the 1960s has been rural development and rural poverty alleviation. The fact that land is, constitutionally, under state jurisdiction has resulted in complex dynamics and tensions between state and federal governments, for example, over large-scale land development by state or federal government agencies. Such programmes have been especially

extensive in Peninsular Malaysia, where the most important agency is the Federal Land Development Authority (FELDA), formed in 1956 (Tunku 1977, Perumal 1992). FELDA itself has been the forerunner for a plethora of other federal and state/regional development agencies set up since.

These agencies have had much success in opening up new agricultural land. Up to 1990, FELDA itself had developed almost a million hectares in Malaysia, while a similar expanse was under the jurisdiction of other agencies (Voon and Tunku 1992: 359). FELDA's role has been immense: financially, it is the largest and most important public agency in Malaysian agriculture. For instance, under the Second Malaysia Plan (1971-75), just under 13 per cent of total government expenditure and slightly more than half of total agricultural expenditure went into land development, most of it through FELDA. A description of FELDA's land development technique gives some idea of its approach: "A decision is taken to develop a new scheme, usually in a forested area. Contractors clear the land, plant the seedlings – oil palm or rubber – and put in the settler houses, roads, water supply, schools and so forth. When these works are nearly completed, the settlers arrive" (Meerman 1979: 242). Clearly, the impact of this system on forests has been significant.

Federal Government Policies

Federal government policy can be gleaned from various plans, elaborated policy guidelines [such as the National Agricultural Policy (NAP)] and the allocation of federal funds for agricultural development expenditure. At the federal level, the four major ministries dealing with agriculture have been the Ministry of Agriculture, the Ministry of Land and Regional Development, the Ministry of Rural Development and the Ministry of Primary Industries. The Agriculture Ministry is in charge of agricultural policy and implementation, but not of opening new land schemes, nor of land and regional development as well as of land rehabilitation agencies, which fall under the jurisdiction of the Ministry of Land and Regional Development. The Ministry of Rural Development is principally concerned with social development (and securing political support), drawing upon resources from other ministries to implement its programmes. The

Primary Industries Ministry is mainly involved with primary commodity exports as well as agricultural and natural resource (including timber) processing.

In addition to these ministries, there is a host of other agencies and institutions that support agricultural and land development at the federal level. For instance, there are several credit institutions that finance agricultural projects, including the Agriculture Bank (Bank Pertanian Malaysia) and the People's Co-operative Bank (Bank Kerjasama Rakyat).⁴ The government also organizes Farmers' Associations that co-operate in the implementation of government programmes related to agriculture.

Since land matters remain the prerogative of state governments, the National Land Council (NLC) – comprising the prime minister and the chief ministers of all 13 states – was established to co-ordinate efforts between federal and state governments. Similarly, the National Forestry Council, which has the same representation as the NLC, plays a similar co-ordinating role. Both federal agriculture and forestry policies may not be implemented as desired by the federal government. While Sarawak and Sabah arguably have more distinct institutional and policy frameworks than the 11 states in the peninsula, in all states, it is the State Executive Councils, the executive arms of the state governments, which make the final decisions on all land matters, including opening up land schemes and approving land applications. The State's Department of Land and Mines handles land administration, while State Agricultural Development Corporations invest in agricultural projects on behalf of some state governments.

Nevertheless, there has been considerable consensus on the aims of and approaches to agricultural policy at both state and federal levels. Throughout the 1960s, federal priorities were centred on: (1) rural development programmes providing basic infrastructure and facilities (including health and education), and (2) agricultural policy to support and extend plantation areas, support and increase small-holder productivity, and open up new land for settlement, particularly for landless or poor Malays.

Except for rice cultivation to reduce foreign imports, the official policy emphasis has always been on production for export. This strategy has not been contradicted by land use policy, largely formulated during the colonial period. In the case of the peninsula,

the policy favoured mineral extraction where there were minerals and agricultural development where there was none but where the soils were suitable. Where agriculture could not be profitably developed, forestry was to be allowed. Hence, lowland areas in the peninsula have been almost completely converted for agriculture if not built upon.

However, as seen in the first chapter, limited progress in meeting the needs and aspirations of the mainly rural Malays led to changes in the end of the 1960s in leadership and policy. The NEP emphasized rural development, but at the same time, export-oriented industrialization and public sector expansion in order to create employment and to diversify Malaysia's economy. *The Second Malaysia Plan, 1971-1975* sought to modernise the agricultural sector to raise incomes, generate employment, develop agro-based industries, and otherwise "integrate agriculture with modern activities in industry and commerce." This was to be done through "the sound exploitation of Malaysia's land, water and timber resources," increased productivity, expansion of products, accelerated land development and strengthened institutional support and services.

As for land development, "the target of the Second Malaysia Plan [was] to develop over a million acres, more than twice the acreage developed under the previous Plan" (Malaysia 1971: para 402). It was noted that "the existence of abundant land, forestry and other resources makes possible the further rapid overall development in agriculture" (Malaysia 1971: para 352).

Clearly, such policies would have effects on land use and forest conversion. Between 1971 and 1980, three key government agencies – the Federal Land Development Authority (FELDA), Federal Land Consolidation and Rehabilitation Authority (FELCRA), and Rubber Industry Smallholders Development Agency (RISDA) – were responsible for developing 455,878 ha (of which FELDA alone developed 373,705 ha). Other Peninsular Malaysian federal or state agencies developed 155,662 ha, Sabah agencies developed 57,816 ha and Sarawak agencies 76,655 ha, while joint ventures or private sector developments accounted for 120,047 ha (Malaysia 1981: Table 15.2). In 1978, Mahathir Mohamad, then deputy prime minister (and soon prime minister from 1981), drew attention to rapid deforestation in the country – partly due to such land clearance for agriculture and as a result of increased timber production.

Besides having adverse implications for forests and raising questions as to how successful such developments really were, such clearance had another economic and social implication (also considered in the following chapters). As the Fourth Malaysia Plan (1981-1985) put it: "With the limited availability of suitable agricultural land for large-scale land development, the large numbers of landless poor, increasing costs of development triggered by higher costs of labour, transport and farm inputs and the necessity of maintaining accepted levels of income and standard of living, the need for reviewing the strategy of new land development cannot be over-emphasized" (Malaysia 1981: para 718).

In other words, the expansive land development programme, so prominent in the first two decades following independence, had been pursued with such vigour that there was little suitable land left for large-scale development in the peninsula by the late 1970s. Thus, endeavours from the 1980s involved more *in situ* development, changes in existing land scheme arrangements, as well as technological and institutional progress. There has been more development by federal and state government agencies as well as private investors of new agricultural land in Sabah and Sarawak but the spatial impact remains limited, as we shall see. Nevertheless, programmes for land development, integrated agricultural development, as well as drainage and irrigation still accounted for 56.6 per cent of expenditure on agriculture and rural development in 1995 (Malaysia 1996: 105).

National Agriculture Policy

The clearest recent statements on federal government agricultural priorities have come in the form of the National Agriculture Policy (NAP), first introduced in 1984 and already revised twice in 1992 and 1998. In the original guidelines for 1984-2000, the NAP's objective was "to maximise income from agriculture through efficient utilization of the country's resources and the revitalization of the sector's contribution to the overall economic development of the country" (Malaysia 1984: 4). The four principal components of the 1984 NAP were plans to:

- intensify new land development;
- devise *in-situ* development to overcome problems of uneconomic farm size and crops, and low levels of productivity;

- provide agricultural support services (such as research, extension, marketing), and use regulatory means (taxes and subsidies) to provide impetus for agricultural development; and
- incorporate social and institutional development within the overall framework.

On forestry, the NAP said: "Clearing of primary jungle will be kept within reasonable limits to conserve forest resources" (Malaysia 1984: 12).

The early 1990s' review of the NAP, prompted by the appointment of a new Agriculture Minister, the end of the NEP and the First Outline Perspective Plan for 1971-1990 and the enunciation of the successor National Development Policy (NDP) coinciding with the Second Outline Perspective Plan for 1991-2000, led to the new National Agricultural Policy for 1992-2010. Income maximization – through optimal utilization of resources – remained a major objective. The goal of transforming agriculture into a highly modernized and commercialized sector also remained, with emphasis on market-driven and human resource-led growth (Malaysia 1993). The role of the private sector was to be enhanced, and a greater role for research and development (R&D) was envisaged. Expansion of food production was to cater to both domestic and export demand.

With regard to the issues of deforestation and agricultural expansion, the new NAP's objectives were:

- a further decline to 65 per cent self-sufficiency in rice production by 2010, with emphasis on yield, production, more frequent crops, mechanization, new management practices and reduction of post-harvest losses, rather than on increasing the area under cultivation;
- increased palm oil output by increasing the area under cultivation as well as productivity. In the peninsula, the emphasis would be on the conversion of idle (non-forest) land, while forest areas would be opened up in Sabah and Sarawak for this purpose. Attention would focus on reducing labour inputs through mechanization to improve competitiveness in the oils and fats markets;
- stabilization of rubber production and export levels through productivity increases via improved clones and production management systems adapted from the estates. In the peninsula, new

planting for latex and rubber wood would be encouraged as part of a programme of "forest renewal";

- for other crops (such as coffee, cocoa, coconut and pepper), greater stress would be placed on better management, improved varieties, higher quality, and increased downstream processing. For coffee, selective planting, as well as inter-cropping, would be encouraged;
- by the year 2010, forested or planted areas would cover up to 85 per cent of the total land area in order to stabilize the environment and to achieve ecological balance. Forest plantations with exotic species would be expanded, while permanent forest estates would be maintained to meet the increased demand for related recreation and other types of activities.

Thus, the second NAP clearly envisaged more commercial development of the agriculture sector, although the emphasis, especially in the peninsula, has shifted to improved technology and productivity, rather than on opening up new land. However, overall economic transformation in Malaysia since the 1990s has involved a push to become a "fully-industrialized nation" by the year 2020. Undoubtedly, the importance of the secondary sector to the Malaysian economy has become greater, but this change has not obliterated the role of the primary sector, still highly significant in terms of export earnings and employment. Some major issues affecting the primary sector are considered here.

Commodity Trade

Export receipts from primary commodities – of some RM44,004 million in 2000 – indicate just how important they still are to the Malaysian economy. Rapid growth has been achieved through continuing efforts to increase the area under cultivation, shifting to higher-priced crops and replanting with higher yielding varieties to increase output and earnings. This growth has also relied on the depleting extraction of natural resources such as tin, petroleum, natural gas and timber.

Rubber and tin were the twin pillars of the colonial economy in Malaya. The almost exclusive agricultural dependence on one crop, rubber, was highly risky, especially with the volatile behaviour of international rubber prices. Thus, a key post-colonial government policy

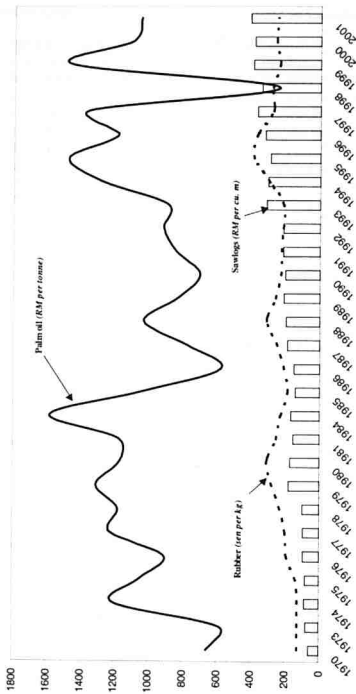
has been to diversify away from rubber, which has resulted in more varied export crops, changing the composition of the export commodity sector. In 1955, exports of rubber and tin accounted for almost three-quarters of total export earnings. By 1970, the primary sector's share was down to 53 per cent, with significant contributions coming from wood (16.5 per cent) and palm oil (5.1 per cent). In 1980, the share of rubber and tin had fallen to just 25 per cent, with palm oil increasing its share to 9 per cent, while timber accounted for about 14 per cent. By 1990, rubber and tin together contributed only about 5 per cent, palm oil 5.5 per cent and timber about 9 per cent. By this time, the bulk of exports was from manufacturing (59 per cent), although its share was exaggerated by the high import content of many such exports. The share of primary commodities in total exports declined further in the 1990s.

Palm oil soon displaced rubber, not only in terms of export earnings, but also in terms of area planted. Palm oil output grew rapidly from the late 1960s into the 1970s, reflecting an increased preference for the crop due to its greater profitability compared to rubber. This was reflected, for instance, in the choice of crop for government land development schemes. Of the 455,900 ha developed by federal land development agencies between 1971 and 1980, 282,900 ha were planted with oil palm, 150,700 ha with rubber, and the balance with sugar-cane, cocoa, coffee and rice (Malaysia 1981: para 662). Earnings of palm oil overtook rubber by the early 1980s. Besides palm oil and rubber, other agricultural products grown for export have included pepper, cocoa, pineapple, tea, sago, coconut, tobacco, fruits and livestock.

This diversification of commodity products paralleled increased earnings. At the same time, the agricultural and rural economy was diversified with income dynamics reflecting crop variety and price fluctuations. Commodity price trends for the period 1970-92 are shown in Figure 2.1. Rubber exports declined during the period 1961-65 owing to adverse price trends. Over the next decade, however, rubber exports grew with higher productivity. The late 1970s saw good growth, with favourable prices, before entering a drop in the mid-1980s, followed by a rise at the end of that decade, and finally, of subsequent decline.

Such diversification did not completely insulate those dependent on agriculture from the worst effects of boom-bust commodity

Figure 2.1 Malaysia: Commodity Price Trends, 1970-2001



cycles. For instance, after the commodity boom of the late 1970s, the first half of the 1980s turned out to be relatively sluggish. The vulnerability of Malaysia's open economy was demonstrated once again by the general collapse of prices in the mid-1980s,⁵ with commodity prices only picking up towards the end of the 1980s. Despite considerable commodity price variations, resulting in export earnings fluctuations and uncertainties for both government revenues as well as rural earnings, the sector continued to grow. Thus, between 1960 and 1970, export earnings rose relatively slowly, from RM3.6 billion to RM5.2 billion, and then more rapidly with the commodities boom of the late 1970s to reach RM28.2 billion in 1980. By 2000, export receipts of RM121 billion were recorded.

REGIONAL DIFFERENCES

While these aggregate trends were true for Malaysia as a whole, there have been significant regional differences. In recent years, the agricultural sector has been relatively more important to the economies of Sabah and Sarawak compared to Peninsular Malaysia, though the latter's overall agricultural output is four times that of Sabah's and six times that of Sarawak's. The major crops have higher productivity and yield rates in the peninsula, possibly because commercial agriculture was established much earlier there than in the two Borneo states.

A comparison of yields and productivities for major crops in the three regions is shown in Tables 2.1a and 2.1b. In 1990, palm oil production on the peninsula accounted for 96.8 per cent of output, Sabah for 2.7 per cent, and Sarawak for 0.5 per cent. For rubber, 96.5 per cent came from the peninsula, 2.3 per cent from Sabah and 1.2 per cent from Sarawak. Agricultural expansion in East Malaysia, chiefly Sabah, during the 1990s was reflected in their increased shares of total palm oil output. In 2000, Sabah accounted for 27 per cent and Sarawak for 5 per cent, while the peninsula's share dropped to 68 per cent. The situation was somewhat reversed in the case of timber: in 1995, Sarawak accounted for slightly more than half the nation's log production, followed by Sabah with 27.4 per cent, while the rest came from the peninsula.

Table 2.1a Malaysia: Agricultural Output and Yields for Selected Crops by Region, 1990

	<i>Sabah</i>			<i>Sarawak</i>			<i>Peninsular Malaysia</i>		
	Output ('000 tonnes)	Per Capita		Output ('000 tonnes)	Per Capita		Output ('000 tonnes)	Per Capita	
		Output (kg)	Yield (kg/ ha)		Output (kg)	Yield (kg/ ha)		Output (kg)	Yield (kg/ ha)
Rubber	29.5	20	889	15.0	9	264	1,247.0	85	1,302
Crude Palm Oil	38.3	26	—	4.2	3	—	5,308.0	363	—
Palm Kernel Oil	159.2	108	—	28.2	17	—	1,657.3	113	—
Oil Palm Fruit (ffb)	—	—	18,100	—	—	17,630	—	—	18,630
Copra	1.0	1	700	15.0	9	420	49.0	3	630
Coconut Oil	0.3	—	—	8.1	5	—	26.3	2	—
Wet Rice	54.4	4	2,653	112.0	—	1,860	683.8	47	3,279
Dry Rice	13.8	9	758	53.5	32	794	1.8	—	2,753

Source: Department of Statistics, Malaysia, *Yearbook of Statistics, Malaysia, 1990*.

Table 2.1b Malaysia: Agricultural Output and Yield of Selected Crops by Region, 2000

	Sabah			Sarawak			Peninsular Malaysia		
	Output ('000 tonnes)	Per Capita Output (kg)	Yield (kg/ha)	Output ('000 tonnes)	Per Capita Output (kg)	Yield (kg/ha)	Output ('000 tonnes)	Per Capita Output (kg)	Yield (kg/ha)
Rubber	25.0 ¹	9 ¹	1,399 ¹	—	—	—	590.2	32	1,070
Crude Palm Oil	3,110.3	1,161	—	520.2	251	—	7,211.5	389	—
Palm Kernel Oil	712.3	266	—	122.5	59	—	2,323.0	125	—
Oil Palm Fruit (ffb) ²	—	—	20,800	—	—	15,050	—	—	19,100
Copra	—	—	—	8.7	4	—	16.4	1	—
Coconut Oil	—	—	—	4.3	2	—	23.8	2	—
Wet Rice	103.1	38	3,631	88.1	43	1,518	944.2	51	3,487
Dry Rice	16.6	6	1,466	47.9	23	661	—	—	—

Notes: ¹ Combined Sabah and Sarawak.

² 1998 figures for oil palm fruit.

Sources: Department of Statistics, Malaysia, *Yearbook of Statistics, Malaysia, 1999, Yearbook of Statistics, Sabah, 1999, Yearbook of Statistics, Sarawak, 1999, Yearbook of Statistics, Malaysia, 2001, Yearbook of Statistics, Sabah, 2001, Yearbook of Statistics, Sarawak, 2001*.

OTHER LAND USE CHANGES

Before going on to gauge the extent of forest loss and the extent to which agricultural expansion has been the cause of such loss, we turn to several other factors affecting land use and forest conversion. The growth of tin – and other on-shore – mining has also involved opening up land at the expense of the forest. The rapid expansion of the tin mining industry from the mid-19th century saw the alluvial plains in Perak, Selangor, Negri Sembilan and other states converted to *palong* (gravel pump), *lampan* (tray washing) and dredge mining (Yip 1969). Most such land was probably forested before mining began. By 1972, about 160,000 ha of land in the peninsula had been leased for mining, accounting for less than two per cent of total land area. Mining activities have been relatively less extensive in Sabah and Sarawak, where there have been smaller areas deforested due to such activities.

In recent years, tourism has become a major foreign exchange earner for Malaysia. Attempts to cater to growing tourism demands as well as to develop Malaysia as an attractive tourist destination have posed some threat to forests. Growing demands for "nature or ecological tourism" and for ever more exotic locations will increase pressure on more pristine natural areas, although some such projects may also support forest conservation. Already, hill resorts, such as the Cameron Highlands, have been developed, with deleterious effects on the environment. The opening up of new golf courses in previously forested areas is another consequence of tourism-oriented development. Similarly, the road linking the resorts in Genting Highlands, Fraser's Hill and Cameron Highlands will have a significant effect on forested areas and the surrounding watershed. The Mulu National Park in Sarawak has more and more tourist chalets and hotels built around the park. One argument in favour of the Bakun Hydroelectric Dam project was the expected tourism spin-offs from the project, which would flood some 70,000 ha already logged by the dam concessionaire.

Aquaculture has also threatened coastal mangrove areas, ever since demand for marine or brackish water prawns rose in the 1980s. Large aquaculture farms have been opened in several states, including Johor, Pahang, Perak, Kedah and Sabah. Many farms are between 40 and 200 ha, depending on the scale of investment.⁶ The largest farm is probably the Soon Cheng farm in Rompin, Pahang. The Pahang

state government provided 2,000 ha of swamp area for this project, to breed the kabayaki eel for export to Japan. A total of 20,000 ha of coastal mangrove area are under some form of pond aquaculture.

Roads and other infrastructural developments have clearly impacted on the forests as well. Opening access to previously remote areas by building roads (such as the East-West Highway in the peninsula or the planned Bintulu-Bakun road in Sarawak) inevitably puts pressure on forest areas, apart from the forest destruction caused by road building itself. For example, the Belum Forest Reserve, previously closed to the public, has in the past come under expansionary pressure from East-West Highway traffic.

At the same time, easier access encourages associated developments, e.g. by logging companies to secure and transport logs and hotel and resort companies to run chalets and hotels. The Perak state government gazetted the Belum district as a state park in April 2001. This move enhances the prospects for conservation of the forest reserve; concrete measures now need to be implemented. Dam building has also had mixed effects. Several dams have huge impoundment areas, for example, the Temenggor dam in Perak and the Kenyir dam in Trengganu. The proposed Bakun dam will have an inundated area larger than the land area of Singapore. However, dams also require extensive water catchment areas, which often serve to conserve forests.

FORESTRY

Before considering the Malaysian experience in terms of forestry policy and forestland use and conservation planning, some description of the forest ecosystem and its functions may be helpful.

Forest Ecosystem

Tropical rainforests have been described as a vast macrocosm of intricately related ecosystems, hosting an array of biotic and abiotic processes occurring within the forest canopy down to substrate minerals and micro-organisms (Krutilla 1991). Malaysia's forests essentially comprise of an evergreen rainforest with several different kinds of natural forests, ranging from beach and lowland rainforests to montane (ericaceous and oak) forests. In terms of forest formation,

Table 2.2 Peninsular Malaysia: Species Diversity

<i>Group Plant/Animal</i>	<i>Estimated No. of Species</i>
Flowering Plants	8,000
Ferns	500
Mammals	300
Birds	616
Snakes	141
Frogs	93
Lizards	>80
Butterflies	1,022
Moths	>5,000
Other insects	>20,000
Other invertebrates	>10,000

Source: Tho 1989, quoting Earl of Cranbrook 1988.

Peninsular Malaysia is part of the Indo-Malayan rainforests, and forms part of the Malesian floristic region (Aitken *et al.* 1982: 24). Its species diversity is one of the richest in the world and the extent of this species wealth in Peninsular Malaysia is reflected in Table 2.2.

This diversity of both plant and animal life is moderated by geographical factors, including altitude and geology. The Peninsular Malaysian forests are by no means homogenous, containing different forest types as well as various specialist communities (for instance, limestone or wetland communities). Such diversity has provided exciting opportunities for scientific research, particularly now that more attention is being given to the wealth-generating potential of forests. For instance, major pharmaceutical firms are actively screening the pharmacological properties of flora, while others look at plant genetic material. Breakthroughs in this kind of research would enhance the status of forests in terms of their potential economic worth, and may buttress policies favouring their protection.

The forest ecology is very stable. Although the soils are generally poor, the forest ecosystem generates about 90 to 95 per cent of its nutrients within the aboveground forest litter. The ecosystem is efficient in trapping solar energy in its different layers and recycling

that energy (Aitken *et al.* 1982: 48). It converts the energy into a number of forms, of which wood is the principal biomass form (Lim 1991). In other words, as has been widely recognized, tropical forests are able to reproduce themselves without needing the external inputs required for commercial agriculture, such as fertilizers, irrigation or pest control.

Of course, the tropical forest is more than just an efficient ecosystem. It provides other kinds of ecological services as well, such as maintaining the hydrological balance of river systems. The watershed function of rainforests plays a crucial role in that balance, as does the way forests check against erosion and landslips. The forest also provides food and resources to human settlements, in some cases providing the main base for their survival. Communities have depended on forest resources for thousands of years. In addition to these functions, forests play a global role by serving as a gigantic filter through which carbon dioxide is removed from the atmosphere and stored as cellulose and other biomass compounds. This carbon sequestering function modulates conditions for the maintenance of the biosphere (Krutilla 1991).

The understanding and appreciation of these and other functions of the tropical forests' ecosystems have been steadily increasing worldwide as more research is conducted and publicized. Ironically, such research has been stimulated by the fact that the rainforests are fast disappearing. In a situation where there is still much to discover, both international and national policies for forest protection – and hence, regulation of the timber trade – have become imperative. At the same time, awareness of the diverse commercial potential of forests has gone beyond merely focussing on the traditional timber products, and has encouraged lobbying for alternative forest policies to maximise the availability and potential utilization of the myriad available forest resources (de Beer and McDermott 1989).

Some Official Definitions

As elsewhere, most official statistics and available evidence on the extent of deforestation in Malaysia are based on a definition of deforestation that equates it with land-use conversion, i.e. a narrower definition. Different definitions result in different figures for the extent of forest cover in Malaysia. For example, while one might doubt

the claim in the *Information Malaysia* annual that "about four-fifths of Malaysia are covered by tropical rainforest" (Karim 1988: 1), the claim that Malaysia's forest cover is in the region of 72 per cent is less contentious.⁷ The definition here has been revealed by the Ministry of Finance's *Economic Report, 1995/1996*: "Currently, out of a total land area of 32.9 million ha, as much as 23.4 million ha, or approximately 71.1 per cent, is under forest cover or tree cover."

Of the area under forest or tree cover, 19 million ha comprise natural forest and forest plantation, and the remaining 4.4 million ha comprise plantation tree crops. Of the area under forest cover, 8.64 million ha (45.7 per cent) are in Sarawak, 6 million ha (31.8 per cent) in Peninsular Malaysia while the remaining 4.2 million ha (22.5 per cent) are in Sabah" (Malaysia 1996: 87). The more specific figures on forest cover (discounting tree crops and the like) produced by the Forest Department and the Agriculture Department (the two Malaysian departments most involved with forest and land use) are at variance with figures in other official studies such as those conducted by the World Bank. For instance, both Tables 2.3 and 2.4 offer figures for the extent of forest cover in the same year, 1991, despite their obvious differences.

Clearly, definitive measures of the extent of forest cover are elusive, as part of the variance stems from differences in the definitions used. Even within the Forest Department, there are two definitions of forests: resource and legal. The resource definition is based on forest inventory surveys, of the type reported in chapter three for Peninsular Malaysia, which refers to four such surveys done in the last 40 years. These also define forest types as dipterocarp, swamp, and mangrove. For all of Malaysia, the dipterocarp types number the most, covering 17.38 million ha, while swamp forests cover 2.12 million ha, and mangrove forests cover 0.6 million ha. On the other hand, Table 2.4 follows the legal definition of the Forest Department, based on the legal gazettement of forest areas. The classification or breakdown into categories in Table 2.4 follows federal government legislation (discussed later) and comprises:

- Permanent Forest Estate (PFE) (sub-classes: production or protective forests),
- National Parks and Wildlife Reserves, and
- Stateland Forests.

Table 2.3 Malaysia: Status of Forests, 1991 (million ha)

	<i>Peninsula</i>	<i>Sabah</i>	<i>Sarawak</i>	<i>Total</i>
Total Land Area	13.2	7.4	12.3	32.9
Forest Area	5.5	4.2	8.8	18.5
Forest/Total Land Area (%)	42	57	71	56
Permanent Forest Estate (PFE)	4.47	3.35	4.64	12.73
– Productive	2.48	3.00	4.15	9.99
– Protection	1.90	0.35	0.49	2.74
Park/Wildlife Sanctuaries*	0.74	0.39	0.26	1.39
State Land Forest	0.2	0.6	3.9	4.7

Note: * Includes wildlife reserve areas in Sabah of 140,000 ha and in Peninsular Malaysia of 190,000 ha, which are also counted as PFE, and must therefore not be double-counted when computing total forest area.

Source: World Bank 1991.

Table 2.4 Malaysia: Extent of Forest Reserves, 1991 (million ha)

	<i>Peninsula</i>	<i>Sabah</i>	<i>Sarawak</i>	<i>Total</i>
Total Forest Area	6.11	4.44	8.70	19.25
Total Land Area	13.16	7.37	12.33	32.86
PFE/Total Land Area (%)	36.0	45.9	36.3	28.2
Permanent Forest Estate (PFE)	4.75	3.35	4.50	12.60
– Productive	2.85	3.00	3.80	9.65
– Protective	1.90	0.35	0.70	2.95
National Parks	0.64	0.25	0.29	1.18
State Land Forest	0.72	0.84	3.91	5.47

Source: Salleh and Lim 1994.

Slightly more than a quarter of Malaysia's total land area is categorized as being under Permanent Forest Estates (PFEs). In the Peninsula, about 77 per cent of the total *forest* area is classified as such; in Sabah, the ratio is 75 per cent, while in Sarawak, it is only 52 per cent. The above classifications are differentiated according to the extent of protection accorded by law and the likelihood of timber production (with national parks and wildlife reserves having the greatest protection, and state land forests the least). Such differences involve different dynamics in the various regions, besides posing varied policy challenges.

Forestry Policy and Institutions

As with land and other natural resources besides petroleum, forestry is under the jurisdiction of state governments. Thus, the main policies and institutions are reflective of state government attitudes. As will be seen in later chapters, forest management policies have had different impacts in Peninsular Malaysia, Sabah and Sarawak prior to and since integration into the Federation of Malaysia in 1963.

However, there is some room for the federal government to directly influence such policies, notably through fiscal policy. There have been a number of initiatives to define and implement federal forestry policy. Federal forestry policy and related institutional initiatives did not really develop until the 1970s. In 1971, the federal government set up the National Forestry Council (NFC) to serve as a forum for discussing and co-ordinating forestry policies in the peninsula. The NFC comprises the chief ministers of all states in the peninsula as well as the relevant federal ministers. Significantly, Sabah and Sarawak chose not to join as full NFC members, maintaining observer status instead; as such, they have been less committed to follow policies set by the NFC.

Towards the end of the decade, concern over the extent of logging and the unsustainability of such practices resulted in the NFC issuing the National Forestry Policy (NFP) in 1978. The NFP was subsequently translated into federal legislation in the form of the National Forestry Act, 1984. This Act only applies to Peninsular Malaysia, although Sabah and Sarawak have paid lip service to the principles it espouses (World Bank 1991: 20). Indeed, the policy does express several exemplary ideals. For instance, it expresses concern

over the environmental effects of deforestation, and proposes initiatives for the protection of watersheds and areas subject to soil erosion, flooding or other natural elements.

Concerns over long-term sustainability were also explicitly expressed. The need to set aside areas for amenities, education, research, conservation and protection of ecosystems has also been noted. Additionally, principles of sound forestry management were to be applied, with stress on the need for efficiency in the production and utilization of forest resources. Concern over the socio-economic benefits of forest resource use was also given prominence. Some salient features of the NFP have included:

- Establishment of PFEs;
- Ensuring the security of forest estates against destruction;
- Practising sound forest management;
- Encouraging multiple uses of forests;
- Promoting efficient, integrated timber industries;
- Employing scientific principles and appropriate technology;
- Upgrading forestry research, education and training;
- Promoting sound development of forest trade and commerce; and
- Promoting public awareness of forestry issues.

It may be argued that the objectives of the NFP were geared to the commercial utilization of forestry resources. Thus, it established the concept of the PFE to ensure that sufficient forest areas are available for timber production, while maintaining protected zones (for example, to safeguard water supply). Forest management systems have been devised and adapted to achieve the objectives of the NFP. These have included incorporating the Malayan Uniform System (MUS) and the Selective Management System (SMS) for lowland and hill forests respectively.

Developments in 1994 reflected two contradictory strands in forestry policy. First, the Forestry Act was amended to provide for greater enforcement powers against illegal loggers and others who contravene the law. Yet, in November of that year, the federal minister responsible for forests, the Minister of Primary Industries, indicated that he would like to see State Forestry Development Corporations (SFDCs) functioning like State Economic Development

Corporations in order to bring about forestry development through greater commercialization of the resource.

Apart from the NFA of 1984, the government has passed a number of other Acts that directly affect deforestation and land clearing. Some legislation has been enacted specifically to protect particular designated areas, and to put into place a system of national parks, wildlife reserves and sanctuaries, and virgin jungle reserves (VJR's). Thus, under the National Parks Act 1980, national parks could be created with the consent of the federal and state governments; under the Protection of Wildlife Act 1972, wildlife and bird sanctuaries could be created. These two categories form what is sometimes referred to as "totally protected areas."

Table 2.5 shows the extent of such "totally protected areas" in the three regions. In addition to these protected areas, a study by the Malaysian Economic Planning Unit (EPU), together with the World Wide Fund for Nature (WWF) Malaysia, has compiled – on a state by state basis – data on actual forested areas, the status, type and character of these areas, their approximate co-ordinates (location and topography) and significant characteristics (EPU 1993). This is very useful for the consideration of forested areas to be given protection.

Other legislation, including the Land Conservation Act 1960 and the Environmental Quality Act 1974, aims to provide some environmental protection. The Land Conservation Act seeks to control soil erosion due to the development of highlands. The Environmental Quality Act has a number of clauses relating to the best type of environmental

Table 2.5 Malaysia: Totally Protected Areas, 1988, 1995 (million ha)

<i>Region</i>	<i>1988</i>			<i>1995</i>		
	<i>National Park</i>	<i>Wildlife Sanctuaries</i>	<i>Total</i>	<i>National Park</i>	<i>Wildlife Sanctuaries</i>	<i>Total</i>
Peninsula	0.43	0.31	0.74	0.43	0.31	0.74
Sabah	0.25	0.22	0.47	0.25	0.13	0.38
Sarawak	0.08	0.18	0.26	0.70	0.30	1.00
Total	0.76	0.71	1.47	1.38	0.74	2.12

Sources: Malaysia, Ministry of Primary Industries; Thang 1996, Table 3, p. 40.

practices and management, while the Forestry Department in the peninsula has also developed specific regulatory guidelines for road construction, logging, and soil erosion control near rivers.

The three major agencies under the Ministry of Primary Industries dealing directly with forests are the Department of Forestry, the Forest Research Institute Malaysia (FRIM), and the Malaysian Timber Industry Board (MTIB). The Department of Forestry is concerned with the upstream end of the industry, that is, with the production of timber within parameters set by the NFC. This includes monitoring logging operations and enforcement of legislation. FRIM is concerned with R&D, as well as information gathering and dissemination about the forest sector. As its name suggests, MTIC is more concerned with the downstream end of the industry, being partly responsible for promoting Malaysian timber products, both domestically and internationally.

At the state level, forest departments answer to both federal and state governments on different matters. The federal government is concerned with management of the resource, while the state governments are concerned with operations and enforcement, as well as revenue or royalty collection. Despite clear state prerogatives over forestry and land, the influence of the federal government should not be underestimated. For instance, while the state governments may approve logging concessions, the federal government's Customs Department oversees the export of logs and other timber products.

The overall tax and revenue structure generally favours the federal government over the state governments, giving greater fiscal muscle to the federal government, and leaving both state and local governments with land and municipal taxes, and certain other royalties. Major revenue items, such as income and sales taxes, accrue to the federal government, along with road taxes as well as import and export taxes. Hence, while the state governments collect some royalties from timber concessionaires in the (upstream) logging industry, the federal government collects timber export duties and income taxes from timber firms which extract and process logs.

In Sabah and Sarawak, the respective state governments have parallel institutions, laws and policies that deal with the management, conservation, protection and use of forestry resources. In Sabah's case, responsibility for implementing forestry policies is divided among

different institutions, such as the Sabah Forest Development Authority (SAFODA), Sabah Rural Development Authority and the Chief Minister's Office (Gillis 1988: 127). In Sarawak, the Forestry Department has sole responsibility, which the Chief Minister has usually overseen by appointing himself Forestry Minister.

In both Peninsular Malaysia and Sarawak, the forest area declined by almost 50 per cent between 1971 and 1989. In Sabah's case, the area still un-logged in 1989 was less than 20 per cent of that available in 1971, indicating that Sabah had logged out most of its forests in the interim. The International Tropical Timber Organization (ITTO) Mission Report on Sarawak (ITTO 1990) reckoned that at the current rates of logging, the Sarawak forest would be logged out in about 11 years. Although there has since been some reduction in logging rates, mainly due to the diminished availability of and reduced physical access to timber resources, the recommendations of the ITTO Report were not properly implemented.

The 1991 World Bank report on Malaysia's forestry sub-sector endorsed these pessimistic projections for the future of the forest, as can be seen in Table 2.6. Thus, without immediate and effective remedial action, the pillage of the Malaysian forests, primarily for export to Japan, will grind to a near-halt in the first decade of this century when there will be little forest left to harvest. This has been the experience of some Southeast Asian neighbours. The Philippines and Thailand have already been virtually logged out, with Indonesia rapidly moving in the same direction.

The circumstances and means for capturing timber resource rents are generally shady, even if not illegal, encouraging rentiers to keep their methods and incomes beyond public scrutiny. Firms that export logs are widely believed to have stashed some, if not most, of their earnings abroad. This has drained away valuable resource rents, limiting potential capital accumulation. Boom-bust timber price business cycles have also adversely affected resource rents captured, as output has often increased in response to price drops. In the peninsula, there is some evidence of resource rents being converted to "man-made" capital (WWFM 1993) as the peninsula became less dependent on resource rents from the 1970s.

Vincent (1993) has argued that Malaysia as a whole has been cashing in on its natural resource assets. However, the situation is different in

Table 2.6 Malaysia: Detailed Status of Forests, 1991 (million ha)

	<i>Peninsula</i>	<i>Sabah</i>	<i>Sarawak</i>	<i>Total</i>
Land area	13.2	7.4	12.3	32.9
Forest area	5.5	4.2	8.8	18.5
Forest/Total Land Area (%)	42	57	71	56
Park/Wildlife Sanctuaries*	0.74	0.39	0.26	1.39
State Land Forest areas	0.2	0.6	3.9	4.7
– Virgin	0.2	0.0	1.6	1.6
– Logged	0.2	0.6	2.3	3.1
Permanent Forest Estate (PFE)	4.47	3.35	4.64	12.73
– Protection forest area	1.90	0.35	0.49	2.74
– Productive PFE area	2.48	3.00	4.15	9.99
Virgin	0.4	0.5	2.5	3.4
Logged	2.4	2.5	1.7	6.6
Total Logged Forest Area	3.1	3.1	3.6	9.8
Total Virgin Loggable Forest Area	0.4	0.5	3.5	4.4
Present Annual Harvest Area	0.15	0.15	0.40	0.70
Remaining Years of Virgin Logging	3	3	9	6

Note: * Includes wildlife reserve areas in Sabah of 140,000 ha and in Peninsular Malaysia of 190,000 ha, which are also counted as PFE and must be deducted when computing total forest area to avoid double counting.

Source: World Bank 1991.

Sabah and Sarawak. In Sabah's case, if the proportion of GDP accounted for by timber and petroleum resource rents is deducted, there would actually be little economic growth since the 1970s. In Sarawak's case, if resource rents were deducted from GDP, growth would still be positive, but far more modest than recorded.

The temptation for state government leaders to exploit their natural assets, both for official revenue and private gain, has been strong. In addition, there is likely to be pressure to increase timber export revenues in times of crisis, as during the recession of the mid-1980s. These two factors have been contributing to Malaysian deforestation. What is certain is that none of the three regions have been practicing sustainable forestry. Besides clearance of forest areas

for agriculture and other land-use purposes, logging has had serious consequences for forest degradation, which, as noted earlier, we consider to be part of the problem of deforestation.

ECOLOGICAL IMPACT OF DEFORESTATION

Various studies have documented the impact of logging on the forest environment.⁸ While logging does less damage to the forest ecosystem than wholesale forest conversion, the actual damage depends on logging practices and local ecological conditions. In most natural forests, logging operations usually cannot avoid causing extensive destruction. For example, Burgess (1971) estimated that logging operations that remove 10 per cent of timber stands would destroy another 55 per cent of other stands, leaving only 35 per cent undamaged. In hill forests, overall damage can be as high as 70 per cent of the forest area (Burgess 1973).

Damage from opening up access to forested areas is also well documented. Aitken *et al.* (1982) quoted the FAO (1973) study on damage caused by log transport, estimating that logging roads could take up between 8.7 to 9.9 kilometres (km) per square km of logged areas, in difficult terrain, and up to 13 km in easy terrain. This would mean between 3.5 and 5.2 per cent of complete forest devastation simply for roads in logging areas. Other impacts that have been noted include soil erosion, landslips, silting, and degradation of water quality, and on the hydrological balance that the forest ecosystem provides.

Another concern is the disturbance to fauna, which may disturb human settlements nearby. Joseph (1991) has reviewed deteriorating water quality and hydrological balance in detail. Deforestation, which includes de-stumping, could cause erosion rates as high as 1,970 to 2,500 tons per ha, while non de-stumped areas may lose 50 to 120 tons per ha (Joseph 1991: 216). The run-off rates of forests may only be about half of those of the latter plantations (Joseph 1991, quoting Daniel and Kulasingam 1964).

Some long-term implications of logging for natural forests have been discussed by Aitken *et al.* (1982), among others. Natural regeneration of the tropical rainforest is exceedingly slow, with full recovery requiring about 50 years (Kochumen 1966, quoted by Aitken *et al.* 1982), maybe even up to 80 years (Aitken *et al.* 1982), depending

on physical and ecological conditions as well as species types. Such regeneration does not, of course, imply that all previously existing flora and fauna will be regenerated, let alone replicated; hence, the implications of logging for future biodiversity are uncertain.

Sustainability

Forest degradation due to exploitation of timber resources has led to very pessimistic forecasts about the future of Malaysian forests. Yet, while this degradation has been happening, the NFC as well as state and federal forest officials have been issuing various pronouncements claiming to practice sustainable forestry. Indeed, as such claims to "sustainability" have become more fashionable, it is worthwhile to quickly review the prospects for the sustainability, or non-sustainability, of both forestry and agriculture in Malaysia as well as some related policy issues. There are vibrant debates about ecological, economic and social sustainability involving issues of definitions and appropriate policy.

The approach of the Malaysian NFC to forestry is instructive. On the one hand, the NFC refers to the multi-functional roles of forests: that forests supply timber and non-timber products, play an important role in hydrology, support communities and possess both recreational and research potential. On the other hand, the NPC discusses the "sustainability" of forestry practices, defined solely in terms of the ability to ensure a continued supply of timber wood.

The Malaysian authorities have put in place a system of PFEs to serve such a protective role, but as we have seen and will see in the following chapters, that "protective" role has all too often been undermined by the "productive" role PFEs play. Recent initiatives have stressed the need to develop forest plantations to ensure "sustainable" timber harvests, at the expense of ecological, social or human criteria for determining sustainability.⁹

This ambiguity of the definitions and claims of sustainability has different implications for policy. To stress the productive capacity and sustainability of forests in terms of timber output, as has been done in official pronouncements in Malaysia, implies a definition of sustainability of renewable resources, such as forests or fisheries, in terms of the continued physical availability of the resource for commercial exploitation. In the case of forests, it usually requires that the

rate of timber harvesting does not exceed the rate of timber regeneration. If timber is harvested at a rate slower than, or equal to, its regeneration, then the timber supply can be maintained and forestry practices are deemed "sustainable". This kind of argument would not be acceptable to those who take more holistic approaches to forests, beyond the relationship between the rate of timber growth and the rate of timber cut.¹⁰

It has been argued that swidden agriculture represents a "sustainable" approach to land use, relying as it does on natural regeneration, nutrients from the forest bio-mass (through burning existing vegetation) and rotation of farmland, which minimizes soil erosion and ecological degradation while maximizing output within the context of a land-use cycle. Advocates of "modern" agriculture reject this definition of sustainability invoked in defence of swidden agriculture (e.g. Joseph 1991). Instead, they take a different approach, aiming to maximize output from maximum sustainable land use at any one time, which it carries out by continuous application of "inputs" such as chemicals, fertilizers, machinery and technological developments. Different impacts on land have been obvious, even from the colonial days. Aitken *et al.* (1982: 109), for example, suggest that many early European planters wrought havoc on the land because of their poor understanding of the humid tropical ecology and their attempts to adapt European farming techniques. Morrison also describes how pepper cultivation in Sarawak resulted in rapid soil erosion due to the practices of immigrant farmers.

Just as some have argued that forestry sustainability should be defined in terms of continued timber supply, agricultural sustainability has been similarly defined in terms of continued successful production of a crop over time. Hence, for example, rubber estates that can maintain or even increase yields after replanting exemplify such sustainability. From this perspective, the rising rubber yields in Malaysia over the last century demonstrate sustainability. Likewise, Vincent and Hadi (1991) note that both rubber and oil palm plantations have increased yields over the long term. They argue that returns to capital have been moderate to high, while wages of plantation workers have risen enough for them to earn a reasonable standard of living. Thus, it is argued that the expansion of tree crops has involved greater financial benefits over costs for planters. From this perspective, in-

creased productivity has enabled the plantation sector to sustain itself over many decades.¹¹

A variety of factors accounts for such important differences in the understanding of sustainability. There is increasing acknowledgement that if environmental impacts and costs ("externalities") – such as those relating to soil conservation, watershed protection and biodiversity conservation – are also taken into account, then the usual estimates of net economic gains from commercial agriculture or forestry are likely to be overstated.¹²

CONCLUSION

This chapter has advanced the discussion of agriculture and forestry in Malaysia. It has focused particularly on federal institutions and policies with regard to agriculture and forestry. Public policy planning and implementation in these areas in Malaysia operate at two levels (federal and state) because land is, constitutionally, a state matter. Hence, several, often conflicting, parameters affect the making and implementation of policy, some of which have been mentioned in this chapter and will be further elaborated in the regional chapters that follow.

Political considerations may determine access to land for some at the expense of others. State-level dynamics also affects the actual extent and rate of logging. Similarly, environmental and other considerations – which may have influenced policy at the federal or national level – may be ignored at the local or state level, or vice versa. Certain land decisions may deprive major sections of the population, while "development priorities" may favour particular agricultural crops or systems or certain interest groups over others.

This chapter has thus introduced the policy context with respect to forestry and agriculture. The ways in which policies have been implemented impact on the environment generally, and on forest dependent communities, land tenure, rural living standards and the local as well as national economy. Issues of sustainability also require the consideration of differing agricultural practices, including the different arguments for and against swidden agriculture as well as other options for economic development. The following chapters will look in more specific detail at some ramifications of these questions in each of the three regions considered.

With regard to the relationship between agricultural expansion and deforestation, important issues arising from this chapter include the ways in which much deforestation has resulted from agricultural expansion as well as from ostensible rural development and poverty alleviation efforts, particularly in Peninsular Malaysia. The extent and varying consequences of such programs will be considered for each region. The role of logging in deforestation became more significant after Independence, albeit at different rates and at different times in Peninsular Malaysia, Sabah and Sarawak. The influence of federal-state relations in shaping deforestation, the role of political patronage and other determinants of policy implementation in each region have also been emphasized. Land legislation, land-use and forestland categories as well as definitions of ownership have also been relevant.

Pressure on forests has also been a consequence of differences in the role and nature of the primary sectors in the regional economies. Lack of diversification in general, but especially within the agricultural sector, has caused Sabah and Sarawak to rely more on the exploitation of their timber resources. Unfortunately, public policy has been tempered by private greed: the low resource rent capture described by the World Bank (1991) reflects the limited extent to which logging has been the subject of enlightened public policy at the state level, despite federal policy influence. For agriculture, however, there has been greater consensus about approach and emphasis. Increased openness of the economy, as well as dependence on primary commodities for export, further integrated Malaysia into the global system.

Notes

1. *Orang Asli* and *Orang Ulu* are Malay terms. *Orang Asli* translates as "original people" and *Orang Ulu* as "people living in the interior."
2. Sarawak: Department of Agriculture 1991.
3. *Annual Bulletin of Statistics, Sabah, 1991*.
4. At the state level, there are also important financial institutions, including the Sabah Credit Corporation and the Sarawak Development Finance Corporation.
5. For instance, petroleum prices fell from RM520/tonne in 1985 to RM287/tonne in 1986; tin prices fell from RM28,711/tonne in 1985 to RM16,086/tonne in 1986; rubber prices fell from RM230.8/kg in 1984 to RM191.8/kg in 1985.

6. A typical investment for a 250-ha marine pond culture was estimated at around RM78 million (Department of Fisheries, 1985).
7. The Ministry of Primary Industries has made such claims, for instance, in their booklet *Fact Sheets on Forestry and Environment* (May 1992). An advertisement of by the Malaysian Timber Development Council, which ran in several international newspapers and magazines, made a similar claim.
8. SINULOG (1993) has an annotated bibliography on Malaysia which lists several research works on the issue. Aitken *et al* (1982), Tho (1990), Lim MT. (1991) and Douglas *et al* (1992) can also be consulted.
9. There is also a debate about re-growth within the natural forest. For example, Appanah and Weinland (1993: 14-22 especially) provide a historical sketch of what they call the "great debate" between those foresters who favour artificial regeneration and those who favour natural regeneration.
10. It should be noted that in terms of productive management, the two systems of management mentioned earlier – the Selective Management System (SMS) and its predecessor, the Malayan Uniform System (MUS) – also varied in practice in Peninsular Malaysia and in the East Malaysian states. Mohd Shahwahid (1993) gives a good description of these. The fact that there has not been more than one cycle (25 to 30 years) so far makes it difficult to assess whether they even fulfil their own definitions of "sustainability". However, the terms and conditions of concessions are critical, while pressure from sawmills and other timber processors may have increased pressure on timber suppliers, to the detriment of management system objectives.
11. New technology and management methods are, of course, significant in modern agricultural practice. A good discussion of these influences for other crops can be found in Pushparajah (1988a), Lim Kuan Huan (1989) for oil palm, and Pushparajah (1988b) as well as Pushparajah and Amin (1977) for rubber.
12. In a strict sense, it could be argued that there is no environmental sustainability in modern agriculture, a point made by the late Solon Barraclough on an earlier draft of this chapter.

Peninsular Malaysia

Peninsular Malaysia, known as Malaya until 1963, is made up of 11 states, namely Johor, Kedah, Kelantan, Malacca, Negri Sembilan, Pahang, Perak, Perlis, Penang, Selangor and Terengganu. A mountainous spine, known as the Main Range, runs from the Thai border in the north down to Negri Sembilan in the south, extending as far as the boundary of Malacca. This mountain range has formed a significant divide between the west and east coast regions. It is also the biggest of seven or eight distinct ranges, which cover a considerable part of Kelantan, Terengganu, Pahang, Kedah and Perak. To the south are the mainly flat, poorly drained lowlands of Johor, and on the sides of the mountain ranges leading to the sea are alluvial plains of varying widths.

Most states consist of river basins and take their names from these rivers. These rivers form elaborate networks that constituted the major means of communication and transport in earlier days. The rivers have brought sediment to the coastal plains on both sides of the peninsula, resulting in the build-up of lowland fringes around the coastal regions, which have been extended by the advance of mangrove swamps on the more sheltered western coast.

The exposure of the East Coast to the Northeast monsoons coming from across the South China Sea contrasts with the relative calm of the Malacca Straits. Consequently, shipping routes have favoured the more protected ports of the West Coast. As a whole, the peninsula forms an obstacle to sea-borne traffic between India and China, and an "almost complete link between the continental mainland and the islands of Indonesia" (Fisher 1964: 589). This condition has resulted in a rich history due to this unique trading position of the peninsula and the desires of those who have sought to control the land and the adjacent seas.

The peninsula has few obvious geo-physical advantages. "To whatever else its great wealth is due, it certainly cannot be attributed to any intrinsic physical advantages, for such are conspicuous by their absence. Structurally, the Malay peninsula, unlike Java or Sumatra, is made up entirely of a portion of Sunda-land, the old stable core of South-east Asia, and this fact, combined with the rapidity of sub-aerial erosion in these equatorial latitudes, explains both the maturity of its relief and the prevailing poverty of its soils" (Fisher 1964: 583).

The main differences in vegetation have been between the freshwater swamp vegetation of the more waterlogged lowlands and the dense evergreen equatorial forest which covers so much else of the peninsula and has physically hampered easy human movement within the peninsula. Indeed, for vegetation and agriculture, altitude and drainage are more important than climatic variations. Although much of the soil shows evidence of laterization and suffers from poor aeration, the best alluvials are to be found in the Kedah plain and the Kelantan delta. These northern areas also have a slight climatic advantage for rice growing, with their more distinct monsoon seasonal variation. Nevertheless, there is paddy cultivation as far south as Johor. Newer areas for large-scale rice cultivation are also to be found in Perak, Selangor and Kelantan. Most of the larger rubber and oil palm estates are located on the West Coast of the peninsula, as are the nation's main tin deposits. Pre-colonial historical evidence suggests that outside the rice plains of the north, in which powerful central authorities built and controlled irrigation systems for sedentary wet rice cultivation, agriculture in the peninsula mainly involved shifting cultivation. Swidden agriculture was quite suited to the foothills of much of the interior as well as the relatively low population densities in most areas of the peninsula at that time. Although rice cultivation on the Kelantan plain was more advanced than anywhere else in the peninsula in the pre-colonial period, in general, the East Coast of the peninsula has been less developed agriculturally since the colonial period.

Colonial expansion from British coastal and island trading centres from the last quarter of the 19th century profoundly changed the peninsular hinterland. This expansion radically transformed agricultural demography, tenurial relations and the social relations of agriculture and land use. This chapter will discuss these transformations, assessing the nature of land use changes, especially those involving deforestation.

It will examine the transformation of the Malay peasantry under colonialism, and will consider the nature of state intervention – including agricultural development initiatives – under both colonial and post-colonial authorities. It will become clear that until the post-colonial increase in commercial logging, most deforestation in Peninsular Malaysia was connected with land clearance for alternative uses, particularly agricultural expansion and, to a lesser extent, mining and human settlement.

AGRICULTURAL EXPANSION

Pre-Colonial Malay Agricultural Settlement

Much of pre-colonial Malay society was organised primarily around agrarian production. Two main kinds of cultivation were practiced. Shifting cultivation (*buma* or *ladang*) involved periodic forest clearing for one or a few seasons of cultivation, after which the land would be left to revert to secondary forest. In most areas of the peninsula right up to the 1860s, hill or dry rice cultivation was more important than wet rice cultivation (Zahara Mahmud 1969, 1970). In fact, prior to the 15th century, it is possible that only hill rice was cultivated (Lim Teck Ghee 1976: 42). Since dry rice was not suited to sedentary cultivation agriculture, and because the political and economic conditions of pre-colonial times were not especially conducive to sedentary agriculture, shifting cultivation persisted, even after sedentary agricultural techniques became known.

Sedentary agriculture, on the other hand, mainly centred on wet rice cultivation (*sawah* or *bendang*). Much of the lengthy history of permanent peasant settlement – in the Kedah and Kelantan rice plains, for example – was based on *sawah* cultivation (Zahara Mahmud 1970). Consequently, it is in such areas of long-standing permanent cultivation that the pressures of population growth have been most acutely felt (Kessler 1974). Wet rice cultivation was apparently introduced from Siam and first took root in the northern *negeri* (or countries, referred to as “states” since colonial times), which had long been under Siamese rule and are endowed with extensive flat river plains suitable for such agriculture. Malay agricultural practices were technologically well adapted to the environment and quite efficient in relation to ecological circumstances. However, the expropriation of the peasant

surplus by the ruling class in pre-colonial Malay society discouraged increased output by peasants, except where the ruling class specifically promoted such production to subject it to more systematic expropriation, as in Kedah.

The basic organizational unit of agricultural production tended to be the family, although in practice, this could mean many different arrangements. Some co-operative activities of both the regular and irregular kind were often organized on a wider, sometimes village (*kampung*)-wide basis, and for specific purposes, especially communal tasks. Land clearance and infrastructure construction, for instance, tended to be communally organized, sometimes involving corvée labour (*kerab*) demanded by the ruling class. Village ties, often overlapping with kinship relationships, were thus strengthened by communal organization and by shared responsibility for various activities including production. Social differentiation within pre-colonial Malay village society did not usually amount to class relations. Rather, village unity was perceived as the norm, supported by shared interests and a common lot, particularly since the ruling class were not in residence in most ordinary villages.

The waterways – both riverine and maritime – and various land routes through the dense equatorial forest served as the primary means of inter-village communication and transport in pre-colonial times. As noted earlier, several Malay *negeri* tended to correspond geographically to river basins. Ease of travel and communications provided by the course of a river and its tributaries also facilitated the assertion of political control backed by military power. Therefore, the ruler of the Malay *negeri* – holding the title of sultan in Islamic times – usually chose to site himself and his entourage strategically, often near the river mouth or at an important river confluence (*kuala*). Subject to the sultan, at least nominally, were territorial chiefs. Formal political hierarchies varied in the various Malay *negeri* while local chiefs were to be found at the village level (Husin Ali 1975).

In the riverine *negeri*, especially where shifting cultivation was the norm, the ruling class typically obtained its surplus by taxing riverine commerce. This usually involved chiefs positioning themselves at strategic points on a river's course, thus strengthening the decentralization of the state structure in such *negeri*. In these circumstances, the titular head of state, the sultan, was in less of a position to exercise effective

authority. Thus, political and economic power by the ruling class was not necessarily concentrated in the hands of the sultan, and would thus be shared, especially among those with direct access to sources of economic surplus.

Evidence on pre-colonial Malay society suggests that it is possible to identify the existence of several types of economic relations in various combinations. Sometimes, different types of production relations co-existed in similar technological conditions. It is also true, however, that some major differences in the social relations of production were associated with different technological conditions. For instance, societies based on sedentary cultivation differed from those based on shifting cultivation.

The variety of resource use arrangements in the many diverse aboriginal *Orang Asli* communities in Peninsular Malaysia, of varying sizes, cannot be surveyed here (see Nicholas 1999). While some larger communities have become involved in sedentary or shifting agriculture, many retain more intimate relations with the forest and its resources. Most have rather weak – i.e. ambiguous or difficult to enforce – proprietary rights, especially the forest dwellers and swidden farmers.

Colonial Rule, Land Use and Tenurial Relations

Colonial Rice Land Policy

The impact of colonial rule on land use and tenurial relations was nothing short of profound as colonial interests and policies regarding agricultural practices, food production and crop choice were quite different from their indigenous pre-colonial precedents; this can be noted, for example, in differing attitudes to rice production. The growth of capitalist enterprises under colonialism led to a rapid increase in the immigrant population and a corresponding growth in rice consumption. Chinese-owned mining enterprises usually employed Chinese immigrants, while British capital and the colonial administration mainly hired labourers from India. Perak and Selangor, which together produced 91 per cent of tin exports from Malaya in 1891, witnessed a population increase from about 72,000 in 1874 to 295,840 in 1891 (Goldman 1975: 253), an increase of almost 224,000 in 17 years. The dramatic corresponding rise in rice consumption was largely met by increasing imports of cheap rice from Siam and Burma, which

was also a British colony. By 1890, rice imports constituted at least 35 per cent of total imports, equivalent to 31 per cent of export receipts (Goldman 1974: 14). To minimize the loss of foreign exchange from importing rice for the labour force, and to curb the drift of peasants into cash-crop cultivation competing with British-owned agricultural plantations, the colonial administration sought to promote rice production among the predominantly Malay peasantry by imposing crop cultivation conditions on their land. This rationale, plus food security and political considerations, continues to be the basis of contemporary rice policy in Peninsular Malaysia.

Other aspects of the growth of capitalist enterprise in Malaya also affected the rice-growing peasantry. The tin rush, and, later, the rubber boom encouraged speculative land acquisitions, mainly involving virgin (forest) land, but also existing cultivated land. This was probably most significant for land previously under shifting cultivation, as fallow land (temporarily not under cultivation) was alienated to the fast expanding mining and plantation enterprises. Where lucrative tin deposits were found or expected, and when land speculation was greatest during the rubber boom, even land already under wet rice cultivation was sold to mining and plantation interests. The diversion of water supplies and the water pollution caused by mining effluents sometimes damaged rice crops. To force peasants to give up shifting cultivation was therefore advantageous to the colonial government, and an added reason for the promotion of settled peasant rice production. Wet rice cultivation would mean permanently settled peasant farmers, who would offer minimal resistance to plantation land expansion.

Yet, the peasantry was not necessarily compliant. Frustrated by the poor response of local Malays to efforts from the last quarter of the 19th century to promote rice production amongst them, the colonial administration began to encourage immigrant agricultural settlers,¹ especially from other parts of the archipelago, who were believed to be favourably predisposed to tropical agriculture. The conditions under British rule were relatively attractive, especially the liberal conditions for land acquisition and low rates of taxation in the peninsula, compared to those prevailing in the neighbouring islands under Dutch administration. This led to considerable peasant immigration and the designation of large areas for rice cultivation.

However, colonial designs were to be frustrated again. Like the local peasantry, immigrant settlers also found cash-cropping more attractive, inadvertently threatening plantation interests (Lim Teck Ghee 1971: 24). On the other hand, non-Malay immigrants were generally discouraged from permanent settlement and rice production by the colonial rulers. Wealthier non-Malay immigrants found it more profitable to engage in other occupations, while poorer ones with some notable exceptions were generally discouraged from going into peasant agriculture; instead, they were expected to gain employment in the rapidly growing capitalist sector.

Thus, although there was an increase in rice-growing areas by the end of the 19th century, this hardly anticipated the later demand increase with the rubber boom. By 1920, there were some 250,000 hectares (ha) under rice cultivation (Hill 1977: 174). Almost 83 per cent of this rice land was to be found in the northern states of Kedah, Province Wellesley (the mainland part of Penang), Kelantan and Perak, so it would seem most likely that these rice areas grew at the expense of swamp as well as lowland dipterocarp forests (for example, in the Seberang Prai, Muda and Krian areas). This would also imply that the destruction of hill forests can be mainly ascribed to the expansion of tree crops – rubber in the first third of the twentieth century, and oil palm (and cocoa) in the last third – rather than rice.

Colonial Rubber Land Policy

As noted in the first chapter, colonial penetration into Malaya after the fall of Malacca in 1511 took time. For our purposes, we need to realize that the major transformations in land use and tenurial relations only began towards the end of the 19th century. At that point, as Barlow (1978: 22) has noted, much of today's cultivated areas were "untouched and uninhabited jungle." The plantation sector then was estimated to cover no more than 200,000 ha comprising mainly of tapioca, gambier and pepper (Barlow 1978: 23). However, the introduction of rubber was to change all that. Between 1898 and 1921, planted rubber grew from 800 ha to over 900,000 ha, with the bulk of the increase between 1908 and 1918 (Barlow 1978: 26).

Subsequently, the expansion slowed down, increasing between 1920 and 1965 from about 1 million ha to 1.8 million ha. Since then, rubber land first stabilised and then declined, with switches to other

agricultural crops, principally oil palm. In the 20th century, agricultural expansion started briskly, but later slowed down. Between 1900 and 1930, more than 1.2 million ha of land were approved for agriculture, mainly rubber. However, between 1931 and 1956, only 345,600 ha were similarly alienated.

The impact of public policy is obviously crucial to understanding the pattern of agricultural land expansion and its effects on forests. The strong encouragement to open up land for rubber cultivation in the first two decades of the 20th century clearly had major implications (Barlow 1978, Drabble 1967). This encouragement reflected the growing demand for rubber with the growing use of pneumatic tyres in the expanding automobile industry. During the rubber boom, smallholders spontaneously responded to the market as well.² The large, mainly foreign-owned, plantation companies were encouraged to grow rubber.

Besides their interest in seeing a profitable, preferably British-owned tin mining industry, the colonial authorities were also keen to develop export-oriented capitalist agriculture (J.C. Jackson 1968, Lim Teck Ghee 1976). The most important crop on European farms in Malaya in the late 19th century was coffee, but the price of coffee dropped dramatically in the 1890s. As the demand for rubber continued to rise with the growth of the pneumatic tyre industry, British investments in rubber planting were strongly encouraged by the colonial administration through a number of initiatives,³ including:

- Attractive land alienation policies which made choice land available at nominal rates minimal restrictive conditions;
- Availability of government loans at low interest rates;
- Negligible taxation in the Federated Malay States (FMS);
- Minimal export duties in the Straits Settlements;
- Provision of important infrastructure, especially roads, railways (charging low freight rates), and harbour facilities; and,
- Active encouragement and subsidization of low-wage Tamil labour immigration (Thoburn 1971: 27).

The colonial state generally facilitated British investments, seeking to ensure and maximize their profitability.⁴ These colonial government initiatives had a substantial impact on Malayan land use. For instance, much land was made easily available for alienation to European

interests at "ridiculously cheap" prices. For example, the FMS Land Enactment of 1897 facilitated land alienation for plantation agriculture. Actual land alienation was generally initiated by the prospective planter, allowing him to "select the most accessible, well drained and topographically favourable land for planting purposes" (Voon 1971: 89). At the height of the boom, well-financed plantation interests expanded more quickly by acquiring already cultivated rubber land from Malay peasants and other Asian planters.⁵ The structure of control in the industry was important, not only for influencing price levels, but also for the distribution of profits by rubber plantations. Managed by foreign-owned plantation agencies,⁶ most rubber companies were linked through interlocking directorships.⁷

Besides subsidizing production costs to plantations, state infrastructure provision was an important means of advancing plantation interests (especially British capital) over peasant interests. Earlier development of rail transportation and ports had been more influenced by the needs of the tin industry, while later road development was strongly influenced by the location of rubber plantations. The construction of communications infrastructure was also crucial in determining the location of new rubber estates. Thus, rubber companies sought to locate their plantations in accessible proximity to the emerging road and railway transport networks. Not surprisingly, Selangor state became the most favoured location for plantation development. In many cases, land adjoining newly built roads was reserved for acquisition by plantations on the official pretext that this was the most rational mode of land resource allocation.

When the exploding supply outpaced demand and caused prices to collapse, the government responded to vociferous plantation lobbying to introduce restrictions. For example, the Stevenson Scheme during 1922-27 and the International Rubber Regulation Agreement in 1934-38 prohibited local growers (mainly Malay peasants) from planting new trees and forcing them to accept lower production quotas, ostensibly to protect prices at the international level.⁸ Malay reservation land legislation was first introduced in 1913 and extended in the 1930s, usually imposing cultivation conditions to reduce peasant smallholder rubber production (Drabble 1973, Lim 1971, Bauer 1948, Barlow 1978). Such public policy made clear whose interests were being served and protected, as we shall see in more detail.

As rubber production gained popularity in Malaya, existing small plantations were soon unable to exploit the new opportunities that arose. Having developed fitfully over the years, the limited resources of these concerns were not enough to respond rapidly to the new circumstances; in fact, they were not even sufficient to ride out depressed rubber prices without considerable difficulty. Merchant capital in the Straits Settlements, in the form of trading agencies which had prospered from the commerce of the colony, were key to much of the expansion of the rubber industry in Malaya. New limited liability joint-stock companies were floated in London by agency houses, mobilizing considerable funds. Such reorganization provided access to the London capital market, which greatly contributed to the rapid expansion of the Malayan rubber industry in the first decade of the century (Allen and Donnithorne 1954: 112). After 1914, however, the flotation of new rubber companies declined, and the years from 1914 to 1921 were essentially a period of financial consolidation as existing companies significantly increased their investments, e.g. rubber investments in Selangor, Negeri Sembilan and Kedah doubled over this period (Voon 1975: 56-7).

Of course, agency houses were not solely responsible for this growth, although they played the most outstanding role by far. Some important groups of estates were formed independently of these firms. Nor was British capital the sole source of investment; continental European investors as well as rubber-using Western industrial companies joined the rubber investment boom, although their involvement was less significant. Still, the role of British colonial policy was evident throughout. For instance, the enthusiasm which American and Japanese capital investors showed in investing in plantation rubber in Malaya led, in 1917, to the Rubber Lands (Restricting) Enactment (Drabble 1973: 137-8). Under this enactment, all lots of rubber land exceeding 50 acres could only be alienated to British nationals, subjects of the Malay rulers, corporations registered in the British Empire or residents in the peninsula of at least seven years' standing.

The rubber market developed a notorious reputation for severe price fluctuations, which alarmed rubber-growing interests. Keynes calculated in 1938 that "there has only been one year in the last ten in which the high price of rubber exceeded the low by less than 70%" (quoted in Arudsothy 1968). Comparing price variations for several

raw materials between 1921 and 1938, Bauer (1961: 186) showed that rubber was the most susceptible to fluctuations: average annual price variation was 47 per cent, while the lowest price as a percentage of the highest price for the entire period was only 3 per cent. These vicissitudes were invoked in the struggle between capital and labour over the wage rate, which declined precipitously with price drops, but tended to rise more slowly in response to rubber price increases.

Impact on Land Tenure

Agricultural expansion of land development involved the introduction of new land legislation and definitions of ownership, with profound effects on both land use and peasant social differentiation. Land rights prior to colonial intervention rested on the condition that the land was worked. Consequently, there was little accumulation of land for purposes other than self-cultivation. Since land was not rendered scarce by this system, most farmers could cultivate as much land as they needed or were able to work. However, ownership under colonial land legislation – in all its variations – bore no relationship to the pre-colonial premises for land tenure.

Two aspects of colonial land policy worked in tandem to fundamentally transform land tenure conditions involving the peasantry. First, the new land laws introduced by the British juridically defined a new relationship between peasants and the land. Second, colonial land alienation policy controlled the availability of land for cultivation, requiring cultivators to farm under conditions specified by the colonial state. Land policy also affected land prices and the use of land as collateral for obtaining credit. Under colonial land laws, ownership involved obtaining legal rights to land properly alienated by the authorities. "The practical goals of the land code were to establish a favourable climate for outside investment in land, and to bring Malay smallholdings under Government control" (Kratoska 1975). As capitalist interests and immigrant peasants from neighbouring islands – attracted by the conditions established under colonial rule – began to acquire land, the remaining land available for cultivation diminished in quantity as well as quality. Colonial rule thus fundamentally transformed access to land. Once virtually freely available, subject to the cultivation condition, land was rendered scarce by a combination of legal, economic, demographic and environmental conditions, making

acquisition of cultivable land by purchase increasingly necessary. In the new conditions accompanying colonial rule, land – the primary means of peasant production – was systematically brought under state or private control, and also transformed into a commodity that could be accumulated as a type of investment. The growing commercialization and monetization of the economy hastened this process, encouraging land transactions and investments.

The imposition of colonial rule meant the beginning of the end for shifting cultivation, previously practised by most Malays in the peninsula outside the long-standing permanent Malay agricultural settlements established on irrigated rice plains, especially in northern Malaya. By rapidly expanding the mining or agricultural land alienated to capitalist and settler interests, the land available for shifting cultivation was significantly diminished. At the same time, new land laws, based on alien notions of property, meant that land cultivation without permission from the owners constituted a violation of property rights. Un-alienated land was considered state property that could be alienated to private interests. Ironically, the pre-colonial Malay ruler's claim to eminent domain over land finally became a reality, but with unexpected significance under colonial rule (David Wong 1975). Soon, legislation prohibiting shifting cultivation by Malays was enacted and introduced in Selangor in 1886, and in Perak a decade later (Lim Teck Ghee 1976: 67); "no effort (was) spared to secure a settled population of agriculturists" (Swettenham 1948: 261). The impact of colonial rule on shifting cultivation by Malay peasants was, therefore, a serious threat to their traditional livelihood, with little done to provide any viable alternative. No infra-structural and financial support was given to make sedentary agricultural alternatives more attractive. In addition, environmental conditions were often not conducive to wet rice cultivation, the crop the colonial government chose for the peasantry. It was hardly surprising then that the peasantry opted to grow other crops wherever possible.

The resulting stratification of the Malay peasantry is often said to reflect not only colonial influences, but pre-colonial relations as well. Our emphasis on the colonial origins of the contemporary peasant social structure does not, of course, deny pre-colonial influences. Indeed, besides colonial land policy to attract (mainly foreign) investment, land alienation also favoured the pre-colonial ruling class.⁹

Without such "co-option", the successful establishment of colonial hegemony may well have been jeopardised.

Thus, with growing concentration of land ownership and decreasing access to alternative land, the peasantry was faced with a new set of circumstances that increasingly worked to its disadvantage. Unlike the pre-colonial class structure – in which peasants generally were not significantly stratified at the village level, though they were subject to extra-local class domination – peasants after colonial integration became subject to differentiation at the village level as well. As rural wealth accumulation on the one hand and peasant impoverishment on the other were manifested in growing concentration of land ownership, peasant relations of production increasingly involved land tenancy, rather than the spread of wage labour relations.

Concentration of land ownership in a situation where the peasant family remains the basic unit of production contributed to the spread of tenancy among peasant cultivators. Tenancy rates are generally higher in older rice areas, compared to, say, relatively newer rubber areas. The implications of inter-generational sub-division of land have included the further fragmentation of land ownership.¹⁰ Such fragmentation – due to growing demographic pressures on socially, rather than ecologically, limited land resources – has led to further social stratification and economic marginalization of impoverished owners in favour of wealthier ones.¹¹

Yet, these peasant relations cannot be considered "capitalist" despite evident subordination to circulation capital, especially merchant capital. They involve new non-capitalist relations of production for the market, not the direct exploitation of free wage labour by capital invested in agrarian production. Caught in fundamentally new circumstances created by colonial intervention, the peasantry has survived as peasants, insofar as they continue to have private (direct) access to land, the primary means of agricultural production. But the processes of income and wealth distribution and social stratification have remained diverse.¹²

Colonial Intervention to 'Protect' Malays

Initiatives¹³ of the colonial government to "protect" the Malays have had a bearing on these processes. This should be compared to the Brooke regime's stance *vis-à-vis* Sarawak's indigenous communities and

that of the British North Borneo Company (BNBC) in Sabah, though the motivation for the colonial regime's interventions in the peninsula was quite different. Under the Malay Reservations Enactment of 1913, the Residents – the highest British officials “advising” the sultans – were empowered to declare any land within their State as reservation land, which could not be sold, leased, or otherwise disposed off to non-Malays. Limitations on the disposal of reservation land were also imposed on owners, and land dealings contrary to the Enactment were declared void in the eyes of the law. Similar legislation was later passed for the Unfederated Malay States, while application of the Reservations legislation has varied considerably.¹⁴ While the main motivation for enacting this legislation was undoubtedly to preserve land for the Malay peasantry, it also facilitated the colonial government's desire to impose crop cultivation conditions.¹⁵ While ensuring that reservation land was not taken over by usurious non-Malay capitalists, it did not protect against take-overs by wealthier Malays, thus inadvertently accentuating social stratification within Malay society.¹⁶ The political importance of preserving a Malay yeoman peasantry was well recognised by the British colonial authorities, especially in the post-Second World War years.

“Malay peasants in (the British) scheme of things were yeomen and, fundamentally, yeomen were independent small land owners” (Kratoska 1975: 209). The political desirability of their preservation was reiterated in various government documents. For example, a report released in December 1957 provided some reasons for encouraging “the existence of a large smallholding class.” “It is a considerable help towards political and social security; and of a great value as a basis for sound democratic government” (quoted in Aziz 1958: 27). Likewise, T.B. Wilson justified his call for land reform and rent control in terms of counter insurgency considerations, seeing the preservation of a yeoman peasantry as an important bulwark against the communist-led insurgency in the 1950s. Such calls did result in a series of reforms from the early 1950s. These included the establishment of the Rural Industrial Development Authority (RIDA) under the leadership of Dato’ Onn Jaffar, the founder-president of UMNO, who left the party in 1951 to form his own multi-ethnic party that was then preferred by the British. The colonial government also set up a rubber replanting fund to facilitate replanting of old rubber trees by setting up a cess to partially compensate for foregone income before replanted

trees become mature enough for tapping to begin. Similarly, ceilings were imposed on land rents that tenant rice farmers paid land owners. The activities of the Cooperatives Department were increased, while the beginnings of a rural development policy were put in place, with encouragement from the World Bank (Harper 1992).

In general, it seems that while the colonial state sought to preserve a yeoman peasantry in the interest of political stability, it failed to arrest the tendencies contributing to peasant differentiation. The overall context of land policy, in which the main emphasis was on easy access to land for large-scale plantation development for export production, dictated against any major initiatives in other directions. Nevertheless, FELDA's establishment did create an instrument that was later used by the Malaysian government to effect massive land clearance and development. But this was not a colonial achievement, and the net effect of colonial land policies was to transform land ownership, land use, related social relations, demography and the economy.

Post-Colonial Developments

Context

Independence involved little immediate substantive change in the economy, including land ownership and operation. No nationalization occurred, meaning that foreign investments, e.g. of plantations, remained intact. Thus, the emphasis continued to be on production for export, although diversification, e.g. to tree crops and other cash crops, has seen a wider mix of products since the 1960s, with oil palm becoming the most significant tree crop. Independence was gained with a strongly Malay-dominated parliament, after representations by the Malay-led UMNO against earlier British proposals that threatened Malay interests. This meant that the coalition government, dominated by UMNO, needed to ensure delivery of the Malay vote to continue to remain in power, which, in turn, meant considerable attention to the mainly rural Malays, many of whom had been adversely affected by the processes described earlier.

Instead, the government's choices sought to: (1) open up new land through government agencies to reduce the problems of rural Malay landlessness, upgrade the living standards of settlers as well as increase and diversify commodity production; and (2) promote *in situ* devel-

opment for example, for rice farmers and rubber smallholders, to improve the quality of their lives by raising agricultural productivity, generating off-farm employment, providing more and better subsidized services and facilities, and, developing suitable land close by for their cultivation. The extent of such government efforts (for example, in the form of land development and irrigation schemes to enable double-cropping) had involved over 200,000 rural households by the late 1970s. The total number of rural households rose from 858,000 in 1957 to 1,250,000 in 1970 (Eddy Lee 1976: 40, Table 11).

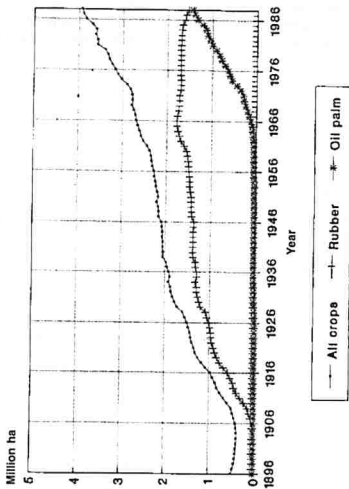
These two policy thrusts have continued to the present. Rapid land development has resulted in a shortage of suitable land, meaning that new land development schemes can no longer be opened in the peninsula at the pace of the sixties, seventies and eighties. Increasing problems of the plethora of government and semi-government agencies involved in land, agriculture, rural development and poverty alleviation programmes of one sort or another, have led to an increasing role of the private sector since the early 1990s, while also reducing the role of government.

All this has not meant that state governments have relaxed their control over land allocation. As in Sabah and Sarawak, state governments have extended their control over land, through introduction and amendment of legislation giving the state greater powers of land annexation. The most recent – and controversial – such initiative has been the amendment to the Land Acquisition Act (1990), which has given state governments almost unlimited powers to take over any land for any purpose deemed to be “in the national interest.” This vague pretext has been the basis for a number of land appropriations in different states of the peninsula, often in favour of private interests at the expense of Malay farmers or Orang Asli communities. The expropriated were forbidden by the law to challenge the appropriation of their land in any court, but could only contest the amount of compensation paid.

Agricultural Land Use

In contrast to the situation in Sabah and Sarawak, there is more information on forests and agricultural land use in Peninsular Malaysia. Figure 3.1 traces land use trends in Peninsular Malaysia from 1896 to 1986 for forests and tree crops, mainly rubber and oil palm. The figure

Figure 3.1 Peninsular Malaysia: Trends in Land Use, 1896-1986



Source: Vincent and Hadi 1991.

suggests the relationship between deforestation and tree crop planting, particularly after 1950 when the data became more consistent. Vincent and Hadi (1991) have surveyed the relationship between deforestation and agricultural expansion in Peninsular Malaysia. They contend that agricultural expansion in the peninsula has gone through three distinct phases. The first phase, 1904-1932, saw the boom in rubber planting described above. An annual average of 49,000 ha was opened up during this time, although there were considerable yearly variations. The second phase, between 1932 and 1966, saw agricultural expansion slow down to an average rate of 24,000 ha per year. The third phase, from 1966 until the eighties, saw renewed rapid agricultural expansion, at an average of some 57,000 ha a year.

Table 3.1 shows land use patterns over the period 1966-84. It is clear that extensive tracts of natural forests have been cleared for agriculture, especially for oil palm planting, which increased to some 1.12 million ha. In all, 1.36 million ha of forests were lost to other uses. Other land use types experiencing dramatic reductions included swamps (190,000 ha) and grasslands (210,000 ha). Besides oil palm, the rubber area increased by some 226,700 ha, while mixed agriculture, other crops and paddy also increased in area. Not surprisingly shifting cultivation activities only account for a very small percentage of overall land use in Peninsular Malaysia, in contrast to the situation in both Sabah and Sarawak.

Agricultural Land Development

FELDA

Careful critical examination of the factors underlying ostensible demographic pressure on land suggests that the land tenure situation in colonial Malaya was the principal source of peasant "land hunger" rather than population growth. Land scarcity as a social condition, rather than as an outcome of exclusively ecological and demographic factors, requires a shift in attention to the conditions of peasant agricultural production, more specifically to land availability. Over two-thirds of the peninsula remained undeveloped agriculturally at the end of the 1960s (Ho 1970: 92). The Malaysian Government estimated that 15.9 million acres, or almost half the peninsula's land area, was "suitable for agriculture." Of this, only 6.1 million "suitable" acres, plus another one million

Table 3.1 Peninsular Malaysia: Land Use Surveys, 1966-1984 (ha)

Land Use Category	1966	1974	1984	Change	
				1966-74	1974-84
Rubber	1,776,460	1,939,980	2,003,160	163,520	63,180
Oil Palm	99,308	485,058	1,218,752	385,750	733,694
Rice	399,897	428,323	442,413	28,426	14,090
Cocoa	453	13,070	42,540	12,617	29,470
Coconut	176,318	196,665	207,937	20,347	11,272
Mixed Horticulture	193,568	236,225	276,599	42,657	40,374
Diversified Crops	31,904	70,846	55,151	38,942	-15,695
Other Crops	40,873	87,773	112,376	46,900	24603
Tin Mining	47,043	82,045	81,390	35,002	-655
Other Mining Areas	4,316	7,051	7,011	2,735	-40
Grasslands	405,356	222,691	195,241	-182,665	-27450
Shifting Cultivation	7,905	4,523	5,295	-3,382	772
Swamps	1,176,437	1,067,537	985,688	-108,900	-81,849
Urban Areas	66,251	91,775	144,276	25,524	52,501
Estate Buildings	11,061	13,132	19,555	2,071	6,423
Newly-cleared Areas	115,301	348,534	278,430	233,233	-70,104
Unused Land	63,132	17,765	15,806	-45,367	-1,959
Unclassified	132,616	153,162	174,223	20,546	21,061
Forests	7,864,398	7,241,766	6,508,235	-622,632	-733,531
Total	12,612,597	12,707,921	12,774,078	95,324	66,157

Sources: L.F.T. Wong (1971); Ministry of Agriculture (1990) unpublished 1984 survey data.

acres of "unsuitable" land, were under agriculture in 1969, leaving 9.8 million more "suitable" acres available (Malaysia, 1971: Table 9.3).

The related phenomenon of unlawful land occupation by rural squatters – as a manifestation of land hunger in Peninsular Malaysia – has not been seriously systematically studied. Occasional media reportage of illegal cultivation tends to publicize crisis situations or government solutions to specific problems, which only reflected the tip of the iceberg. T. B. Wilson (1956: 93) estimated that it took a single settler about four years, without assistance, to prepare six acres of jungle for wet rice cultivation in the 1950s. Although preparing a rubber holding would take less time, it would take another four to five years before the trees could be productive. Hence, squatters usually

preferred crops that yield returns within shorter time-spans. Given these circumstances and the insecurity of illegal cultivation, it is remarkable that rural squatters have not been deterred altogether. The continued existence of such illegal cultivators is testimony not only to peasant land hunger, but also to the availability of arable land and, more specifically, to the economic and legal, rather than ecological and demographic, limits which have constrained peasant land usage.

There are no national statistics on agricultural land ownership, let alone peasant landlessness or land hunger. Land area owned is not synonymous with land operated. The earlier dominant organizational form of rice production, with the family's role as the basic productive unit, as well as other factors – such as the fragmentation of land property – have further limited land holdings and farm sizes. Sometimes, landowners have let out their own land and operated land belonging to others (usually to minimize the adverse effects of fragmented ownership), but it is more common for owners to cultivate their own land. There are many factors, however, which mediate between land ownership and land operation. Many a land-hungry farmer can only afford to rent small farm areas, if available, and may instead supplement his income with other jobs. Thus, the concentration and inequitable distribution of land ownership has considerable influence on the distribution of farms by size. However, the size distribution of farms (see Selvadurai 1972a, Eddy Lee 1976: 22, Table 6) probably reflects only the distribution of farmland ownership in a distorted fashion.

The Federal Land Development Authority (FELDA) was established by the British colonial administration in 1956, a year before Independence was granted. The main consideration in its establishment was to effectively counter the communist-led insurgency's promise of land reform for the peasantry. Land hunger,¹⁷ reflected in peasant landlessness and farms of uneconomic sizes,¹⁸ had grown over the generations, undermining the economic viability and, presumably, the political stability of peasant life. In particular, the need for FELDA implicitly acknowledged that previous policies, including the Malay land reservations, had not succeeded in protecting the Malay yeoman peasantry, as its proponents had hoped.

FELDA was therefore set up to open new land suitable for agricultural cultivation, particularly in areas that had not already been

cultivated due to poor access and infrastructure. From the outset, the emphasis was on cash-crop cultivation, at this juncture meaning rubber and later changing to oil palm, though schemes with other crops – such as sugar cane and cocoa – have also been operated.

As noted earlier, FELDA has been the principal land development agency in the peninsula. FELDA has played a key role in transforming virgin forest land into plantations and settling landless families. FELDA has provided a package of physical, social and technical infrastructure aimed at bringing the technological strengths of the plantation sector (as opposed to the smallholder who is seen to be technically backward) to smallholder agriculture. It has thus addressed rural poverty, widespread in the peninsula in the early decades after independence. Since 1956, FELDA has developed over a million ha of agricultural land, with over 70 per cent planted with oil palm, a quarter with rubber, and cocoa, coffee and sugarcane. FELDA's strategy was to "develop forested land into viable plantations to settle landless families. In addition, a package of physical, social and technical infrastructure is provided" (Perumal 1989: 204).

Besides the 'uneconomic size' of most smallholder farms, there is evidence of considerable landlessness among the peasant population. For example, at a rate of rural population growth of about 2.8 per cent per annum, the number of landless families in the country was expected to increase by about 10,000 each year, according to a 1974 estimate by the FELDA deputy director-general. Citing the 1970 national census, he also stated that about 342,000 Malay families in rural areas either had no land or possessed plots of inadequate size.¹⁹

The typical FELDA arrangement would have involved FELDA negotiating to secure a particular land area from the state government with jurisdiction. FELDA would then pay contractors to clear the land, build the infrastructure, including housing, and plant the crops, before allowing the selected settlers to move in. The host state government might impose certain conditions: for example, that a certain proportion of the settlers should be from that state. The land area per settler has varied over time, and also with the type of crop planted. The packages provided for the peasantry were designed to anticipate some of the many problems that beset small farmers outside such schemes, including inadequate credit facilities, low crop productivity and volatile price fluctuations.

Table 3.2 Land Area Developed by FELDA, 1957-1990 (ha)

	<i>Annual Average</i>	<i>Period Total</i>	<i>Cumulative Total</i>
1957-60	1,477	5,909	5,909
1961-65	9,296	46,483	52,392
1966-70	14,492	72,462	124,854
1971-75	33,384	166,921	291,775
1976-80	40,783	203,913	495,688
1981-85	31,905	159,524	655,212
1986-90	33,669	168,347	823,559

Source: FELDA.

FELDA was seen as playing a leading role in the battle against rural (Malay) poverty.²⁰ If FELDA was to measure its success purely in terms of the amount of land opened, it would certainly be able to congratulate itself.²¹ For several decades, it consistently exceeded the targets set for it in the five-year plans.²² By 1986, it had settled some 98,000 families in 235 schemes covering 680,000 hectares. By 1990, this had increased to 823,559 hectares. Table 3.2 lists the land area developed by FELDA up to 1990.

Clearly, FELDA's impact on land use has been considerable, and the figures somewhat impressive. The Fifth Malaysia Plan (1986-90) noted that Pahang, which accounted for 40 per cent of the land area developed by FELDA up to 1986, would continue to provide the largest areas for proposed new schemes accounting for 36.3 per cent of planned new development. But, significantly, the second most important state was Sabah, with 33.2 per cent. The *Sixth Malaysia Plan, 1991-1995* (6MP) reported that about 353,296 ha of new land was opened up in Malaysia during 1986-90, compared to the 1986 target of 286,700 ha. Most of the excess was due to state government programmes. In line with the government's privatization policy, the 6MP also stated that new land development in the peninsula would not be undertaken by FELDA, but rather by the private sector.

Thus, a reformulation of FELDA's role, with significant impact on future land development in the peninsula, has begun. But for the five years covered by the 6MP, new land development was to be halved to 162,708 ha, mainly due to the scarcity of suitable land, but also due

to the rising cost of land development, and environmental considerations (Malaysia 1991: 117). Land scarcity in Peninsular Malaysia explains the increased attention given to the East Malaysian states, particularly Sabah. A 1986 editorial noted that FELDA had been responsible at that time for resettling "500,000 Malaysians on 11 per cent of the nation's land." But the editorial continued: "FELDA's success is not to be measured merely in the amount of land developed but in how efficiently that land is used and the standard of living it is able to provide its settlers."²³

Other Land Development Agencies

Inter-ministerial, federal-state and other political rivalries as well as other land development possibilities spawned the formation of a number of government agencies for land development besides FELDA. The proliferation of state and federal rural development agencies was especially pronounced after the introduction of the New Economic Policy (NEP) in 1997, usually invoking the state's presumed mandate to reduce rural poverty.

For example, the official poverty rate among rice farmers in Peninsular Malaysia was 88 per cent in 1970. Both absolute and relative poverty worsened between 1957 and 1970. Also, at that time, the agricultural sector was still key in terms of contribution to GDP and employment, as shown in the first chapter. Some of the agencies formed were federal agencies, while others were state government agencies. While some concentrated on new land development, like FELDA, others concentrated on *in situ* programmes, working with smallholders to raise incomes and living standards in various ways, including opening up suitable land close by for agricultural cultivation. Such agencies included the federal government-inspired and established regional development agencies (RDAs). For example, in 1966, the government established the Jengka Development Corporation, charged with responsibility for developing the primary forests in the Jengka region of central Pahang, an area of some 120,000 ha. It was then anticipated that, when fully developed, there would be 23 FELDA land schemes with 60,000 settlers, covering some 50,000 ha.

Other regional development agencies included KETENGAH (for central Terengganu), DARA (southeast Pahang), KEJORA (southeast Johor) and KESEDAR (south Kelantan). The master plan study for

KETENGAH, completed in 1968, envisaged the development of more than 120,000 ha of primary forest into agricultural land. DARA aimed to develop 1,000,000 ha from 1972 to support a population of 500,000. The centre of this massive development was to be Bukit Ridan, a township that was to have a population of 70,000. Most of the forests in the DARA area were to be developed as joint ventures between DARA and private companies, involving timber processing, oil palm, rubber, tapioca and tea estates and cattle ranching. KEJORA, initiated in 1971, set out to develop some 300,000 ha in Southeast Johor, most of which was still forested, while KESEDAR, initiated in 1978, aimed to develop 1.2 million ha in south Kelantan, making it the largest RDA.

Agencies have also developed at state level. In some exceptional circumstances, this may have been where federal agencies have chosen not to work. For example, when the Kelantan state government was ruled by an opposition party between 1959 and 1973, it was largely bypassed by FELDA. Under the Malaysian system of fiscal federalism, the Kelantan state government could not afford the capital-intensive FELDA-style of land development. Instead, the Kelantan Land Development Authority opened up new land, mainly in the southwestern part of the state in which the settlers themselves undertook, at considerably less expense, most of the work done by contractors in FELDA schemes.

More typically, state agencies have been set up to pre-empt federal land development efforts, rather than in the interests of the ostensible target group. The proliferation of agencies has given rise to problems of duplication, waste and useless competition. But such agencies have been set up and encouraged by particular groups or individuals from the ruling political parties. They have sought to cultivate and patronize particular constituencies, and, to enhance their (political) careers through such patronage. As a result, the performances of many such agencies eventually came under critical scrutiny, not least from a federal government increasingly reluctant to deploy funds for these agencies' programmes.

While FELDA has been the most significant agency for new land development, the most significant federal agency for *in situ* development has been the Federal Land Consolidation and Rehabilitation Authority (FELCRA). The Rubber Industry Smallholders Development

Agency (RISDA) has concentrated, as its name suggests, primarily on replanting aged trees in rubber smallholders. Other agencies focus on *in situ* programmes and aim to increase productivity through providing inputs, including better irrigation and drainage, land management (fertilizers, etc.) and financial and marketing support (credit, etc.), such as the Integrated Agricultural Development Programmes (IADPs). These are to be found in rice areas,²⁴ including the Muda Agricultural Development Authority (MADA), Kemubu Agriculture Development Authority (KADA), and the agencies for Besut, Krian-Sungai Manik, Kemasin-Semarak, Trans-Perak and Balik Pulau-Seberang Perai. In some cases, cultivable land – including abandoned land previously cultivated – has been planted with crops, usually those already planted in the area, before distribution to members of the proximate community, often involving some political favouritism in the selection process. Such *in situ* land development is considered by some to ensure the most effective use of agricultural land that is no longer primary forest, though critics contend that such a policy ignores the gains from preserving forest reserves close to agricultural communities.

Smallholders

As we have seen, the federal government's approach to the smallholder sector has concentrated on providing incremental technical help, rather than any major reform – landholdings, for example. This has, to a great extent, constrained the success of government agency programmes. The official stress on increasing productivity and improving market access has ignored what has been evident to and documented by the very government agencies implementing the programmes: productivity is not the major problem, the size of landholdings is. As the Third Malaysia Plan (1976-80) stated for the rice sector: "About 55% of all holdings were less than three acres; 80% were less than five acres. In comparison, an owner-operated double-cropped holding of about three acres is needed if a poverty line income is to be earned" (Malaysia 1976: 164). The same was true of the rubber smallholding sector, estimated to cover 1.5 million ha in 1985 (Malaysia 1986: 303): "Apart from low yields, inadequate-sized holdings was a major factor accounting for poverty in the sector. About 50% of all holdings were smaller than 4-5 acres in size – the acreage of a high-yielding holding needed for a family to rise above the poverty line" (Malaysia 1976: 164).

The productivity of "hard-core" poor rubber smallholders – defined as those with holdings of less than 2 ha for an average-sized household with no other major source of income – was 46.6 per cent higher on average than the "non-poor". While the former produced 99.99 kg/ha monthly on average, the latter managed only 68.21 kg/ha. Poverty among rubber smallholders has been primarily related to the small size of their holdings: "hard-core" poor rubber smallholders own 1.64 ha on average, all poor smallholders (i.e. those with incomes below the official poverty line) own 1.75 ha on average, while holdings of other smallholders average 3.05 ha (Gibbons 1984). Ho (1968: 102) showed that while replanting with high-yielding rubber clones could quadruple output per acre, total output per farmer continues to be mainly limited by land. Yet, federal and state agencies continued to emphasize incremental gains from increased productivity. RISDA supervises replanting programmes funded by a cess on all rubber exports, but its programmes have not been too successful at reaching those with little land, i.e. less than 4.1 ha (10 acres). RISDA has also tried to improve production efficiency by amalgamating smallholdings into "mini-estates", an approach also favoured by land development agencies such as FELDA. Hence, the government's priority in recent years has been to consolidate land at the operational, rather than the ownership, level.

Not surprisingly, then, there has been a slight decline in the size of the smallholding sector, which also suggests the decline of household agricultural production. The decline is partly due to inter-generational change, in which landholdings have been progressively divided into smaller and smaller parcels. As pointed out earlier, such divisions should be seen in the context of the public policy failure to ensure equitable land distribution. Others have argued that the pattern of decline suggests that "increased specialization in the economy generally subjects the most marginal producers to abandon their cultivation (of rice) for other cash crops or wage employment" (Ikmal 1991: 61). For example, the decline of dry rice cultivation, from an estimated 15,066 ha in 1954 to 2,970 ha in 1984, can be ascribed to the fact that such rice varieties have been grown by "the least commercialised and productive producers" (Ikmal 1991: 61).

One feature of this decline, and a major focus of government attention with regard to land use, is the amount of land left idle, as owners or producers seek more remunerative opportunities, either off-

farm in rural areas, or through migration to urban areas (or by relying on remittances from family members who have migrated).²⁵ In 1986, the amount of idle land was estimated at some 22 per cent of the 4.1 million ha of cultivated land in the peninsula, amounting to 890,000 ha.²⁶ As noted earlier, the capacity for new land development was fast becoming exhausted in the peninsula in the eighties. Thus, more attention has focused on the question of how to utilize idle land. Successful rehabilitation of such land would help reduce the pressure for forest clearance.

DEFORESTATION

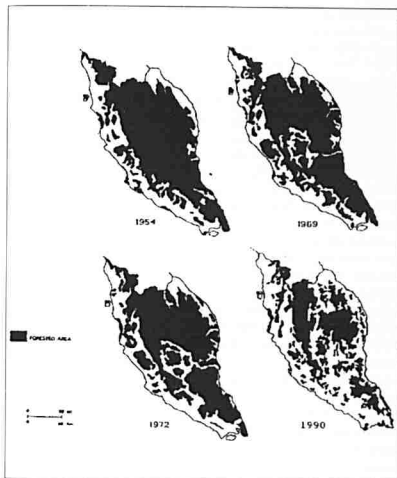
Figure 3.1 and Table 3.1 show how forest loss has been closely associated with the expansion of agriculture, particularly rubber (especially during 1908-1932) and oil palm (particularly during 1966-1984). Some 1.36 million ha of forest were lost between 1966 and 1984 alone – as confirmed by Map 3.1 which shows the rain forests in Peninsular Malaysia in 1954 and 1990, and land use trends. As can be seen, there has been a substantial reduction in forest area over this period. Various studies of forest cover in Malaysia reflected differences that arise due to differences in definition, methodology or focus, e.g. the perceived political advantage of over-estimating remaining forest cover. Some estimates for Peninsular Malaysia are shown in Table 3.3.

Table 3.3 Peninsular Malaysia: Forest Area Estimates (million hectares)

Source Year	Reber & Richards	Forest Department	Forest Inventory	Agriculture Department	FAO
1953	9.7	9.5			
1960	9.5	9.5			
1965		8.6		7.8	
1970	8.0	8.0	8.1		8.1
1975	7.2	7.3		7.2	
1980		6.5	6.4		7.5
1985		6.3		6.5	
1990		6.2			
1995		6.0			

Sources: Repetto and Gillis (1988: 154-155); Vincent and Hadi Yusuf (1991: 47); Forest Department, *Annual Report*, various years; I.F.T. Wong (1980); Department of Agriculture (1984).

Map 3.1 Peninsular Malaysia: Distribution of Rain Forests, 1954, 1969, 1972 and 1990



Sources: Aitken *et al* 1982, p. 161.

Ministry of Primary Industries (1992b), *Forever Green: Malaysia and Sustainable Forest Management*.

Table 3.4 Peninsular Malaysia: Forest Types, 1970, 1981

<i>Forest Types</i>	<i>1970-71</i>		<i>1981-82</i>	
	<i>000 ha</i>	<i>% of Total</i>	<i>000 ha</i>	<i>% of Total</i>
Virgin	3,335	41.0	2,651	41.2
– Superior	827	10.2	708	11.0
– Good	1,150	14.1	908	14.1
– Moderate	1,398	17.2	1,034	16.1
Logged Over	2,981	36.7	2,650	41.2
Poor	412	5.1	279	4.3
Shifting Cultivation	261	3.2	136	2.1
Upper Hill	289	3.6	258	4.0
Inland Swamp	815	10.0	459	7.1
– Virgin	464	5.7	234	3.6
– Logged Over	351	4.3	226	3.5
Total	8,131	100.0	6,433	100.0

Source: Vincent and Hadi 1991: 47, Table 4.

However, all sources agree that forest covers in the peninsula has been declining since the sixties. The Forest Department in Peninsular Malaysia carried out forest inventory surveys in 1962, 1970-71, 1981-82 and in the early 1990s (Malaysia, Ministry of Primary Industries n.d.: 14, Vincent and Hadi Yusof 1991: 5). The early surveys were based on aerial photographs, while the 1981-82 survey updated the 1970 survey, for which the Forest Department had the following categories: virgin (sub-classes: superior, good, moderate), logged over, poor, shifting cultivation, in-land swamp (sub-classes: virgin, logged over) and mangroves. Table 3.4 shows the forest resources estimated by the Forestry Department in its 1970-71 and 1981-82 surveys. Total forest coverage declined in the intervening decade, from 8.31 million hectares to 6.43 million hectares. While the proportion of forest classified as virgin remained at 41 per cent, the proportion of logged over forest increased from 36.7 per cent in 1970-71 to 41.2 per cent in 1980-81.

Land use surveys for Peninsular Malaysia have also been carried out by the Department of Agriculture. The first survey was carried out in 1966-67, with complete aerial photo coverage of the peninsula, while later surveys, in 1974-75 and 1981, were based on less complete

aerial photo coverage (Vincent and Hadi Yusof 1991: 4). The results of a further update in 1984 by the Agriculture Department have not been published. Other figures also suggest extensive deforestation has occurred. Deforestation due to agricultural expansion experienced two distinct spurts. The first was in the early decades of this century, when rubber prices boomed and induced massive rubber planting. The second was from the mid-1960s to the mid-1980s, when government policies, particularly large-scale land development, opened up much new land for more diversified agricultural growth.

In 1946, the total forest area accounted for 10.15 ha (77 per cent) out of a land area of 13.17 ha in the peninsula. By 1960, this had been reduced to 9.4 million ha (71 per cent). This trend of forest loss continued, and by 1988, only 6.3 million ha (48 per cent) of forest had survived. Of this, permanent forest reserves made up 27 per cent, totally protected areas (TPAs) 4 per cent, and state land forests (SLF) 16 per cent. In the early 1970s, an average of 70,000 ha of forest were being cleared in Peninsular Malaysia annually. In 1975, 19.2 million cu. metres of logs were produced of which 8.5 million were exported. By the 1980s, however, with the price of timber doubled, the felling rate had increased to 30 million cu. metres annually, with 240,000 ha cut per annum, of which over 60 per cent were exported as logs.

But the rate of deforestation, like the rate of agricultural land expansion, has been slowing down since the late 1980s. In absolute terms, official figures suggest that between 1946 and 1960, 680,285 ha were lost; another 908,808 ha between 1960 and 1965, 151,686 ha between 1980 and 1985 and 65,293 ha from 1985 to 1988. Gillis (1988: 117) estimated mean annual forest loss at 90,000 hectares during 1976-1980 and also during 1980-1985. In the 1990s, annual forest loss numbers fluctuated, from a low of 7,847 ha in 1995 to a high of 170,842 ha in 1996. Overall, average annual forest loss for 1992-96 was 58,002 ha. Interestingly, official sources indicate increases in forest coverage in 1997 and 1999, contributing to an average annual gain in forest area of 39,174 ha. This was mainly due to expansion of areas designated as forest reserves. It should be noted that the figures in Table 3.5 for the 1990s include both existing and proposed forest reserves. The area of existing forest reserve has grown substantially slower than that of proposed forest reserves. The task remains to strictly monitor the conditions of the areas earmarked for preservation.

Table 3.5 Peninsular Malaysia: Forested and Non-forested Land Areas, 1946-1999 (ha)

Year	Land Area	Forested Land				Non Forest
		FRs	NP/WSs	SLFs	Total	
1946	13170985	2808912	781425	6557150	10147487	3023498
1960	13134715	3464896	664197	5338109	9467202	3667513
1965	13134715	3469456	665207	4423731	8558394	4576321
1970	13122280	3338834	652280	4019767	8010881	5111399
1975	13162176	3449171	611425	3231399	7291995	5870181
1980	13159168	3124045	603838	2777028	6504911	6654257
1985	13159646	3274008	548929	2530288	6353225	6806421
1988	13161270	3563916	544194	2179822	6287932	6873338
1991	13161270	4434776	645224	717277	6110558	7050712
1992	13161270	4717732	607979	716371	6042082	7119188
1993	13161270	4698459	658403	667146	6024008	7138262
1994	13162057	4687463	611340	700433	5999236	7132821
1995	13162057	4683563	611340	696486	5991389	7170668
1996	13162098	4684094	614925	521528	5820547	7341551
1997	13162098	4731927	611692	504025	5852869	7309229
1998	13153208	4730216	611692	479409	5838860	7314348
1999	13153208	4853646	645217	485364	5938068	7215140

Key: FRs: Forest Reserves;
 NPs/WSs: National Parks, Wildlife Sanctuaries and Wildlife Reserves;
 SLFs: Stateland Forests.

Notes: 1. Data at 5 yearly intervals to show trends.

2. The long-term plan is given by "target" figures for the year 1995, when the Compensatory Plantation Project was supposed to achieve the targeted amounts.

Over the long term, the trend of deforestation has become a major cause for concern. Table 3.5 indicates losses of 143,777 ha in 1975 alone, and 157,417 ha in 1980. The federal Forest Department has expressed concern about the extent of forest loss and wanted to increase forest cover from 6.3 million ha (48.3 per cent of total land area) in 1985 to 6.78 million ha (51.5 per cent) in 1995. This objective of increasing forest cover was in recognition of, and in response to, recurrent problems of deforestation and forest degradation involving both productive forests as well as protected ones. Between 1946 and 1988 for example, areas categorized as national parks, wildlife sanc-

Table 3.5 Peninsular Malaysia: Forested and Non-forested Land Areas, 1946-1999 (ha) (continued)

<i>Forest Loss</i>	<i>Ave. Annual Deforestation Rate</i>	<i>Percentage of Total Land Area</i>				
		<i>FRs</i>	<i>NPs/WSs</i>	<i>SLFs</i>	<i>Tot. Forest</i>	<i>Non Forest</i>
		21.33	5.93	49.78	77.04	22.96
-644015	-42934	26.38	5.06	40.64	72.08	27.92
-908808	-181762	26.41	5.06	33.68	65.16	34.84
-535078	-107016	25.44	4.97	30.63	61.05	38.95
-758782	-151756	26.21	4.65	24.55	55.40	44.60
-784076	-156815	23.74	4.59	21.10	49.43	50.57
-152164	-30433	24.88	4.17	19.23	48.28	51.72
-66917	-22306	27.08	4.13	16.56	47.78	52.22
		33.70	4.90	5.45	46.43	53.57
	-68476	35.85	4.62	5.44	45.91	54.09
	-18074	35.70	5.00	5.07	45.77	54.24
	-24772	35.61	4.64	5.32	45.58	54.19
	-7847	35.58	4.64	5.29	45.52	54.48
	-170842	35.59	4.67	3.96	44.22	55.78
	32322	35.95	4.65	3.83	44.47	55.53
	-14009	35.96	4.65	3.64	44.39	55.61
	99208	36.90	4.91	3.69	45.15	54.85

3. "Forest Loss" is the reduction in forest cover compared to the previous year in the table.
4. "Ave. Annual Deforestation Rate" refers to the mean annual loss of forestland since the previous year reported in this table.
5. "Forest reserve" figures from 1992 onwards include both existing and proposed forest reserve.

Source: Department of Forestry, Malaysia.

tuaries and wildlife reserves had declined from 781,425 ha to 544,194 ha. The size of this area rose again to 645,217 ha in 1999. Unfortunately, in spite of the increase in park and sanctuary area, forest cover per total land area in Peninsular Malaysia has stagnated around 45 per cent through the 1990s.

CONCLUSION

This chapter has shown the profound and far-reaching impact of British colonialism on agricultural expansion in Peninsular Malaysia.

Colonial land laws and policies, as well as integration into global markets for cash crops, most notably rubber, fundamentally transformed peasant agriculture, with far-reaching and irreversible consequences for social relations, as well as for relations between the farmer and the land – demographically, technologically and even agronomically (for example, crop choice). Besides attracting peasant interest and many immigrants from neighbouring lands, the success of rubber in the early 20th century also attracted plantation capital, privileged by the colonial authorities, partly at the expense of the peasantry. The post-colonial sequel to this rubber boom has been state-encouraged agricultural settlement, mainly on FELDA schemes, and new oil palm planting since the 1960s. These two planting booms pushed back the forest frontier with the planting of tree crops. More recently, timber substitute by-products have been developed from these tree crops, especially old rubber trees.

The main consequence of the expansion of plantation agriculture has been to expand capitalist production in rural areas, leading to greater exploitation of wage labour and relatively less peasant smallholder household production. Meanwhile, greater cash crop production has increased the vulnerability of the peasantry to the vagaries of global capitalism, especially to the vicissitudes of primary commodity markets.

New land development and *in situ* rural development have both failed to address the major problems of unequal land distribution. Uneconomic-sized holdings have contributed significantly to the persistence of rural poverty. Though the promulgation of the NEP implicitly conceded the shortcomings and inadequacies of the previous trickle down economic development strategy, it did not really go beyond that approach in the new development and poverty eradication policies it advanced. Though the provision of socio-economic amenities and physical as well as social infrastructure had failed to impact significantly on rural poverty in the 1960s, the NEP proposed more of the same.

Notes

1. Frustration with peasant reluctance to comply with colonial designs also led the authorities to accuse the peasantry of being indolent, ignorant,

stubborn, irrational, and the like. However, more objective research of peasant reactions has found their behaviour to have been quite rational.

2. Under colonial rule, smaller plots could be alienated on the authority of just one official, the Collector of Land Revenue (CLR). However, in the post-independence period, politicians, especially those in state governments, have taken away many such powers from bureaucrats.
3. Rubber latex is the sap of the tree *hevea brasiliensis*. It arrived in South-east Asia (Singapore originally) in 1877 after Henry Wickham smuggled some seeds out of Brazil and succeeded in cultivating them in London's Kew Gardens. Ironically, the failure of the Malayan coffee crop and the growing success of the Brazilian coffee industry contributed to the experiment with and then spread of rubber in the peninsula.

The gains offered by investment in rubber plantations during the first two decades of the 20th century were described as "tremendous" and "beyond imagination," and for good reason too. Despite violent fluctuations in the rubber price from the outset, and its general decline through the 1910s, the price remained attractive enough to put 779,100 acres under cultivation by 1920.

4. Not surprisingly, there were close relations between the colonial administration and British-owned plantation companies, both directly and indirectly. Large capitalist interests, especially British mines and plantations, were assured by colonial administrators of easy and cheap access to land, which was often accumulated speculatively, in excess of their anticipated level of utilization. The British also devised a "system of dual agricultural land taxation, a light one on the affluent European planter and a heavy one on the native cultivator" (Lim Teck Ghee 1976: 129), besides other discriminatory colonial agricultural policies and practices in favour of capitalist interests.
5. A quick way of acquiring land was to buy over existing cultivated land. The practice of expanding plantations by absorbing neighbouring land attained serious proportions when much "traditional" Malay agricultural land was bought over by the well-financed, foreign-owned rubber companies from peasants eager to enjoy windfall profits. Concern generated by such sales led to a series of legislative measures, beginning from 1913, designating certain areas to be owned only by Malays (Drabble 1973: 73). Even before the introduction of restrictions on the purchase of Malay peasant land, Asian-owned estates were already being bought over since these were larger than peasant lots and, hence, more easily integrated into large plantations.
6. The proliferation of rubber companies and the structure of their control hindered subsequent amalgamation of these companies because of the vested interests involved (Bauer 1948: 11). Agency houses were in an

excellent position to reap tremendous profits from floating rubber companies (Drabble, 1973:85), freight charges, insurance, brokerage and management commissions, with their directors collecting considerable fees. Costs at the London end of operations were very high since such operations were usually "notoriously badly organised" (Voon 1976: 163). On the whole, the agency house system financially burdened the Malayan rubber industry, which was also weighed down by highly salaried European staff. The British-owned estate sector's high-cost operations also rendered it especially vulnerable to declines in the rubber price: hence, the plantation owners' desire for restriction schemes to prop up rubber prices.

7. In the early 1950s, 14 managing agencies, which managed over 85 per cent of the 1.4 million acres of European owned rubber, were thus connected (Puthuchearry 1960: 46).
8. The over-enthusiastic response of rubber producers eventually backfired. Massive planting during the boom period due to the anarchy of competition was characterized by a complete lack of planning output for future requirements. As global cultivated rubber production increased by over 25 times during the 1910s, the rubber price plummeted (Lim Chong-Yah 1967: 75). New planting was reduced drastically, labour sacked (the number of estate workers dropped from 237,128 in 1919 to 156,341 in 1921) and some voluntary reduction of production undertaken.

A restriction scheme in 1922 to boost sagging prices (Voon 1976: 180) curbed the challenge from the smaller "Asian" rubber growers in Malaya, especially the Malay peasantry. However, despite some success in raising the world market price for rubber and thwarting the challenge from peasant production, British ownership and control of the industry worldwide actually diminished because of Dutch refusal to co-operate in the restriction scheme.

9. Besides large land concessions to members of the pre-colonial ruling class and their heirs, other factors also contributed to unequal land distribution among the peasantry at the beginning of the colonial epoch.
10. The distributive effects of the Islamic and customary Malay (*adat*) inheritance systems have frequently been blamed for the fragmented condition of many contemporary Malay peasant landholdings. Although Islamic and *adat* inheritance systems among the Malay peasantry obviously predates colonialism, the extent of joint ownership, subdivision, and fragmentation of peasant landholdings does not seem to have been significant in pre-colonial times. Rather, it appears that these features only became significant with the imposition of colonial legal restrictions on increasing cultivated land to accommodate population increases. Therefore, it is not the inheritance systems, but the conditions created under

colonialism and persisting thereafter, which bear primary responsibility for the sub-divisive effects of demographic increase on landholdings.

11. Accumulation of land property in a situation of limited land availability necessarily involves another's dispossession.
12. Under colonialism and since then, the peasantry has been irreversibly transformed by integration into the world economy and subordination to capital.
13. Some of the major assumptions underlying the colonial government's justifications for the Malay Reservations Enactment of 1913 were erroneous, if not misleading (Lim Teck Ghee 1971: 145-59). The colonial government's characterization of the cause of peasant land problems completely absolved big mining and agricultural capitalists from responsibility and, instead, used small money-lenders and shopkeepers as scapegoats (Lim Teck Ghee 1971: 158).
14. While the initial progress in the Reservations legislation was statistically impressive, "most of the reservations were unoccupied land in the upland regions of the state where not only were there few conflicting interests to be considered but also the absence of a Malay population to take advantage of them" (Lim Teck Ghee 1971: 154). Although not all reservation land was suitable for settlement, in many places, reservations only covered alienated land, with no provision for subsequent population increases and corresponding land needs.
15. But many peasants violated these cultivation restrictions or applied for non-reservation land until the colonial administration was finally forced to concede some amendments to the cultivation restrictions (Lim Teck Ghee 1976: 159).
16. For example, implementation of the reservations policy also resulted in land prices falling by 50 per cent, so that Malay peasant landowners often petitioned for their property to be excluded from reservation (Lim Teck Ghee 1971: 206). Since reservation land was no longer good security for credit from non-Malays, participation by wealthier Malays in usurious activities was inadvertently encouraged since they alone were able to accept Malay peasant land as collateral for loans.
17. Priority was to be given to the landless, although most young people whose parents were still alive, and who therefore had not inherited land, had little trouble qualifying.
18. The gravity of the tenancy situation among rice cultivators had been highlighted by the 1952 and 1955 reports of the Rice Production Committee. This resulted in the colonial government's promulgation of the Rice Cultivation (Control of Rents and Security of Tenure) Ordinance 1955, legislating a rent ceiling and prohibiting the "tea money" practice, among other things. However, the legislation was not supported by an

effective enforcement apparatus, and the Ordinance has been described as having been "completely ineffective" (Selvadurai 1972a: 29).

19. *New Straits Times*, 22 June 1974.
20. Halim Salleh (1987) argued that FELDA schemes were actually designed to turn peasants into settlers in order to control them for large-scale cash production.
21. FELDA is often claimed as a successful case of agricultural land development (MacAndrews 1977). Certainly, it has made a major impact on land use – and on the forests – in the peninsula. But there have been a number of criticisms of the effects of the programme on the settlers, and there is on-going re-assessment of its organization and future role. Some criticisms have focused on the fact that the high land development costs have limited the numbers settled. There have also been criticisms of lack of cost-effectiveness, inequity (Thillainathan 1976) and exploitation (Halim Salleh 1987). In common with other parastatals, both in the peninsula and the other two regions of Malaysia, FELDA has been characterized by a "top-down" management style, with prescription – rather than – participation emphasized.

It has also been accused of renegeing on original promises implicit in the terms and conditions of settlement. FELDA has imposed controls on various aspects of the settlers' lives, including sale of their produce, ostensibly to ensure revenues for FELDA. Also, growing commodities for export has integrated settlers into global commodity markets. Repayment of settler loans depends on their incomes, which, in turn, depend on prices, determined in international markets beyond the settlers' control.

FELDA's management has also steadily increased control over settlers in the schemes. Since the seventies, FELDA has experimented with alternative managerial arrangements, which have generally diminished settler autonomy and strengthened FELDA management prerogatives. These initiatives emerged in response to various problems associated with the earlier emphasis on individual cultivation, especially with the introduction of new crops said to involve scale economies, the ageing of the settler population, the related emergence of so-called "second (and third) generation" problems and various settler efforts to evade, and even resist, FELDA control. Many recent schemes are said to be virtually indistinguishable from plantations except for the fact that settlers are also shareholders, and therefore derive incomes as waged employees as well as shareowners after paying for development costs.

22. The First Malaysia Plan (1966-70) target was to develop 64,452 ha, but it actually developed 72,459 ha, i.e. an 'achievement' of 112.4 per cent. For the Second Malaysia Plan (1971-75), achievement was 104.3 per cent,

for the Third Malaysia Plan (1976-80) 105.2 per cent, and for the Fourth Malaysia Plan (1981-85), 104.4 per cent.

23. Editorial in the *New Straits Times*, 11 September 1986.
24. The Green Revolution in Malaysian rice farming – especially in Malaysia's rice bowl, the Muda region – emphasized four elements. First was the adoption of new fast-growing and high-yielding varieties of rice. Second was the construction of built irrigation systems and other related physical infrastructure by government agencies. Third was the widespread introduction of mechanized ploughing and harvesting. Fourth was the usage of agricultural chemicals as pesticides and fertilizers.

In other words, the recent technological changes in rice production, supported by government public policy, have changed the social relations of peasant rice production in the direction of capitalist agriculture, that is involving more capital-intensive rice production involving the employment of wage labour by big farmers.

25. There is some disagreement about the fundamental causes of this problem. Besides the ageing of the rural peasant population and the urban drift of younger, more educated people (remitting incomes to their rural families), the prohibitive rental expectations of landowners – encouraged by large-scale, more capital-intensive farms and plantations nearby – are also said to deter would-be tenants and sharecroppers from cultivating their land. This is particularly true where there are alternative options, including alternative off-farm work and incomes.
26. The exact figures have been the cause of a certain controversy; see Lim Teck Ghee (1993).

Tropical deforestation in Malaysia has received a great deal of international attention in recent years. The Borneo state of Sarawak has received special attention, mainly due to complex political controversies involving logging concessions and native rights. Although similar issues also emerged in the neighbouring state of Sabah, the latter has received far less critical international scrutiny.

In 1991, forests in Sabah covered an estimated 4.2 million ha, or 56.7 per cent of the state's total land area. Sabah's forests mainly consist of tropical rain forest and tropical evergreen moist forest. The structure and composition of the state's forests vary according to soil characteristics and elevation. The major distinction is between wetland and dry land forests, although there are often riverine and peat-heath forests between the two main kinds of forest. Mangrove and *nipah* are common in the tidal swamps constituting wetland forests. Dipterocarp forests are the main vegetation on dry land below 1,000 metres (m.) elevation. Above this level, in the montane zone, dipterocarp trees are rare.

Like Sarawak, Sabah has a large number of indigenous groups still mainly located in rural areas. The high population growth rate has mainly been due to considerable "economic" immigration from Indonesia and the Philippines. The effects of such immigration on land tenure, use and pressure, as well as on deforestation will be examined in this chapter. Indeed, an overview of the main processes underlying agricultural expansion and deforestation must begin with the earlier history of Sabah, which influenced subsequent social and economic structures and configurations.¹

Agricultural expansion and deforestation in Sabah are features of a pattern of development going back to the colonial period, which accelerated in the last third of the twentieth century. Although Sabah has been regarded as one of the "odds and ends" in the grand imperial

scheme of things, its integration into the British Empire involved certain economic and social changes with increased production of primary commodities for export. Administration by the British North Borneo Company (BNBC) starting in 1881 marked the formal beginnings of the territory's transition to the "modern era" under British rule. Sabah, then known as British North Borneo, was essentially administered as a commercial concern until 1946, when the British colonial government took over the territory from the BNBC (Ongkili 1985: 15).

AGRICULTURAL EXPANSION

Under The Company

The BNBC set the stage for early commercial agricultural expansion organized along plantation lines. Operating with a Royal Charter, but receiving little financial assistance from the Crown, the BNBC sought to manage the territory as a viable economic concern (Tregonning 1965). This prompted the BNBC to disengage from minor trading activities in jungle produce and to diversify into ventures generating greater revenue by attracting capital from overseas. Then, without the potential for mineral exploitation on any scale comparable to tin mining in Peninsular Malaysia, the BNBC emphasized agricultural production for export. This strategy led to rapid commoditization of land and attendant changes in land use patterns.

Agricultural expansion involved land colonization, a process aided by liberal land alienation policies and an "open door" labour recruitment policy (Fortier 1964, Tregonning 1965). Plantation and small-holder forms of agricultural organization can be traced to the 1890s (Sidhu 1989: 140). Rubber was later recognized as an appropriate crop fitting the bill. The decline of the tobacco industry in the riverine coastal areas of the east coast of Sabah further encouraged the switch to rubber (John and Jackson 1973).

The rapid expansion of cash crop production in the then sparsely populated territory soon led to a labour shortage, exacerbated by the policy of excluding the indigenous population from the "modern" economy. This inevitably led to the importation of labour, with the largest source being Chinese immigrants. This was in contrast to Malaya, where British preference was mainly for Tamils from South

India. Initially, this involved indentured labour, but immigration policy was later re-oriented to grant small land holdings to groups and individuals in order to expand agricultural activities in the territory. One to three hectare lots were alienated, especially along communication routes, usually rent-free for a fixed period (Fortier 1964). By 1905, when the railway from Jesselton (the colonial name for the capital, now known as Kota Kinabalu) to Tenom was completed, plantations and smallholdings had proliferated on the west coast and in the Tenom Plain. The two phases of immigration thus created a pool of wage labourers for the plantations, together with a group of land-owning immigrants who managed family-based smallholdings.

The smallholdings involved three main types of cultivation, namely:

- Rubber/other crop-based smallholdings producing for the world market;
- Rice cultivation for subsistence and sale; and
- Market gardening.

Meanwhile, indigenous land use mainly involved hill rice and wet rice cultivation, as well as fruit orchards. The significance of foreign immigration, especially from China and Java, was reflected in the 1921 census. The Chinese comprised 36.9 per cent of the labour force, the Javanese 33.4 per cent, and local indigenous groups, only 23.6 per cent (Gudgeon 1981: 193). Of a total settled population of 263,252, over 77 per cent were considered indigenous, 15 per cent were Chinese, with the balance made up of Europeans (a mere 665 individuals) and other races.

While the rubber industry in Southeast Asia can be traced back to 1882, rubber cultivation in Sabah took off later, especially after 1906, when the BNBC guaranteed no tax or levy on exported rubber for 50 years. Before 1906, only a few hundred hectares had been planted, compared to over 4,000 ha in Malaya. From some 1,200 hectares in 1907, the area allotted for rubber increased to 21,457 ha in 1920 and to 52,097 ha in 1940. In spite of all the boom-bust cycles between 1918 and the 1930s, annual rubber exports grew to almost 40 million pounds in 1940, valued at 14 million Straits dollars (Gudgeon 1981: 194). A surge in rubber cultivation was matched by other agricultural expansion, with the area under major crops (rubber, tobacco, coconuts, wet rice, dry rice, sago) rising from 23,919 ha in 1900 to 112,251 ha

in 1940 (Gudgeon 1981: 196). But increasing commercialization was also accompanied by growth in the timber industry, which was soon to become the mainstay of Sabah's economy.

Forestry was first organized commercially under the BNBC. From the first shipment of logs in 1885, with Hong Kong and China as the major markets, until the creation of a Forestry Department in 1913, the main British concern was to control an industry that was dominated by four companies. The main one was the British Borneo Timber Company (BBTC), which had a 25-year monopoly to exploit timber on all land controlled by the BNBC (Gudgeon 1981: 191). The BNBC increasingly relied on the timber industry to finance its other projects in the territory. Some measure of the scale of timber operations in the 1930s can be gleaned from export figures: exports had expanded to 3.5 million cu. ft., valued at S\$2.5 million, by 1930, and a record high of 6.2 million cu. ft. by 1937 (Gudgeon 1981: 194).

Not surprisingly, both agriculture and forestry were concerned with the widespread practice of shifting agriculture. While there is no concrete information on the extent of such land use or the number of people involved (Kahin 1947, Williams 1960, Fortier 1964, Tregonning 1965), there was concern, bordering on alarm, within the BNBC over shifting cultivation's claim on forest and land resources. The first substantial policy response in the form of resettlement schemes only came in during the 1950s. While shifting cultivation had long been perceived to be a problem, no measures were taken to check it before 1946. The Royal Charter granted to the BNBC explicitly prohibited interference in the socio-cultural practices of the indigenous population (Ongkili 1985: 15).

Adat (traditional code) law covered the acquisition, use and disposal of land, with customary rights stipulating cultivation as the main condition for ownership (William 1960, 1961; Burrough 1976). The indigenous population was prevented by legislation from participating in the emerging commercial economy. Commercial economic activities were only to be undertaken by non-indigenous groups. The prevailing wisdom was that commercial development would be best served by minimal social upheaval of the indigents. This was reinforced by Victorian romanticism ("noble savages") and the belief that indigenous peoples lacked the cultural traits required for participation in the modern commercial economy.

It could be argued that the contemporary identification of economic disadvantage with ethnicity, location and occupation stems from this period. The policy of "protecting" indigenous cultures served to marginalize them to positions of disadvantage. Hence, by the 1940s, European and Chinese immigrants had become commercially dominant. However, this dualism between immigrants and indigenous groups was not as clearly demarcated as is often suggested. The logic of market expansion and capital accumulation gradually and inevitably altered indigenous socio-economic relations. For example, commercial agricultural expansion and related settlement patterns were accelerated by the sale of native land in the vicinity of the main rubber growing areas. In Tenom, where smallholder expansion was great, land pressure was such that, of the half-dozen indigenous settlements within two miles of town, only the Munit settlement survived (Fortier 1964: 74).

Evidence also shows that indigenous society was far from being static despite official exclusion. For example, transitions to more sedentary forms of agriculture were in progress in some areas – notably the Ranau Plain – due to ecological and demographic factors. Closer to the administrative centres, especially Ranau, Kota Belud and Tenom, such transitions involved complex processes of uneven demographic adjustment and agricultural development due to differential access to trade and desirable land (Harrison 1971). These processes also contributed to agricultural expansion and deforestation, hence, to changes in settlement and land use patterns. Indigenous forces were nevertheless essentially dominated by the commercial forces promoted by the BNBC.

British Colonial Administration, 1946-1963

After the Second World War, Sabah, like Sarawak, also became a British Crown colony. The BNBC was no longer in a position to regain its previous privileged status, let alone embark on a programme to rehabilitate and develop the war-devastated economy. For Sabah (or British North Borneo, as it was known then), Crown-colony status from 1946 led to economic rehabilitation and commercial expansion as well as greater incorporation of the indigenous population into the economy. This period also saw a greater role for state interven-

tion in the form of planning, which was perpetuated into the post-independence era. The piecemeal measures for economic recovery initiated in 1946 were consolidated in the *Reconstruction and Development Plan, 1948-1955*. Long-term planning was essentially sectorally oriented, emphasizing infrastructural development as well as the recovery and expansion of commercial agriculture.

A new policy to integrate the indigenous population into the commercial economy was initiated. Such integration was necessitated by the official desire to reduce rice imports, as well as the acute post-war labour shortages due to new restrictions on Chinese immigration. Instead, an intermittent supply of Indonesian workers became the main source of labour for the timber camps and rubber as well as hemp estates. Those employed in establishments with over 20 employees grew from 17,500 in 1948 to 38,000 in 1963, i.e. at an average rate of about 6 per cent per annum. There was also greater indigenous participation in the formal labour force with 17,250, mainly employed in the agricultural sector, compared to 16,750 Indonesians and about 5,000 Chinese (Gudgeon 1981: 213). Inter-sectoral employment mobility for the indigenous population was fairly constrained by limited access to education.

Agriculture

During this period, agricultural expansion and forestry were given greater impetus by new institutional arrangements involving increasing sectoral and sub-sectoral specialization. The Department of Agriculture, which had been sharing officials with the Forestry Department since 1921, was made an independent entity. In 1950, the Rubber Fund Board (RFB) was established to revive the industry, particularly in the field of research, as rubber output dropped to less than 50 per cent of its previous productivity. By 1954, the RFB's status had been changed to that of a corporation, making it North Borneo's first parastatal agency. The introduction of a cess and associated grants for replanting with high yielding clones was instrumental in raising productivity and increasing the area under rubber from 50,607 ha in 1946 to 93,510 ha in 1963 (Gudgeon 1981: 218).

This period also saw new forms of agricultural organization as well as land use and settlement patterns, especially involving indigenous communities. Two main types of agricultural organization – *in situ*

projects and settlement schemes – had the most impact. *In situ* projects at the village level involved little or no relocation of people, and mainly involved enhancing productivity in wet rice and other crop cultivation. These projects were mainly situated in the western areas and other regions such as Ranau and Keningan. Cash crop agricultural development was also planned within defined boundaries, the forerunner for later settlement schemes in the state. The first scheme was in Keningan Palin (at Bingkor) in 1952, four years before FELDA was set up in Peninsular Malaysia. Other schemes were later set up in other parts of the state. In the new schemes, crop mixes were changed to include perennials, such as rubber, encouraging indigenous commercial smallholder agriculture producing for the market. In spatial terms, the location of such schemes in the interior and on the east coast was especially significant as these regions had previously mainly drawn shifting cultivators. The first settlement scheme at Bingkor was specifically intended for shifting cultivation. In contrast to the BNBC period, the new policy minimized shifting cultivation by encouraging alternative types of sedentary agriculture.

On the east coast, expansion of settlement scheme smallholdings saw the gradual emergence of a commercial/agriculture belt. In the Tawau locality alone, 26 schemes, along with numerous other independent smallholdings, were in operation by 1963 (*North Borneo Annual Report*, 1963: 49). With the availability of more funds in 1961/62 before Sabah joined Malaysia, there was a policy shift encouraging the settlement scheme model as the desired form of modern agricultural organization. This policy was boosted in 1963 by the formulation of the Land Alienation Policy that, among other things, declared that profits from timber exploitation (outside long-term concessions) would be channelled into agricultural land development and settlement schemes. Even at this stage, plans for the future were considered grandiose, as they envisaged 20,000 settler families with 12,874 ha of permanent crops.

The official policy emphasis at this time was also on further expansion of export crop cultivation. Thus, agricultural expansion also involved diversification, encouraged by rubber price volatility, causing government revenue fluctuations. The two new crops that have become the main bases for further agricultural expansion have been oil palm and cocoa. Both crops expanded rapidly after their initial trial stages:

oil palm from a mere 12 ha in 1958 to 2,630 ha in 1963, and cocoa from about 30 ha in 1955 to about 2,200 ha in 1963 (Gudgeon 1981: 235). Meanwhile, improving communications opened up agricultural land in previously inaccessible areas. Improved access and the growing urban market of the capital, Jesselton, encouraged the cultivation of temperate vegetables on the Crocker Range around Mount Kinabalu and in the Kundasang area. While specific figures are not available, the extent of deforestation is quite apparent and reflects the acceleration of processes initiated during this period.

The policy of agricultural expansion extended to rice cultivation. Responding to post-war shortages, the colonial government decided in 1950 to irrigate more land for rice cultivation. Irrigation schemes were established on the west coast and in the interior. The area under wet rice increased from an estimated 18,623 ha in 1940 to 25,384 ha in 1963, while the land under shifting dry rice cultivation fell from an estimated 14,174 ha in 1940 to some 9,716 ha in 1963 (Gudgeon 1981: 219).

While integration into the market economy was favoured in the period 1946-63, the relocation of the indigenous population was discouraged. The idea was to expand agricultural commodity production within the framework of traditional agrarian relations and 'planned' new schemes. Furthermore, although wage labour could not be completely avoided, it was discouraged in the belief that the peasantry should remain attached to the land to ensure its productive utilization. Hence, there was considerable conflict among the various attempts to integrate the indigenous peasantry, to modernize agricultural production and to maintain the traditional social equilibrium. Integration inevitably dislocated the peasantry and increased their vulnerability to the global economy. The long-term impact of such contradictory policies was that indigenous groups experienced limited mobility and have remained in rural smallholder agriculture until the present.

Forestry

Sabah's post war economic recovery did not only rest on the revival of agricultural exports. As exports rose from RM17 million in 1947 to RM247 million in 1963, timber exports became dominant, comprising 55 per cent of total export value. Indeed, in the period leading

up to federation with Malaya and Sarawak in 1963, timber had become the principal engine of growth. There was, however, a notable change in export destination, i.e. from Britain to Japan as the latter's share of Sabah timber exports rose from 12.6 per cent in 1951 to 36.2 per cent in 1955, 64.5 per cent in 1960 and 80.8 per cent in 1963 (Gudgeon 1981: 232).

The logging industry was given considerable backing by the colonial government, ostensibly to offset the unreliable and volatile rubber industry. Basically a revenue-collection office in the past, the Forestry Department became much more important with the revisions to the Forest Ordinance in 1954, which gave the Conservator of Forests wider powers for overall forest management. Forestry policy now provided for management on a sustained yield basis. Timber processing was also encouraged to promote industrialization, but apart from a brief period immediately after the Second World War, which catered to the demands of reconstruction, timber concessionaires viewed it as unprofitable.

Lee's (1976) detailed historical account of the timber industry and the key players involved shows the linkages between timber, power and policies in Sabah. Before 1963 the timber industry was largely dominated by Western and ethnic Chinese commercial interests. Few, if any, indigenous people owned or operated any commercial logging concerns. The earlier BBTC monopoly was eroded in the early 1950s as three other foreign companies gained long-term concessions, while Chinese companies initially held only annual licences. Hence, until 1959, log production was dominated by just four long-term concession holders who operated renewable 21-year concessions, which allowed for 80-year felling cycles. After 1959, the number of long-term concessionaires increased to 11, who together accounted for as much as 57.7 per cent of timber output in 1963. The concession tracts amounted to about a quarter of the entire land area of Sabah (Gillis 1988: 123). The balance consisted of special (10-year) licence holders and annual licence holders (Gudgeon 1981: 236). Annual licence holders were predominantly Chinese contractors – 52 annual licences were issued in 1951 alone – who were assigned logging areas along accessible river deltas. Between 1946 and 1963, approximately 80 per cent of Sabah's land area was under forest, of which 50 per cent was considered productive (Gudgeon 1981: 237).

Post-Colonial Agriculture

The first real steps towards independence through merger to form Malaysia were taken in 1961. The process began with the development of a party political system, which gave new importance to some previously marginalized indigenous communities.² As in Peninsular Malaysia, there was a perceived desire to ensure that political power rested with indigenous ethnic groups to check Chinese domination of the economy. But another crucial factor was the perception that in return for supporting some indigenous leadership, the substantial British investments and interests in the timber industry would be protected. This motivation encouraged the formation and development of communally based parties.

One such party was the United National Kadazan Organization (UNKO), Sabah's first political party, whose origins can be traced to a cultural association formed in the 1950s and which was financed by timber revenues. Timber concessions were awarded to native leaders, including Donald (later Fuad) Stephens and Mustapha Harun, both leaders who would go on to become chief ministers of Sabah. The British used the awarding of these concessions to secure their long-term investments. The British strategy worked. By the mid-1960s, the concessions policy was already geared towards re-allocating forest resources (to favour indigenous population), and the system of awarding annual licences to the Chinese was terminated. However, by late 1979, the seven concessions awarded to British companies before 1963 still remained in force, and were only scheduled to expire by 1986 (Gillis 1988: 123).

Hence, it can be seen that timber politics were deeply entrenched in the body politic from the time of Sabah's independence and incorporation into the federation of Malaysia (Larson 1976). The attainment of independence and the formation of the federation of Malaysia provided a new political context for policies and practices affecting agricultural expansion and deforestation. Some important influences of the new political situation on public policy affecting deforestation in Sabah included:

- the nature of federal-state relations in Malaysia;
- jurisdiction of the state authorities over land (including forests);
- the new electoral democracy, in which political parties would vie for

- votes from a still overwhelmingly rural population in Sabah; and
- the desire of the state government and many politicians to maximize their own revenues, by encouraging short-term exploitation of forests as well as agricultural expansion.

As with Peninsular Malaysia and Sarawak, the desire to modernize the rural economy has had implications for land use (including forest conservation), agricultural practices and land tenure systems. But, as has been noted, the contexts – for policies and practices – in the three regions have been different. Thus, at the time of independence, Sabah and Sarawak inherited relatively underdeveloped rural economies in which shifting cultivation was still significant.

Gazetting Permanent Forest Reserves and Parks, land alienation and large-scale tree crop agriculture have furthered the transition from “traditional” communal ownership systems to private land alienation. There is a stark difference between the two land tenure systems. The official emphasis on the latter since independence has not only contributed to the expansion of agriculture, but also of a land tenure system which defines ownership in terms of clearly defined exclusive rights allocated to specific individuals or corporate organizations. This contrasts with “traditional” community ownership systems in which land was managed with considerable flexibility because no individual had exclusive permanent ownership of any one area.

While private land ownership had previously been significant in and around urban settlements, private agricultural land ownership with title is now commonplace throughout the state. Most areas with commercial value have been alienated or gazetted for specific purposes, notably agriculture, forestry or livestock breeding, with much of the remaining un-alienated land sought by both individuals and groups. As will be seen, the potential for conflict between the two systems has indeed manifested itself on occasion.

Early Post-Independence Initiatives

The post-colonial Sabah government's policy to open up land depended on both the availability of suitable land and the ability of the government to authorize its development. As in Sarawak and Peninsular Malaysia, the classification of land gave the government

greater jurisdiction over land, with large areas designated as "State Land," in accordance with the Land Ordinance (1930). The Ordinance affected all land outside forest reserves, which were also considered to belong to the state. The term "State Land" has a specific legal meaning and does not refer to all land claimed by the state, but only to all land available for reservation for a public purpose or for alienation. The Ordinance empowered the state authorities to control and regularize land matters. Outside of the urban settlements, the main intention of the Land Ordinance originally was to promote agricultural production. As will be shown, alienating available state land for agriculture continues to be "official policy".

Other than "State Land," the most extensive land tenure category in Sabah is the "Native Reserve," designated to protect the interests of indigenous communities; no other type of tenure is allowed on such land. Other less extensive land types defined in the Land Ordinance are "Country Land" (which refers to land outside urban boundaries; if more than 6 ha were alienated, the lease period could not exceed 99 years) and "Government Reserves" (essentially for specific purposes, such as military or police use, water supply, education or airports). From 1963, game and bird sanctuaries could be gazetted, but there is no specific statutory prohibition on alienating or leasing land in these areas (WWFM 1992: 94-95).

While all land is vested with the state unless transferred by legal means, the indigenous communities have certain rights to some types or categories of land owned by the state. Native Customary Rights (NCRs) entitle them to acquire land ownership in several ways, including customary tenure, recognized under the law if there is evidence of continuous occupation or cultivation for three or more years, which could include planting a certain number of fruit trees or other plants of economic value per acre or other agricultural or livestock grazing use (WWFM 1992: 80). NCRs are applicable throughout the state, except in designated forest reserves, parks and lands reserved for specific purposes by the government, but are rarely demarcated in reality, however encroachment into such areas does happen and often leads to conflict. For example, the land area available for the exercise of usufruct rights is dwindling, most notably by gazetting permanent forest estates (PFEs), which may subsequently be used for either private or public sector tree-crop schemes. NCR claims often

arise after an official or commercial project is announced in the vicinity (World Bank 1991: 101).

Sabah's post-colonial government neither inherited nor developed a comprehensive land-use policy. Instead, it has set some broad policy directions that are still relevant today. Concerned with tackling rural poverty and expanding the rural economy, not least for the benefit of the state coffers, the government prioritized opening up rural areas for agriculture on the premise that agriculture is the most 'viable' form of land use in rural areas. Yet, in Sabah, political rhetoric has often been taken as "policy" and there have been few clear policy directives that address the location, type and extent of crops to be cultivated. Undoubtedly, the difference between domestic food and export crop production has been recognized, but its implications have hardly been addressed by policy. Instead, the focus has been on the amount of agricultural land opened up. The documents of the state government and parastatals reveal a strong orientation towards defining achievement in terms of land opened within a specific time frame.

With agricultural expansion and diversification as major policy goals, shifting cultivation has been viewed as a hindrance, not only to expanding the state's economic base, but also to poverty alleviation, thus the main strategies have intensified the earlier colonial policies of *in situ* development and resettlement. *In situ* programmes have, indeed, contributed to raising incomes through the introduction of new technology and high yielding (crop) varieties (HYVs). However, incomes have been limited by farm size, crop-mix, pricing vagaries, marketing capacity and household size (Sidhu 1989: 149). Land resettlement schemes have been favoured by technocrats for offering greater potential for alleviating poverty while increasing agricultural output for export purposes.

Usually based on a mono-cultural export crop system with relatively rigid organizational and labour arrangements, the settlement scheme was adopted from the 1960s as the model for agricultural expansion by a number of parastatals such as the Sabah Land Development Board (SLDB) and the now defunct Sabah Padi Board (SPB). Besides its perceived utility for tackling rural poverty and bringing the rural population into modern commercial agriculture, the settlement scheme was also expected to ingratiate the incumbent ruling coalition to rural voters. From the 1960s until the 1980s, it was believed that

accelerated expansion of the state's economic base was best achieved through such parastatals, after which greater emphasis was given to private sector initiatives.

The early view of how government agencies should be deployed resulted in the creation of two types of agencies: (1) special purpose parastatals responsible for particular segments of an increasingly differentiated economy, and (2) more general agencies. Thus, for example, the SPB was set up in 1968 to oversee rice development and to achieve state-level rice self-sufficiency, as stated in the State Rice Policy formulated in the First Malaysia Plan (1966-70). The SPB also ventured into land settlement schemes, with very mixed results.

The most important land development agency set up in the 1960s was the Sabah Land Development Board (SLDB), established in 1969 to promote land development through settlement schemes. Such land development was deemed a specialized task beyond the capabilities of existing government agencies, and the Department of Agriculture was asked to hand over existing schemes to the SLDB. However, the performance of the state government in poverty alleviation and land development left much to be desired. There was growing frustration over the slow pace of land development, particularly compared to the pace in Peninsular Malaysia. Major shortfalls were recorded in planned oil palm expansion, (with only 69 per cent of the planned 74,500 acres actually developed), and for wet rice (with only 4,000 acres, or 29 per cent of the 15,000 acres planned, actually developed). Progress was also slow with the major settlement schemes undertaken by the SLDB, SPB and the co-operatives involved in land development, with only 57 per cent of the planned 57,000 acres actually developed between 1963 and 1976 (Gudgeon 1981: 294).

The importance of the Malaysian five-year development plans as the guiding policy framework became more evident and took a new turn with the *Second Malaysia Plan, 1971-1975* (2MP). The 2MP emphasized the New Economic Policy (NEP), with its twin aims of poverty reduction and inter-ethnic economic parity. These aims were to be achieved through selected redistributive state intervention as well as accelerated expansion and diversification of the economy, i.e. including agricultural sector modernization and public sector growth.

In Sabah in the early 1970s, an estimated 35 per cent of the population was still considered outside the cash or market economy,

and almost entirely involved with subsistence agriculture (Gudgeon 1981: 279). According to the 1970 census, 53 per cent of all households cultivated land and 59 per cent of the active labour force was engaged in agriculture (Gudgeon 1981: 293). There are no poverty figures for this period, although a survey estimates in the mid-1970s suggests a poverty incidence of 58 per cent – higher than the 1970 figure of 49 per cent in the peninsula (Pang 1989: 119).³ Significantly, 80,900 of the 89,900 poor households in Sabah were rural-based (Sidiu 1989: 150).

Such poor performance, coupled with autocratic rule, financial mismanagement and corruption, led to a change of government in the state elections of 1976.⁴ Dissatisfied with the shortcomings of rural development, and facing limited financial resources, the new government set up new development parastatals, with most expected to operate semi-autonomous corporations. These were incorporated as commercial ventures, or had commercial subsidiaries to venture into profitable activities that were expected to eventually subsidize their socio-economic programmes and thus lessen the government's financial burden.

The most prominent agricultural parastatal was the Rural Development Corporation (RDC),⁵ established in 1977 to diversify and accelerate the pace of agricultural development. This new proliferation of state agencies included some with multifarious responsibilities, such as the RDC and other more specialized agencies, including the Sabah Forestry Development Authority (SAFODA), KO-NELAYAN (Fisheries), KORAS (Co-operatives) and the Sabah Marketing Authority (SAMA). By the late 1980s, its subsidiary, KPD Holdings, oversaw the activities of 13 companies, with interests in tea and cocoa estates, cattle ranching, dairy milk production, pepper, temperate vegetables, rattan plantations and even hatcheries. In 1979, the Federal Land Development Authority (FELDA) was invited to expand its role in Sabah through development of 156,000 ha in the Dent Peninsula on the east coast.

While there is no reliable information on the extent of land brought under cultivation by these agencies, there is no doubt that suitable forested zones were more vulnerable to rapid land acquisition and development. For example, the dairy farm and temperate vegetable cultivation on the slopes of the Crocker Range or in coastal areas, and

the pepper project in Menumbok in the Klias Peninsula in the south-western part of Sabah involved land not previously opened up for agriculture. Thus, although the new agencies probably accelerated agricultural, the expansion was not always appropriate in terms of land use.

Parastatals

Parallel with the expansion of the private sector since the mid-1970s, government-sponsored land development programmes have been increasingly managed by parastatals. The government had hoped to reduce rural poverty by expanding sedentary agriculture, but the success of the strategy proved doubtful. Land actually opened fell far short of what had been planned. This was not surprising as the agencies involved were given little attention and had little expertise and experience. The programmes sponsored by these agencies involved bringing sections of the rural population into land development schemes, where many lost their status as landowners and became wage workers instead. Little sensitivity to such implications was apparent in the way state agencies conducted their programmes. Some micro-level impacts of two of the more important parastatals, the SLDB and the RDC, illustrate the impacts such programmes on the people and the land.

Sabah Land Development Board

As the state's main land settlement agency, the SLDB may have developed a logic of its own that subverted other development objectives which the SLDB – like other parastatals – was meant to achieve, through the resettlement of the rural poor. Exactly how many of the rural poor have been helped by the SLDB and other similar agencies is also not clear as the SLDB has never met its settler placement targets. Gudgeon (1981: 322) asserts that about 5,600 settlers had been absorbed into settlement schemes by 1980 but more recent figures raise doubts about such estimates. In 1991, the SLDB had 34 schemes operating, with some 53,299 ha planted with oil palm and rubber (*Annual Bulletin of Statistics, 1991*: 68-69). However, only 12 of the schemes, covering 17,685 ha (or 33.2 per cent of the total), actually had settlers, while the balance operated as tree crop plantations. By

this time, the four settlement schemes managed by the SPB, catering to a few hundred settlers, had been forced to close down. The RDC had far fewer settlers than the SPB, and was experiencing problems recruiting settlers by the early 1980s. The SLDB had only 2,736 settler families in residence, compared to the 3,880 houses it had erected (*Annual Bulletin of Statistics, 1991: 68-69*).

Apart from the SLDB, the other Sabah parastatals have little expertise in settlement scheme planning and management. The strong technocratic bias of these agencies also led to a subordination of social considerations to physical and agricultural development goals. The SLDB never met its settler placement targets mainly due to its emphasis on physical development and its neglect of social amenities. Although established in 1969, it only set up a Social Development Division in 1981. This was not at the initiative of the Board itself, but came out only after a private corporation had been recruited by the state government to re-organize the SLDB to place it on a firmer financial, agronomic and social footing. The secondary status accorded to social development was a major source of problems for the Board. Much settler dissatisfaction has been due to rigid organizational and labour practices that deny the settlers occupational mobility and income enhancement.

The terms imposed for joining land settlement schemes have also caused problems. By not awarding land titles, the SLDB hoped to control the settlers by minimizing the risk of the settler converting the land to other uses. The possibilities of earning supplementary incomes on the schemes have also been limited by the mono-cultural cultivation condition imposed by the authorities. In addition, fixed-sized land holdings have not been able to support increases in population or household size, which has become a major factor in outward migration by the children of older settlers.

In practice, however, settlers have not been allowed to hire outside labour or seek off-farm employment. Hiring labour has not been uncommon since incomes on oil palm schemes have generally been high enough to allow, if not encourage, this. Off-farm employment and absenteeism have also been widespread. Unlike a peasant or smallholder, the settler on an SLDB or FELDA scheme cannot alter his crop mix, even when prices are low. More often than not, he is not allowed to withdraw his labour to seek off-farm employment

during slack periods. The settler receives an income, from which development costs – over which he has no say – have been deducted. Thus from the settler's point of view, the long-term sustainability – of the major land development schemes undertaken by the SLDB and FELDA – is suspect beyond the first generation.

Interestingly, in the late 1980s, the SLDB withdrew from further involvement in such settler schemes. Instead, it began to operate as a plantation agency running schemes with wage workers, not settlers. The schemes with settlers are now managed by co-operatives ostensibly established and run by the settlers. However, no data were available to determine the performance of both types of schemes. The abandonment of its settler development objective was, perhaps, the SLDB's most open admission of failure. While land conversion to oil palm and rubber had raised incomes compared to other rural occupations, the regimented nature and high costs of such development apparently rendered the scheme unsustainable (Vincent and Hadi 1991: 20).

In Peninsular Malaysia, FELDA has experienced similar problems, and has experimented with various alternatives to enhance the overall viability sustainability of its schemes. By the early 1990s, FELDA's plans to settle 11,000 families on schemes in the Dent Peninsula⁶ led to conflicts with local residents over NCRs and the pollution of rivers supplying water to nearby villages. Some neighbouring communities took their land cases to court, while settlers dissatisfied with scheme rigidities appealed to the Chief Minister and other politicians to intervene. The problems faced in Sabah and the very rigid and centralized nature of the settlement model raised the question of whether the strategy is desirable and transferable to a society with a low population density (22 persons per sq. km.) where patterns of employment and population mobility are considerably different (Sidhu 1989: 149-151).

Rural Development Corporation

The Rural Development Corporation (RDC), a multi-functional or general agency, has been entrusted with small- to medium-scale socio-economic projects since it began operations in 1977. It began by initiating over 100 projects, either as joint ventures with landowners (communities or individuals) or independently. By the late 1980s, however, it had cut down the number of projects by two thirds. All 14 land settlement schemes had either been abandoned or converted

to other purposes. Most of these projects could not be sustained after the initial enthusiasm of the "partners" for RDC soft loans and other inputs had waned. The RDC's failure can be attributed to several factors, including: lack of – or poor – planning; uneconomic-sized projects; poor soils; difficult terrain; and lack of appropriate expertise. Interference by politicians, who saw land resettlement schemes as providing opportunities to patronize their own rural constituents regardless of the appropriateness of such schemes in their areas, also caused problems. Such considerations usually led to unfeasible projects being implemented and then failing.

Most RDC settlement schemes began as agricultural projects, which were then converted into settlement schemes (irrespective of size), but which came to be managed as agricultural projects. Most communities and individuals did not realize the nature of the relationships they were entering into with the RDC. In certain cases, the RDC entered into deals with absent, rather than participating, partners. Obviously, such partners could not possibly contribute to creating independent farming communities. While the RDC rhetorically emphasized participatory development, it lacked planning and implementation capabilities, especially human resources needed to effectively implement policy. Planning and implementation systems were "top down", with little attention given to participation or consultation.

For instance, the Bukit Nun scheme in Menumbok, in south-western Sabah, had its status changed from a "settlement scheme" to a "co-operative" at the insistence of the then Chief Minister, without any prior consultation with the participants.⁷ This 130 ha pepper-based settlement scheme was but one of many projects that could not be sustained because of poor planning and management. The settlers at Bukit Nun were given sub-standard houses and were not allocated individual plots of land that the settlers had expected upon joining the scheme. Nor were settlers aware that they had to pay a portion of development costs. This resulted in adult males seeking off-farm employment, leaving women to work as daily-paid labourers. Settlement schemes were expected to be an improvement over the settlers' previous conditions and also to be amenable to upgrading. This was certainly not the case in Bukit Nun or any other settlement scheme operated by the RDC. The RDC management's emphasis has been on the crops, while settler concerns have been dealt with on an *ad hoc*

basis. The RDC's objective of crop diversification, with pepper as the main alternative crop on new settlement schemes, proved inappropriate, with settlers left poorer and disillusioned. The scheme was eventually handed over to a private firm to manage once again as an agricultural project.

Ad-hoc management, e.g. due to ill-considered conversions or political interventions, or both, has also been the cause of failure for many other projects, including the 230-ha Sadul-Muruk cocoa settlement scheme near Ranau in the interior. Opened as a fringe land development project for a neighbouring village of the same name, the forest was cleared, and new houses (of poorer quality than those in the village) erected on individually assigned plots. But, for unknown reasons, no cocoa (the crop selected) was actually planted.⁸ Not only were there no channels for consultation or participation available, the RDC did not even have any full-time staff assigned to the project.

Agriculture and Land Policies

As mentioned earlier, through the 1960s and early 1970s, the emphasis on opening up land continued without any clear land-use strategy. Land development proceeded in an *ad hoc* fashion, with the only official framework for land use still being the Land Ordinance of 1930. There was an attempt to rectify this in 1976, with the introduction of a Land Capability Classification (LCC) system. Although the LCC was not used as a formal land-use planning mechanism, its influence on agricultural land allocation has been significant over the years. In brief, the LCC valued land differently in terms of potential productivity. Land use was divided into the following five main categories according to economic potential:

- Mining, Agriculture (extensive range of crops),
- Agriculture (restricted range of crops),
- Forestry, and
- Conservation.

With limited potential for mining (since petroleum is offshore), the emphasis has been on agriculture (both categories) and forestry. The "de-reservation" of most large forest reserves in eastern Sabah, the location of major settlement schemes and the designation of per-

manent forest reserves in the mid-1970s were all based on LCC recommendations (WWFM 1992: 90). The LCC's significance was enhanced by the fact that there has not been a single agency with responsibility for overall land-use planning in the state and there has been no formalized system for integrated planning. Similarly, there is no formal body for co-ordinating the activities of government departments and parastatals. In such a scenario, different sectors and sub-sectors (represented by parastatals and departments) compete for land, inadvertently favouring the expansion of agriculture and forestry, while activities not regarded as economic or development-oriented (for example, conservation) have been disadvantaged. This bias was accentuated by the parastatals being empowered by various enactments to acquire land already alienated to others. The demand for land, especially for large tracts, has also meant that land, which might otherwise have been considered unsuitable or unattractive for agriculture, has been alienated for cultivation since the 1970s.

The alienation of unsuitable land is evident in the figures available. Of land alienated until 1974, 238,478 ha (38.7 per cent) were deemed "unsuitable" for agriculture, 230,596 ha (37.4 per cent) only suitable for a limited range of crops, and only 147,591 ha (23.9 per cent) suitable for a diverse range of crops, according to the LCC (WWFM 1992: 97). There is little reason to doubt that this trend continued with the new generation of parastatals emerging on the scene after 1976. For example, in the late 1970s and early 1980s, RDC-initiated projects, such as in Sadul-Muruk and Dalit in the interior, were sited on land considered only marginally suitable for cocoa cultivation. These projects, and others like them, were initiated and implemented at the "request" of well-connected politicians who desired high profile or "visible" large-scale projects for their constituencies. Apart from such political pressure, even policies with good intentions unfortunately also contributed to deforestation and dislocation of rural communities.⁹

The Nabawan project in the southern interior was one such project that went wrong due to poor planning. Begun in the mid-1960s, it was part of a programme to resettle Muruts living in scattered settlements along the Indonesian border for security reasons, and to achieve economies of scale in the development of the then frontier region. In a bid to check shifting cultivation, the predominant mode of land use among Muruts, wet rice was to be the main crop in the project. But

in the process of site preparation, the top soil was cleared with heavy machinery, rendering much of the land unsuitable for rice agriculture. Since that debacle, various other strategies have been tried, but all seem to have failed to improve the lot of the Murut community concerned. There are far too many such public projects in marginal (in terms of both soil quality and location) areas to be listed here. Some of the more controversial include the Kimanis Highland vegetable project and other RDC projects on the steep slopes of the Crocker Range. Expanding into marginal areas, however, has not been the sole preserve of public sector agencies; in the cocoa-growing "frenzy" of the 1980s, private investors also ventured into areas with soil unsuitable for cultivation of the crop on a large scale (Kler 1989: 33).

The LCC's attempt to regulate and plan land development and use reflected the government's intention to bring some overall strategy into play. After 1976, more specific policies were developed, at least on paper. Among the more notable examples were the Land Alienation Policy (1977), the National Agricultural Policy (1984), and the Sabah Action Blueprint (1989). These policies sought to establish a greater role for smallholders and for the private sector. The Land Alienation Policy involved the identification and reservation of 368,225 ha of land for various programmes to be undertaken by government departments, parastatals and smallholders (Voon 1981: 54-56). The land was reserved for four main categories of land use: large-scale settlement schemes, pre-planned smallholder schemes, individual smallholders and commercial estates.

An earlier chapter described the National Agricultural Policy (NAP), a federal policy document for all states including Sabah. The NAP's major emphasis has been on maximizing income from agriculture through greater efficiency in resource utilization and revitalizing the sector's contribution to economic development. By the 1980s, new land development in Peninsular Malaysia had slowed down due to the limited availability of commercially viable agricultural land and the officially encouraged shift to manufacturing and services. In rural development programs, the new emphasis was on *in situ* and integrated area development. In Sabah, however, although *in situ* development projects were emphasized, new land development schemes continued to be emphasized until similar constraints became more pronounced in the 1990s.

Private sector involvement in plantation agriculture gained momentum from the mid-1970s. The sector's involvement was facilitated by a package of incentives aimed at reducing export duties, allowing greater foreign equity participation, providing re-investment tax allowances, adopting a broader definition to qualify for capital expenditure deductions and streamlining the process of land acquisition (Ti and Yee 1989, Ho and Fu 1989). The high price of cocoa beans in the 1970s was a major incentive for investing in cocoa; land under cocoa increased therefore from 11,411 ha in 1976 to 205,976 ha in 1990. The pace of oil palm cultivation growth was also rapid, rising from 76,962 ha in 1972 to 281,486 ha in 1990 (*Annual Bulletin of Statistics*, various issues). In spatial terms, over 90 per cent of both crops were grown in the Tawau and Sandakan divisions in the eastern part of the state. From the 1970s until the mid-1980s, about half the oil palm area was developed by the public sector (i.e. government departments and parastatals), whereas the public sector involvement was limited to only 16.2 per cent of the total planted area in the case of cocoa (Pang 1989: 91). Since the 1980s, several forays have been made by Peninsular Malaysian companies into the plantation sector, with the involvement of major companies such as KL-Kepong and Golden Hope.

The principle reason for forest encroachment has been the government's liberal land alienation policy. As noted earlier, a major pre-occupation of the Sabah government from the 1970s has been with developing land resources – for forestry and agriculture. The policy of alienating available state land for agriculture in lots greater than 6 ha each, continues unabated (WWFM 1992: 88). There is also the perception that all land not already reserved by the government is available for alienation. This has undoubtedly contributed to unnecessary deforestation, the emergence of idle agricultural land, and diminishing areas left for forest conservation, especially as so much more land has been alienated. The increase in land applications and alienated land has had serious long-term consequences for the economy and the environment. For example, it has reduced the state's timber output capacity due to the replacement of protected forest areas by alternative land use classification, a condition for awarding land titles for agriculture.

While the government has control over land alienation, this is limited by irreversibility as well as enforcement difficulties. Generally,

the government does not collect significant revenue – registration fees, premiums, rents – from land alienation. In fact, charges from the alienation of Native Title land is inadequate to even cover the cost of providing the service. Land alienated with Country Lease titles at less than market prices reflects the official commitment to agricultural expansion (WWFM 1992: 102). The only income the government derives directly from timber concessions is from royalties on harvested trees.

Such land should, and would, have remained forested with the enforcement of a comprehensive land use policy. Continuing interest in applying for land unsuitable or less suitable for agriculture can be partly attributed to the low costs of such applications. A study of conservation in Sabah argued that land should not be further alienated for agricultural expansion in view of the growing shortage of wood-producing land and the continuing dependence in the agricultural sector on foreign labour from Indonesia.

The existence of idle agricultural land puts indirect pressure on forests by reducing timber production capacity without enhancing agricultural production. Land alienated for agricultural purposes (and, to a lesser extent, for other commercial purposes) is not always utilized fully, if at all. While there is no commonly accepted definition of what constitutes idle land, and while its extent cannot be accurately estimated, there are indications of a significant amount of such land. For example, in the category of land alienated under "Native Title" alone, an estimated 250,000 ha remain uncultivated – what percentage was fallow is unknown – of a total of 780,000 ha (WWFM 1992: 103). This undoubtedly constitutes a policy failure as the Land Ordinance stipulates cultivation as a condition for gaining legal title, but this stipulation is neglected after the forest has been logged.

There are legal provisions with which idle land can be repossessed by the government without compensation, but this is rarely ever done due to the considerable administrative and political difficulties and costs involved. In a mainly rural society, where the relationship attachment to land is imbued with cultural significance, government land repossession would also threaten the political survival of the government of the day. Hence, the reasons for leaving land idle, or under-utilized, are often complex and inter-related. Such factors include uneconomic prices, poor market access, land acquired as family

investments, labour shortages, high labour costs, considerable management requirements and unsuitability of the land for agriculture. The existence of idle land points to major flaws in land alienation policy as well as land use practices.

There has also been some tension between the need for conservation and the liberal land alienation policy. Areas gazetted for nature conservation purposes have been reduced (for instance, the Kinabalu Park in the Crocker Range) or even almost eliminated altogether because of the large number of applications for land in the area. A proposed Park in the lower Kinabatangan region in eastern Sabah – important for the conservation and management of wild elephants – was considerably reduced in size with the large number of applications for land in the area (WWFM 1992: 88). Available figures for 1991 reveal the extent of land alienation in Sabah with 222,670 land titles covering 1.2 million ha (*Annual Bulletin of Statistics*, 1991: 73). The demand for land has shown little sign of abating, as there already was a massive backlog of 100,000 pending applications in 1992 (WWFM 1992: 109).

In spatial terms, the Sandakan and Tawau Divisions in the eastern part of Sabah had 64,100 land titles covering 776,296 ha. The West Coast Division gave a greater number of land titles (97,993), covering a smaller area of 224,352 ha due to the higher concentration of population in the West Coast Division, its mountainous terrain and the little land available for alienation. The eastern frontier regions have smaller populations, but larger tracts of land have been alienated there, e.g. for plantation agriculture. Introduction of "modern" land tenure in areas unsuitable for sedentary agriculture has been problematic as the traditional swidden system was more ecologically sensitive while conservation considerations hardly figure in more modern land practices.

Besides pressure from ruling coalition politicians for the government agencies to open up schemes in their constituencies, collusion between politicians and contractors for land development contracts and logging concessions all contributed to encouraging agricultural projects for gain. In other words, besides vote-seeking, projects have also been motivated by rent-seeking. Also, as in Sarawak and Peninsular Malaysia, development schemes have been used as pretexts to grant timber concessions (Vincent and Hadi 1991: 22). Contractors who develop projects on behalf of the parastatals and supply agricultural inputs are the main beneficiaries. While forest loss for financially and

economically viable and sustainable agricultural projects may be unavoidable, forest loss due to poorly conceived projects is indefensible. Forest loss has created considerable environmental problems due to soil erosion, siltation, pollution and loss of biodiversity.

Land Use

The area under agriculture in Sabah increased considerably from about 123,500 ha in 1960 to 691,329 ha in 1990, 1,048,999 ha in 1996 and 1,174,177 ha in 2000, i.e. an annual average of about 19,000 ha.¹⁰ Although impressive, these figures only refer to the "major crops", namely cocoa (2.7 per cent), oil palm (3.8 per cent), rubber (1.2 per cent), coconut (0.8 per cent), wet rice (0.5 per cent) and dry rice (0.2 per cent). Together, they accounted for 9.2 per cent of the state's total area of 7.4 million ha (see Table 4.1). The area under agriculture would have been greater if other agricultural land use categories (including market gardening, pepper, tapioca, coffee and fruit) were included.¹¹ According to one calculation (Ti and Yee 1989: 236), as much as 30,700 ha are planted with fruit and "other food crops."

The total land area devoted to cocoa, oil palm, coconut and rubber in 2000 amounted to 1,127,414 ha. With government promotion of

Table 4.1 Sabah: Major Crop Areas, 1990, 1996, 2000

	1990		1996		2000	
	Hectares	Share of Tot. Land Area (%)	Hectares	Share of Tot. Land Area (%)	Hectares	Share of Tot. Land Area (%)
Cocoa	205,976	2.7	111,736	1.5	42,403	0.6
Oil palm	281,486	3.8	746,222	10.1	970,715	13.1
Rubber	92,051	1.2	90,466	1.2	90,812	1.2
Coconut	59,227	0.8	50,590	0.7	23,434	0.3
Wet rice	34,641	0.5	38,701	0.5	36,294	0.5
Dry rice	17,958	0.2	11,284	0.2	10,519	0.2
Total	691,329	9.2	1,048,999	14.2	1,174,177	15.9

Note: Total land area: 7.4 million ha.

Sources: *Annual Bulletin of Statistics, Sabah*, various issues.

Table 4.2 Sabah: Major Crop Areas by Cultivators, 2000

<i>Crop</i>	<i>Private Plantations</i>	<i>Government Agencies</i>	<i>Small- holders</i>	<i>Total Area (ha)</i>	<i>Total Area (%)</i>
Cocoa	19,772 (46.6)	500 (1.2)	22,181 (52.2)	42,453 (100.0)	3.8
Oil Palm	764,248 (78.7)	156,106 (16.1)	50,361 (5.2)	970,715 (100.0)	86.1
Coconut	682 (2.9)	282 (1.2)	22,470 (95.9)	23,434 (100.0)	2.1
Rubber	2,615 (2.9)	9,781 (10.8)	78,416 (86.3)	90,812 (100.0)	8.1
Total	787,317 (69.8)	166,669 (14.8)	173,428 (15.4)	1,127,414 (100.0)	100.0

Notes: Figures in parentheses are percentages.

General definition – Estate refers to continuous or uncontinuous area more than 40.47 hectares (1,000 acres) under a single legal ownership while smallholders refer to continuous or uncontinuous area less than 40.47 hectares (100 acres). However, land development schemes (FEILDA and others) are included as smallholders although some land schemes may individually be more than 40.47 hectares (100 acres).

Source: *Yearbook of Statistics, Sabah, 2002*, Table 4.1.

export crop agriculture, 1,023,168 ha, or 13.8 per cent of Sabah's total land area was used for cocoa and oil palm cultivation. When cocoa statistics were first collected officially in 1976, the two crops accounted for just over one per cent of Sabah's land area (79,103 ha). These crops were mainly grown in the eastern parts of the state where contiguous large tracts of land required for plantation development were still available. Table 4.2 shows the main crops contributing to Sabah's agricultural expansion.

Agriculture can also be classified into three main types: plantation crops (both private and public sector), smallholdings (both mixed crops and monoculture) and shifting agriculture. Private sector plantations have dominated cocoa cultivation, accounting for 68.8 per cent of the land planted with cocoa. Private and public sector involvement in oil palm is almost equal, with 48.8 per cent accounted for by the private

sector and 49.5 per cent by the public sector. The large roles played by both sectors have been due to official policies promoting oil palm cultivation as well as favourable private sector responses to easy land access and attractive palm oil prices.

In the public sector, FELDA and SLDB have been the biggest players. The SLDB had 53,299 ha under oil palm (and some rubber), while FELDA had over 100,000 ha alienated, with some 80,000 ha already developed. (These figures for SLDB and FELDA refer to the total scheme areas under their jurisdiction, and not just to the areas under the crops.) Both these agencies preferred oil palm as their main crop because it grows better in "marginal soils". The smallholders' share of oil palm in Sabah has been minimal (1.7 per cent), probably due to high development costs and the need for links with marketing and refinery outlets.

Coconut cultivation, mainly in the north and in coastal areas, is dominated by smallholders (79.9 per cent), who usually practice mixed agriculture to supplement subsistence food production with cash crop incomes and to protect themselves from the vagaries of the market. Private plantations (12.7 per cent) and government agencies (14.4 per cent) have relatively minor roles. It is likely that the land area under this crop has stabilized at just under 60,000 ha. However, it is not known to what extent primary forest has actually been cleared for coconut cultivation.

The area under rubber has also been stable. In fact, it is the only major crop that has experienced a decline in land area in recent years. Land under rubber was consistently above 100,000 ha from 1965 until 1981, peaking at 110,000 ha in 1974 before declining to 92,051 ha in 1990. The actual amount of land originally cleared for rubber is higher as there are many abandoned or "inactive" rubber stands. This decline can be attributed to private interests shifting to oil palm and cocoa with the falling price of rubber. Plantations only accounted for 8.9 per cent of rubber land, but private interests as a whole were more significant, mainly due to smallholders not on government schemes (83.6 per cent). As noted earlier, the government had actively promoted rubber as a smallholder crop from the 1950s by providing a range of incentives and support services.

While data on sedentary agriculture is problematic, information on shifting cultivation is fraught with even more difficulty. Official five-

year plan documents have not offered figures on shifting cultivators in their analysis of poverty groups in Sabah. Shifting cultivation has undoubtedly caused deforestation, but estimating its extent depends on which sources are most credible. Unlike in Sarawak, there have been few recent studies of shifting agriculture in Sabah. Practices have varied over time and by community, depending, among other things, on the topographical features of available land. As in neighbouring Sarawak, there are three main practices: nomadic, swidden and a mixture of swidden and sedentary farming.¹² [For more information on shifting cultivation, see Lee (1965), Landgraft (1956), William (1960, 1962), Harrison (1971), and the sources quoted in Chapter 5 on Sarawak.]

Arguably, shifting cultivation has long contributed to long-term forest clearance in Sabah as it was the dominant agricultural practice long before agricultural sedentarization was accelerated by government intervention from the 1950s. But there is reason to believe that the extent of swidden agriculture has declined considerably over the past four decades as some processes – which led to its decline in Peninsular Malaysia – have increased in Sabah, with similar effects in Sarawak. It has also been suggested that shifting cultivation has historically been less extensive in Sabah than in Sarawak (World Bank 1991: 24). Hence, it is very likely that in the area under shifting, cultivation has been declining, and that where it survives, old plots are probably being recycled. As a system of agriculture, swidden practices have long been regarded as ecologically benign and appropriate – the practice has relatively little impact on existing primary forest while land already cultivated regains secondary forest cover during fallow periods.

Without any reliable studies or figures to depend on, it is difficult to arrive at any meaningful conclusion about shifting cultivation in Sabah, including its role in deforestation. A rough idea of the extent of shifting cultivation may be gleaned from the few available sources. A 1976 study estimated that 14 per cent of Sabah's land area has been under shifting cultivation (Senftkben 1978: 192). In 1989, the Forestry Department, which has long been against the practice, claimed that an estimated 1.1 million ha, or 14.8 per cent of the total land area of Sabah, was under shifting cultivation. If these figures are credible, it would suggest that shifting cultivation stabilized between 1976 and 1989. Using Food and Agriculture Organization (FAO) estimates, Gillis

(1988: 121) asserted that more than half the annual deforestation between 1975 and 1985 was due to shifting cultivation, though it is not clear if the re-cultivation of previously cleared fallow land has been properly considered in making this estimation.

The likely small increase in shifting cultivation needs some explanation. To the casual observer, it would seem that encroachment into the forest – say, over the past two decades – has been linked to population increase, poverty and land shortage, the three classic causes of forest encroachment elsewhere in the world. This does not seem to have been the case in Sabah. Although the state has the highest annual population growth rate (3.7 per cent) of all states in Malaysia, a significant cause of this high rate has been the influx of immigrants from the Philippines and Indonesia. In 1980, the foreign-born population made up about 13 per cent of the total population of Sabah. A decade later, the immigrant population had increased to around 29 per cent of the total estimated population of about 1.7 million. These foreign workers, both legal and illegal, make up a large part of the work force in the plantation, construction and timber sectors, and have placed heavy demands on public services such as health and education. However, there is very little, if any, evidence of these foreign immigrants encroaching on their own into forests to any significant degree.

There is little doubt that forest conversion to (sedentary) agriculture – that is, not including shifting cultivation, logging and plantation forestry – has been rapid and substantial in recent decades. By 1990, over 691,329 ha of forest had been converted for agricultural use. If the 30,700-ha estimate for “other crops” is added, then the area under agriculture was 722,029 ha, or 9.7 per cent of the state’s total area. In view of the Land Capability Classification’s 1976 estimate that only 7.6 per cent of Sabah’s land was suitable for agriculture, then at least 28 per cent of agricultural land was in areas not suitable for agriculture. (An accurate picture of the extent of cultivation of unsuitable land cannot be ascertained without comprehensive land use surveys.)

Recent Agricultural Expansion

Unlike Peninsular Malaysia, where deforestation due to agricultural expansion appears to have declined due to higher agricultural labour costs and the lack of suitable agricultural land, it appears that land

development in Sabah continued well into the 1990s, partly driven by the desire to offset the decline of revenue from the timber industry. While private sector expansion has been driven by the prospect of high financial returns, better economic returns and enhanced rural living standards from perennial crops have been central to the agricultural development efforts of government agencies.

Opinions vary as to how much more agricultural expansion is possible in Sabah. One study concluded that given constraints – such as soil suitability, terrain, inaccessibility, and increasing labour costs – it is unlikely that more than 25 per cent (or 1.85 million ha) of Sabah's total land area can ever be used productively for agriculture (WWFM 1992). In practice, agricultural expansion is already encountering increasing constraints, with more demands for stricter land conservation and alienation. It could be argued that there is some pressure on land in a few areas, but the overall population density of only 22 persons per sq. km. suggests that land pressure is not a major reason for deforestation. This argument is even more persuasive when one considers migration out of rural areas into the growing urban centres (Yaakus and Sidhu 1989). Yet, while a land shortage may not actually exist, the perception that there is one could be significant, though this is very difficult to prove.

Poverty is often also presented as a reason for forest encroachment. Again, this may be a factor in certain areas: for instance, in the Bengkoka Peninsula, where much of the forest cover is secondary. However, it is hard to prove a connection between poverty among shifting cultivators and increased deforestation.¹³ The claim that Sabah has a relatively higher poverty must be balanced against two considerations: first, as mentioned earlier, the official figure for the incidence of rural poverty (35 per cent) has to be regarded with some scepticism; second, some rural communities may be "cash poor", but self-sufficient in terms of food and shelter, and thus should not be deemed poor solely on the basis of cash income measure (Shireen Hashim 1995).

The recent legal recognition of NCRs may give the impression of increased forest encroachment by rural communities, including some involved in shifting cultivation. However, with growing land alienation across rural Sabah to "outsiders" over the past two decades, rural communities have resorted to asserting NCRs as a defensive measure to protect their land, which has increasingly come under threat. Access

to rural land, especially in remote areas, has been facilitated by an extensive and growing network of logging and other roads. Rural communities have also expressed their resentment at large-scale encroachment by agricultural development agencies into their areas. Ironically, one way of attempting to protect their land is to fell trees as proof of use to invoke NCR claims (WWFM 1992: 183). But the World Bank Report regarded such land of encroachment as still modest in scale and mainly concentrated near logging roads. The report suggested that land availability outside the PFEs has limited the threat to protected areas (World Bank 1991: 24). Furthermore, the large contiguous tracts of land desired for plantations are no longer easily available.

This sort of action by rural communities is commonly directed at parastatals. For example, SAFODA's Bengkoka forestation and settlement scheme in northern Sabah has been the source of considerable conflict between communities fearful of losing land held under NCRs to a parastatal organization with land acquisition powers. Depleted of forests and having limited commercial agricultural potential due to poor soil conditions, the Bengkoka Peninsula has been classified as being suitable only for large-scale forest plantation development. Having encountered much resistance, SAFODA was forced to recognize the rights of some communities to native customary land. In other cases, communities were told to resettle elsewhere or risk being forcibly regrouped beyond the project's boundaries. Large-scale encroachment by parastatals has also led to the disruption of traditional livelihoods, although such disruption is not entirely negative if accompanied by viable alternatives. In the case of the Bengkoka scheme, however, the affected communities' choices were limited to becoming settlers within a confined and regulated environment (the settlement scheme) and existing on the margins, with decreasing access to resources essential for one's livelihood.

In terms of land use, tree crop plantations and smallholdings can produce yields on a long-term basis. High yields can be sustained through a combination of improved management, planning, harvesting, fertilization, pest control techniques and agro-chemical inputs. No attempt is made here to examine the financial and economic feasibility of tree crop land uses. The development and longevity of tree crop agriculture plantations, smallholdings, and development schemes in Malaysia have been studied elsewhere (Vincent and Hadi 1991). There

is evidence of the long-term financial feasibility of major tree crops such as oil palm, rubber and cocoa (Vincent and Hadi 1991: 18). However, the financial feasibility of private sector involvement and the economic feasibility of development schemes are partly negated by their adverse environmental impacts. Negative environmental externalities have generally been largely ignored in most cost-benefit assessments of the desirability of such land use in Malaysia.

Environmental impacts were not assessed in the 1960s and 1970s, when many such projects were initiated. Even today, environmental externalities are only partly incorporated into project assessments. This is especially pertinent in view of increasing encroachment into forest areas considered less suited for agriculture without large infusions of agro-chemical inputs. In this context, market forces have led to the expansion of private sector investment in tree – especially plantation – crop agriculture and of government-sponsored land development schemes, often motivated by political considerations. Vincent and Hadi (1991: 23) asserted that inadequate cost-benefit analysis as well as market and policy failures had led to excessive conversion of forest land to agriculture and consequent negative environmental impact. However, this does not mean that excessive conversion would not have taken place if environmental impacts had been given due consideration since political considerations among others would have encouraged excessive agricultural expansion.

Historically, moderate-to-high positive rates of return for government and parastatals sponsored projects meant that these ventures earned acceptable returns on public investment funds.¹⁴ It is quite likely that certain projects in Sabah met such expectations, but collectively, government parastatals, including non-agricultural agencies, were a net drain on the government's Statutory Fund. The Statutory Fund covered expenditure allocated to about 13 state agencies, more than the next two major expenditure items, the Chief Minister's Department and the Treasury (Pang 1989: 115). In 1986, total loans outstanding to this Fund amounted to RM1.8 billion.

Most agencies were unable to even pay the interest due (Pang 1989: 115). All the agencies were involved in some commercial activities, especially the largest three in terms of investments, namely the SLDB, the RDC and the Sabah Economic Development Corporation (SEDCO), with only SEDCO not directly involved in agriculture.¹⁵

Mismanagement is the most oft-cited cause for the sluggish performances of the government agencies. The reasons why the government has not closed down some problematic parastatals¹⁶ are complex. The parastatals are a major source of employment in both urban and rural areas; offering services which other government departments do not, and constitute an important component of the state's economy. Their presence in the countryside is the most visible symbol of government intervention in the rural economy, and is useful in dispensing political patronage by awarding contracts, other privileges and incomes to supporters. This combination of reasons makes closing down a parastatal, especially a major one, a risky proposition. This does not imply that if there had been fewer rural-oriented parastatals, there would have been less agricultural expansion, as the few could have grown to pick up the slack.

Sabah shares a number of common features with Peninsular Malaysia and Sarawak in terms of its experience of agricultural expansion and forest loss, but there have also been some marked differences. The colonial impact transformed land use priorities, ownership conditions and the nature of development, as the economy became increasingly oriented to commodity exports. But the particularities of Sabah's geography, demography and history, the relationship between the BNBC and indigenous people, the influx of foreign labour and the earlier beginnings of its logging industry have distinguished its experience.

Post-independence policies have involved more similarities and fewer differences. The nature of the federation has resulted in federal-state tensions. However, while there are some similarities to problems faced by other states, especially Sarawak, there are also important differences, e.g. the rise of Kadazan nationalism and capture of the state government by the Kadazan-led Parti Bersatu Sabah (PBS) contrast with the failure of the "Dayak-nationalist" Parti Bansa Dayak Sarawak (PBDS) to prevail in Sarawak. Within Malaysia, Sabah most resembles Sarawak, in that both state governments have stressed diversification of the commodity sector in particular as well as of the economy in general, e.g. through industrialization. Such diversification has been limited, and has encouraged further exploitation of timber resources for state revenue. Significantly, this has been managed by the Sabah Foundation, in contrast to less centralized arrangements in Sarawak and the peninsula. And although the state has had a higher

rent capture rate than both Sarawak and Peninsular Malaysia, it has failed to convert this to ensure more sustainable development of the economy or less deforestation in particular, posing some major challenges for the future.

Sabah has continued to open up new land for agricultural development. In the late 1980s, FELDA switched attention from Peninsular Malaysia, which was almost exhausted of cultivable land, to Sabah. Encouragement of the private sector from the eighties has accompanied a reduced role for the parastatals that were so important in the late 1970s and early 1980s. Unfortunately, conservation and other environmental considerations have fared worse with the private sector in charge. Land legislation, in particular the liberal land alienation system, needs a serious overhaul, not only to protect existing NCR land, but also to check land misappropriation and misuse. This misuse of land stems from a policy failure to conceive of an appropriate overall land-use policy for the state, which would consider broader issues such as social equity and productivity improvement.

With the "politicization" of the timber industry and the need for more state revenue in the absence of alternative sources, logging has been well in excess of sustainable levels, despite reasonably good policies on paper, including production quotas and encouragement of downstream processing. Detailed policy alternatives for the forestry sector have already been comprehensively covered by the World Bank study. They include improving logging practices and procedures, maintaining residual forests, minimizing early re-entry into logged areas, increasing royalty levels and other rent-capture mechanisms, and strictly enforcing the responsibilities of licensees and their agents. But, as in Sarawak and Peninsular Malaysia, no policy measures will have much success without political will, which has been compromised by timber industry interests.

DEFORESTATION

Logging, 1963-1990s

Despite various initiatives to open up new land and to develop the agricultural sector, these initiatives made relatively limited contributions to state revenue GDP and exports until the late 1970s. Instead, timber and petroleum have been crucial for Sabah's exports. The importance

of timber is not a recent phenomenon. Unlike the situation in Sarawak, timber in Sabah was already its most important export by 1958, when it displaced rubber as the single most important export earner. Timber has also been a major source of political largesse since the 1950s. By the time of independence in Malaysia, the timber industry was already important for export earnings, government revenue and state politics. These considerations have continued to impact on the exploitation of Sabah's forests, as well as the clearing of forest for agricultural expansion. Several recent studies¹⁷ describe forestry sector policies, practices and dynamics in Sabah.

Revenue

As a subset of land, forest use is the prerogative of state governments in Malaysia. Sabah is no exception. Forestry revenues accrue directly to each state, but downstream activities pay federal taxes, which accrue to the federal government. As such, downstream activities have not been a priority for state governments. Sabah's timber royalty rate is the world's highest, and is structured to yield the state government an increasing share of log values (Gillis 1988: 128). As Table 4.3 shows, before the nineties, the bulk of Sabah's timber exports was in the form of logs. Subsequently, sawn timber contributed a larger share of export revenue. This shift has come with the reduction of logging activity. The importance of timber revenue to total Sabah state revenue, and its changes over time, can be gauged from Table 4.4.

As in Sarawak and Peninsular Malaysia, state government desire for revenue has undermined forest conservation in Sabah. State forestry policies are comprehensive on paper; the problem therefore lies not in the lack of framework. Indeed, the main forestry problems reflect poor policy implementation and enforcement, not flaws in the policies themselves (World Bank 1991: 21). The main government priority appears to be high levels of state revenue in the short-term. For example, as the desire for such revenue rose, the government de-gazetted protected forest areas. The de-gazetting of the southeastern part of Kinabalu Park for copper mining for example, led to extraordinarily complex environmental problems.

On paper, the system of protection resembles the situation in the other two Malaysian regions. There are also shortcomings in the forest classification system that has a bearing on deforestation and forest

Table 4.3 Sabah: Exports of Major Commodities, Selected Years, 1965-2001 (RM '000)

	1965	1970	1975	1980	1985	1990	1995	1998	2000	2001
Palm oil	1,280	18,067	131,010	159,564	267,561	468,555	2,148,417	2,144,603	3,870,158	3,019,764
Rubber	34,039	36,454	40,030	82,255	36,645	60,801	131,333	39,841	67,269	62,266
Cocoa	417	4,441	16,955	67,626	235,785	347,472	255,262	119,836	201,346	87,694
Timber logs	185,437	395,807	567,781	1,777,515	1,395,521	1,174,587	1,300	33,017	336,015	162,792
Sawn timber	-	-	809	77,642	371,180	1,222,336	1,606,800	425,260	989,842	988,027
Petroleum (crude)	-	-	85,503	1,779,651	1,961,046	2,837,989	1,366,170	1,001,526	2,114,282	3,673,680
Total	221,173	454,799	842,088	3,944,253	4,267,738	6,111,740	5,509,282	3,764,083	7,578,912	7,994,223
Five major commodities as percentage of total exports (%)	73	85	83	89	77	69	52	56	57	64

Source: *Annual Bulletin of Statistics, Sabah*, various issues.

Table 4.4 Sabah: Forest Revenue and Total State Revenue, 1963-2001
(RM million)

<i>Year</i>	<i>Forest Revenue</i>	<i>Total State Revenue</i>	<i>Forest Revenue as % of State Revenue</i>
1963	14.1	97.7	14.4
1968	67.3	159.2	42.3
1971	95.5	183.3	52.1
1974	240.1	380.4	63.1
1977	497.0	716.3	69.4
1980	1,098.6	1,538.3	71.4
1983	805.0	1,315.7	61.2
1986	552.7	1,099.5	50.3
1989	912.2	1,744.0	52.3
1992	856.5	2,004.7	42.7
1995	602.7	1,475.3	40.9
1996	577.6	1,524.5	37.9
1997	557.9	1,422.8	39.2
1998	321.2	1,218.9	26.4
1999	356.3	1,258.0	28.3
2000	342.4	1,225.2	27.9
2001	241.6	1,199.4	20.1

Sources: *Annual Bulletin of Statistics, Sabah*, various issues.

Annual Report, Department of Forestry, Sabah, 1997.

conservation in the long term. For instance, 64 per cent of the state's land area has slopes greater than 25⁰, yet existing Protection Forest Reserves accounted for only 1.4 per cent of this land area (World Bank 1991: 159). There are extensive tracts of steep forested state land in central and western Sabah not given any type of legal protection. The growth of this category is important for conservation and to replenish existing Protection Forest Reserves damaged by logging and fire.

There are several institutions in Sabah involved with forestry-related policies and regulatory functions, including the Sabah Forestry Department (SFD), the Sabah Foundation (SF), SAFODA and the Chief Minister's Department. The precise division of responsibilities has been unclear at times, but the SFD is generally responsible for the protection and management of all forest reserves and other natural forests, except those on alienated land, in designated parks and

on land allocated to parastatals. As mentioned above and elaborated below, the official rent capture rate has been much higher than in the other two states.

Forest categories in Sabah include the category of "Permanent Forest Land", which refers to land reserved by the state for forestry and forest conservation purposes. Such land includes forest reserves, parks and land allocated for specific timber production and plantation forests, mainly the preserve of government parastatals. The term "Permanent Forest Reserves" (PFR) refers to the existing array of forest reserves designated for ostensibly permanent legal conservation in the Forest (Amendment) Enactment, 1984 (WWFM 1992: 157). The objective of establishing PFRs is to ensure that enough forested land is conserved in perpetuity.

The first new forest legislation introduced in Sabah after 1963 was the Forest Enactment, 1968. All matters relating to natural forests fell under the jurisdiction of this enactment, which provided for the creation and management of forest reserves as well as for the exploitation of forest produce from state land outside the reserve system. Existing PFRs are the outcome of an amendment to the Enactment in 1984. A major weakness of the Enactment, as it stands, is that it does not prescribe any forestry sector management planning process (World Bank 1991: 18).

The Forests (Amendment) Enactment, 1984, classified forests into the following categories: Class I (Protection), Class II (Commercial), Class III (Domestic), Class IV (Amenity), Class V (Mangrove), Class VI (Virgin Jungle), and Class VII (Wildlife). These essentially functional classifications differ from biological forest classifications, and thus obscure certain rare or localized forest types by its focus on functional categories. The prerogative of deciding which forest reserves categories can be used for timber production lies with the state government, and there is presently no legal prohibition on logging any class of forest reserve other than Protection and Virgin Forests (WWFM 1992: 163).

However, in 1989, the SFD issued policy recommendations that were more specific than earlier state policies. These recommendations included suggestions for actions to be taken. Faced with a declining timber resource base, the recommendations sought to achieve the long-term sustainability of the sector. They included suggestions for reduction of annual timber harvests, scientific forest management,

confining plantation forests to deforested state land, overhauling the system of fees charged for logging, and more conservation on state land. These suggestions not only reflected increasing concerns about deforestation in the state, but also followed the broad principles of the Sixth Malaysia Plan (1991-95), which called for forestry resources to be managed on a sustained yield basis. Further, at the state level, the Sabah Action Blueprint (SAB), introduced in 1987, stressed the need to develop domestic downstream processing to promote forest-based manufacturing.

There are some areas of policy concern. For instance, there is inadequate statutory protection for biodiversity and wildlife reserves. Logging, both licensed and unlicensed, has taken place in wildlife reserves; therefore biodiversity, whose importance is increasingly being recognized, should be accompanied by amendments to existing legislation to provide sufficient statutory protection for forests. Conflicts between natural resource extraction and other types of land use have arisen because natural resource planning has mostly been on an *ad hoc* basis, compounded by an apparent lack of mechanisms for rural land use planning.

The SFD proposed to convert an estimated 262,000 ha – designated as Commercial Forest Reserves and part of a wildlife reserve – into Protection Forest Reserves (WWFM 1992: 159). Similarly, it has recommended that areas be identified and reserved for rural communities to practice shifting cultivation with security of tenure. Existing arrangements do not cover all remaining forestland in the state. Virgin Jungle Reserves, for example, should be conserved intact for research purposes and to preserve biodiversity.

Logging Concessions

In broad terms, Sabah's forestry sector has come full circle from the monopoly situation in the early part of the century to becoming an oligopoly before reverting to monopoly status. The BBTC's monopoly from 1919 until 1952 was followed by entry and dominance by other foreign concessionaires until 1966 (three years after independence), when the Sabah Foundation was established to oversee Sabah forest estates. Since then, the private sector has secured rights to log forestland under the "concession system" of licensing timber extraction

from given areas of land¹⁸ for fixed periods. This power to award concessions has been the most important basis for political patronage at the state level in Malaysia, including Sabah.

Licensees usually receive concessions as political favours or, in the case of parastatals, due to privileged political access, ostensibly in the public interest (Gillis 1988: 22). In most cases, licensees sub-contract logging operations to third parties, assume no supervisory or managerial responsibilities, and are not held accountable by government agencies. Public exposures of various abuses of this system have brought about significant changes in the manner by which concessions are awarded. In early 1995, a new system of awarding timber concessions by tender was introduced by the new state government, putatively in a bid to "put an end to money and timber politics in Sabah" (*Star*, 30.12.94). The Sabah Foundation is now also required to bid, like anyone else, under the new system. The ostensible reason is to allow a greater range of people, especially from the indigenous communities, to participate in the timber industry compared to the past, when concessions were restricted to the politically influential elite.¹⁹

Sabah Foundation

In many ways, the creation of the Sabah Foundation (SF)²⁰ served to consolidate the relationship between politics and timber, the most important natural resource under state control. By 1979, this link had been further strengthened when the SF was made a statutory body of the state government. The SF's history is one of noble official socio-economic objectives mixed with poor management and some abuse of its vast forest concessions. The establishment of the SF in 1966 signalled the beginning of a new phase of forest exploitation. Four years after its creation, the state government granted it a 100-year licence to 972,800 ha, supposedly for the "advancement of education and the relief of poverty" in the state (World Bank 1991: 19). Setting up the SF was also expected to enlarge the state's revenue base.

The SF has not only functioned as a development agency, particularly for promoting educational access and grassroots development, but has also disbursed earnings from its huge concessions in the form of annual cash payments to all Sabahans over the age of 21 years.²¹ Since its establishment, the SF has expanded its commercial assets by

entering into joint ventures with overseas and domestic partners, e.g. in processing, shipping and plantation agriculture, to name just a few. Most of these joint ventures were undertaken through its investment arm, Innoprise Corporation Ltd. Innoprise lost hundreds of millions of ringgit between 1986 and 1994 (*New Straits Times*, 21 February 1995), and has been suspected of abuse and corruption. Malpractices and irregularities in the sale of logs as well as non-compliance with the Forest Management Plan (FMP) have been discovered. In the case of the former, the sale of undervalued logs – a common practice – to two companies resulted in losses of an estimated RM112 million. Accelerated logging – in violation of the FMP – had exceeded the logging schedule by 20 years. Of the total concession area of 972,800 ha, only 323,939 ha were supposed to be logged under the FMP, but the actual area logged was 497,950 ha, an excess of 174,011 ha, or 54 per cent.

Innoprise became a diverse conglomerate with no corporate focus, but still relied heavily on timber revenue despite its varied portfolio. The SF was apparently unable to control Innoprise.²² Mismanagement and endemic corruption were two reasons why the Foundation was in arrears in paying royalties on harvested timber (World Bank 1991: 28). Staffed by political appointees at the senior management level, it obtained government approval to accelerate its log harvest rate in order to pay off its arrears despite objections from the Forest Department.²³ These revelations emerged as a result of a restructuring of the SF by the new state government, which introduced a tender system for awarding concessions and planned to make it mandatory for licensees to undertake reforestation (*New Straits Times*, 23 February 1995).

Forestry Parastatals

The increase in the number of agricultural parastatals in the late 1970s was accompanied by the commissioning of new agencies to pursue agro-forestry programmes. Of the major agencies, SAFODA has an additional objective of fostering community development. It is involved in northern Sabah in the Bengkoka integrated rural development scheme, the state's only settlement scheme with softwoods as the main forest crop. SAFODA's overall objective is to build up a future forest resource, including stocks of rattan and bamboo, by

reforesting denuded areas on the west coast and in the north. Other such agencies include Sabah Softwoods (a subsidiary of Innoprise) and Sabah Forest Industries (SFI). Sabah Softwoods is the only large-scale commercial plantation forest company in the country, which by one count has reforested about 60,000 ha of previously logged areas.

SFI was established in 1982 to set up the first integrated pulp and paper mill in Malaysia at Sipitang in southwest Sabah. The project has undoubtedly created long-term pressures on the natural forest to provide raw material for the mill. SFI has secured a concession of nearly 300,000 ha, including the Gunung Lumaku Commercial Forest Reserve and the Sungei Padas Commercial Forest Reserve, where large tracts of forest were cleared and planted with scotch pine.²⁴ While no information regarding the project's viability is available, its sustainability has been questioned, especially in the context of international competition and the fact that the mill is quite a distance from natural softwood stands (Gillis 1988: 138). The project cost US\$560 million – a very large amount for the state's economy. There have been plans to privatize the project since the 1990s, as it had long been a drain on government funds. Since tree plantations or agro-forestry projects are only marginally viable financially, from an economic point of view, it would make more sense if these projects were established on denuded or degraded land (World Bank 1991: 69).

Parastatals in Sabah have a dominant share of the forest concessions with long-term tenure. They are generally powerful and influential enough to over-ride the mostly supervisory role of the Forestry Department. As the World Bank (1991) report has noted, none of the variations in forestry practices have made any significant difference to the quality of forest management which, contrary to the policy rhetoric, has been mostly oriented to forest extraction in the short-term (World Bank 1991: 22-23). The larger firms claim to adopt a longer-term outlook, by referring to their longer concessions and by halving their annual harvested areas. They probably did so because of their limited processing capacity, restrictions on log exports and with the hope of "squeezing" out the smaller independent loggers.

Efforts to promote timber-based manufacturing in Sabah only began in 1979. Prior to this, virtually all forest timber exports were unprocessed logs. The purpose of imposing log export quotas was to

encourage saw-milling in the state.²⁵ However, increased saw-milling capacity raised demand for round logs, thereby increasing – instead of relieving – pressure to log the forests (WWFM 1992: 186). Downstream processing as a policy measure to diversify the economy was given further official sanction in the Sabah Action Blueprint of 1987, which sought to promote diversification of the economy through industrialization and a greater role for private sector participation. In policy terms, banning or restricting round log exports to encourage domestic downstream processing has actually increased the pressure to log.

Federal-State Relations and Logging

Sabah politics has sometimes strained federal-state relations, especially when Sabah was governed by a party not part of the national ruling coalition. In 1993, when Sabah was ruled by the opposition Parti Bersatu Sabah (PBS), the federal government imposed a temporary ban on round log exports from Sabah, with the stated objective of conserving forest resources and ensuring enough timber for the nascent domestic wood-processing industry, which was operating at only 50 per cent of capacity. The Sabah state government viewed the ban as politically motivated by the federal government to undermine the state government's authority.²⁶

The federal government action proved that it has powers at its disposal which can constrain a state government's forestry policy, in the ostensibly "national interest". Other available federal instruments include taxation, lending to state governments, trade and industrial regulation, and Environmental Impact Assessment (EIA) requirements. However, the actual application of these instruments, singularly or as part of a package, requires considerable political will because the constitutional framework of the country vests forestry rights with state governments. The heavy-handed intervention of the federal government in Sabah – to the point of arraigning then Chief Minister Joseph Pairin Kitingan on corruption charges – was seen as an act of political revenge because of his earlier abandonment of the federal Barisan Nasional ruling coalition to join the opposition. Although state government malpractices have been common throughout Malaysia, no similar action has been taken against other state government leaders.

Logging and Deforestation

Different sources present conflicting information about the extent of deforestation in Sabah due to logging. More often than not, the data are not easily reconcilable: consistently reliable information is not readily available. Most of the information used here is drawn from the already oft-quoted World Bank study of forestry in Malaysia and the Sabah Conservation Study undertaken by the World Wide Fund for Nature Malaysia (WWFM). These two studies present different figures, mostly estimates. Following our earlier discussion in Chapter 2 about problematic definitions, it is pertinent to reiterate that for the World Bank, "forest area" is based on the statutory land use classification of an area, rather than on the actual physical existence of forests (World Bank 1991: 3); Table 4.5 reviews the status of Sabah's forests in 2001 according to the Bank.

Over a 25-year period, the area of Sabah's forests dwindled from an estimated 6.05 million ha in 1966 to an estimated 4.2 million ha in 1991, involving a loss of 1.85 million ha, i.e. an average annual loss of 74,000 ha. This figure is close to the 1980-85 estimate of 76,000

Table 4.5 Sabah: Status of Forest Area, 2001 (hectares)

Land area	7,371,261
Forest area	n.a.
% Forest	—
Park/Wildlife Sanctuaries*	245,172
State forest/State land	3,531,679
Forest Reserve, of which:	3,594,514
– Protection (Class I)	342,216
– Communal (Class II)	2,685,119
– Domestic (Class III)	7,355
– Amenity (Class IV)	20,767
– Mangrove (Class V)	316,024
– Virgin jungle (Class VI)	90,382
– Wildlife (Class VII)	132,653

Note: * Includes a wildlife reserve area of 140,000 ha, which is also counted as permanent forest estate, and must therefore be deducted when computing total forest area.

Source: *Yearbook of Statistics, Sabah*, Table 4.21, based on figures from Forestry Department, Sabah.

ha per annum estimated by Gillis (1988: 117). Prior to the 1980s, the rate was probably 60,000 ha per annum, and by 1980, all the state's productive forests had been marked for exploitation. Most of the timber harvested came from the primary dipterocarp forest widespread in Sabah, which has over 350 species of trees. From figures available for the period 1975-87, the extent of primary dipterocarp forest was reduced from 37.8 per cent (2.8 million ha) to 11.2 per cent (825,270 ha) of the state's land area (WWFM 1992: 173). Most of this loss can be attributed to logging. If the harvest rate continued at past levels, the productive virgin forests in Sabah would have been depleted by the mid-1990s.

During the 1960s, timber harvest levels began to exceed the estimated maximum annual sustainable yield – in the range of 2.4 to 6.6 million cu. m. per year – and the policy of gradual reduction recommended in 1980 was not enforced. Between 1981 and 1991, the timber harvest averaged 11.7 million cu. m. per year, compared to the recommended reduced rates ranging from 1.5 to 8.0 million cu. m. per annum (Gillis 1988: 173-74). The long-term sustainability of forests depends crucially on the health and re-growth of logged-over forests. A rather optimistic annual growth rate of 2 to 3 cu. m. per hectare was used by the SFD (Gillis 1988: 175). These estimates are often based on "best case" assumptions, which allow re-harvesting in 25 to 60 years. In fact, there has been considerable disagreement over these assumptions, and it has been estimated that annual growth of 1 cu. m./ha would be more realistic (World Bank 1991: 97). In fact, it has been estimated that 70 per cent of logged-over commercial forest area was either deforested (20 per cent) or "poorly to very poorly stocked with residual trees of commercial species (50 per cent)" (World Bank 1991: 4).

Since most commercial forest reserves have already been logged over the past two decades and are still at an early stage of regeneration, it will be a long time before the second cut is possible. State land forests and agricultural land clearance continued to contribute to timber production from natural forests, but, as predicted at the outset of the decade, such sources would become less available after the mid-1990s – unless all state land forests with productive potential became available for timber production, and are not reserved or alienated for other purposes (WWFM 1992: 175). Data in Table 4.6 reflect the

Table 4.6 Sabah: Forest Land by Major Vegetation, 1975, 1995 and 2001

Forest type	1975		1995		2001	
	Area ('000 ha)	% of total land	Area ('000 ha)	% of total land	Area ('000 ha)	% of total land
Mangrove forests	366	4.96	317	4.30	341	4.61
Transitional, beach and swamp forests	203	2.76	193	2.62	119	1.61
Undisturbed high forests – lowland dipterocarp forests and highland dipterocarp forests	2,800	37.99	300	4.07	263	3.55
Montane forests	712	10.47	700	9.50	716	9.68
Other forests (immature, disturbed and regenerating forests)*	1,399	18.98	2,799	38.00	2,901	39.20
Plantation forest	–	–	–	–	80	1.08
Total	5,540	75.16	4,309	58.46	4,420	59.73

Note: * Excludes plantation forests.

Source: *Yearbook of Statistics, Sabah*, Table 4.20.

damage and depletion of forests in Sabah between 1975 and 1995, in particular, the decimation of "undisturbed high forests".

There is no information available on the actual amount of timber potentially available from sources outside the forest reserves, but it is unlikely to be in the region of 2.72 million cu. m. per annum, as assumed by the SFD. Various factors continue to undermine the sustainability of logging, since the remaining areas with higher timber stands are mainly on steep land or protected as water catchment areas. Also, forest stands have been burnt for conversion to agriculture, or lost to illegal logging, while premature re-logging and shifting cultivation are still widespread. It was estimated that commercial forest reserves would only be able to supply well under two million cu. m. of timber per year after 1995 (WWFM 1992: 176).

Despite the strong likelihood of worsening forest depletion in the state, there is still neither a policy nor an institutional mechanism to ensure sustainable forest management outside the forest reserves.²⁷ A strong argument can be made, such as that in the WWFM study, for a policy to limit timber production on forests outside the reserves, since much land in the state is unsuitable for agriculture. While this might make more logging sustainable, it could be argued that there is just as much, if not more need to promote sustainable forest management to conserve biodiversity and protect water resources.

Factors Inhibiting Reduced Logging

The detailed analysis of prices and marketing in the World Bank study on forestry in Malaysia identifies salient features that have increased logging pressure. When forests are state-owned, as in Sabah, the government determines the stumpage value that concessionaires pay to the state (World Bank 1991: 114). The balance is sometimes considered a windfall profit for the contractor and log buyer, with relative shares depending on each party's relative strength and other related factors. Since the mid-1960s, the Sabah government, like other Malaysian state governments, has consistently charged concessionaires much less than the full resource rent. As a consequence, state timber revenue has been only a fraction of the potential revenue from this source.

Reducing, or even shutting down, the operations of some smaller parastatals would be an economic option, especially with the change of government in 1994, and its re-election in 1999. The demand for

timber by the downstream wood-processing industry, promoted through reduced royalty and export duty rates, is another factor.²⁸ The slow development of plantation forests has meant that they currently supply only five per cent of timber production, instead of the projected 50 per cent. Due to the long gestation period and the considerable investment costs involved, plantation forestry has mainly been a public sector activity.²⁹ There is little private sector interest in plantation forestry in existing circumstances, with the state government's heavy dependence on logging royalties for revenue, and its concern that such royalties have been dwindling. Plantation forestry is not really a substitute revenue source as taxation could nullify the financial viability of agro-forestry ventures (World Bank 1991: 15).

Notes

1. There is a dearth of serious academic studies of the state's economic history and recent developments, especially with regard to agricultural expansion and forestry. Analysis of the contemporary situation is hindered by the limited availability of information. For example, information concerning the practice of shifting cultivation is seriously lacking, as are data on private sector involvement in export cropping.
2. For more detailed accounts of the state's political development, including the role of timber in Sabah's political evolution, see the studies by Ratnam (1974), Roff (1974), Bedlington (1978) and Ongkili (1985).
3. It should be noted that figures relating to poverty incidence must be interpreted with caution due to various complicating factors, ranging from varying definitions of the "poverty line" to inadequate data gathering. For instance, shifting cultivation and settlement schemes were excluded from the Sabah figures in the *Fifth Malaysia Plan, 1986-1990*. Despite this caveat, the data for 1987 revealed a relatively high incidence of poverty (35.3 per cent).
4. For background political analysis, see Sin Fong Har (1979) and R.O. Tilman (1976).
5. The RDC is often known by its Bahasa Malaysia name and acronym, Korporasi Pembangunan Desa (KPD).
6. Upon completion, the FELDA complex will cover an area of 117,630 ha and include a palm oil storage installation and landing slip. The total cost was expected to be in the region of RM1.6 billion; 40 per cent of the cost would be borne by the federal government grants and 60 per cent in the form of loans (FELDA, Kota Kinabalu 1994).
7. The contributing author for this section was present at this meeting, in which settlers appeared bewildered at the idea of a co-operative.

8. It would have been more appropriate if the project had become a land distribution exercise, with supervisory and agricultural inputs provided by the Department of Agriculture.
9. This is partly based on the personal observations of the contributing author to this section.
10. For a comparison over a longer time span, the area under agriculture in 1900 was estimated at 16,000 ha, consisting of dry rice (10,000 ha) and wet rice (6,000 ha). In 90 years, the area under rice cultivation had increased to just 52,589 ha, with the gradual process of sedentarization – and the corresponding decline of swidden – meaning that the area under wet rice (34,631 ha) was greater than that under dry rice (17,958 ha) in 1990 (*Annual Bulletin of Statistics*, various issues).
11. Unfortunately, there are few figures available for such land uses, while those available cannot be checked against other sources.
12. For a more detailed understanding of the culture of shifting cultivators, see Lee (1965), Landgraft (1956), William (1960, 1962), Harrison (1971) and sources quoted in the chapter on Sarawak.
13. For instance, it would be interesting to see the number of persons from “poverty groups”, especially shifting cultivators, who have been absorbed into FELDA’s Sahabat Scheme on the Dent Peninsula.
14. Studies have shown that the economic rates of return for public sector oil palm and rubber schemes exceed rates of return for other public agricultural investments, including an irrigation scheme, an integrated sugar project, a fish-meal project and an integrated textile mill (Vincent and Hadi 1991: 35).
15. The total investment funds injected into the SLDB, SEDCO, RDC, Sabah Gas Industries and Sabah Forest Industries amounted to some RM3 billion – a huge amount compared to Sabah’s annual budget of about RM1 billion (Pang 1989: 115).
16. One parastatal, the Sabah Padi Board was closed in 1981. This was undoubtedly partly due to its dismal performance, but also due to the federal National Rice Board (LPN) – now Bernas – taking over its duties to avoid a duplication of functions.
17. Including the Sabah Conservation Study (1992) by the World Wide Fund for Nature, Malaysia; Repetto and Gillis (1988); and World Bank (1991).
18. Licences vary in length. They can be short-term (1-5 years), or longer-term (5-25 years). Longer licenses are given for larger concessions (over 50,000 ha), often to parastatals.
19. As virtually all the forest has already been allocated (mainly to the Sabah Foundation), the new tender system may be a political smokescreen by the new government since there is nothing to tender unless existing contracts are cancelled.
20. The Sabah Foundation is known as Yayasan Sabah in Malay.

21. These disbursements were not for "poverty relief", as Gillis (1988: 123) stated, but for all Sabahans, irrespective of income levels.
22. Impartial and effective monitoring was compromised through the collusion of the Executive Chairman of the Foundation, a political appointee, with Innoprise.
23. Similar malpractices also exist in other parastatals that hold large concessions.
24. To ensure the long-term supply of wood, the SFI also set up a reforestation programme. Land was allocated, and by 1991, an estimated 56,000 ha of tree plantations had been developed. However, progress has been slow. It was expected that some 50 per cent of the state's timber production would be supplied by this project in 1990, but in reality, the figure was closer to 5 per cent (WWFM 1992: 177).
25. Licences had been issued for a total of 230 sawmills and 92 other wood-processing factories by the early 1990s. There were 157 sawmills and other wood-processing plants in operation (WWFM 1992: 186). But there was a slow response to downstream processing, apart from sawmilling, because of shortages in skilled labour, high labour costs, irregular shipping facilities and high shipping costs. The consistency of log supplies was also of concern to potential investors (Pang 1989: 95).
26. Political motivation was cited as the reason because Parti Bersatu Sabah (PBS), the ruling party then, had been subject to the wrath of the federal government following its defection to the opposition camp in the 1990 general election.
27. At present, there is no prohibition on logging in any class of forest reserve other than protection and virgin jungle.
28. As the World Bank report pointed out, royalty reductions for local processing in Sabah have enabled the wood-processing companies to capture more resource rents, allowing the entire investment in a sawmill to be recovered in one year. Cheap logs, of course, encourage wastefulness. While differential export duty rates would include investments in wood processing, such generous levels are clearly excessive.
29. Foreign investors have shown some interest, mainly to ensure long-term supplies of pulp or chip-wood. Private sector involvement would be enhanced if there were security of long-term tenure and tax benefits similar to those received by plantation agriculture. Recently, the Forest Research Institute, Malaysia (FRIM) signed memoranda of understanding with private firms interested in reforestation in Peninsular Malaysia and Sabah. The chairman of one of the firms, Sejati, was Datuk Harris Salleh, a former Chief Minister of Sabah. Datuk Harris appealed to the government to provide tax incentives and RM250 million in soft loans. Sejati has 5,200 ha of plantation forest in eastern Sabah.

The East Malaysian state of Sarawak, located approximately between longitudes 109°E and 116°E and latitudes 1°N and 5°N, is the single largest state of Malaysia. Covering an area of 12.4 million ha, it is almost as large as the whole of Peninsular Malaysia (13.2 million ha). However, this vastness of area is somewhat deceptive because of the physical characteristics of the state and its geography. Briefly, the hilly terrain of the interior, covering some 68 per cent of the total land area, and the generally poor soils, mean that only a relatively small portion of the total area is easily accessible to human settlement or suitable for agriculture. Indeed, a recent study on the agricultural potential of the state estimated that only some 28 per cent of the total land area (about 3.5 million ha) is suitable for agriculture. In fact almost half of this is considered "marginal", with the remainder classified as either "moderately suitable" or "suitable" for commercial agriculture (*Sarawak: Agricultural Statistics, 1986*). Thus, in total, only about 207,000 ha are considered to be free of major limitations to agriculture.

Physically, the state can be broadly divided into three zones (Jackson 1976, Cramb and Dixon 1988):¹

- The coastal lowlands comprising peat swamp areas and the alluvial plains of major rivers. This zone has been much altered by urban and industrial development, agriculture and logging.
- An intermediate zone of undulating and broken hill country stretching from the coastal plains to about 300 m. above sea level. This zone is characterized by favourable agricultural conditions. A plurality of the native population is located in this region that has been subject to logging and to land development schemes in recent times.
- The mountainous interior extending to the border with Indonesian Kalimantan and rising to an average height of about 600 m.,

reaching its highest point at Mount Murud (2,400 m). Minority indigenous groups are located here. This zone has come under heavy logging starting in 1970s and accelerating in the 1980s. Within the past five years, plantation development has also occurred in this zone.

The three zones are criss-crossed by numerous rivers. The principal river basins are those formed by the Lupar, Rejang and Baram rivers. Between them, they cover the bulk of Sarawak. These river systems provided the main routes of communication between coast and interior, and between interior regions. The only trunk road connecting the state capital, Kuching (in the southwest), with Miri (in the northeast), a centre of the Sarawak petroleum industry, and, via Brunei, Limbang and Lawas, is located within the coastal and intermediate zones. Over the last twenty years, the rivers have been increasingly displaced as the major means of transportation and communication by an extensive network of logging roads.

Climate

The climate is slightly seasonal. The temperature, mean relative humidity and mean daily sunshine are relatively stable. Temperatures over the past 10 years record a mean daily maximum of around 31-32°C and a mean daily minimum of about 23-24°C, although the range is considerably greater in the highlands of the interior. Mean relative humidity at mid- afternoon ranges from 68 per cent to 73 per cent, while long-term mean daily sunshine averages 5-6 hours, both depending on locality.

Rainfall is somewhat more seasonal and unstable, depending on area and elevation. The long-term mean annual rainfall ranges from about 2200 millimetres (mm) at Sibu to 5400 mm. at Long Akah, some 120 km. southeast of Marudi in the interior of Baram Division. However, local annual rainfall amplitudes can vary from -25 per cent to +75 per cent of the long-term local mean.² Furthermore, rains can be torrential and river water levels can fluctuate greatly in a matter of hours. Although the rainfall pattern divides the year up into four seasons, this division is more marked along coastal regions than in the interior.

Soils and Natural Vegetation

Despite the lushness of the forest vegetation, Sarawak soils are generally acidic, shallow and of poor quality. The climatic conditions mean that these soils are subject to considerable erosion, leaching and oxidation of soil nutrients, once exposed. They thus pose obstacles to agricultural development and diversification as the widespread clayey, silty or loamy upper layers are most susceptible to erosion after development operations.

The natural vegetation is broadly divided into swamp and peat-swamp forest on the organic soils of the coastal region and several sub-types of hill forest further inland. The climatic conditions permit the rapid and efficient cycling of nutrients between forest biomass and the soil, thus resulting in luxuriant growth. But once the forest is cleared, the fertility can be rapidly lost through oxidation and leaching, and weed growth is prolific. Conversely, when left to natural processes of ecological succession, forest regeneration occurs rapidly and leads to the restoration of soil fertility. This is the rationale of the system of shifting cultivation, still the dominant form of staple rice food production in Sarawak (Cramb and Dixon 1988).

ECONOMY

Sarawak has experienced sustained economic growth since independence in 1963. However, this growth has been dependent on three key resources: oil, gas and timber. Recently, Sarawak has managed some diversification into non-resource based manufacturing. Its economic performance relative to Peninsular Malaysia and Sabah has been discussed in Chapter 1. A review of the sectoral contributions to Sarawak's GDP indicates the important areas of the economy and the transformation experienced over the past 30 years:

Despite the declining contribution of the forestry sector to total GDP, it remains critical as a revenue source for the state government due to the federal revenue arrangements of the country. Thus, direct forestry revenues accounted for 54 per cent of state revenue in 1990, 44 per cent in 1997, and 35 per cent in 1999. Moreover, agriculture and forestry remain the largest employers of labour. Of note, given the focus of this book, is the maintenance of the percentage GDP contribution of agriculture, representing an increase in real terms, in

Table 5.1 Sarawak: Percentage Shares of GDP, 1970-2001

<i>Sector</i>	<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>1999</i>	<i>2000</i>	<i>2001</i>
Agriculture, fishing, livestock & forestry	30	28	24	15	15	15
Forestry	12	13	15	6	7	6
Mining	15	30	27	26	34	37
Manufacturing	9	7	17	22	18	17
Construction	6	5	4	8	4	3
Services & utilities	37	35	28	29	22	22

Sources: *Sarawak Agricultural Development Plan (SADP) (1992)*, Table 4.3; *Second Outline Perspective Plan, 1991-2000*, Table 4.6; *Yearbook of Statistics, Sarawak*.

the 1990s – a reversal of the longer-term trend from 1970 to 1990. This has largely been due to the rapid development of oil palm plantations in the 1990s.

Although the manufacturing sector has grown tremendously over the period, it remains highly dependent on resource processing of petroleum and timber. In 1997, the latest year for which data is publicly available, three-quarters of output and value-added were accounted for by such resource-based industries, with timber processing alone accounting for one-quarter of output and value-added. The three primary commodities of timber, oil and gas and their derivatives dominate the state's exports. In 1990, exports of saw logs, sawn timber, crude petroleum and LNG amounted to RM8,719 million, or 70 per cent of the state's GDP, and accounted for 77 per cent of export value. In 1999, such exports amounted to 50 per cent of state GDP and accounted for 62 per cent of export value. However, including plywood and veneer, which counted for little in 1990, exports of these natural resources and their derivatives amounted to 61 per cent of state GDP and accounted for 75 per cent of export value. Timber and its derivatives alone amounted to 22 per cent of state GDP and accounted for 27 per cent of export value, and this in a period when timber and plywood prices were at historic lows.

While the development of manufacturing in Sarawak as an adjunct of natural resource extraction is logical, in the case of oil and gas, the natural resource is non-renewable. Timber, in principle, and

ignoring biodiversity concerns, is a renewable resource; in practice, this depends on extraction practices. Based on assessments by the ITTO (1990), the World Bank (1991) and the GTZ (1992), current levels of extraction remain in excess of estimated sustainable levels, although output of logs has been reduced from almost 19 million cu m in 1990 to just over 13 million cu m in 1999.

In brief, timber continues to have a central role in Sarawak's economy, with significant multiplier effects. Some of the biggest names in tropical timber logging are Sarawak-based companies which first obtained their experience in Sarawak. In the course of the 1990s, plantation agriculture, primarily oil palm, has also come to assume a much greater role.

This raises the question of the agricultural frontier and its implications for the forest.

LAND AND FOREST CLASSIFICATION AND USE

In order to address that question, we need first to review the way in which land (including forest) in Sarawak is classified and administered, and also its capability and use.

Classifications

Although land in Sarawak can be classified from a number of viewpoints, a major distinction employed has been between forest and non-forest. Concern has centred on the adjustment of conflicting claims on, and uses of, the land, including the forest, between the state, major economic interests and various indigenous groups collectively called "natives" in Sarawak. Over time, the state has sought to limit the customary rights and practices of natives in the belief that shifting cultivation was destructive and unproductive, as well as to increase the state's control over the use of land and forest. Classification and limitation has operated through two distinct bodies of legislation: that referring to land, and that referring specifically to forests.

Land legislation, from early on in the Brooke regime, began to erode the stated objective of protecting native land rights from incursions by outsiders. This process began as early as 1863, and it has intensified over the years with the amplification of commercial

pressures upon land and its resources. At the same time, the prejudice against the practice of shifting cultivation resulted in land laws that had, among other objectives, the intention to circumscribe swidden agriculture, ignoring the implications for life in the indigenous communities. Thus the protection given to native customary land, and therefore their culture and agricultural practice, became ever more compromised with successive land legislation (Porter 1968).

This circumscription of native customary rights and use of land can be tracked in successive legislations (years of such legislation in brackets):

- "Unoccupied" (which, by implication, meant those lands left fallow, even where they were part of a shifting cultivation cycle) and waste lands became the property of the government, and land outside the immediate indigenous community's domain could not be claimed by anyone in the community except by permission of the government (1863).
- Squatting on previously cultivated land, but subsequently deemed "abandoned", was sanctioned. Land under long fallow in the cycle of shifting cultivation became vulnerable to alien annexation. This Order also introduced a monetary penalty on those alleged to have cleared and then abandoned land, a clear attack on shifting cultivators (1875).
- State jurisdiction over land was extended, including powers of compulsory annexation, and a land register developed (1920 and 1931).
- Native use of the forest was limited by categorization and "protection" of certain forest areas; in such areas, natives were not allowed to open up new land for agriculture and were prohibited from extracting forest products for commercial purposes (1934).
- Demarcation exercises were conducted to limit native rights (to land) only to their settled farming land (1939). In the Appendix to Secretariat Circular 12/1939, Forestry and the Use of Land, official attitudes to shifting cultivation were clearly revealed when it was stated that a more rational forest policy would see the elimination of "the evils of shifting cultivation."

After the War, and with Sarawak now a Crown colony, the introduction of a five-year plan was paralleled by an effort to streamline land administration, ostensibly to enable more effective delivery of

rural development programmes. Finally, the 1958 Land Code sought to rationalize and merge all existing land legislation and, with amendments,³ became the basis of present-day land law. Its categorization of land is discussed below. The code extended the powers of government over land, to alienate it to third parties and to recognize individual, as opposed to communal, native title. Such powers saw, in some areas, accumulation of land under title by some individual natives and the concomitant creation of a group of landless natives (Bahrin Adeng 1975: 40).

Continued disaffection with native persistence in shifting cultivation gave rise to the 1962 Land Committee that sought to "induce the native to abandon this present method of cultivation and to develop his land productively in the national interest" (Sarawak Report of the Land Committee 1962, para 3). Recommendations arising from this committee, including the abolition of the 1958 classification and its proposed replacement with a two-tier system of registered and unregistered land were tabled as a proposed new Bill in 1965. However, these proposals proved too controversial, and were withdrawn.

Categorization of Land: The Sarawak Land Code 1958

As noted, the Land Code 1958, with amendments, still remains the main piece of legislation on land. It attempted to make coherent the various enactments since the mid-19th century. It divided the state into a number of categories, distinguished by property rights. The categories were as follows:

- Mixed Zone Land and Native Area Land, covering 8 per cent and 7 per cent of the total land area, respectively. Such lands are held under title, but the latter is restricted only to natives of Sarawak, inclusive of certain statutory bodies and agencies;
- Native Customary Land, covering 22 per cent of the land area, refers to land recognized as such prior to 1958 and located mainly in that area which would otherwise fall under the final category below. Such land is *untitled* and can be held under native customary rights or as native communal reserves. To be recognized, these rights had to be first registered, but the holder occupies the land as a *licensee* of the state and provisions exist for the extinguishing of such rights. After 1958, such rights to land can only be obtained

if the native community first obtains permission of the relevant authority to occupy land or fell forest;

- Reserved Land, covering 16 per cent of the land area, and held by the state principally as forest reserves;
- Interior Area Land, the remaining 47 per cent, is also state land and is mainly forest.

On one hand, the overt recognition of the right of natives to land under native customary practice is a salutary and distinctive hallmark of the Sarawak Land Code.⁴ On the other, the 1958 Land Code marked a further stage in the limitation of such rights by freezing their extension, although the limited surveillance capability of the state meant that the extension of such rights continued past 1958. In any event, the code did not resolve the difference in understanding between natives and the state; where natives considered their customary practices as conferring ownership rights, the state only recognized them as essentially conferring usufruct rights on the licensee. Further, if the code had the ambition of clarifying the extent of ownership rights, including rights to native customary land, it failed to achieve this. Instead, it left a number of ambiguities, anomalies and irregularities, and reserved to the state-wide powers to extinguish, at will, any claim or title held by natives (Porter 1970, Colchester 1989), subject to compensation. Such power has been exercised, not least in the subsequent leasing out of land as timber concessions and state-sponsored land development schemes. In addition, it has often led, in practice, to the non-recognition of native claims to old fallow that had regenerated to mature secondary forest.

Forest Categorization and Ordinances

As is evident, the Land Code applies primarily to non-forestland and reserves the forest to the state. The forested area is categorized according to enactments specifically dedicated to forests. The forest areas in Sarawak have been divided into three major categories: permanent forest estates (PFEs), totally protected areas (TPAs), and state land forests (SLFs). The first is dedicated to production forestry (primarily of timber); the second encompasses national parks and wildlife sanctuaries; and the last is potentially available for alienation and conversion to other uses.

The PFEs are regulated by the forest policy formalized through the Forest Ordinance 1953. The criteria and regulations for TPAs have been specified in the National Parks Ordinance, 1956, the Wild Life Protection Ordinance, 1958, and subsequent amendments. The Forest Department is entrusted with the responsibility of overseeing both the PFE and the national parks and areas designated as wildlife sanctuaries. However, SLFs fall outside their province except with regard to the extraction of timber and other forest produce.

The PFE, as originally conceived, comprised three components, namely:

- *Forest reserves*, which are production forests for the exclusive use of the state;
- *Protected forests*, which are production forests but where natives have the regulated right of forest produce collection for own domestic use;
- *Communal forests*, which are forests of limited area (excluded from production forestry) set aside for the exclusive use of particular native communities.

As of 1990, the reported area covered by these categories, and their changes from 1970, is shown in Table 5.2. Over time, however, the distinction between these categories has become blurred. In particular, the area of communal forest has shrunk (from 30,300 ha in 1968 to a mere 5,600 ha in 1984) and new applications for communal forest-land have not been successful.

Table 5.2 Sarawak: Forest Area by Classification, 1970-1990 ('000 ha)

Year	Total Land Area	Permanent Forest Estate			Other Forest	Total Forest Area
		Forest Reserve	Protected Forest	Communal Forest		
1970	12,325.3	684.0	2,410.0	30.3	6,308.2	9,432.5
1975	12,325.3	716.9	2,396.2	30.6	6,288.8	9,432.5
1980	12,325.3	755.5	2,422.4	5.4	6,248.2	9,431.5
1985	12,325.3	847.8	3,789.2	5.2	4,796.2	9,438.4
1990	12,315.6	817.1	3,604.9	5.3	4,028.0	8,455.3

Sources: *Sarawak Annual Statistical Bulletin*, various years; *Sarawak Yearbook of Statistics*, 1992.

Thus, in effect, the whole of the PFE is production forest, primarily for logging.⁵ Further, it should be noted that even in TPAs certain logging activities could be sanctioned. Up until 1990, for instance, wildlife sanctuaries could include an area of PFE and would thereby continue to be subject to production forestry, and in 1992, a report noted that there remained a legally covered transitional period with regard to timber harvest in TPAs (GTZ 1992: 15). At the same time, it is evident from Table 5.2 that some forests have been converted from SLF into protected forest, hence into part of the PFE. Equally evident, the total forest area declined by just over 10 per cent, or one million hectares, over the ten-year period of 1980-90.⁶

The SLF – forests designated as subject to conversion to other land use (often agriculture) – have been a ready source of timber. As noted by the ITTO mission, “in these the Forest Department has no legal jurisdiction on the use of the land after the timber is removed” (ITTO 1990: 18). However, the extraction of timber is subject to license and all licensees have to submit forest management plans,⁷ in this case called felling plans, but possibly with different conditions than for the PFE. Nevertheless, despite the designation of PFE as permanent production forests, it is possible for the PFE to be converted to other land uses, as is clear from the reduction in the area of PFE shown in Table 5.3.

Table 5.3 Sarawak: Forest Areas, 1985-2001 ('000 ha)

	<i>Total Land Area</i>	<i>PFEs</i>	<i>Nat. Parks & Wildlife Sanctuary</i>	<i>State- land Forest</i>	<i>Total Forest</i>	<i>Other Land</i>
1985	12,325.3	4,572.4	252.9	3,942.4	8,767.7	3,557.6
1990	12,315.6	4,471.1	289.9	3,939.4	8,700.4	3,615.2
1995	12,315.6	4,346.2	291.0	3,862.4	8,499.6	3,816.0
1999	12,315.6	4,190.1	291.0	3,862.4	8,343.5	3,972.1
2000*	12,315.6	4,050.2	320.0	3,833.4	8,203.6	4,112.0
2001*	12,315.6	3,955.4	377.7	3,781.9	8,115.0	4,200.6

Sources: *Sarawak Yearbook of Statistics*, 1994, 1997, 2000 and 2002, based on Forest Department, Sarawak figures.

Table 5.3 carries the statistical series in Table 5.2 forward to 2001. The differences in total forest area for 1985 and 1990 between the two tables are due to the publication of revised figures for those years. Taking Table 5.3 alone, it is ironic that loss of PFE exceeds loss of SLF. Thus, during 1985-1999, the PFE declined by over 8 per cent, while the SLF declined by only 2 per cent.⁸ However, what is most striking from Tables 5.2 and 5.3 is the absolute loss, i.e. excluding forest degradation, of some 12 per cent of forest, or 1.1 million hectares, in the two decades from 1980-99, with the bulk of that occurring in the 1980s. In addition, Table 5.3 indicates the loss of over 6 per cent, or 280,000 ha, of the permanent forest estate in the course of the 1990s.

In summary, Sarawak's land area is classified as follows:

Permanent Forest Estate (PFE) reserved for production forestry, comprising

- Protected forests
- Forest reserves
- Communal forests

Totally Protected Area (TPA) comprising

- National parks
- Wildlife sanctuaries

State Land Forest (SLF), potentially convertible to other use

Non-Forest: Titled, comprising

- Mixed zone land which can be held by all
- Native area land which can be held by natives only

Non-Titled, comprising state land recognized as native customary land held under

- Native customary rights
- Native communal reserves (which are forests, but listed here because of its tenurial status)

The greater part of the land area is classified as forest which comprises about two-thirds of the total land area. About half of the forest is designated as permanent forest estate, that is, for the production of timber, while another half is designated as forest potentially convertible to other use. Forestry department figures indicate that some 12 per cent, or 1.1 million ha, of the forest was lost between 1980 and 1999; in the course of the 1990s alone, 6 per cent, or 280,000 of the permanent forest estate was lost.

Land Capability and Use

In terms of capability, Sarawak's land area has been classified, from the viewpoint of agricultural potential, into five classes. They are:

- Class 1:* Land with, at most, one minor limitation to crop growth and is suitable for the widest range of crops.
- Class 2:* Land with two or three minor limitations or one moderate limitation. This class of land restricts the possible range of crops.
- Class 3:* Land with two or three moderate limitations or one serious limitation. This class of land will require special conservation practices to avoid certain effects, such as severe erosion, low fertility, poor drainage, moderate salinity, and low water holding capacity.
- Class 4:* Land with several moderate or two to three serious limitations. This class of land restricts the range of crops and requires special conservation practices. Yields can be expected to be low and the risk of crop failure high.
- Class 5:* Land with severe limitations and not generally suitable for agriculture. The limitations include: steep slopes, high erosion rates, frequent floods and low nutrient content.

It is crucial for Sarawak's agricultural potential that the bulk of its land area is Class 5. Moreover, of the 28 per cent deemed potentially suitable for agriculture, 1.7 per cent is classified as "suitable", 12.5 per cent as "moderately suitable", and 14 per cent as "marginally suitable" (ITTO 1990: 103).

Land Use

The estimate of agricultural potential by assessing land capability indicates the limited area open to commercial agriculture. Yet, government policy since the time of the Brookes has been to advocate the more effective use of land and to design bigger and more commercial land development schemes which might induce "the native to abandon his present methods of cultivation and to develop the land productively in the national interest" (Sarawak, *Report of Land Committee*, 1962: para 3). Justification for this is based on land use figures, which have also been used to assess the loss of forest cover and, indeed, to attempt to ascribe blame for this. Clearly assessment of

these figures is crucial in the on-going debates about land use and forest damage in Sarawak.

Table 5.4 shows the major land uses of Sarawak in 1976, 1985, 1991 and 2000. It should be noted that the data sources are different. The 1976 and 1991 data were estimated from planimetric sources, while the 1985 data is extrapolated from remote sensing techniques with field checks. While some caution needs to be exercised in the interpretation of such data, they do nevertheless exhibit considerable consistency with one another, with the exception of the area reported as under rice on wetlands. This is due to limitations of the resolution of satellite imagery.

The most important land-use category is clearly forestland, especially dry-land forest. In 1985, this comprised 56 per cent of Sarawak's total land area. Peat swamp and coastal mangrove forests accounted for another 11.6 per cent. Shifting cultivation accounted for some 27-28 per cent of land use – certainly, the most important agricultural land use in Sarawak. These figures are discussed in a little more detail below.

According to the Land and Survey Department's figures, between 1976 and 1991 there was evidently a reduction in the area under dry forest and wetlands, to the order of:

- 10 per cent, or 150,000 ha, in the area under wetland forest; under this category, the loss of mangrove forests amounted to 20 per cent, or 30,000 ha, a figure which would be even higher if the 1985 estimated mangrove forest area was taken as a base.
- 9 per cent, or 660,000 ha, in the area under dryland forest.

In sum, these figures suggest the loss of about 800,000 ha of wetland and dry-land forests between 1976 and 1991, roughly consistent with – if lower than – the figures in Tables 5.2 and 5.3. This, if accurate, would represent outright loss of forest and wetlands. Although it does not begin to indicate the extent of forest degradation, itself the subject of considerable dispute and controversy, it represents a good starting point for an inquiry into the nature and cause of this loss and the different interpretations of it. Table 5.4 suggests that the loss has been mainly due to shifting cultivation – the area having grown by 800,000 ha between 1976 and 1991 before dropping by 3.6 million ha to a negligible 72.5 thousand in 2000. This will be discussed further

Table 5.4. Sarawak: Land Use Summary, 1976, 1985, 1991, 2000 (7000 ha)

<i>System</i>	<i>Description</i>	1976	1985	1991	2000
Permanent Agriculture	Wetland rice	41.7	18.9	55.9	58.4
Open Field Crops					
Total Large-scale & Smallholder Agriculture, of which:		311.0	441.7	294.5	551.5
Large-scale Agriculture	Tree crop plantations (oil palm, cocoa, rubber, coconut, etc.)	-	106.0	-	238.5
Smallholder Agriculture	Gardens/lots with mainly cocoa, coconut, pepper or rubber	-	335.8	-	313.0
Shifting Agriculture	Traditional slash and burn agriculture, may include 10%-20% of permanent smallholder crops, such as, old rubber and scattered small orchards (year 2000 figure is for dry/hill padi)	2852.9	3322.0	3651.7	72.5
Pioneering Slash and Burn Agriculture	Areas of shifting cultivation inside permanent forestland	-	116.0	-	-
Wetland Forest	Coastal mangrove forest and nipah palm forest	168.3	195.0	139.0	-
	Mixed peat swamp, <i>alang or padang paya</i>	1383.7	1226.4	1262.2	-
Dryland Forest	Primarily hill forest of about 65-80% of Dipterocarp trees	7,480.2	6,961.4	6822.6	-
Urban and Settlement Areas	Major cities and population centres	15.2	34.1	36.0	-
Unused land	Land in secondary growth	72.4	-	63.4	-
Total		12,325.3	12,315.5	12,325.2	-

Sources: 1976, 1991 and 2000 figures are from the *Yearbook of Statistics, Sarawak*, 1985 figures are from *Sarawak Agricultural Development Project, 1992*, State Planning Unit, Department of Development, Sarawak, Table 5.1. The *Yearbook of Statistics* figures are based on the planimetric measurement land use maps, while the SADP's figures are estimated from satellite imagery with field confirmations.

later; suffice to note here that it is unlikely that 150,000 ha of wetland forests were converted to shifting cultivation use.

The factors invoked to explain forest loss in Malaysia and elsewhere in the world include population pressure, poverty, land settlement, commercial plantation development, and other land development, in addition to logging activities. In Sarawak, as has been suggested, there is little evidence to suggest that poverty or population pressure accounts for the kind of forest loss indicated in the figures above. Nor is there evidence to suggest that conversion of forests for settlement schemes and/or commercial plantations has been that extensive until the 1990s, something that is not captured in Table 5.4, but factored into Tables 5.2 and 5.3. In any case, until the 1990s, the bulk of land development schemes occurred in Native Customary Land, that is, land attributed to shifting cultivation most of which would be under secondary forest, including mature secondary forest distinguishable from primary forest only by the presence of certain tree species not found in the latter. A brief examination of the history of the land development schemes in Sarawak may help indicate the limitations of these programmes, and at the same time contribute to the discussion on how state policies and interventions have affected the forest as well as the rural indigenous population.

LAND DEVELOPMENT POLICIES

As we have seen, overt policies under the Brooke regime meant that even where the land was capable, Sarawak experienced considerably less large-scale plantation development under its colonial administration than Peninsular Malaysia or Sabah, a situation which persisted under the independent government and which only recently subsided. Developing the economy through conversion of forest to plantations was never strongly advocated in Sarawak by either the Brooke or British colonial administrations. This was due to two main reasons:

- government recognition, however ambiguous, of native customary rights to land and the concomitant restrictions on non-native use and ownership of land;
- the physical characteristics of the state, especially soil characteristics. Large lowland areas were swampy and unsuitable for agricultural

tree crops, while the highlands were inaccessible and thus unsuitable for commercial agriculture.

Thus, at independence, Sarawak had little by way of plantations. Most of the area under tree crops was comprised of smallholdings, i.e. mainly land taken out of shifting cultivation and converted to permanent cultivation, initially under rubber, followed by pepper and cocoa. Moreover, even the small 106,000-ha area (or less than one per cent of total land area) said to be under large-scale agriculture in 1985 (Table 5.4) was primarily made up of contiguous smallholdings and, to a much lesser extent, of land development schemes, much of which involved the consolidation of smallholdings. Taking together the major tree crops of rubber, cocoa and oil palm, strictly speaking, there were in total only about 23,000 ha under plantations or estates in 1990, most of it under oil palm. In the same year, these three crops covered over 325,000 ha in smallholdings and land scheme developments, the latter accounting for about 40,000 ha.

In brief, while the Sarawak state government has attempted to promote plantation-style cultivation as part of a policy to modernize agriculture and to alleviate poverty, there has been limited success and, until recently, limited impact upon forest. While there has been some conversion of forest to agriculture, these schemes have, for the most part, involved the conversion of previously cultivated land through land consolidation and rehabilitation schemes or group-planting schemes under various state agencies. These include the Land Custody and Development Authority (LCDA), the Sarawak Land Development Board (SLDB), and the Sarawak Land Consolidation and Rehabilitation Authority (SALCRA), i.e. state-level agencies comparable to the federal agency, the Federal Land Consolidation and Rehabilitation Authority (FELCRA), which also operates in Sarawak.⁹ Even then, as already indicated, these efforts have not been extensive, primarily because of the complexities of native customary land and the reluctance of its holders to enter into land schemes, as well as for reasons of soil and locational suitability.

It was only in the early 1970s that some attempt was made to attract some foreign investment into plantations, alongside the development of state-sponsored schemes of the sort described above. Thus, the Commonwealth Development Corporation was encouraged to develop an oil palm estate in the Miri-Bintulu-Long Lama triangle, and

peninsula-based companies began limited investment at roughly the same time. In some cases, the latter were enlisted to take over failing state-sponsored schemes.

Although the effect of these types of land development schemes on the people of Sarawak may be marked, their significance in terms of changes of land use (which might include forest conversion) has been limited. Figures for selected years for rubber, oil palm and cocoa are shown in Table 5.5 below. Given the small amounts of land involved, their role in deforestation has been negligible.

Table 5.5 Sarawak: Estates and Land Schemes, 1975-2001 (ha)

Year	Rubber		Oil Palm		Cocoa		Total
	Estates	Land Schemes	Estates	Land Schemes	Estates	Land Schemes	
1975	2,678	5,544	4,032	9,492	—	—	21,746
1980	2,450	5,544	3,931	17,900	97	629	30,551
1990	933	5,175	20,313	37,990	1,551	4,672	70,634
1992	826	5,415	28,767	39,735	1,020	4,740	80,503
2000	—	—	231,720	91,860	—	—	—
2001	—	—	270,928	94,951	—	—	—

Sources: *Annual Statistical Bulletin*, various years; *Yearbook of Statistics, Sarawak*, 1992, 2002.

Indeed, plantation development has not directly impacted significantly upon the forest. Here again, the issue is much more of a social, political and cultural nature, as the state's attempts at the development of land schemes and at consolidation of smallholder cultivation into large-scale commercial cultivation has come into conflict with native practices and native systems of land tenure. Furthermore, in several instances, the failure of these schemes, for whatever reason, has resulted in the migration of scheme participants in search of land for their own cultivation. In this manner, such land development schemes have an indirect impact upon the forest. But the limited numbers involved in such schemes has also meant that this indirect impact is limited.

In the 1990s, however, there has been an acceleration of large-scale plantation and agricultural development. Although federal agricultural policy is re-orienting away from new land development — usually

involving conversion of forests to agriculture – towards *in situ* intensification of agriculture through the application of new technology, and the conversion of “subsistence” agriculture to commercial cultivation, Sarawak is apparently still emphasizing large-scale land development, covering both land consolidation as well as the conversion of forest to agriculture. Table 5.6 shows this accelerating development for oil palm, the currently favoured plantation crop. Total area under oil grew six-fold; the area under estate grew eleven-fold, from a miniscule 20,000 ha to a total of almost 232,000 ha, with much more in the pipeline.

A major reason for this acceleration was the adoption of a new policy towards the development of native customary land after 1995. This was driven by similar considerations towards shifting cultivation mentioned above as well as the apparent failure of the state land development agencies. At the same time, this new policy also dovetailed with the interests of major plantation companies in Peninsular Malaysia where land had become scarce and expensive and where labour had also become relatively expensive. Briefly, this new policy

Table 5.6 Sarawak: Area under Oil Palm by Type, 1990-2000 (hectares)

<i>Year</i>	<i>Estates</i>	<i>Land Schemes</i>	<i>Smallholdings</i>	<i>Total</i>
1990	20,313	33,837	646	54,796
1991	21,723	37,990	646	60,359
1992	33,810	42,686	646	77,142
1993	37,462	48,919	646	87,027
1994	46,285	54,603	1,000	101,888
1995	55,946	61,837	1,000	118,783
1996	71,035	67,436	1,429	139,900
1997	74,883	69,966	2,158	147,007
1998	162,357	82,399	3,674	248,430
1999	228,076	86,802	5,598	320,476
2000	231,720	91,869	98,667	422,256

Sources: *Yearbook of Statistics, Sarawak*, various years, based on Palm Oil Registration and Licensing Authority (PORLA), Malaysia, figures. These figures are considerably more accurate than those provided in the land use figures in Table 5.4. For instance, in 1991, the land use figures estimated about 30,000 ha under oil palm, half of the figure above. This has implications for the area that can properly be attributed to shifting cultivation.

takes native customary land and leases it for 60 years to a plantation company. A new company is formed in which the landowners have a 30 per cent stake, paid for out of payments for the land, the plantation company 60 per cent, and the Land Custody and Development Authority, 10 per cent. This new policy has met with considerable misgivings and some resistance.

However, the impact of the new policy on forest is, as yet, unclear as the land developed thus far has been native customary land, that is, usually land that had previously been used for shifting cultivation, but is currently under long fallow. Some of this land is mature secondary forest of different constitution and diversity, but of similar morphology to primary forest. Should it be counted as forest? If so, would the development of such land mean forest loss? Additionally, there is the real possibility that should this scheme not generate the predicted returns – dependent upon palm oil prices – then native landowners may well encroach into the forest for their needs.

Moreover, it is probable that surrounding forest, much of which is logged-over forest, will be alienated to the plantation company for development. Indeed, this has already happened even in instances where there has been no such development of native customary land. In this manner, as a by-product of the Bakun hydroelectric dam development, various timber companies logging the area have cleared over 40,000 ha of logged-over forests for oil palm development. There are plans to open up even more forest for plantations in what used to be the deep interior of Sarawak and which was, until twenty years ago, virtually untouched primary forest. Similar developments are occurring elsewhere in the state, especially in areas of highly degraded logged-over forest. One such development stretches from the district of Belaga, in the upper Rejang basin, all the way across to the district of Marudi, in the upper Baram basin, a total area of about one million hectares.

In addition to this, another 500,000 ha, much of it logged-over forest, have been set aside for planting acacia, as feedstock for the Borneo Pulp and Paper mill established near Bintulu. Should another proposed pulp and paper mill materialize, another 500,000 ha, again much of it logged-over forest, will be put aside for a similar purpose.

Thus, while large-scale commercial cultivation had not been a significant factor in forest loss, events in the 1990s point to a serious

concern that it is fast becoming one. While the recorded statistics indicate that, at the time of writing, the total area converted to plantation remains small relative to total land area, the examples cited above indicate that this is rapidly accelerating; indeed, the example of the million hectares under tree crops and half a million hectares under acacia together constitute almost 20 per cent of the forest area.

FORESTRY, SHIFTING AGRICULTURE AND LOGGING

In view of the above, the central debate to date regarding forest loss is not how far commercial agriculture and land development has destroyed the forest, but rather where principal responsibility for deforestation lies – between swidden farmers or shifting cultivators and loggers.¹⁰ Nevertheless, as should be clear, this is rapidly changing, with commercial agriculture and tree-crop plantations assuming a greater and greater role.

Shifting Cultivation

The discussion about shifting cultivation has not always been marked with objectivity. As we have seen, the practice of shifting cultivation, mostly among indigenous communities and which is widespread in the interior, has been viewed with disdain by government officials since the time of the Brooke dynasty. Initiatives to encourage its abandonment, either through legislation or through public policy pronouncements, have been characteristic of Sarawak's administration for well over a hundred years, and yet, the practice still persists. In the pronouncements of government figures, the disdain with which swidden agriculture is viewed has produced some false claims that responsibility for deforestation lies with indigenous shifting cultivators, as opposed to loggers.¹¹

Viewed historically, it is likely that some primary forests were cleared by various indigenous communities for the purpose of shifting cultivation. Whether this amounts to deforestation is a matter of debate as well. Some claim that properly conducted shifting cultivation results in forest regeneration, thus not causing forest loss. For example, Hong (1987: 136) quoted Spencer (1966) to the effect that it is likely that most of the mature forests of the Orient today are not virgin

forests in the proper sense, but merely old forests that have reached a fairly stable equilibrium of ecological succession after some earlier clearing by human or natural means. On the other hand, all native agricultural communities distinguish between primary forest and even very mature regenerated forest. Thus, for example, the Kayan distinguish between *tuan*, primary forest, and *talun*, regenerated forest, which, in turn, is distinguished between *talun ok*, the small *talun*, *talun ayak*, the big *talun*, and *talun geng*, or very mature regenerated forest of age upwards of 100 years. The criteria for distinction are species composition and tree size.

It has been suggested that some 3.2 million ha in Sarawak were, at one time or other, subject to shifting cultivation. What is at issue, however, is how much of that is still subject to shifting cultivation, and how much new forest is being cleared each year by shifting cultivators. The extensive discrepancies in these figures are suggested by the following. On the one hand, according to the Land and Survey Department, between 1966 and 1991, the area under shifting cultivation increased by a massive 62 per cent, or 1.4 million ha, amounting to an average increase of 56,000 ha yearly. The Forestry Department has estimated that some 35,000 ha of primary forest are lost every year to shifting cultivation (Hatch 1982: 102), while another study assesses loss of primary forest to be in the region of some 60,000 ha a year (Lau 1979). If true, this would account for the kind of forest loss mentioned above, particularly the 12 per cent reduction in dry forestland and, as noted, this is indeed what is suggested by the land use figures cited in Table 5.4.

But other figures, based on both older and more recent localized case studies, suggest that these estimates are a gross exaggeration. In 1949, Leach had already concluded that in most normal circumstances the total amount of virgin jungle cleared in any one year by shifting cultivators is almost infinitesimal (Leach 1950: 89). That this still holds true is confirmed by a number of studies (Hong 1987, Chin 1985, Hatch 1982). Hong claimed a total figure in the region of 73,000 ha per year was utilized by shifting cultivators, of which there is minimal expansion into primary forest areas. A state official told the International Tropical Timber Organization (ITTO) mission to Sarawak in 1989-90 that there was negligible marginal increase of the area under shifting cultivation, with the same stock of land being cycled over. The

director of the Forest Department was cited in the same report as stating that allegations that shifting cultivators cut down more forest than loggers were untrue (ITTO, 1990: 106). And, according to a study by the GTZ on the status of forestland, shifting cultivators should only be held accountable for clearing about 116,000 ha of primary forest over the last decade (GTZ 1992: 24).

Land actively under shifting cultivation has been estimated by the Department of Agriculture, with similar figures to the above. According to their calculations, the area under shifting cultivation in any one year appears to fluctuate from just under 70,000 ha to around 85,000 ha. Estimates for 1981-91 suggest that there was a rise in cultivated area from about 74,000 ha in 1981-82 to a high of 85,000 ha in 1984-85. This was followed by a steady decline to 71,500 ha in the late 1980s, rising again in the 1990-91 season to around 77,500 ha (Sarawak Department of Agriculture, 1991: Table 5.3). In the 1990s, the same department's estimates show a range from a high of 76,000 ha in the 1994-95 season to a low of 69,000 ha in the 1993-94 season, and averaging 71,000 ha in the last few years of the decade. The Sarawak Agriculture Development Plan (1992: 63) concurred with these kinds of estimates: it reported some 70,000 ha under active cultivation with between 2.25 and 3.3 million ha of fallow lands.

Two comments are in order with respect to these figures:

- It is unbelievable that shifting cultivators would clear the bulk of the land cultivated in any one year from primary forest. There is the disincentive of the physical effort, and there is the evidence of studies and observations that people prefer clearing fairly young secondary growth and, increasingly, they prefer to clear land closer to the place of settlement. This is especially true of the past two decades when material comforts have improved to the point that people find it a disincentive to re-locate far from the place of settlement for the planting season. This latter practice has sometimes had the unintended side effect of causing land degradation as land is not left in sufficiently long fallow.
- The wide range of the estimate of land under fallow – almost one million hectares – should be both a salutary reminder as well as a warning. It can sometimes be difficult to decide whether an area is under long fallow or is actually forest other than by direct examination of the species of trees. Native people report that there are

certain species that are never found in primary forest, but which are found in even very mature secondary forest; that is how they tell whether an area has ever been used for cultivation. Indeed, as already noted, the vocabulary of native people distinguishes between primary forest and even very mature secondary forest virtually indistinguishable from the former. This difficulty of distinguishing between the two may account for the discrepancy of half a million hectares between the Forest Department's figures of the total forest area and that derived from planimetric measurement, as seen in a comparison of Tables 5.2, 5.3 and 5.4. Forest regeneration under proper conditions of shifting cultivation is rapid.

If these kinds of figures were true, it would be inappropriate to blame shifting cultivation for recent major damage to forests, particularly the recent loss of primary forests.

Even the evidence of localized pressures – which may result in localized forest damage by shifting cultivation – does not support any major accusation against shifting cultivators destroying forests. For instance, in assessing the consequences of sedentary cash-cropping (which, in theory, takes away fallow land from shifting cultivators, an action that may put pressure on them to open up new lands in new forest areas), studies have stressed the complicated adaptive farming strategies which certainly do not always simply lead to new forests being cut (Cramb 1988, Padoch 1982). There are examples of localized land degradation, but the reasons are often as much to do with pressure exerted by logging and lack of alternative land sites available to local communities as to poor farming practice.

In some instances, involvement in the cash economy and the acquisition of new consumer tastes and other needs have resulted in localized migration to areas nearer the bazaar, which causes, in turn, localized land pressure. This, however, does not translate into encroachment into primary forest, which would imply movement away from the bazaar, but into land disputes, shifts in customary land tenurial practices, and changes in cultivation practices, sometimes with deleterious consequences.

In brief, while the system of agriculture has social, economic and cultural consequences, that sometimes result in land degradation, it does not appear to impact upon the issue of recent deforestation. Indeed, as one writer put it,¹² "So long as the relationship between

population and land is maintained, Sarawak can manage at least a three-fold increase in the number of shifting cultivators without there being any threat at all to primary forest resources."

In conclusion, we quote from a study by an official from the Department of Agriculture: "In recent years shifting cultivators have been blamed for a whole variety of environmentally damaging effects. However, it now seems clear that logging and timber extraction must take a lot of the blame that was previously laid at the door of the shifting cultivator. Not only do traditional logging methods tend to destroy more trees than they harvest but they also lead to serious soil erosion, impeded drainage, siltation and flash flooding. All of the evidence available from studies carried out in Sarawak indicate (*sic*) that few if any of these undesirable effects can be laid at the door of the shifting cultivator" (Hatch 1982: 146).

Nevertheless, it is the case that shifting cultivators have cleared primary forest in recent times, specifically the past two decades. This has usually been in association with the arrival of logging activities and the resulting network of logging roads. In turn, however, this often means the "abandonment" of previous areas of shifting cultivation, those accessible by river, to forest regeneration, as people relocate their activities to areas accessible by logging roads.

Logging

So we come to the debate, which is highly charged politically, on the logging industry in Sarawak and its environmental and social impacts. The importance of logging to Sarawak's economy cannot be doubted. Indeed, one of the most vociferous complaints made by Sarawakian politicians and officials about the international concern over Sarawak's logging practices was that pressure (in terms of moratorium on log exports, for example) emanating from such concern would have dire consequences on Sarawak's economy and therefore the people of Sarawak. Table 5.7 indicates the important contribution made by forestry to state revenue.

One can note the fluctuations in contribution, partly explainable by global prices, and partly by prices and production of the other major contributors, oil and gas. But there is no doubting the significance of the contribution. The converse side of this revenue

Table 5.7 Sarawak: Forest Revenue as Share of Total State Revenue, 1971-1999

Year	Total State Revenue (RM'000)	Total Forest Revenue (RM'000)	% of Forest Revenue to State Revenue
1971	90,187	23,876	26.5
1980	402,093	71,006	17.7
1990	1,467,034	793,495	54.1
1992	1,730,186	681,139	39.4
1995	2,199,435	977,468	44.4
1997	2,508,915	1,104,555	44.0
1999	2,336,690	823,385	35.2

Sources: *Annual Statistical Bulletin*, various years; *Yearbook of Statistics*, various years. The major decline in 1999 had to do with poor timber prices resulting in considerable retrenchment of activity.

contribution is the extent of logging, most conveniently expressed as amounts of logs (and timber products, initially sawn timber, but in more recent years panel products such as plywood, veneer, etc.) produced and exported and what this means in terms of forest area logged.

Obviously, production has risen dramatically until the downturn of the past two years. This increase has resulted not only in local protests at incursions on native customary land, but also in international protest, especially in the 1980s and early 1990s. As a result, there are numerous reports and other writings about Sarawak's forest practices and their consequences, and only a brief summary will be made here.¹³

Chief among the controversies has been the extent to which Sarawak's forest practices have remained sustainable; or, to put it in another way, whether Sarawak's logging practices have been responsible for widespread forest destruction, or at least degradation. Table 5.9 indicates the extent of forest logged, up to 1985.

The calculations in Table 5.9 are based on the assumption that the average log yield is 45 cu. m. per hectare, a stringent rate well below actual rates. Thus, these estimates of area logged are on the high side, although, conversely, the actual rate means that there is considerably more forest destruction and degradation. It is estimated that between 1966 and 1970 (inclusive), some 440,934 ha were logged; between 1971

Table 5.8 Sarawak: Production and Export of Logs and Sawn Timber, 1965-1999 (cu. m.)

<i>Year</i>	<i>Log Production</i>	<i>Sawn Timber (mil.)</i>	<i>Sawn Timber (at source)</i>	<i>Export of Saw Logs</i>	<i>Export of Sawn Timber</i>
1965	2,312,008	n.a.	9,548		
1970	4,685,091	n.a.	13,747		
1975	2,511,341	n.a.	18,070		
1976	4,414,217	n.a.	13,700		
1977	4,879,826	n.a.	14,238		
1978	5,977,254	n.a.	20,540		
1979	7,571,022	343,545	29,287		
1980	8,445,301	352,274	34,521		
1981	8,802,052	314,478	52,347		
1982	11,318,748	321,229	37,785		
1983	10,597,614	355,772	16,584		
1984	11,401,828	349,418	17,716		
1985	12,285,328	348,334	14,649	11,452,000	
1986	11,470,689	392,569	14,497	10,239,000	
1987	13,655,190	395,291	11,123	12,584,000	
1988	14,386,748	441,427	15,800	12,285,000	204,000
1989	18,162,578	558,897	16,360	14,961,000	279,000
1990	18,837,760	732,763	16,209	15,898,000	359,000
1991	19,410,903	880,685	24,312	15,823,000	601,000
1992	18,848,225	1,120,734	17,614	14,826,000	906,000
1993	16,735,011	1,441,796	23,127	9,127,000	1,123,000
1994	16,318,000	1,722,000	14,512	8,498,000	1,361,000
1995	16,092,000	1,874,000	13,994	7,841,000	1,554,000
1996	16,083,000	1,599,000	15,046	7,006,000	1,542,000
1997	16,823,000	1,657,000	14,512	6,361,000	1,310,000
1998	11,307,000	1,305,000	8,714	5,109,000	1,124,000
1999	13,096,000	1,191,000	5,568	5,969,000	1,005,000
2000	14,274,000	1,485,000	5,747	6,142,000	1,218,000
2001	12,179,000	1,140,000	5,682	4,814,000	1,132,000

Note: n.a. – not available.

Sources: *Annual Statistical Bulletin*, various years; *Sarawak Yearbook of Statistics*, various years.

Table 5.9 Sarawak: Forest Area Cleared by Logging, 1963-1985

<i>Year</i>	<i>Production of Logs (000 cu. m.)</i>	<i>Estimate of area logged (ha)</i>
1963	1,704	37,867
1968	4,228	93,956
1970	4,685	104,111
1972	3,172	70,489
1975	2,511	55,800
1978	5,977	132,822
1981	8,802	195,600
1983	10,598	235,511
1985	12,200	271,111

Source: Hong (1987: Table 5).

and 1975, 348,266 ha; between 1976 and 1980, 695,266 ha; and between 1981 and 1985, 1,207,111 ha. Other descriptions of the situation included the fact that between 1963 and 1985, 30 per cent of Sarawak's forests were logged, with the vast majority of the remaining available productive forest having already been given out as concessions. Since 1985, as is evident from Table 5.8, the pace of logging has accelerated, with the 1990s rate averaging about 40 per cent higher than the 1980s rate.

In response to growing pressure on the Sarawak state government because of figures such as these and the dramatic blockades mounted by hunter-gatherer Penan in the latter half of the 1980s, an ITTO mission was despatched in 1989 at the request of the Sarawak government. The team was to report on the sustainability, or otherwise, of Sarawak's forest practices. The report, published in 1990, stated clearly that, while it acknowledged on paper that Sarawak's forest policies were in advance of most countries in the world, "If harvesting of the hill forests continues as at present, all primary forests in PFE and state land assumed to be available for timber production, including those on more than 60 per cent slope, would have been harvested in about eleven years" (ITTO 1990: para 125).

In other words, the practice of logging in Sarawak was far from sustainable in even the conventional sense, a condition that pertained

to swamp and peat forests as well.¹⁴ The ITTO report made a number of recommendations, centring on the expansion of appropriately-trained staff, more effective and comprehensive monitoring of logging, better water catchment protection, more extensive silvicultural treatment, and, of course, a severely reduced cut rate. The response of the Sarawak state government was to impose quotas on cut rates, invest in downstream processing with concomitant reduction in the export of raw logs, and extend PFE and TPAs. The use of forests in 1991 and 2001 is set out in Table 5.10.

It can be noted that gazettement of 1.5 million ha of SLF as additional PFE, and the extension of TPAs to account for some 12 per cent of forest area in Sarawak are in place. However, as of the end of the 1990s, total TPA has actually increased only marginally, while PFEs have actually declined, as shown in Table 5.3. Moreover, at least some of the proposed TPA have been logged or are currently being logged; for example, the area covered by the proposed Hose Mountain National Park and that in the proposed Batu Laga Wildlife Sanctuary, both in the Balui River basin, as well as the proposed Tulung Pau National Park in upper Lawas and Limbang.

More to the point, even as of 1990, the official statistics of the Forest Department showed that 8.8 million hectares had been licensed for logging, i.e. the *total* forest area (cited in GTZ 1992: 29). According to the same statistics, the average area logged per year between 1983-1990 was about 220,000 hectare (GTZ 1992: 37, Table 11). In recent years, as will be shown below, the annual area logged amounts to about 350,000 hectares. Therefore, re-gazetting *per se* will not guarantee a sustainable forestry. It is still the case that over 90 per cent of forest is available for timber extraction, and cut rates since the publication of the ITTO report have not shown the kind of reduction recommended by that report as necessary for survival of the forest.¹⁵ Meanwhile, as was indicated earlier, plantation development is resulting in clearing of logged-over forest.

Timber Politics

The deleterious rate of deforestation is partly because there has been no reduction or revocation of concessions. Definitive figures are difficult to come by, but two sets are presented here. Official statistics of the Forest Department show that, in 1990, 8.8 million ha had been

Table 5.10. Sarawak: Actual (and Planned) Status of Forestland Areas, 1991 and 2001

Legal Forest Status	1991				2001			
	Actual		Planned		Actual		%	
	'000 ha	%	'000 ha	%	'000 ha	%		
Total Forestland ¹	8,717	100	8,470	100	8,103.6		100	
Of which:								
State Land Forest	3,929	45	1,470	17	3,781.9		47	
Permanent Forest Estate ¹	4,498	52	6,000	71	3,955.4		49	
Forest reserves	854	10	-	-	-		-	
Protected forests	3,638	42	-	-	-		-	
Communal forests	6	0	-	-	-		-	
Totally Protected Areas	290	3	1,000	12	377.7		5	
National parks	115	1	685	8	-		-	
Wildlife sanctuaries	175	2	315	4	-		-	

Note: ¹ Includes 116,000 ha under shifting cultivation.Sources: GTZ (1992: 24, Table 6); *Yearbook of Statistics, Sarawak, 2002*.

licensed for logging – the total forest area (cited in GTZ 1992: 29). According to the same statistics, the average area logged per year between 1983-1990 was about 220,000 ha (GTZ 1992: 37, Table 11).

According to statistics on working plans and felling plans to which all licensees are subject, in 1991, 7.22 million ha of forest were under logging concession. Taking the total natural forest area as 8.45 million ha, then 85 per cent of the forest area was under logging concession. Of these 7.22 million ha, 2.96 million ha, or 41 per cent, had already been logged. The total area exploited in 1991 alone amounted to 346,753 ha, and between 1989 and 1991, 666,234 ha were exploited. Taking the average cut rate for 1983-1990, another 2.0 million ha were logged between 1992 and 1999. This is only considering absolute area logged without considering actual practices that result in major forest destruction and degradation.

Despite the evidence of widespread forest destruction by logging, the Sarawak state government has argued the necessity of logging for the state economy, and has refused to effect any change in the widely criticized concession system. The two are not unrelated. As we mentioned in Chapter 2, in a report on Malaysia's forestry sub-sector, the World Bank drew attention to the remarkably low levels of rent capture. "Since the mid-1960s, state governments ... have consistently and drastically charged concessionaires less than the full resource rent for the timber in the concessions. The most obvious consequence is that revenues to the state treasuries, particularly in Sabah and Sarawak, have been a fraction of their potential level" (World Bank 1991: para 24). Moreover, if there had been efficient rent capture, Sarawak would have been able to garner the same amount of monies for state revenues from harvesting 69 per cent of timber cut.

Crucially, the World Bank report goes on to note that the uncaptured rent flows into private hands (World Bank 1991: para 6.21). This reiterates the observation made by many commentators that it is impossible to understand the timber industry in Sarawak unless one understands the timber politics involved. Through the mechanism of the concession system, which is controlled by the chief minister, timber underpins a system of political patronage that ensures the enrichment of families, friends and political supporters of the ruling elite, and the continuation of the latter. It has, for instance, been estimated that winning a state constituency in the last state election costs in the region

of RM2 million, much of which was channelled to government supporters and financed from timber money. In other words, "the Sarawak political elites' control over awarding logging licences gives them the means to maintain and tighten their grip on state power" (INSAN 1986: 3). It also means that those returned to power represent a certain class and interest which, as has been mentioned earlier, may skew development choices. "The benefits accrue in an ever-increasing degree to an urban rich who model themselves on the international set and who live in a world of palatial homes, air-conditioned Mercedes and helicopters.... It is the choice of this set of political goals and practices that threatens to block development in the State" (Leigh 1979: 372).

CAUSES OF DEFORESTATION AND FOREST DEGRADATION

Shifting Cultivation and Smallholding Agriculture

Shifting cultivation was historically the main cause of primary forest loss in Sarawak. But for some time now, the loss of primary forest cannot be blamed on shifting cultivation. Any encroachment of such cultivators into primary forest is minor, and often consequent upon logging. Also, such encroachments usually mean the "abandonment" of previous shifting cultivation lands to forest regeneration, a process of great rapidity in instances of "best practice" shifting cultivation. Furthermore, shifting cultivation will decline in the medium-term, with the spread of education and modernization. Already, there is considerable interest on the part of indigenous shifting cultivators to experiment with sedentary wet rice cultivation. The limiting factor here is the availability of suitable land in terms of soil type and terrain as well as location. A point of concern is that social and cultural changes appear to result in the shortening of the fallow cycle in several instances, and the use of fertilizers, i.e. a drift towards sedentary cultivation in circumstances that do not permit such a mode of agriculture. It is unlikely that the soil can withstand such use and not suffer significant degradation unless there is a corresponding shift in cultivation techniques and/or an abandonment of food cultivation. There are no signs that new cultivations techniques for hill rice in the terrain and soil conditions of Sarawak are on the horizon, and it is highly unlikely in the short- to medium-term that food cultivation will

be abandoned, for both cultural and economic security reasons. But this need not lead to the conclusion that farmers will encroach upon forest in search of new, more fertile land. Such a move would be contrary to the reasons why fallow has been shortened in the first place. Nevertheless, in the unlikely event of extreme poverty, it may well happen that encroachment upon forest will occur, which is the more usual pattern of deforestation in other parts of the developing world. In ways that it would be inappropriate to argue here, that unlikely event may well have been made less unlikely by recent policies of land development.

More likely to happen is a strategy that has been adopted, viz. a combination of food cultivation with cash-cropping. With cash-cropping, sedentarization becomes the rule. Thus, areas that under a shifting cultivation regime would be allowed to go into fallow are now permanently under a number of cash crops, mainly rubber, pepper or cocoa. Such developments mean that land will not go into fallow and there will be no secondary forest regeneration. But in so far as such crops prove to be a viable strategy in combination with continued subsistence agriculture, it will also limit encroachment into the forest. The danger here is soil erosion and degradation, particularly on pepper farms, and hence the need to look for new land. Against this strategy will be the reluctance and non-viability of looking for suitable farmland too distant from current settlements and from market centres.

Plantation Agriculture and Land Development

Under previous policies, plantation agriculture and land development have not been major factors in deforestation and forest degradation. However, the recent acceleration of plantation agriculture and land development is making this pair of factors become the most important cause of forest loss, completing the process that started with logging. In this regard, dam development and resettlement have had adverse "collateral" effects. Thus, in the case of the Bakun hydro-electric dam, still under construction, the "collateral" effect thus far has been the loss of around 5-10 per cent of forest to plantation development and to clearing for resettlement; this will likely increase as construction goes ahead.

Logging

In recent times, logging has undoubtedly been the major cause of deforestation and forest degradation. This will continue in the medium term, except in the unlikely event of the government, either federal or state, imposing a moratorium on logging, or sharply curtailing it. But here, too, there is perhaps some reason for hope that rationality will prevail and some environmentally and economically sustainable level of exploitation can still be found, facilitated by the introduction of timber certification. Nevertheless, the fact remains that as of the time of writing, the great bulk of Sarawak's primary forest have been logged at least once and in the twenty year period, 1980-1999, about a million hectares, or 12 per cent, of forest have disappeared.

CONCLUSION

The preceding discussion indicates that the major areas of concern pertaining to deforestation and forest degradation in contemporary Sarawak are, in decreasing order of importance:

- logging, particularly in the rainforest,
- agricultural development and aquaculture in the coastal wetlands forests,
- plantation development,
- shifting cultivation,
- dams and resettlement.

Logging remains the single most important concern for deforestation and forest degradation, yet it is difficult to access accurate information and to conduct public discussion, given the secrecy in which it is shrouded and the political constraints imposed upon public debate. What is indisputable is that current logging practices are environmentally and economically non-sustainable, even in the conventional economic sense, aside from issues of the degree of leakage, the inefficiency of rent capture by the state, and the extent to which rents are being re-invested in such a manner as to result in the economic sustainability of the economy as whole. All these issues are of significance because by 2010, virtually all forested parts of Sarawak, aside from the limited areas already established as national parks and wildlife sanctuaries, would have been logged at least once.

Wetland forests are also of concern. Wetland forests, particularly in coastal regions, have already experienced substantial logging. But there are also plans for aquaculture development and for conversion to agriculture. Given the limited wetlands areas and the critical roles they play in coastal ecology, this is a matter of great concern, especially since the rate of loss to date exceeds that of dry-land forest.

Shifting cultivation, historically blamed as the main culprit in the loss of primary forest and far more extensive in Sarawak than elsewhere in Malaysia, has begun to decline in importance. Additionally, those areas under shifting cultivation that have not been degraded by insufficient fallow and/or erosion – due to conversion to permanent crops such as pepper – will regenerate as luxuriant secondary forest, although with a floristic composition different from primary forests.

Dams, while dramatic and not without major problems worthy of investigation in their own right, do not pose a substantial threat to the forest. Indeed, it might well be argued that the need to safeguard the massive investments that dams entail might actually help to curtail or control logging in their catchment. This has, however, not occurred. Indeed, in the case of the Bakun hydroelectric dam, the launch of the project actually resulted in an increased pace of logging, while in the case of the Batang Ai dam, an area that was formerly not logged is now being logged, at least at its fringes. Nevertheless, the extent of forest directly affected by dams is minimal.¹⁶ The "collateral" effects can, however, be major.

That leaves plantation development and resettlement. While on paper the extent of forested area suitable for plantation development is limited by soil and terrain conditions as well as labour supply, this has, in recent times, apparently been not much of a barrier. Much plantation development will involve already cultivated or alienated land, not forest. Nevertheless, conversion of forested area to plantation is accelerating; some notable examples are cited. At the moment, however, the total area involved is small relative to the area under logging; but it is becoming clear that logging starts a process that ends in plantation development. This situation needs close monitoring.

Resettlement, in many instances, will mean forest loss. Thus, for instance, the construction of the Bakun Dam and the resultant resettlement of the affected longhouse communities will mean forest loss in order for resettlers to revive their economy. However, such

resettlement, despite their tremendous human problems, will only have limited impact upon the forested area as the numbers of people involved are not great. Of greater concern are the policies driving resettlement as they are critical to the success or failure of a resettlement effort. If resettlements are successful, their impact upon the forest will be minimal. However, in the event of failure, the outcome will be abandonment of the resettlement and an attempt to look for areas of new settlement. This will likely mean encroachment upon the forest. Nevertheless, the scale is likely to be limited as the population numbers involved are small.

Finally, it must be asked what the impact of the international market on domestic processes of deforestation is. This issue is discussed in greater detail in the overall conclusion to this study. Here, it is only necessary to note that while agriculture, in particular smallholding cash-cropping, is responsive to international market prices, as these are transmitted rapidly to the cultivator, such agriculture as has been noted generally does not entail cutting down primary forests. The same is not true for logging. Of course a market for tropical timber has to exist for logging to be at all attractive. But beyond this very broad condition, prices are not the primary controlling factor with respect to the rate and extensiveness of logging. The controlling factor here is the political economy of logging in the state. Principally, the award of logging concessions – as sources of quick and massive wealth – is part of a system of political patronage. Timber has also become a critical source of state revenue that can be deployed to secure patronage, political legitimacy and support, aside from more legitimate development policies.

One important means of political legitimacy and support is through what are labelled as "minor rural projects" (MRPs) in the state budget. The allocations for such projects are made through the state assemblyman. But only state assemblymen from the ruling party receive such allocations, which they then dispense as they see fit, i.e. to those whose political support they can count on or wish to secure, and to those whose political leanings are wavering or can be made to waver. The expenditure on MRPs generally goes up during an election year.

Leaving aside questions of the adequacy of rent capture on the part of the state and the uses to which the captured rent is put, it may perhaps be pertinent to point out here that policies encouraging

the downstream processing of timber will make it more difficult to control the rate of logging in the short- to medium-term¹⁷ because a broader and larger constituency with vested interests in continued logging will be created, and this will be even harder to resist than the more limited logging interests.¹⁸ In Sarawak's case, this has been exacerbated by the fact that the same interests control both logging and downstream processing, a situation that additionally allows for unrecorded harvesting.

Notes

1. The Sarawak Agriculture Development Plan study identified nine kinds of agro-ecological zones. They were: organic plains, saline clay plains, undulating and sedimentary hills, igneous mountains, steep hills and mountains, dissected karst, steep and dissected sedimentary zone, steep and very high mountain, and fresh water lakes. The first two correspond to the first broad zone described here, the third to the second, and the rest (excepting fresh water lakes) to the third. In area, they cover 2.3 million ha (18 per cent), 1.45 million ha (12 per cent), and 8.45 million ha (68 per cent) respectively. See Sarawak Agricultural Development Plan, 1992: 44.
2. Source for the climate data is the Sarawak Department of Statistics. It may be of interest to point out that some changes in the rainfall regimes may be occurring in some localities. For example, Sibu, for which data has been gathered since 1915, has a long-term mean annual rainfall of about 2,200mm. But the annual mean for 1979-1988 was 3,400mm.
3. The most recent amendment was in 2000 with the declared objective of titling all land now held under native customary rights. However, there have been considerable misgivings over the amendment, especially with the elimination of some clauses which some interpreted to mean the possibility that the process of titling may mean the loss of land under long fallow as well as various types of customary forest reserves, including ritual reserves.
4. In May 2001, Justice Ian Chin of the High Court of Borneo handed down a landmark decision stating that native customary rights pre-date statute law and do not derive their force from statute law, although statute law can limit or extinguish such rights. In handing down such a decision, he awarded the case to the plaintiffs, natives whose land had been alienated to Borneo Pulp and Paper. The decision is under appeal.
5. The Forest Department's Annual Report of 1968 stated that "The constitution of protected forests is directed against shifting cultivation"

(quoted in Hong 1987: 75). To that extent, there have been different agendas which arguably end up in the same place. We can note that it was not only the land law that represented state interventions against shifting cultivators.

6. However, comparison with Table 5.3 should indicate that the quality of these figures is somewhat suspect. Putting the two series together suggests that as of 1985, the extent of forest loss was greater than suggested by Table 5.2 on its own. However, Table 5.3, based upon revised estimates, suggests that Table 5.2 may have overestimated the extent of forest loss by 1990.
7. As described by the ITTO Mission, "each forest concession area (also known as 'forest management unit'), whether in the PFE or State land forests, has a Forest Management Plan [which] contains a description of the area, the objectives of management or prescriptions on how the forest management unit is to be harvested, the species to be removed, the minimum cutting diameter limits, the annual allowable harvest, penalties for harvesting damages etc.... The Forest Management Plan for a State land forest which is likely to become part of the PFE has similar prescriptions to that of established PFE" (ITTO 1990: 19).
8. The greatest decline was in wetland forests – swamp and mangrove – that declined by over 14 per cent.
9. The federal agency which has been responsible for the bulk of land development in forest areas in the peninsula and in Sabah, the Federal Land Development Authority (FELDA), has not been active in Sarawak.
10. For a recent survey of the controversy, see Cramb (1989). See also, Chin (1977, 1985, 1989), Freeman (1955), Hatch and Lim (1978), Hatch (1982) and Hong (1987). Hong (1987: Ch 3) provides a review of the debate on the ecological sustainability of shifting cultivation, and concludes that shifting cultivation, properly practiced and under the right conditions, is not only ecologically sound, but perhaps the only system of cultivation suitable for the soil and terrain conditions found in places such as Sarawak. Cramb (1989) is an excellent review of the conflicting claims on various aspects of shifting cultivation from the mid-nineteenth century to the contemporary period. He too concludes that shifting cultivation is ecologically sustainable.
11. Such statements were particularly prominent towards the end of the 1980s, when international attention was possibly at its height with regard to deforestation in Sarawak and abuse of indigenous rights. James Wong, the infamous ex-minister of Tourism and the Environment, who himself holds extensive logging concessions, announced, for example, that "it is a fact of life that the biggest curse to Sarawak forest is shifting cultivation" (*Borneo Bulletin*, 1/8/87). Prime Minister Mahathir Mohamad also joined the fray. Attempting to turn the tide of opinion against those

Penan who still practised a nomadic existence and who were prominent in international campaigns to stop the logging in Sarawak, he stated that it was the Penan who were "largely to blame for destroying the forests due to extensive shifting cultivation" (*New Straits Times*, 17/11/87), even though the nomadic Penan practised no such agriculture!

12. From a manuscript of M. Heppel quoted in Colchester (1989: 52).
13. Most of the major studies have been referred to elsewhere in the text, including, most importantly, ITTO (1990) and World Bank (1991).
14. For example, the Report noted how the most valuable species of the swamp forests, ramin (*gonystylus bancanus*), has been heavily overcut (ITTO 1990).
15. The ITTO stated that, if all its recommendations were put into place (which has not happened), a sustainable cut rate from untreated PFE would be in the region of 6.3 million cu. m. per annum. Some critics have deemed this figure too high. Nevertheless, cut rates since 1990 have exceeded 12 million cu. m. per annum, and the target for reduction is 9.2 million cu. m., still in excess of even the ITTO's recommendation. The total log production for 1994, including from SLFs, was 16.32 cu. m., with an expected 17.52 million cu. m. for 1995 (Malaysia 1996: 87).
16. For instance, the largest dam projected for Sarawak, the Bakun Hydro-Electric Dam, will flood an area of about 80,000 ha, of which about three-quarters will be secondary forest. Another proposed dam in the vicinity will flood about 20,000 ha, but most of this will be either primary or climax secondary forest. Aside from potential concern about the distinctiveness of flora and fauna in these areas and, above all, their impact upon native communities, it is clear that the area involved is minor in relation to the total area of forest.
17. In the long term, the availability of forests and of timber will be the controlling factor.
18. Furthermore, under present circumstances that, as a World Bank study points out, effectively amount to a considerable subsidy for downstream processors, the level of rent capture by the state will be even smaller. See World Bank (1991). Thus, once again, we see the unintended consequences of well-intentioned proposals.

Markets, Politics and Logging*

This chapter considers the roles of markets and state policies in logging and the timber trade as well as their impact on deforestation as well as forest degradation in contemporary Malaysia. While agricultural expansion has historically been the single most important cause of deforestation throughout Malaysia, the ecological damage caused by logging has been far more important for forest degradation in recent times. In the post-colonial period, and particularly since the 1970s, the tropical timber trade has developed as a major commercial economic activity within the Malaysian and the international economies, with dynamics quite independent of agricultural development considerations.

This chapter is primarily devoted to a consideration of the Malaysian timber business in connection with the international tropical timber trade. After briefly considering some Malaysian agricultural issues, the following are then reviewed: the nature of the international tropical timber trade and its regulation [through the International Timber Trade Council (ITTC) and Organization (ITTO)], their implications for Malaysian production and exports, and the timber business practices of the Japanese *sogoshosha*. A discussion of the case of log exports to Japan should help illustrate the actual dynamics of the timber business beyond the imagined world of textbook environmental economics. Finally, the political economy of logging in Malaysia is considered in larger perspective to emphasize the business and political constraints on policy reforms in the face of an ecologically rapacious and short-termist official growth emphasis and politically powerful distributional coalitions.

LOGGING AND DEFORESTATION

While federal policies and institutions have ostensibly been devised to ensure good sustainable forest management, accelerated deforestation

in the 1970s and 1980s due to agricultural expansion and commercial logging has been so serious that, a decade ago, the World Bank (1991: 1) described Malaysia's forestry sector as a "sunset industry". In Sarawak in 1990, for example, forestry accounted for 15 per cent of its gross domestic product (GDP), 28 per cent of its export value and 54 per cent of its state revenue. The logging of Malaysian forests has been the subject of much interest, not least internationally, and a number of studies have sought to document its extent. Some general trends are briefly reviewed here.

Trade

Firstly, it must be recognized that timber has generally been a major source of export earnings for Malaysia. Indeed, timber has been Malaysia's second largest net export earner, after petroleum, since the early 1980s, greatly exceeding palm oil (except in 1984, an exceptional year for palm oil prices) and rubber. In 1990, for instance, timber export earnings and timber products amounted to RM8.9 billion, or 11.3 per cent of total export proceeds, compared to RM10.6 billion for petroleum, RM4.4 billion for palm oil and RM3.0 billion for rubber. In 1995, the contribution of timber exports to export earnings from primary commodities still accounted for some 20.4 per cent, although it declined, as expected, to 5.5 per cent by 2000 (Malaysia 1996: 142).

For many state governments in Malaysia, timber has been critical in providing revenue for state budgets. Indeed, this is true for most states, with an estimated average of 35 per cent of all state budgets derived from timber in 1995 (Malaysia 1996: 108). This contribution has vacillated with timber and other price fluctuations, for example, from an average of 25.6 per cent only a year earlier. The dependence of Sabah and Sarawak on timber taxes for state revenues has been especially marked. Sabah, for example, derived 61.4 per cent of its state revenue from timber in 1973, 71.4 per cent in 1980, 52.3 per cent in 1989 and 39.2 per cent in 1997.

The increase in timber output and exports in the 1970s and 1980s was dramatic. In the early 1970s, an average of 70,000 hectares was cut in Malaysia annually. In 1975, 8.5 million (or 45 per cent) of the 19.2 million cubic metres (cu. m.) logged were exported as raw logs, yielding RM670 million. By the early 1980s, timber prices had more

than doubled, and the logging rate more than tripled to 240,000 ha per annum, yielding over 30 million cu. m. of logs annually, with over 60 per cent exported as logs. For some time now, Malaysia has been the world's leading exporter of tropical hardwood, in addition to palm oil, rubber, tin and pepper. In 1983, Malaysia accounted for 58 per cent of the world's tropical log exports and 81 per cent of Asian exports, exporting 18.7 million cu. m. in that year alone.

Some diversification into downstream processing began in the 1980s, with a ban on raw log exports enforced in Peninsular Malaysia, and later in Sabah since the early 1990s. The ban was partly inspired by the recommendation in the first Industrial Master Plan (IMP) for 1986-95 that the diversification of manufacturing away from electronics and textiles should involve the development of wood-based manufacturing as a key component. The increase in value-added activities in the peninsula, however, was not matched by Sabah and Sarawak until very much later. In 1984, Peninsular Malaysia exported only 2.4 per cent of its timber in log form, compared to 79 per cent for Sabah and 98 per cent for Sarawak (Gillis 1988: 120). Sabah began some limited diversification into wood manufacturing and paper milling in the early 1990s, while Sarawak had mainly been exporting raw logs, until it began downstream activities in the mid-1990s.

As log prices rose by 47 per cent between 1985 and 1989, Malaysian timber export earnings rose from the mid-1980s to RM7.3 billion in 1989. The share from raw logs totalled RM4.4 billion (from 21.1 million tonnes), 63 per cent of which went to Japan, 15 per cent to South Korea, and 12 per cent to Taiwan. Meanwhile, Malaysia's sawn timber exports of 5.1 million tonnes fetched RM2.9 billion, and went mainly to Singapore, Holland and Thailand. By 1994, the export of raw logs and sawn timber accounted for RM6.4 billion. By this time, Sabah had also banned the export of raw logs, and Sarawak had begun developing downstream industries and discouraging log exports. In 1990, sawn log production was 40,147 cu. m., of which 20,354 cu. m. were exported as logs. By 1995, 32,040 cu. m. were produced, of which 6,880 cu. m. were exported (Malaysia 1993: 28). Official statistics suggest that sawn timber exports to Europe declined from the 1980s, probably due to successful pressure by anti-tropical timber logging lobbies.

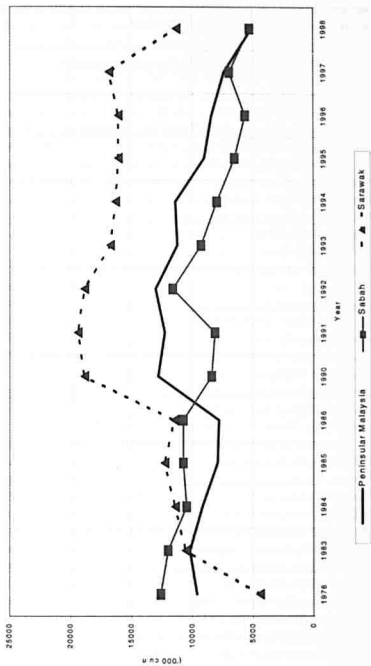
As the regional chapters showed, the timber harvest rates in each of the three regions have been dissimilar. Peninsular Malaysia produced

about 10 million cu. m. annually between 1976 and 1989, while Sabah's production fluctuated, though averaged more than 10 million cu. m. annually over the same period. Diminishing forest resources, heightened public awareness of and opposition to forest degradation, and other adverse environmental consequences had reduced logging in Peninsular Malaysia by the end of the 1970s, in Sabah after 1992, and Sarawak after 1997. But this was initially more than compensated for by increased timber production in Sarawak. Annual Sarawak timber output rose from 2.5 million cu. m. in 1975 to 12 million cu. m. in 1985 and 18 million cu. m. in 1990. Figure 6.1 shows the volumes harvested in each region.

There is little likelihood of stopping the state governments in Malaysia from exploiting their forests. With Malaysia's constitutional arrangements, state government executives have virtually unlimited authority over land and forests. Much of the interest in seeking public office at the otherwise much less consequential state level has centred on the acquisition of such access to land and forest concessions. A 1991 World Bank study has highlighted the poor rent capture via timber royalties due to massive illegal logging, and the apparently poor enforcement capacity at different levels of government for capturing resource rents. Lacking the managerial and other operational skills needed to directly manage and exploit forest concessions profitably, the politicians turn them over to loggers for cuts or commissions. In the case of Sarawak, for instance, the present and previous chief ministers (a nephew and his uncle) allocated huge logging concessions to themselves and their proxies while in positions of power (INSAN 1989). During the 1993 constitutional crisis to strip Malaysia's nine sultans (constitutional monarchs) of their immunity from legal prosecution, the ruling coalition-controlled press published instances of royal houses getting logging concessions which they then turned over to businessmen who ran their logging operations.

Hence, in spite of some half-hearted federal government and media efforts at exposing corruption, tightening regulations and advocating forest conservation, logging interests have faced few constraints besides sporadic local resistance and international disapproval. The cumulative effects on the forests have been severe, according to the National Conservation Strategy study undertaken by the World Wide Fund for Nature, Malaysia (WWFM 1993), which adopted a natural

Figure 6.1 Malaysia: Sawlogs Harvested by Region, 1976-1998 ('000 cubic metres)



resource accounting approach. The study shows that the physical size of Malaysia's forests has declined drastically.

THE INTERNATIONAL TIMBER TRADE

In the post-colonial era after the Second World War, many tropical countries have experienced boom-bust timber export patterns, with high initial export earnings followed by the depletion of old-growth forests, poor management of second-growth forests and the collapse of wood-processing industries. However, in the global economy, timber prices reflect global market scarcities, rather than, say, national scarcities. Hence, individual producing countries are essentially "price-takers". Competition from temperate timber as well as timber substitutes has inhibited tropical timber prices from rising very much in real terms during the post-war period.

Due to high stumpage values (i.e. the difference between log prices and logging costs, often equated with the resource rent) there is a strong imperative to log out the forests as quickly as possible (to earn a positive rate of return from investing the stumpage value), thus often exacerbating the boom-bust cycle, which is seen (by most neoclassical economists) as self-regulating and hence, economically rational. Slowly increasing stumpage values – especially from old growth forests, in which net timber growth is virtually zero – do not encourage deferment of logging, and therefore, only policy intervention can check or reverse this "market" imperative to log quickly.

The adverse consequences of logging to the environment and to living standards, especially for those drawing sustenance from the forests and related eco-systems, such as rivers, are considered negative "externalities", which do not directly impose costs on timber production *per se*, and hence, are not effectively valued by the market. Rapid and excessive logging – often associated with boom-bust cycles – has usually been accompanied by poor forest management as well as inefficient wood processing. However, while this boom-bust phenomenon could be inimical to sustained forestry, it could also be consistent with sustained growth of economic output if the captured stumpage value from the timber boom is well invested.

Vincent (1992) identifies timber concession policies and log-export restrictions as major culprits exacerbating the boom-bust cycle by

suppressing "timber scarcity signals", and hence, market responses to such signals. However, the slowly climbing world timber prices (which Vincent acknowledges for the past and predicts for the future) hardly amount to much of a "scarcity signal", especially the substitutability of temperate for tropical timber. Also, there is little evidence of inelasticity in the prices of Malaysian timber as prices rose dramatically in the 1980s.

Timber concession policies, it is argued, generally fail to ensure optimal forest tenure and management with the effective capture of stumpage value, thus preventing both governments and logging concessionaires from responding to rising stumpage values. However, the fact that existing concession policies have failed to do so does not mean that the concession policy in itself is fundamentally flawed and cannot be developed to ensure better outcomes. Also, if world timber prices are not rising enough to encourage forest conservation, it does not really matter that concessionaires do not respond as they would not have done so anyway.

Often, political influence and wasteful rent-seeking activity (e.g. election funding) are involved in securing logging concessions, and the fees or taxes paid by concessionaires for the timber extracted fall far short of the stumpage value, i.e. the government only captures a small proportion of the resource rent, leaving the balance of the rent available for political capture. Consequently, the contribution, and hence the value of forests to government revenue for public spending purposes is reduced. In some situations, this could limit the funds available for forest management and may encourage governments to opt for conversion of forestland to uses that yield greater government revenue.

In Malaysia and Indonesia, however, the timber revenue is still very large, and more than enough to adequately fund better forest management and discourage forest land conversion to agriculture, especially if the government were to use a low discount rate in its planning. While some stumpage value is lost due to rent seeking, to other transaction costs as well as to inevitable inefficiencies arising from such resource allocation, concessionaires still end up capturing most of the stumpage value, but have little incentive to improve forest management owing to the typically short or uncertain (for political reasons) duration of their concessions.

Countries with a natural resource may not have a comparative advantage in processing it. Hence, policy makers have wrongly assumed that by exporting primary commodities (saw logs), a country foregoes jobs and additional export revenues from further (value-added) timber processing. Consequently, restrictions on log exports to stimulate domestic wood processing have diverted capital, labour and other factors of production from more efficient economic deployment, with negative consequences for economic productivity and efficient allocation of resources.

Also, by suppressing foreign demand, log export restrictions depress domestic log prices, giving the domestic wood processing industry cheaper raw materials. Empirical evidence generally suggests that, because of log-export restrictions, the loss due to the lower price of wood is not offset by the value added to the wood due to timber processing. Such a loss of revenue due to trade restrictions has been referred to as "rent destruction" (Gillis 1988, also see Lindsay 1989 for an estimate of the magnitude of such rent destruction due to the log export ban in Indonesia).

In Peninsular Malaysia between 1973 and 1989, for every US\$2,200 per year for a sawmill job created, US\$6,100 was lost due to the reduction in the value of wood exceeding the value added to the wood; consequently, US\$16,600 in foregone revenue from log exports was lost; stumpage values also declined by 31 per cent due to log-export restrictions (Vincent 1992). According to the World Bank (1991: 89), "Each sawmill job created by the log-export restrictions cost Peninsular Malaysia annually RM16,000 in economic value added, RM44,800 in export earnings, and RM92,600 in resource rent. In contrast, the average annual wage in sawmills in 1989 was around RM6,000."

Log export restrictions "distort" price signals, as such restrictions are typically imposed in response to processing industry complaints of rising timber prices. Such price rises may be further increased by log exports to economies restricting imports of processed wood products. Log export restrictions may mute the market signals that would otherwise indicate that expanding processing capacity may not be not efficient as wood supply is declining and processing capacity efficiency is not internationally competitive.

Thus, log-export restrictions alone are likely to result in processing over-capacity, and consequently, in excessive logging, land use con-

version and poor forest management. In both Indonesia and Sabah, for example, primary wood processing capacity alone is double the respective annual allowable cuts (David Brown, personal communication): Indonesia's saw and plywood mill capacity is around 45 million cubic metres per year, while the annual allowable cut is around 22 million cubic metres per annum; in Sabah, "primary processing capacity, now estimated at around 4 million cu. m. of log input, exceeds the state's sustainable harvest level by a factor close to 2" (World Bank 1991: 89).

Also, it should be emphasized that the higher log prices one might expect from a lack of log export restrictions may still not provide the necessary economic incentive to ensure forest conservation or satisfactory forest management, and may, in effect, have the perverse effect of encouraging short-term rent maximization by accelerating the rate of logging and log exports. Conversely, lower prices due to excessive supply may also result in increased logging in order to compensate for the lower prices.

While temporary protection is sometimes justifiable for the promotion of desirable "infant" industries, unfortunately, most governments of tropical countries do not wean their wood-processing industries off cheap wood. This criticism is applicable to much of the protection in previous decades for infant industry promotion. However, the successful transitions in Japan, Taiwan and South Korea from import substituting to export-oriented industrialization suggest that investment incentives can be structured in ways so as to ensure that protection is temporary and conducive to achieving international competitiveness, e.g. by making effective protection contingent on successful export promotion.

If timber producing countries, through more appropriate and effective government intervention, developed internationally competitive wood-processing industries successfully, greater export earnings and government revenue could eventually be gained by exporting higher-value wood manufactures, rather than larger volumes of cheap, unprocessed logs. This must, however, seem most unlikely in view of what has happened so far. Temporary restrictions or higher taxes on log exports could well provide the window of opportunity for a viable and internationally competitive wood processing industry to emerge. Excessive industrial capacity, which might encourage excessive logging,

could easily be avoided by limiting (e.g. by licensing) such capacity based on considerations of sustainable logging and forest conservation. This limited capacity could be auctioned off among interested parties to minimize the magnitude and duration of protection. Of course, the political authorities concerned could well abuse such a mandate for intervention, and the possibility of seriously reducing such abuse is not likely to happen where there is a market for political influence.

Instead, such abuse is more likely to be contained by institutional reforms constraining rather than enhancing the scope for rent-seeking business influences, e.g. by public auction and strict regulation of logging concessions as well as wood-processing licences. Simple reliance on market forces is likely to exacerbate negative externalities, such as deforestation and forest degradation, which do not impose direct costs on loggers. Market-based incentives or disincentives, however, may well be the superior choice among alternative policy options, e.g. when the monitoring or enforcement costs of effective regulation are prohibitive, though this should not dogmatically be assumed to always be the case.

Also, the presence of wood processing industries may well generate political pressures to slow down the rate of timber extraction in order to achieve sustainable forestry to ensure continued timber supply in the future. In such circumstances, the most efficient timber processing industries could be induced to invest in plant and machinery in return for securing long-term timber supplies, since boom-bust cycles might otherwise deter such long-term investments. However, if wood-processing industrial capacity is not limited by licensing that takes into consideration available forest resources and permissible cutting rates, then it is more likely to enhance pressures for increased logging.

However, besides the problem of the political influence of the "protected" industries, another possible problem in contemporary Malaysia is that the remaining available timber supplies (primarily in Sarawak) may already be too little (to ensure scale economies in the long term) and too expensive (to transport to existing processing industries) to significantly improve the prospects for and international competitiveness of wood processing capacity in Malaysia, which is still largely concentrated in the peninsula. With profitability ensured by the indefinite (meaning, not temporary) protection provided by the log export ban, the likelihood of achieving international com-

petitiveness may well have been undermined, though profitability measures tend to underestimate the likely efficiency gains motivated by profit maximization.

While emphasizing the deleterious effects of timber concession and log-export restriction policies, Vincent (1992) denies that high import barriers by developed countries against processed tropical timber products and low tropical timber prices in international markets have contributed to this boom-bust cycle. However, there has been considerable evidence of significant, if declining, trade (especially non-tariff) barriers, especially in Japan, against the import of processed wood, particularly plywood. It was only in the early 1990s that politically-backed Indonesians (most notably, Bob Hasan) – who had earlier succeeded in getting the government to impose a ban on Indonesian log exports, thus “protecting” the Indonesian wood processing industry – succeeded in raising the quality of their plywood exports to meet Japanese import specifications, thus undermining the oligopsony of Japanese *sogosha* timber importers and raising the prices of tropical timber imports into the Japanese market.

The political and economic factors contributing to existing timber concession policies have also served to keep tropical timber prices low – in a highly imperfect market – due to the failure of the governments concerned to more effectively capture the potential resource rents derivable from timber exports. Intense competition among suppliers from different countries – whose elites usually seek to capture timber rents for themselves as quickly as possible while they can – and binding contractual and financial controls over suppliers by oligopsonistic log purchasers mean that one should not assume the existence of a symmetrically competitive international timber market, i.e. with close to perfect competition involving many sellers as well as many buyers on both the supply and demand sides.

While the General Agreement on Tariffs and Trade (GATT) has succeeded in reducing wood import taxes, non-tariff barriers have become more significant, e.g. supposed quality controls on plywood and “ecological” labelling of wood sources. Some timber exporting countries have imposed export taxes on sawn wood exports to encourage further wood processing “downstream”. In Indonesia, the government introduced a prohibitively high export tax on sawn timber in 1989 to kill off the sawn wood export industry, resulting in the

diversion of the log supply to the more favoured plywood industry (David Brown: personal communication).

However, Vincent (1992) argues that these actually constitute efforts by the governments concerned to capture some of the resource rents available. Whatever the case, before the 1990s, the higher tax rates on log exports seem to have largely failed in Malaysia to discourage log exports in favour of processed wood exports, which are still taxed less or not at all. As noted earlier, part of the reason for this is the fact that the Sabah and Sarawak state governments prefer log exports as much more tax revenue consequently accrues to the state governments concerned, under the Malaysian federal fiscal system. The Malaysian tax system allows taxes on natural resources (including timber) to be imposed by the state governments, instead of by the federal government, which collects most other taxes.

Import barriers have certainly not prevented Peninsular Malaysia from becoming the world's largest exporter of hardwood sawn-wood or Indonesia from becoming the world's largest plywood exporter. Also, the removal of trade barriers would primarily benefit temperate wood exports. Nonetheless, tropical wood producers would probably secure higher prices for their wood without such barriers. Also, formidable tariff and non-tariff import barriers to greater value-added tropical wood processing and manufacture continue to exist. The average export prices for tropical hardwood logs and sawn wood have been substantially lower than the corresponding prices for temperate hardwood products because most tropical timber exports can be easily substituted by, and hence must compete – on the basis of price – with, timber products made from temperate woods.

While competition with temperate wood may have thus inhibited price increases for tropical timber products, it is not clear why this inhibition constitutes an adequate explanation for why tropical hardwoods from Asia have consistently been significantly cheaper than hardwoods from Africa as well as from temperate sources (see Vincent 1992). Instead, it has been suggested that timber extraction costs are generally lower in Southeast Asia, owing to lower labour costs, better transport infrastructure and the much higher density of commercially-valuable trees, implying that the price determination is on a "cost-plus" basis rather than what is implied by most assumptions about substitutable timbers and hence competitive timber markets.

INTERNATIONAL REGULATION

An important development in the last decade has been the establishment of the International Tropical Timber Organization (ITTO). Following the signing of the International Tropical Timber Agreement (ITTA) in 1985, ostensibly to achieve sustainable management of tropical forests by the year 2000, most producer and consumer countries came together to form the ITTO. As the world's leading importer, Japan agreed to set up and support the head office in Yokohama, with the first head coming from Malaysia, the biggest exporter. Japan has been the largest contributor of funds to the ITTO, totalling US\$42.2m by late 1991 (*Yomiuri*, 5/12/91). Considering trends in the international trade of tropical timber and the resulting deforestation, it is now broadly acknowledged that current levels of consumption are unsustainable. The ITTO has also been encouraging producer countries to develop processing industries to raise domestic value-added and thus, it is claimed, to reduce the number of logs extracted from the forests.

In the first half-decade after the establishment of the ITTO, 85 million hectares of rainforest were logged. Indeed, this brings into question the effectiveness of the organization, highlighting the contradictory roles of promoting the timber trade while ostensibly ensuring sustainable use and conservation of rainforests. Part of the problem with the ITTO is that it focuses primarily on timber as the only economically viable forest product, while the commercially ambiguous ecological value of virgin tropical forests is ignored.

The 1992 announcement – that log production would be reduced starting September and that a quota of 1.4 million cubic metres per month would be introduced – was held up by state and federal officials as proof of Sarawak's and Malaysia's commitment to the ITTO recommendations, i.e. providing the appearance of compliance on the eve of the Earth Summit in Rio de Janeiro. However, total official log production in 1992 of about 19 million cubic metres was still well in excess of the ITTO recommendation. Although production declined in 1993 and 1994, production has continued to be in excess of the quotas that the governments concerned claim to be complying with. (Similarly, the Indonesian government has announced that by the end of the century, it will comply with ITTO guidelines "in principle", i.e. apparently not in practice.) Sarawak has also failed to implement other

crucial ITTO recommendations and to address the land rights claims of the indigenous people. All this underlines the inability of the ITTO, acting alone, to bring about sustainable logging.

There are conditions laid down in the General Agreement on Trade and Tariffs (GATT) that inhibit efforts towards sustainable forest management. The introduction of bans on exports of logs – as in the Philippines, Indonesia and Thailand – is considered to be protectionist, and hence, directly contravening the GATT. GATT also made it illegal to impose trade restrictions on products according to the method of production. In other words, importing countries have not been allowed to limit or ban the import of unsustainably produced timber in favour of sustainably produced timber, as Austria sought to do with eco-labelling back in 1992, much to the displeasure of the Malaysian government. Furthermore, discrimination or subsidies to promote sustainable management are also illegal under the GATT.

GATT trade regulations make it illegal for any industry to be subsidized, even to become more environmentally responsible. Such GATT economic regulations with clearly adverse environmental consequences constitute major obstacles to more sustainable management policies. Such rules are clearly outdated, and reflect how free market policies can be ecologically destructive, if not offset by appropriate regulation, including the use of so-called market-based incentives.

THE MARKET

Only 4.5 per cent of the total wood extracted from tropical forests around the world is exported, the rest being consumed within the country of origin (Arafune 1991: 14). Hence, it would seem that the producing countries themselves are to blame for the high levels of consumption. However, in Malaysia, where Japanese involvement in logging is high, exports account for the majority of the total quantity of timber extracted, especially in Sabah and Sarawak. In particular, roughly two-thirds of the wood extracted in Malaysia was exported in the 1980s; if fuel wood gathered from forests is discounted, leaving only commercial timber, then the percentage exported would rise to over 80 per cent (Nectoux and Kuroda 1989: 21). Additionally, 63 per cent of logs exported from Malaysia went to Japan in 1989 (Jomo 1992: 2). In any case, the low figure of 4.5 per cent for tropical wood

exports is misleading because only a small portion of the tropical forest wood extracted globally is of commercial value internationally. When measuring the volume of wood extracted, domestic consumption appears high, but this is because local people collect firewood from the forests, scraps from the forest floor or debris left behind after logging. In doing so, they do not damage the forest as much as logging practices do.

As Table 6.1 shows, total European tropical timber imports have been less than those of Japan alone, which accounts for slightly over half. With only some two per cent of the world's population, Japan imports 30 per cent of all tropical timber, and half of all tropical hardwood logs traded internationally. Tropical hardwood log imports by ITTO consumers came to 22.9 million cubic metres in 1991; 45 per cent of this total went to Japan, though Japanese consumption dropped by 8 per cent in 1991. In the mid-1980s, most Japanese tropical hardwood imports (96 per cent in 1986) were processed into plywood, the major end-uses for which were in construction (55.4 per cent) and furniture (30.2 per cent) (Nectoux and Kuroda, 1989: 5).

Japan also dominates the international import market for tropical sawn wood, accounting for almost a fifth of total ITTO consumer imports of 5.5 million cubic metres in 1991. Japan is also the dominant tropical hardwood veneer importer, accounting for 677,000 cubic metres in 1991 from total imports of almost 1.2 million cubic metres. Japan is also, by far, the largest market for tropical plywood, taking

Table 6.1 Imports of Tropical Timber by Major Consuming Countries

<i>Country</i>	<i>1988</i>	<i>1989</i>
Japan	18,383,644	23,939,512
South Korea	6,008,160	6,027,300
United States	5,122,450	3,605,848
United Kingdom	2,859,822	2,586,634
Netherlands	1,984,686	2,350,914
France	2,076,242	2,249,956
Italy	1,623,764	1,860,012
Germany	1,597,052	1,738,320
Spain	1,085,660	1,165,400

Note: Unit of measurement is cubic metres of round-wood equivalents.

Source: Japan Tropical Forest Action Network, 1991.

2.9 million cubic metres of total consumer imports of 8.1 million cubic metres in 1991 (Frezailah 1993).

Tropical hardwoods provide beautiful, durable woods, with smooth, defect-free surfaces, which are resistant to warping, but such wood has long been used as disposable plywood in Japan because it costs less to cut down a tree in, say, Malaysia, and ship it to Japan to make plywood than to make plywood from "inferior", but more expensive Japanese softwood. In Japan, the already intensified logging of "national" (i.e. state) forests had to be supplemented by massive imports starting in the 1960s as the economy took off and domestic stocks became increasingly inadequate and expensive. High labour and other production costs, the rising yen and increasingly difficult access to the mountainous forests rendered domestic timber far more costly than imports. With growing affluence, public pressure for forest conservation soon further limited and raised the costs of logging the Japanese forests.

This triggered and has since sustained the "logging boom" in Southeast Asia, which has continued to the present. The continued availability of relatively cheap tropical timber from abroad has thus discouraged less wasteful use of timber as well as substitution by other materials. Japan uses much of its imports of tropical hardwood for the production of plywood. Since tropical hardwood is so cheap, there is no economic imperative to seek alternatives to the use of hardwood in plywood production and the use of plywood itself.

Tropical plywood has become so much a part of the Japanese construction industry that building contractors will not consider anything else. Some plywood is also employed to make cheap furniture that is so little valued that it is often discarded when people move house. Hence, tropical hardwood imports remain high. Indeed, demand increased in the mid-1980s when housing starts increased from 1.14 million in 1983 to 1.37 million in 1986, and again sharply to 1.67 million in 1987. In 1986, the number of housing starts per thousand inhabitants in Japan was double the number in the USA, and more than double those in the European Community (Nectoux and Kuroda, 1989: 55).

The late 1980s saw a resurgence of tropical hardwood imports into Japan, but these imports were exceeded by those of temperate softwoods. This fact suggests that actions taken by producing countries

in recent years, such as the Indonesian and Peninsular Malaysian log-export ban, have made it difficult for importers to continue the practices of the 1960s and 1970s (see Jomo 1994). Hence, softwoods are beginning to replace tropical hardwoods. However, Japan still imported 29 per cent of the world's rainforest hardwood in the late 1980s (Nectoux and Kuroda, 1989: 5), and wood and paper consumption in general remains high.

The overwhelming significance of Japan as the market for over half of world tropical timber exports is enhanced by the oligopsonistic character of the Japanese timber import business that are dominated by massive general trading houses known as *sogososhas* that organize the imports of tropical timber (Jomo 1994). In the case of timber, Japan's share of the Southeast Asian exports is so important that prices have come to be determined by demand in Japan, weakening the bargaining power of the producers and their influence on prices. The top 15 *sogososhas* are important dealers in tropical timber, with the ten biggest being: C Itoh & Co., Marubeni Corp., Yuasa Sangyo, Sumitomo Forestry, Ataka Mokuzai, Nissho Iwai Corp., Nichimen, Mitsui & Co., Mitsubishi Corp. and Tomen. Together, these companies imported over half the tropical logs produced in the world into Japan in 1987 (Nectoux and Kuroda 1989: 65).

The role of the *sogososhas* in the tropical timber trade is crucial because they involve themselves in all levels of activity: extraction, processing, importing and distribution, both domestically and abroad. Two practices employed by the *sogososha* have greatly facilitated imports into Japan, with dire effects on the environment. The first has been to loan capital and equipment to timber merchants who organize the logging. The *sogososha* may then also sell or lease the necessary heavy equipment to the loggers for their operations. Repayments for the loans may be required in log-shipments, thus guaranteeing the supply of logs.

The second has been to engage in joint ventures with local companies that are often required by government policy to put up 60 per cent of the initial investment to retain local control. Sometimes, especially if the Malaysian logger is small or prefers to reduce its exposure, it cannot or does not raise the required funding. The Japanese company may advance the rest – sometimes another 30 per cent of the total for the project in addition to the legally permissible

40 per cent stake – in uninsured, back-door dealings, since formal foreign ownership is limited by law (Nectoux and Kuroda, 1989: 68). Since Japan provides the major market for high-quality hardwood and the sogoshas have control, albeit indirectly, of the resource base, their arrangements put pressure on loggers to work as quickly as possible and to engage in logging practices that are highly destructive.

There is evidence to suggest that the Japanese have privately recognized that changes are required. The timber importers in Japan agreed to cooperate in reducing imports for 1992 by 15 per cent from 1991 levels, and planned to reduce imports by 35 per cent over the next five years, perhaps due to declining demand (with the “bursting of the Japanese bubble”, and its consequences for real estate and construction, and growing timber imports from Siberia and Northeast Asia) and in an effort to try to raise timber prices. Moreover, companies like Marubeni, Komatsu, and C. Itoh have pledged to help promote development in the producing countries by building processing plants and paper factories in response to local government pressures to gain more from their timber endowment. Efforts to promote international afforestation projects are also underway. Finally, the association of plywood manufacturers are tackling the issue of using temperate softwoods instead of tropical hardwoods (*Nibon Kogyo Shimbun*, 23 March 1991).

There is no reason to expect the authorities in timber-importing economies, e.g. Japan, to require their own timber industries to ensure that logs are extracted at a sustainable rate with greater benefit to the Malaysian economy and the local populations adversely affected. Hence, for example, until the supplies of cheap high-quality tropical timber diminish sufficiently and prices rise sufficiently for construction methods and their material requirements to change, the construction industry in Japan is likely to continue to use hardwood plywood, and only respond to resource exhaustion by diverting attention to other suppliers when Malaysia becomes unable to meet Japanese demand.

It is important to emphasize that if the demand for tropical timber is reduced for some reason or other (e.g. a ban on particular uses of tropical timber), as argued for by some advocates of greater forest conservation, producing countries will not necessarily manage their rainforests in a more sustainable fashion. As a reduction of demand would lower timber prices, timber producers may well increase supply

to compensate for reduced stumpage values due to lower prices. Of course, if prices fell below extraction costs, production could be expected to decline or even cease, although this is unlikely to happen in practice. As loggers have already invested a great deal in securing concessions and equipment, they would want to minimize their losses by continuing to produce after price downturns, presumably with the hope that prices would rise once again.

In other words, the institutional context of logging tends to encourage production, and as we shall show later, short-termism and price changes might not have the straightforward effects of supply and production one might expect from a simple supply-demand model. An effective international cartel arrangement is urgently needed. It should seek to ensure reduced logging or timber production as well as higher log revenues (resource rents) for log-producing countries, as well as institutionalized mechanisms to ensure greater forest conservation and better rain forest management.

MALAYSIAN TIMBER PRODUCTION AND EXPORTS

Malaysia's impressive economic growth record and official efforts to promote industry have obscured the significance and vulnerability of continued reliance on primary commodity exports, which have become more diversified, particularly with the increased contribution of depleting resources such as petroleum and timber. While forestry is theoretically renewable, those familiar with logging activities in the Malaysian jungle and the country's track record, especially in the eastern or Borneo states of Sabah and Sarawak, have no illusions about this.

The problem was exacerbated by the general decline in primary commodity prices during the early and mid-1980s, encouraging compensatory increases in production volumes, especially of petroleum, gas and timber. Hence, despite some earlier half-hearted efforts at forest conservation, mainly in Peninsular Malaysia, logging interests in Sabah and Sarawak have faced few constraints other than local community resistance, some NGO activism and international disapproval. The pillage of Malaysian forests – primarily for export to Japan from Sabah and Sarawak – began to slow down from the nineties, with less timber left to extract and export. By that time, the

Philippines and Thailand had been virtually logged out, with Indonesia fast moving in the same direction.

By the end of the 1970s, diminished forest resources and heightened public awareness of its grave environmental consequences have reduced logging in Peninsular Malaysia, but this has been more than compensated for by increased timber production in both Sarawak and Sabah. Annual timber output in Sarawak rose from 2.5 million cubic metres in 1975 to 12 million in 1985 and 18 million in 1990. Between 1963 and 1985, 30 per cent of Sarawak's total forest area was logged.

As Malaysia entered a deep recession in 1985-86, it became even more dependent on export earnings from exhaustible natural resources such as petroleum and timber. However, dramatic economic growth since the late 1980s did not result in a corresponding reduction in timber export earnings, as the interests desiring logging are quite unrelated to such growth. Despite increased international concern about Malaysian over-logging, especially in Sarawak, timber production was stepped up in the late 1980s. In Sarawak, log output rose by 64 per cent from 11.5 million cubic metres in 1986 to 18.8 million cubic metres in 1990, with the greatest increases occurring in 1987 (19 per cent) and 1989 (26 per cent), when log prices rose by an average of 20 per cent and 19 per cent respectively. Meanwhile, saw log exports rose by 55 per cent in volume, but by 123 per cent in value – from 10.2 million cubic metres worth RM1,291 million in 1986 to 15.9 million cubic metres worth RM2,883 million in 1990!

Log exports by ITTO producing members totalled 23.9 million cubic metres in 1991, 5.7 per cent less than 1990 exports, of which Malaysia accounted for 81 per cent. Tropical sawn-wood production in ITTO producing nations fell 16.5 per cent in 1991 to 32.9 million cubic metres. Total tropical sawn-wood exports were 7.3 million cubic metres in 1991 (with Malaysia accounting for 67 per cent), increasing by 7.6 per cent in 1992. Tropical hardwood veneer production increased by 12.7 per cent to 1.5 million cubic metres in 1991, while tropical plywood output increased by 3.7 per cent in 1991 to 12.8 million cubic metres. Veneer exports, also led by Malaysia, increased by 23 per cent to 0.83 million cubic metres in 1991. Tropical plywood exports continued to grow in 1991, rising by 7.5 per cent from 1990 levels to 10.5 million cubic metres, with recent increases largely accounted for by Malaysia.

The Malaysian authorities have proved to be very accommodating by responding positively to growing international, especially Japanese, demand for tropical timber. As early as 1966, a Malaysian government timber official wrote, "It is incumbent upon us to open an area for exploitation irrespective of whether this area is adequately stocked with the requisite regeneration or not. Inadequacy of stocking before felling should not be allowed to hinder the progress of exploitation" (quoted by Sesser 1991: 46). In the late 1980s, Japan imported almost two thirds of its tropical hardwood log imports from Sarawak in Malaysia. Malaysia provided four-fifths of the 10 million cubic metres of tropical hardwood logs used by Japanese plywood manufacturers in 1992 (Friedland 1993). Malaysia has substantial new plywood and veneer capacity and would continue to account for a large proportion of aggregate increases in these categories in the mid-1990s.

However, Malaysia too was eventually forced to impose restrictions. Realizing that the peninsula's timber supply was rapidly running out, the federal government limited logging starting in 1978, reducing the annual rate of cutting by more than 60 per cent in six years, and banning the export of logs. Nevertheless, the Sarawak state government has seemed determined to continue exporting logs, in spite of the now much reported popular local native resistance to the logging. On the other hand, there is no reason to expect the Japanese authorities to require the Japanese timber industry to ensure that the logs are extracted at a sustainable rate with greater benefit to the Malaysian economy and the local populations adversely affected. Instead, in 1988, two shipments of 38,500 cubic metres of logs were made from Brazil (where log exports had been officially banned since 1973), suggesting that Japan is perfectly aware that supplies are diminishing in South-east Asia, and alternative sources must be secured (Nectoux and Kuroda, 1989: 30).

Under pressure from profit considerations, debt financing of loggers puts huge pressure for the logs to be extracted as quickly as possible. Firstly, growing debt-servicing requirements put pressure on loggers to clear their debt liabilities as quickly as possible by accelerating production. Secondly, uninsured funding is of concern to the Japanese financier. In any case, the loggers are rushed, giving rise to numerous problems.

In a survey of commercial logging operations in Malaysia, extrac-

tion of only 10 per cent of the trees in a specific area resulted in an additional 55 per cent being damaged or destroyed in the process (Arden-Clarke 1990: 5). The heavy equipment usually utilized for timber extraction has been estimated to leave up to 40 per cent of logged forest area bare (Chin 1992: 59). The logged areas consist of severely compacted sub-soil, where natural regeneration of forest – as opposed to secondary jungle vegetation – is very difficult. Logging roads alone may account for a further 14 per cent of the area cleared by logging activity (Nectoux and Kuroda, 1989: 20).

Sometimes, the authorities may be genuinely unaware of the full economic, social and environmental consequences of the logging of rainforests though very often, they are constrained by those in power who benefit directly from the logging. Besides the problem of poor policy implementation and regulatory enforcement, policies and regulations are far from adequate in light of the problems faced. Meanwhile, the executive officials and legislators at state government level in Malaysia often privately benefit from inadequate policies and regulations, as well as from their poor implementation and enforcement.

The influence of vested interests in compromising and undermining the role of the state in relation to logging is also reflected in the form of low effective tax rates. Consequently, the state governments do not tax the logging companies enough to even cover the real costs of reforestation and enforcement of logging and other related regulations, let alone maximize resource rent capture by the state. With few taxes to pay, and poor enforcement, the loggers cut down the forests to maximize short-term rather than long-term returns for themselves and the usually politically connected concession holders.

Having no economic stake in the forest's regeneration, the loggers have largely been oblivious to the importance of long-term management. Much illegal logging follows as a result, with logging companies, especially the smaller ones which are less concerned with maintaining acceptable relations with government regulatory agencies, often disregarding the restrictions for selective felling in order to maximize profits in the short-term. Under-declaration of the wood extracted and exported from a concession is common, while accounts are often "fiddled" with. This allows exporters to pay less to the government in royalties and tax, while concealing illegal profits. As governments realize that timber revenues have been well below what they should

be, taxes have been raised, but often only leading to further tax evasion. Statistical discrepancies suggest that more wood arrives in Japan than has been declared as exports from the country of origin (Nectoux and Kuroda 1989: 72). Such illegal logging has been ignored by the Japanese companies importing the timber and by Japanese trade authorities.

Many argue that such timber extraction constitutes or contributes to economic development and the improvement of Malaysian welfare. It is usually also stressed that logging practices and timber exports are in accord with Malaysian government policy. Undoubtedly, producing countries have come to rely heavily on the export of raw materials, such as timber, as a major source of revenue. In 1990, timber export earnings amounted to 11.3 per cent of Malaysia's total export proceeds (Jomo 1992: 1). Clearly, the loss of the rainforests will eventually result in economic problems as well as other difficulties for the producing countries, but such medium- and long-term considerations are not of much concern to governments and businesses with short-term priorities and considerations.

Such arguments suggest that the tropical timber trade has become too important to the producing countries' economies for decision-makers to voluntarily put a stop to it until the resource is exhausted. It is important to emphasize that existing logging arrangements primarily benefit a small, albeit influential minority of politicians, businessmen and, arguably, their employees (see Jomo 1992). It is further argued that by stopping logging, people will be forced to exploit the land in some other way, for instance by clearing the land for farming or grazing (Arafune 1991: 14). But with efficiently enforced and more sustainable forestry techniques, forests can be harvested with less adverse consequences, not only for timber, but also for other secondary forest products such as fruits, nuts, resins and oils; e.g. rattan cultivation in forests appears commercially feasible in Malaysia. At the moment, however, the emphasis remains exclusively on timber extraction, with the damage to the forest that goes with it.

The long-term impact of logging on the forest is less obvious. By removing all the largest trees during logging, the shade from the sun is lost, and the complex eco-systems of the forest floor, unable to survive the increase in temperature, may gradually decline and sometimes even die out. Without the shelter and water absorption capacity of the taller trees, rain water washes the soil away, while logging roads

turn into rivers of mud after downpours. Also, the forests may be cleared if shifting cultivators move into the forest to farm the land after the loggers have left; thus, they may eventually convert the old forest floor into exhausted wasteland if they are constrained from moving on again. The gradual disappearance of the rainforests not only threatens the livelihood of the indigenous communities who live in them, but also the stability of the global climate.

The irreparable and irreversible consequences of logging for the equatorial forest ecosystem and its resources are increasingly known. More importantly, rural Malaysians – especially those with the most intimate relationship with the forest – are well aware of some of the environmental consequences, especially those that impinge upon and undermine their livelihood. Hence, it is not surprising that those who live closest to the forest are most threatened by the wanton destruction of the forest that accompanies logging. Hence, those with the simplest of lifestyles and who are closest to nature – like the hunting and gathering nomadic Penan of Sarawak – have been in the forefront of the resistance to logging.

LOGGING COALITIONS

The political economy of timber has shaped Malaysian state-level politics, especially in the more forested states like Sabah and Sarawak, for at least the last three decades. The Malaysian rain forest is considered an almost “free good” for the “logging coalitions” as the state governments’ claims to the timber rent, in the form of stumpage values, are relatively modest, say, for example, compared to petroleum. The state government gives out the logging concessions at nominal charge and both federal and state authorities impose relatively light taxes on the logs extracted and exported.

Sarawak and Sabah only joined Malaya to form the Malaysian federation in 1963, as Britain tried to ensure that its lucrative possessions in the region passed into safe hands as de-colonization became inevitable. Meanwhile, the ethnic Malay elite in Malaya sought to offset the overwhelming ethnic Chinese population of Singapore with the indigenous communities of the Borneo states.

From 1933, no logging had been allowed in Sarawak unless an area had sufficient stock for regeneration. According to the Sarawak Timber

Museum in Kuching. "Up to 1961, hill forest logging operations were very limited. Timber harvesting was limited to a very few species which were mainly consumed by the local building industry. In the early days, logging was carried out with simple tools – axes and saws – while elephants and water buffaloes were used for log transportation. From 1962 onwards, logging operations steadily increased. This was largely due to the entry of Japanese buyers."

The two Borneo states secured some special prerogatives not available to the other eleven states of Peninsular Malaysia as compensation for giving up alternative options, including independence. "In part because of British fears that the federation would imperil native land rights, Sarawak was accorded the power to set its own land policies. That arrangement proved no insubstantial irony later, when state officials began to plunder the forests" (Sesser 1991: 45). From 1963 – the year of Malaysia's incorporation of Sabah and Sarawak – to 1985, 2.82 million hectares, or about 30 per cent of Sarawak's forestland, had been logged. By the end of 1984, an additional 5.8 million hectares – i.e. another 60 per cent of Sarawak's forestland – had been given out as timber concessions. Of the 3.4 million hectares in the Fourth Division, i.e. the Baram river basin, where popular resistance to logging has been greatest, 2.46 million hectares – or 72 per cent – had been given out by 1984.

Meanwhile, the politicization of the allocation of such concessions has ensured that the prime beneficiaries have been politicians associated with the state executive, their relatives, proxies, cronies and businessmen who have "bought" sufficient influence through unrecorded payments to state officials, their proxies and the ruling political party. The forest dwellers, or those living in relatively close proximity who gain part of their livelihoods from forest resources, get nothing or, at most, a comparative pittance by way of compensation, and only if they are relatively effectively organized and represented. In such a system of politicized concessions, the state does not capture most of the resource rent or stumpage value.

Besides low royalty and taxation rates, "transfer pricing" and other forms of "under-accounting" serve to minimize state revenues from logging. Instead, most of the rent is captured by the concessionaires, loggers, traders and politicians on the Malaysian side, and, arguably, by the shippers, importers and consumers abroad. Cost reduction

means capturing higher rents as prices are primarily influenced by the oligopsony of mainly Japanese *sogoshosha* traders and importers. However, the reduction of economic costs to loggers may actually involve increasing social costs in the form of negative externalities. Hence, while existing arrangements may encourage efficiency in terms of reduction of operating costs to the loggers and shippers, they are inimical to any serious and operational commitment to sustainable forestry or forest conservation.

Not surprisingly then, timber concessionary rights have become the much coveted prize for political office and power in Malaysia, especially at the level of the governments of the more forested states. This has, in turn, engendered a vicious cycle of timber politics, which only comes into the public eye when politicians fall out in the intensifying scramble for the diminishing and increasingly inaccessible resource. If state governments either take direct control, or allocate concessions directly to those involved in downstream processing, or publicly auction off timber concessions, or at least give them directly to those with proven logging capacity and experience, some unnecessary sub-contracting, corruption, payment of under-the-counter money, illegal logging and inefficiency could be reduced with more revenue generated for the state governments. Currently, timber concessions given to politicians, their families, cronies, or to royalty are, in turn, sub-contracted – a system which encourages corruption and illegal logging owing to the lack of accountability of the concessionaires and loggers.

Some "industry experts" claim that if the present system was terminated, many of the ills facing the timber industry would be reduced (*Business Times*, 1 February 1993). Eliminating timber politics and politicians' involvement in the industry might begin to allow greater possibilities for introducing, financing and effectively enforcing the necessary regulations and incentives, e.g. by insulating state officials from industry interests. However, it is important not to attribute the problems entirely to timber politics. The nature of the timber industry and market as well as the nature of the incentives which drive those involved will not be significantly changed by the elimination of "abuses" in the processes of timber rent allocation and capture.

But without the necessary regulation and enforcement, awarding concessions directly to loggers will only have a limited impact. Also, complete state control over logging and more effective capture of

rents, in themselves, need not be superior options as far as forest conservation is concerned as the state would then be even more likely to accelerate logging in the face of fiscal constraints. This has happened with timber in Sabah and Sarawak, just as the federal authorities increased petroleum production from the early 1980s as prices declined and fiscal constraints became more pressing.

The logging concessions controlled by Sarawak Chief Minister Taib Mahmud were estimated to be worth about RM10 billion (Sesser 1991: 62). The biggest logging operator in Sarawak and Malaysia was reputedly Senator Tiong Hiew King. Being also the owner of Berjaya Textiles Berhad and the largest circulation Chinese language daily in Malaysia, the *Sin Chew Jit Poh*, his family timber company does about half a billion ringgit worth of business yearly. Raphael Pura (*Asian Wall Street Journal*, February 1990) reported, "Sen. Tiong's 800,000-hectare (1,970,000-acre) timber empire of concessions and logging contracts includes the forest that Uma Bawang's rebel farmers are struggling to retain. His partners in that concession are Tan Sri Taib's sister, the Sarawak government, a private Islamic foundation and a second influential senator". How much timber operators pay concessionaires to get the logging contracts varies, but figures of up to fifty million ringgit for a single contract are not unusual.

When Malaysia's royal families were in conflict with the political executive in early 1993, Malaysian newspapers reported that Datuk ("Tengku") Wong, a close associate of the Pahang royal family, had been paid RM140 million by logging contractors in advance for logging concessions given to the Pahang royalty to be "sold" by Wong. Contractors "buying" the concessions claimed to have been "overcharged" – in one reported case by almost twice the going rate. Primary Industries Minister Lim Keng Yaik claimed that the 37,000 hectares given to the Pahang royal family could yield timber worth RM270 million at the lower prices prevailing then (*New Straits Times*, 22 January 1993). Meanwhile, Pahang was logging 16,000 hectares annually – 4,000 hectares above the yearly quota set by the National Forestry Council; these figures obviously do not include illegal logging. Other state governments have also reported similar pressure from royalty for them to be given timber concessions.

Not unlike the Archipelago timber shipping monopoly for the Japanese Nanzai Freight Association (NFA) in Sabah – run by Tan

Sri Wong Chek Lim – which charged US\$1.55 per cubic metre ostensibly on “behalf of Malaysian politicians”, Archipelago Shipping in Sarawak – run by the Chief Minister’s brother – runs similarly lucrative monopoly operations. Despite the Federal Government’s supposed commitment to economic liberalization and deregulation, there is strong evidence that powerful federal politicians have colluded to maintain these state-level cartels.

The authorities do not tax the logging companies much, certainly not enough to cover the real costs of reforestation and to ensure strict enforcement of logging and other related regulations. Even the taxes collected are not specifically designated for such purposes. With few taxes to pay, and poor enforcement, the loggers seek to maximize short-term, rather than long-term, returns, especially with the political uncertainties that threaten policy change and the security of their concessions. Having no stake in the forest’s regeneration, the loggers appear to have been largely oblivious to the importance of long-term management. Much illegal logging – outside concession areas, of immature trees, etc. – also occurs as a result, with logging companies often disregarding restrictions for selective felling in order to maximize profits in the short-term.

Under-declaration of the wood extracted and exported is common, while accounts are “fiddled” with or officials bribed to reduce tax and royalty liabilities and to maximize profits. As the governments realize that timber revenues have been well below what they should be, tax rates have been raised, but often only to lead to further tax evasion. Discrepancies in official statistics suggest that more wood arrives in importing countries, such as Japan, than has been declared as exports in the country of origin (Nectoux and Kuroda, 1989: 72). Most knowledgeable Malaysians have no illusions that there is considerable under-declaration of timber production and exports – partly reflected, for example, by the inconsistencies in official timber statistics to facilitate tax evasion and capital flight.

In other ways too, logging’s contribution to Malaysian capital accumulation, investment and growth is limited. Reflecting the rentier nature of their wealth, most of the beneficiaries do not even reinvest within the country, let alone in the areas from which the timber has been extracted. Thus, logging constitutes a resource outflow, not only for the communities directly affected, but also for the national

economy. The ecological, economic, social and cultural damage it causes, especially to poor rural communities, basically means that logging constitutes a devastating double exploitation of nature as well as of people. Despite the considerable profits gained from logging, both state and federal governments get relatively little. Timber companies hardly pay income tax, and their financial statements often show losses or modest profits. According to Pura (*Asian Wall Street Journal*, February 1990), between 1976 and 1987, Rimbunan Hijau, Malaysia's largest logging company, had more than two billion ringgit in revenue, but paid the federal government less than five million in taxes.

The state governments collect a modest royalty on the logs extracted, amounting to barely one per cent of the timber price. Thus, loggers minimize their tax liabilities by undervaluing the type, nature and quality of the timber extracted, as well as their quantity, volumes or weights. It is important to recognize that these practices can continue precisely because the governments affected acquiesce to them. Limited state government access to other revenue sources and the massive scale of the logging mean that this revenue nevertheless provides nearly half the Sarawak state budget despite the government's limited capture of timber "resource rents".

Another factor encouraging increased logging has been the federal-state division in the Malaysian tax revenue system. Most tax revenue is collected and controlled by the federal government, with the state governments constitutionally only allowed to collect resource related revenue, including timber export duties. Ostensibly to encourage Malaysian timber processing, higher export duty is collected on saw logs than on sawn timber. But to maximize such revenues, state governments, especially in Sabah and Sarawak have preferred to maximize log – rather than timber – exports, thus encouraging more logging, but less timber processing, let alone wood-based manufacturing.

Hence, the potential for discrimination, e.g. against opposition-led state governments, in Malaysia's federal financial system has also encouraged short-termism, and hence more rapid logging in the timber industry to compensate for insufficient federal government allocations. This has undermined the likelihood of serious forest conservation efforts (e.g. with more limited and selective logging), as well as the development of wood-based manufacturing in place of log exports in order to increase domestic value-added and employment

generation in the Malaysian timber industry. Ironically, the federal government does not seem to recognize its own responsibility for increased logging in these circumstances. For example, Primary Industries Minister Lim Keng Yaik disputed the claim by the then opposition-controlled Sabah state government that 4 to 6 million cubic metres were logged in the state in 1992, claiming instead that the real figure was closer to 11 million (*New Straits Times*, January 1993).

Selectively focussing attention on the state government in Sabah, then out of favour with the political executive, i.e. Prime Minister, Minister Lim also claimed significant under-declaration of timber exports, saying that export dockets he had seen showed the average value of exported logs to be US\$125 per cubic metre when the free-on-board (FOB) going rate was US\$210. A letter to the *New Straits Times* (29 January 1993) welcomed his ban on log exports from Sabah, but went on: "Why the Ministry has to wait so long to do something about it, one cannot really understand. As the Minister has admitted, Malaysia has been deprived of earnings running into millions of ringgit because of this (corrupt practice), it is common knowledge that in Sarawak, log exporters have over the past 15 to 20 years hived off considerable profits by manipulating prices and downgrading the various species at the export point." The letter went on to urge the Inland Revenue Department to conduct an audit exercise going back 15 years, a suggestion which does not seem to have been taken up.

The high profile the Mahathir administration took before and during the June 1992 Rio Summit introduced a new silver lining to the deteriorating situation earlier. After taking the high moral ground on environmental issues at various international forums since the 1989 Langkawi Declaration of the Commonwealth Heads of Government Meeting (CHOGM), Mahathir apparently felt obliged to try to put Malaysia's "house in order", at least in order to stand up to the greater international scrutiny anticipated after Rio, and directed government officials to act accordingly. With the benefit of hindsight, it is now clear that these measures were inadequate, i.e. "too little, too late".

And it seems that political considerations, more than anything else, will probably determine whether such efforts will be sustained, and whether ecologically, economically and socially acceptable "sustainable

logging" will ever be achieved in Sarawak before it is too late. The limited transparency of the public policy formulation and implementation process obscures the ability of international influences and the federal government to influence timber policy decision-making in Sarawak. However, the ability of the federal government to persuade the Sarawak state government to subsidize sawmills and plywood factories suggests considerable potential for the former to influence policy matters constitutionally under the control of the latter. For example, in response to federal government pressure, the Sarawak state government raised the tax rebate on domestically processed logs from 50 to 80 per cent (World Bank 1991: 83).

Sarawak state officials claim that the government's system of selective logging harvests only the largest trees, leaving others to grow and the forest to regenerate around them. "We take only two or three trees an acre; that's not much. There's no clear-cutting, as in America" (quoted in Sesser 1991: 48). While logging is selective and there is no clear-cutting unless logging is in connection with land development, what is usually selected is every tree perceived to have profit potential; furthermore, the remaining forest is seriously damaged in the process of getting these trees out. Even the ITTO, with its headquarters in Yokohama, and which is dominated by governments involved in the timber trade, i.e. exporting (producing) and importing (consuming) countries, has criticized Sarawak's logging practices. The Sarawak Forestry Department is too understaffed to enforce regulations. Consequently, the rules to safeguard designated watershed areas are regularly violated and loggers often ignore selective-cutting regulations, while concession owners and logging companies "plan their operations so as to get the maximum possible output with the minimum possible fixed investment in plant, roading (*sih*), training, safety, or infrastructure."

In contrast, the federal government seems to have been more responsive to international criticism, taking particular advantage of opportunities arising from domestic political developments. For example, after considerable pro-ruling party criticism of illegal logging practices by loggers operating on concessions to members of the traditional Malay ruling houses, Minister Lim changed the National Forestry Act of 1984 to increase the maximum fines for illegal logging from RM10,000 to RM100,000 and jail sentences from the previous

maximum of a year to a new maximum of five years. If one accepts the official claim that only six to seven trees are taken per hectare, the maximum fine here would represent less than thirty trees, i.e. about four to five hectares, at most – paltry by any stretch of the imagination. Add to that, the maximum jail sentence has never been imposed.

Meanwhile, the Sabah state government has amended its own forestry laws to allow for a 7-year jail sentence for illegal logging. The support of the army and police in combating illegal logging was also to be enlisted. A *New Straits Times* editorial (21 January 1993) fully supported the tougher measures, adding "it is to be hoped that this directive (to curb illegal logging) will be faithfully implemented, as timber, being a particularly profitable proposition, has been a murky territory for quite a long while, where personal greed has more often overtaken national interest; illegal logging is not merely theft, but wanton destruction of the country's national heritage".

Existing government regulations are routinely ignored, especially when those contravening the law believe that they will not be implemented or enforced. Officials have never suspended, let alone revoked a company's license for destructive logging practices. Between 1988 and 1991, the Forestry Department only took 39 out of 1,769 reported cases of illegal logging to court, citing the difficulty of producing evidence. Some paid compound fines, which were generally mere pittance compared to the value of the trees taken. Even the proposed RM100,000 fine is considered by many to be still too small a deterrent, given the vast amounts of money to be made by contravening the law.

The timber concession system also encourages getting as many logs as possible out of the rain forest as quickly as possible. The politicians face an election every four or five years, and if they lose, the concessions could be revoked. As timber concessionaires or loggers selling timber get paid by weight or volume, a tree left behind represents foregone profits. Speculation that the government might impose restrictions, as in March 1991 and August 1992, tends to accelerate logging activity. Feverish efforts to cut down trees to beat deadlines become so intense that work continues through the night. The director of the Sarawak Forestry Department, Leo Chai, described a "mad rush" to cut down trees in August 1992, following the announcement that the reduction in logging would come into force

on 1 September. According to Chai, in that month, production doubled the monthly average. This suggests that loggers believe that the government is capable of implementing and enforcing policies.

In December 1992, Minister Lim temporarily banned log exports from Sabah state – held by the opposition United Sabah Party (PBS) – ostensibly to ensure timber supplies for local processors said to be operating at only half capacity. Sabah Chief Minister Joseph Pairin Kitingan claimed the ban was politically motivated and discriminatory, alleging that the local wood-processing industry was inefficient. In May 1993, Kitingan announced a permanent ban, which Keng Yaik then claimed was politically motivated to embarrass him as he had promised Japanese importers that he would lift the ban to export an alleged over-supply of Sabah timber of two million cubic metres – precisely the amount exported to Japan in 1992!

In September 1992, the Sarawak Government's Director of Forestry announced a program to significantly reduce – some critics would still argue, inadequately, owing to the high rates prevailing and the damage already done – logging output by 1.5 million cu. m. annually over the next six years, from 18 million cu. m. in 1982 to 9 million cu. m. per annum. The Director claimed this was the ITTO's "recommended" allowable annual cut, although the actual ITTO recommendation was 4.5 million cu. m. per annum based on current practices in Sarawak in the late 1980s, provided no new areas were gazetted as permanent production forest. By August 1992, Sarawak had already produced 15 million cu. m. in response to rising prices, even though the target for that year was only 18 million cu. m. The government then imposed a strict quota of three million cu. m. for the last quarter of the year, causing log prices to rise further from US\$125 per cu. m. in August to US\$165 in October. The Sarawak government thus rejected the Sarawak Timber Association's proposal to reduce logging by half in exchange for extending their concession periods (David Brown, personal communication).

Tropical timber prices rose sharply throughout 1992. While the price increase in the last quarter might be attributed to the Sarawak authorities' September announcement, after years of domestic opposition and international criticism, of cuts in permissible logging, the earlier rise is more difficult to explain. Presumably, the success of the Indonesian Plywood Association, Apkindo, in marketing 95 per cent

of its total Japanese sales (accounting for 30 per cent of Japanese use) through an affiliated company, Nippindo, at prices comparable to those charged by Japanese manufacturers, had also helped. Happily, for the business interests concerned, Tokyo timber price increases have more than compensated them for the loss of earnings due to the reduced volume of output and exports. Prices for Sarawak logs – the benchmark for tropical hardwood prices in Japan – rose by over 110 per cent in the following year, despite recessionary conditions in Japan, which especially affected construction start-ups.

CONCLUDING REMARKS

The preceding review of the economic and political forces at work in the timber industry in Malaysia highlights the complications of drawing simple conclusions in terms of the usual market and state options which have come to dominate public policy debates in recent times. We have shown that the market is riddled with "imperfections" while the state has been "captured" by interests unlikely to voluntarily slow down the pace of logging, and therefore, the consequent deforestation and forest degradation. However, agricultural expansion has slowed down considerably in recent years mainly due to the declining availability of suitable cultivable land as well as the cheap labour needed to sustain agricultural expansion.

Our discussion so far has largely focussed on the principal actors in the present situation, namely those associated with the state – state governments, including politicians as well as bureaucrats, the federal government, international economic organizations, etc. – and those with the market – logging operators, sawmill and wood-processing operators, timber financiers, exporters, importers, consumers, etc. – with timber concessionaires most prominent at the interface between the two. However, such an analysis ignores others who are directly involved and affected but who have little control over these developments, most notably the rural communities in the vicinity of logged areas, and the timber industry workers, most of whom are drawn from such communities. Even rural communities are not undifferentiated, most notably between those who are politically – and usually economically – "compromised" and those most intimately involved with and, in welfare terms, dependent upon the forest for their

livelihoods. In so far as resistance by such communities has largely been repressed or "bought off", they are often merely considered as costs to be minimized and negotiated between the rentiers on the one hand and agents of the state on the other.

Recent international discussion suggests how democratic participation by local communities and more responsive and accountable states could fully develop new institutions and incentives to achieve more participatory, equitable and sustainable development in terms of worthwhile agricultural expansion and forest conservation. It might well be objected, however, that serious recommendations for public policy reform must only take into consideration existing realities and likely future developments as well as the limited prospects for change available on the political horizon considering the economic interests at stake. Such recommendations would then be dismissed as utopian, and hence not worthy of serious consideration despite their various merits. Unfortunately, recent experience suggests that while the prospects for policy reform in response to domestic pressures seem remote, both federal and state governments seem to have been much more responsive to international criticism and pressures.

It would be particularly interesting to consider the implications and consequences of a code of conduct for the international timber trade that would restrict exports to sources that are managed in a sustainable fashion. Problems arise, however, both in defining sustainable forestry, and in ensuring that such measures are not abused as new protectionist instruments by timber importing countries. Independent organizations, such as non-governmental organizations (NGOs), may have the capability of solving both of these. Producing countries may be forced to respond positively since they would be unable to sell their wood if extracted unsustainably.

"Good" wood would, of course, be more expensive. The rent from such higher prices should be taxed to finance efforts to improve forest management, including conservation, and other efforts to reduce logging, especially by those not utilizing sustainable practices. Regulations could also be used to force companies which might otherwise turn a blind eye to unsound logging techniques, to use less damaging logging methods, thus reducing forest degradation where logging does not lead to new land uses, i.e. deforestation. The higher prices could also compensate for higher production costs and/or lower

output levels. The real costs of forest management, i.e. including the enforcement of logging regulations and reforestation, need to be recognized, with the full resource rent captured by the state and more effectively utilized for forest reforestation as well as conservation and to compensate victims of past and ongoing deforestation.

Note

- * Some of the material here is drawn from earlier work, notably Brandt (1992), Jomo (1992) and Jomo (1994). I am grateful to Michael Ross (then Princeton University, later University of Michigan, Ann Arbor, and now University of California, Los Angeles) and David Brown (then University of Washington) for their helpful suggestions for revision.

In this review of the relationship between agricultural expansion and deforestation in Malaysia, we have described similarities and differences in the three regions of Malaysia, namely Peninsular Malaysia, Sabah and Sarawak. The chapters for each region underscored geophysical, historical, cultural, demographic, political and socio-economic differences without ignoring diversities within each region. These variations have resulted in differences in the rates and nature of agricultural expansion and deforestation. However, there has also been some convergence since the formation of the Federation of Malaysia in 1963, especially in relation to public policy. This is the case, for instance, with regards to the opening and use of land to alleviate rural poverty, commercialise primary production, and increase government forest revenue, as well as designating land for conservation. This policy convergence and corresponding institutions and targets have been reflected in the various five-year plan documents.

FARMING SYSTEMS

The main thrust of land use changes has been the expansion of agriculture. Forests had been cleared for small-scale shifting cultivation for a long time preceding British colonial intervention. Subsequent to British colonial intervention in Malaya and the establishment of the North Borneo Company in Sabah, priority was given to land clearance for large-scale tree-crop (mainly rubber) plantations for export-oriented production. Increased integration of the rural peasantry into the global economy also encouraged cash crop production for export.

Although official emphasis has continued to be on production for export, the terms of such integration have been modified with independence and the formation of Malaysia, resulting in some convergence in spite of significantly different pre-1963 histories,

geographies, demographics and land use patterns. Thus, although there were some attempts to develop Sabah into an export-oriented plantation enclave under the North Borneo Company, the amount of land actually developed for commercial agriculture was much less than in Peninsular Malaysia. In neighbouring Sarawak, the pre-war Brooke regime had an overt policy of preventing tree-crop plantation development, ostensibly to protect the interests of the indigenous people. In both states, shifting cultivation remained the dominant agricultural practice, in contrast to Peninsular Malaysia. Logging and large-scale land development had a major impact on land use only relatively recently, first in North Borneo from before Malaysia's formation, and in Sarawak subsequent to it.

The prevalence of such different farming practices has been important for both the type and scale of agricultural production and their ecological and social impacts, with various transformations due to the changing agricultural practices. For example, smallholder growth in the peninsula first tracked and then overtook commercial plantation production for global markets, while the leading role of government agencies has grown and changed after independence. In Sabah and Sarawak, there has been growing policy intolerance, coupled with pragmatic on-the-ground tolerance, of shifting cultivation, especially in recent decades. Thus, environmentally sustainable and socially cohesive swidden agricultural practices have given way to large state-sponsored or private agricultural development schemes, or to logging, both ecologically destructive and socially divisive.

While the land settlement model increasingly came under criticism worldwide (Barnett 1977, Palmer 1979, Robertson 1984), its widespread adoption in Sabah has shown little signs of abating. Since the 1970s, more state agencies have become involved with land settlement schemes, including the Rubber Fund Board (RFB), the RDC, and even the Ministry of Culture, Youth and Sports, which has undertaken such schemes for youths. Why did the strategy survive in Malaysia despite international repudiation? The reasons are complex.

Most planners and policymakers in Malaysia seemed unaware of the international criticisms, but there was also the apparent evidence of success of the FELDA schemes in Peninsular Malaysia. Furthermore, there is little formal or informal co-ordination among the state agencies involved in agricultural expansion. Hence, each agency's

strategy has its own momentum and inertia. Most agencies still hold the view that the settlement model is the best for their purposes, offering the possibility of combining modern agricultural and human resource development in a single strategy. Recently, especially in Sarawak, in tune with global political economic changes, there has also been a turn to the private sector for the execution of privatised land development schemes, particularly in relation to customary land held by the indigenous population.

LAND USE POLICY

Official pronouncements on land use priorities have become increasingly similar across the three regions, with Sabah, and then Sarawak, tracking the peninsula with less of a time lapse. Land use policy has given little protection to the forests or, more generally, the environment, but become more oriented to land development for commercial agricultural production, or to the extraction of revenue, urged on by private profits, from forests.

Officially, forest policies in all three regions have paid lip service to the need to conserve forests. Nevertheless, forest degradation has continued, by clearance for plantation development, or by logging, sometimes – increasingly – succeeded by outright clearance and agriculture. Thus deforestation is not only related to the extent of land conversion for agriculture, but also to the dynamics of logging and the timber trade and the poor regulation of such operations despite the existence of legislation. These processes are embedded within a complex political economy and federal politics.

Plantation development has always been motivated by prospects for gain, with the early colonial development of rubber plantations proving to be highly profitable. Economic considerations dominated land policy in the colonial period, with Sarawak under the Brooke's showing some inconsistency and anomalies in this regard. However, land-use policies and agricultural expansion under post-independence Malaysian administrations have also been tied up with socio-political considerations, not least the need to respond to the aspirations of the crucial rural electorate and to use land development for rural poverty alleviation. Expansion of agricultural output, and therefore land clearance, has thus taken priority over the need for forest conservation.

Logging has also always been motivated by the prospect of windfall profits by way of resource rent. But it has also been tied up in the system of Federal-State relations where land and forests are a state matter, with revenues deriving from them going into state, and not federal, coffers. Thus, it was hardly surprising that the pace of logging, the quickest means of extracting revenue from the forest, picked up in states with extensive forest resources.

FEDERAL-STATE RELATIONS AND PUBLIC POLICY

Before independence, the colonial administration in the peninsula had policies that ensured land availability for capitalists for plantations, while allowing indigenous groups, especially Malays, to continue their traditional agricultural practices with some security. This dualism was also true of Sabah, while in Sarawak, Brooke paternalism protected indigenous groups by allowing little commercial agricultural development on large tracts of land.

Following independence, the prospect of major federal government-led changes in public policies relating to forestry and agriculture has been hampered by state government jurisdiction over land matters. The political dynamics between the federal government and the states of Sabah and Sarawak, in particular, have critically influenced the processes of agricultural development and deforestation.

There have been attempts to develop national policies and policy co-ordination with the states. For example, the National Forest Council, National Forest Policy, National Land Council and National Agriculture Policy have all been federal government initiatives. However, actual implementation and enforcement have remained the prerogative of state governments, and there has been considerable variation in the pace and success of agricultural expansion as well as forestry policy implementation.

Land development through government agencies has been especially important after independence, more recently in Sabah and Sarawak. The importance of such agencies in opening up new land has been detailed in the relevant chapters. The role of FELDA, for example, has been crucial. However, in each of the three regions, the activities of such agencies, while possibly successful in terms of the amount of land developed, have been controversial in their impact, both on settlers and on indigenous landholders, and on the land itself.

Agricultural expansion, increasingly led by large-scale plantation development, has seen the transformation of the rural economies and land tenure patterns in Malaysia. There have been significant changes to and protests over the ways in which settlers and landholders have been integrated into schemes. In general, state control over land has been extended over time. One result has been weaker land tenure and related rights for most indigenous communities. Control of land (which includes forests) is vested in the hands of administrators, not local populations. This has given rise to some protests, notably in Sarawak and Sabah over Native Customary Rights, and in the peninsula over the abuse of the Land Acquisition Act to the detriment of landholders. However, there is little evidence that increased land insecurity has caused much rural-rural migration and unauthorised forest clearance in less inhabited parts of the country in the recent decades.

FORESTS

There are few forests in any of the three regions which have escaped the attention of logging interests and state governments, and it is probable that logging concessions have been awarded for most of the remaining accessible forests. While the effects of agricultural expansion on forests have been considerable, the impact of logging on forests has also been traumatic. Logging concessions have been used by state governments to secure revenue, aggrandize ruling coalition politicians and their business partners, as well as dispense political patronage. However, the allocation of timber concessions for personal aggrandisement or political patronage has taken precedence over government revenues. Hence, official captures have been low as evasion or abuse of the system is widespread. Forests in the three regions have been cut at rates that were not sustainable until timber supplies were close to exhaustion or external pressure brought to bear. Without urgent, adequate and effective policy changes, the future of the remaining forests remains in jeopardy, but the battle for forest conservation has been largely lost in the most of the country.

Peninsular Malaysia lost some 1.35 million ha of forests between 1966 and 1985, while Sabah lost about 1.5 million ha between 1970 and 1990, and Sarawak is likely to be logged out very soon according to the ITTO. The Food and Agriculture Organization (FAO) estimated

deforestation at a rate of 90,000 ha per annum in Peninsular Malaysia between 1980 and 1985, with the comparable figures for Sabah and Sarawak being 76,000 ha and 89,000 ha respectively.

The renewed emphasis on the private sector, especially in Peninsular Malaysia, and the fact that little suitable land for large-scale agricultural development is left coupled with a tight labour market means state-led programmes in the peninsula have declined and will continue to decrease in significance. Such programmes have not only been very expensive, but have also failed to fully realise the ambitious social goals envisaged for them. This however did not make any significant difference to expansion until the land constraint became binding. Indeed, the short-term demands of private capital make it even more unlikely that longer-term concerns of sustainable development, ecological conservation, and social equity will be served. For example, one should expect few major changes affecting land tenure or land use other than those dictated by the forces of capital accumulation. Indeed, the conversion of agricultural land to residential, leisure, infrastructure or industrial use is already considerable, and likely to become more so in the years ahead.

As economic transformation away from primary sector dependence continues in Peninsular Malaysia, pressure for agricultural expansion has declined. However, there is no evidence that this has had a beneficial effect on forest conservation. While there is official acknowledgement of the situation – "new land becomes more scarce and ecological and environmental reasons demand the preservation of the remaining forest land" (Malaysia 1996: 117) – there are few indications that there is the political will to directly tackle issues of patronage, low rent capture and forest abuse. The *status quo* is likely to continue, inevitably leading to further degradation and destruction of the remaining forests. This is also true for the states of Sabah and Sarawak, where officials believe that there is still room for further agricultural expansion, and current government policies continue to be against shifting cultivation and in favour of large plantation schemes. Displacement of both forests and populations can therefore be expected to continue.

There are changing perceptions of how forests should be valued, e.g. to include both timber and non-timber products. Introduction of agro-forestry and community forestry schemes, particularly for in-

indigenous groups, may both enhance local economies and enable local populations to maintain control over their land and some of the changes affecting their communities. In this connection, it is crucial for indigenous populations to secure control over land and other natural resources, including usufructuary and other rights to forest areas as well as cultivated land. Strong action against illegal logging and other abuses are needed. Proposals for gazettement more forests as TPAs need to be implemented as soon as possible.

However, the social and political pressures for such reforms are weak. Economic development in Malaysia remains firmly embedded in political patronage and global markets, with renewed emphasis on private capital and production for export. If change is to come, it will most likely be due to political exigencies or environmental necessity, such as costly and unacceptable increases in flooding, or, paradoxically, to developments in global markets. Thus, there is an on-going federal government-led initiative in recognition of the pressures from those markets for timber certification. There is now a National Timber Certification Council which, although subjected to much NGO criticism, has attempted to address at least some community concerns about their rights and about forest management. Unfortunately, some government agencies have increased the subterfuge by using the vocabulary of environmental reform and social progress to misrepresent new programmes for exploitation and abuse. For example, some such social or community forestry projects have resettled existing communities elsewhere in order to log their ancestral land and then develop commercial agriculture on the logged land.

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