

Forestry in Malaysia : Issues and Prospects

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ABSTRACT

The paper is concerned with forestry in Malaysia. It describes the present status of forestry in Malaysia, its management practices and major issues relating to timber trade, silviculture and forest plantation. The paper also discusses the challenges faced by Malaysia following the Earth Summit in Rio in 1992 particularly as these relate to non-wood resources, biological diversity, tropical forests as carbon sink, indigenous people and the role of the non-governmental organisations (NGOs) in forest management.

ABSTRAK

Kertas ini adalah mengenai perhutanan di Malaysia. Ia memerihalkan kedudukan masakini perhutanan di Malaysia, amalan pengurusannya dan isu-isu utama berhubung dengan perniagaan kayu, silvikultur dan perladangan hutan. Kertas ini juga membincangkan cabaran-cabaran yang dihadapi oleh Malaysia berikutan daripada Persidangan Puncak Bumi di Rio pada tahun 1992 terutama isu-isu berkaitan dengan sumber bukan-kayu, kepelbagaian biologi, hutan tropika sebagai penghisap karbon, penduduk pribumi dan peranan pertubuhan-pertubuhan bukan-kerajaan (NGO) dalam pengurusan hutan.

INTRODUCTION

Malaysia is a federation of 13 states in the Southeastern tip of Asia. It is a democratic sovereign state which gained independence from Britain in 1957 as Malaya and later formed Malaysia with the inclusion of Sabah and Sarawak in 1963. Sabah and Sarawak lie on the island of Borneo while the other nine states are collectively referred to as Peninsular Malaysia. Malaysia has a population of 17.6 million with over 14.1 million in the peninsula and about 1.8 million in Sabah and 1.7 million in Sarawak. The population comprises 55% Malays, 34% Chinese, 10% Indians and 1% other races. The ethnic groups consists of over 30 races, including the aboriginal tribes.

Malaysia's economy had been dependent on rubber and tin in the early days of independence, but now has diversified into manufactured goods. Malaysia's major export comprises manufactured goods, petroleum, palm oil, tropical timber, rubber, cocoa, tin and other commodities.

It is the goal of the government to make Malaysia a developed country by the year 2020 through a Vision 2020 launched in 1991. This far-sighted plan is complemented by regular five year development plans and a longer term Outline Perspective Plan. The industrialisation policy is guided by an Industrial Master Plan while the National Agricultural Policy has been recently revised to give focus to the farmer. The per capita income of Malaysia was about US\$2500 in 1991. The economy has been growing well at a GDP rate of 8.7% in 1991. The middle class of Malaysia is increasing but Malaysia is faced with a problem of high cost of labour. As a result, there is a large influx of labour from Indonesia, Thailand, Bangladesh and the Philippines.

Malaysia has drawn up a comprehensive national forest policy since 1978 based on the experiences under the British colonial past. However, as land and forests are the jurisdiction of the States, every State has enacted its own State Forest Policy and State Forestry Act to implement the policy. The state jurisdiction over forestry is important to be understood as this has a major influence on the management of forests and explains the variation in practices between states. The Federal Government is only responsible for research, training, coordination and providing advice to the states. Coordination at the Federal level is through a National Forestry Council, comprising all heads of State governments and chaired by the Deputy Prime Minister. It is responsible to the National Land Council. There is a proposal to combine the two councils as membership is similar.

THE MALAYSIAN FOREST

Malaysia has a land area of 32.9 million ha, about the size of New Mexico. Tropical rain forest covers about 59% of the land mass. Three inter-related factors, climate, edaphic conditions, and the plant community, have contributed to the development of various forest types (Table 1). Elevation, influencing climate, has been the most important in forest formation. Edaphic forests have developed mainly as a result of influences of the geology of the terrain. The lowland, hill and upper dipterocarp forests, with an upper limit of about 1200 m above sea level, together constitute just over 85% of the forested area in the country. These three forest types are biologically very diverse. In the lowland dipterocarp forest, for example, a total of 820 species of trees over 1 cm diameter at breast height were recorded in a 50 hectare area (Kochummen *et al.* 1990). The species number is almost a third of the total number of tree species found in Peninsular Malaysia.

The family Dipterocarpaceae, the most important timber family in the Southeast Asian region, dominates the three dipterocarp forests. The dipterocarps are the most important group of timber trees in the country and produce such timbers as Meranti and Keruing. The dipterocarps are also

prominent in edaphic forests such as the peat swamp, heath and fresh water swamp forests. The swamp forests, alluvial and peat swamp combined, comprise about 8% of the forested area. Mangrove forests, important also as nursery and breeding ground for fisheries, form about 3%.

TABLE 1. The rain forest types of Malaysia
(adapted from Symington [1943] and Wyatt Smith [1964])

Climatic climax forest	Edaphic forest
Lowland dipterocarp forest	Heath forest
Hill dipterocarp forest	Forest over limestone
Upper dipterocarp forest	Forest over ultramafic outcrops
Montane oak forest	Beach stand vegetation
Lower ericaceous forest	Mangrove forest
Montane subalpine vegetation	Brackish-water forest
Semi-evergreen seasonal forest	Peat swamp forest
	Fresh-water swamp forest
	Seasonal swamp forest

Malaysia developed a land use planning exercise in the early 1970's through a Land Capability Classification (LCC) programme, where various resources were inventorised and broad guidelines for land use developed based on soil, slope and resources. Mining and agriculture took precedence over forestry. Based on the LCC, the Permanent Forest Estate (PFE) was determined amounting to 14.06 million ha or 42.8% of the total land area. Out of this about 11.23 million ha is designated as productive forests to be managed for timber production on a sustained yield, while 2.83 million ha is for protection purposes. Besides this, about 1.60 million ha are conserved as national parks and game reserves. A total of 3.60 million ha under stateland forests are forest areas earmarked for agriculture and other land use. However due to the policy of deemphasising land development, and the fact that the government has announced a policy of having not less than 50% of the country under forests and tree cover, it is expected that some of the stateland forests will be reverted to the PFE in the future. Together with rubber and oil palm plantations, Malaysia currently has over 70% under tree cover. Table 2 gives the breakdown of forest by states. The distribution of major forest types in Malaysia is given in Table 3.

TABLE 2. Forest resources in Malaysia (1991)
(million ha.)

Region	Pen. M'sia	Sabah	Sarawak	Whole M'sia
Productive PFE	2.81	3.00	5.42	11.23
Protective PFE	1.90	0.35	0.58	2.83
Total PFE	4.71	3.35	6.00	14.06
National & Wildlife Parks	0.74	0.39	0.47	1.60
Stateland Forest	0.67	0.70	2.23	3.60
TOTAL FOREST	6.12	4.44	8.70	19.26

Total Land Area : 32.9 million ha.

Source: Anon (1992)

TABLE 3. Distribution and extent of major forest types
in Malaysia

Region	Land Area (m ha)	Dipterocarp	Swamp	Mangrove	Total Forested Land	Percentage of Total Country Land Area
Peninsula	13.16	5.81	0.20	0.11	6.12	18.6
Sabah	7.37	3.93	0.19	0.32	4.44	13.5
Sarawak	12.33	7.30	1.24	0.16	8.70	26.5
Total	32.86	17.04	1.63	0.59	19.26	58.6

Source : Anon (1992)

FOREST MANAGEMENT AND SILVICULTURAL PRACTICES

Logging control and silvicultural treatment are only carried out in the Permanent Forest Estate. No control over logging is instituted in the State land forests which are due for conversion to other land uses.

The concept of sustainable yield management has always been the guiding principle in managing the natural forests in Malaysia. Control of logging is by area and permits for logging are issued by blocks. Inventory is carried out before logging to determine which trees are to be harvested and inventory is again carried out after logging to assess the residual stand and

to prescribe silvicultural treatment. The current silvicultural system for mixed Dipterocarp forests, adopted by Peninsular Malaysia and Sarawak, is the Selective Management Systems (SMS) which sets the minimum cutting limits of 45 cm dbh for non-dipterocarps and 50 cm dbh (60 cm dbh for Sarawak) for dipterocarp species. It also requires a minimum residual stand of 32 trees per hectare after harvesting.

The cutting cycle of Peninsular Malaysia is 30 years while Sarawak practices a 25-year cycle. Under the SMS a nett economic volume of at least 30 to 40 cubic metres per hectare is obtained at the time of logging and an equal volume is expected in a 25 or 30-year cutting cycle.

In Sabah, the Malaysian Uniform System (MUS) with a cutting cycle of 60 to 80 years is still being practised but with modifications to include a series of treatments applied to the forest before and after logging. The different management systems applied manifest clearly the independent jurisdiction of forestry within the states of Malaysia, especially in Sabah and Sarawak.

The scientific basis and rationale of these systems are constantly being examined and reconciled through R & D but much yet needs to be done. New innovative approaches have to be introduced into the silvicultural system to make them more effective, environmentally friendly and more economically attractive. In areas where natural regeneration is not possible, enrichment planting with indigenous trees are practised.

The Malaysian silvicultural system is one of the best known and effective silvicultural systems in the tropical world and has been adapted by many other countries, especially in South-East Asia. However, in view of the many new issues of forestry, there needs to be a close look at improving these systems to make them more cost-effective and to take into consideration new issues that have arisen.

FOREST PLANTATION

Establishment of plantation forest in Peninsular Malaysia was initiated in 1957 with the planting of *Tectona grandis* (teak) in the northern states where 780 hectares have been planted. In the late 1960's and early 1970's plantation efforts in Peninsular Malaysia also initiated preliminary efforts at the establishment of fast-growing tropical pines. About 6,700 ha had been planted mainly with *Pinus caribaea*, *Pinus merkusii* and *Araucaria* species. However, the planting of these species was stopped in the late 1970's due to the difficulties in obtaining quality seeds.

Subsequently in the early 1980's the Government embarked on a new reforestation project to establish large scale forest plantations of fast growing species for general utility timber. A total of 100,000 hectares had been planned to be established in poorly stocked logged over forest as well as in

degraded forest lands within the Permanent Forest Estate. At the end of 1992, a total of 50,200 hectares had been planted with *Acacia mangium*, *Paraserianthes falcataria* and *Gmelina arborea*. A balance of about 49,000 hectares are still available for forest plantation establishment.

In Sabah, plantations of fast-growing species as well as some indigenous species have been initiated since 1973. The agencies involved are Sabah Forest Development Authority (SAFODA), Sabah Forest Industries (SFI), Sabah Softwood Sdn. Bhd. (SSSB) and the Forestry Department. To date a total of about 56,100 ha of *A. mangium*, *G. arborea*, *P. caribaea*, *Paraserianthes falcataria*, and *Eucalyptus* spp. and indigenous hardwood species have been established in Sabah (Stanley, 1992).

In Sarawak, a total of 6,600 hectares of the shifting cultivation areas in the PFE had been planted by the Forestry Department using both indigenous and exotic species. The species are *A. mangium*, *G. arborea*, *P. falcataria*, *Shorea macrophylla*, *Swetenia macrophylla* and *Durio zabethinus*. Under the Sixth Malaysia Plan, (1991 - 1995), Sarawak intends to establish a further 14,000 hectares of forest plantation (Kendawang, 1992). It is expected that forest plantations will increase in the future, particularly with indigenous quality timber species and rubber. The private sector has also indicated interest in this venture.

MALAYSIAN TIMBER TRADE

The timber trade in Malaysia only came into being in a big way after World War 2. It was during the late forties that the timber trade took off and this coincided with the publication of the first edition of the Malaysian Grading Rules (MGR) in 1948.

The timber trade consisted of supplying heavy hardwood (railway sleepers) for the construction of railway line. Since then, the forestry and wood-based industry took on an even more important role in the Malaysian economy. Its contribution to export earnings rose by 100 percent from MR4.3 billion (US\$1.68 billion) in 1980 to MR8.9 billion (US\$3.5 billion) in 1989. It increased further in 1991 to MR9.3 billion (US\$3.6 billion) or 10.8% of GDP (Table 4). The forestry and wood-based industry provided employment opportunities to approximately 194,000 people in 1991.

Of the RM9.3 billion, 43% is still accounted by log export (Table 5). Malaysia is the largest exporter of tropical hardwood logs in the world. Malaysia produced 41 million cu.m of logs in 1991 of which about 19 million cu.m is exported. Sarawak accounted for 15.7 million cu.m. of the log export and the remaining was from Sabah.

Peninsular Malaysia has banned the export of logs since 1985. In 1991, Japan imported a total of 9.2 million cum of logs from Malaysia. Korea and Taiwan imported about 3.2 million cu.m. each.

TABLE 4. Export earnings of wood and wood-based products

Year	MR (million)	% of GDP
1980	4,348.5	9.7
1985	4,300.9	5.9
1986	4,705.7	6.7
1987	6,936.4	11.3
1988	7,168.9	10.8
1989	8,980.3	12.4
1990	8,935.2	11.2
1991	9,347.8	10.8
1992*(until Sep)	7,500.5	-
1US\$ = RM2.60		

TABLE 5. Malaysia: export of major timber products (1991)

	Volume ('000 cum)	MR (million)
Logs	19,320.0	4,096.7
Sawn Timber	4,932.2	2,901.2
Plywood	1,185.6	1,005.4
Veneer	476.7	302.5
Moulding	398.5	543.3
Wooden & rattan furniture	-	478.8
Others	-	19.9
Total	-	9,347.8

US\$1 = RM 2.60

Sawn timber contributed about a third of the total export value. Sabah and Peninsular Malaysia both accounted for about RM1.2 billion each with Sarawak lagging behind. The European Community was the largest importer of Malaysian sawn timber accounting for 36.2% of total sawn timber export value. Japan imported about 13.1% and Singapore 8.4%.

Aware of the over-dependence on the export of logs, the Malaysian Government in 1985 initiated the Industrial Master Plan (IMP). The plan called for an increase in down-stream processing in the wood-based industry. An export levy on sawntimber was imposed for Peninsular Malaysia in September 1990.

The setting up of more sawmills and plywood mills in Sabah and Sarawak was encouraged. This has resulted in the increase in sawn timber export from Sabah.

The target set for export of furniture of RM410 million by 1995 at the end of the Sixth Malaysia Plan, had been surpassed in 1991. The figure has since been revised upward to MR1 billion. The growth of the wooden furniture industry has been phenomenal as shown in Table 6, and manifests the commitment of the government to go downstream and increase value added manufacturing.

TABLE 6. Export value of furniture in Malaysia

Year	MR (million)
1980	12.4
1985	18.0
1986	27.5
1987	56.4
1988	93.9
1989	171.3
1990	269.5
1991	478.8
1992* (until Sep)	456.5

The Malaysian wood-based industry is currently going through a stage of radical changes and adjustments. The realization that Malaysia cannot remain a supplier of raw-material has hastened the pace of diversifying into downstream activities. The focus has been directed at the wooden furniture industry and at this juncture Malaysia has succeeded in meeting its initial target.

Sarawak has taken steps to reduce log production in its Permanent Forest Estate (PFE) by 3 million cu.m. (1.5 million cu.m. in 1992 and another 1.5 million cu.m. in 1993). This reduction is to be targeted at a sustainable level of 9.2 million cu.m. per annum to conform with the recommendations of the International Tropical Timber Organization (ITTO) to the Sarawak Government. To promote more downstream processing in the stage, the Sarawak Government imposed a 20 percent log export restriction quota in 1992. This will be increased to 36% for 1993. A revised timber royalty system which incorporates an incentive scheme for wood processors was also implemented in 1992.

The Sarawak Government temporarily suspended log stamping in the later part of 1992, reflecting its commitment to the proposed log reduction.

As a result of the move, 15 to 20 percent of the work force in the logging sector has been retrenched. In another move to check illegal logging, the Sarawak Chief Minister has offered a reward of 50% of the total value of timber logs seized from illegal loggers to forestry enforcement teams.

In Sabah the Federal Government has put a temporary halt to the export of logs in an attempt to reduce logging and promote downstream activities, while in Peninsular Malaysia, there has been a concerted campaign to stop illegal logging. Measures include involving the police and army and increasing penalties.

FORESTRY AND UNCED

In order to discuss current issues of forestry, it is relevant to discuss decisions arrived at the United Nations Conference on Environment and Development (UNCED) at Rio de Janeiro in June 1992 on the following:

1. Agenda 21; a statement of goals and objectives, as well as list of strategies and actions, that are to be taken to implement the principles enunciated in the Earth Charter (a document of principles of the Conference).
2. Convention on Biological Diversity: developed and signed at Rio.
3. Framework Convention on Climate Change; developed and signed at Rio.
4. Statement of Principles on Forest: a non-binding agreement for the protection of all types of forest, agreed upon in Rio.

A whole chapter in Agenda 21 addresses the problem of combating deforestation. The issues of sustaining the multiple roles and functions of forests, of greening degraded areas through forest rehabilitation, afforestation, reforestation and other rehabilitative means and of increasing the value of forests by increasing the production of goods and services, in particular, the yield of wood and non-wood forest products, and by eco-tourism and the managed supply of genetic materials, are given particular attention in this chapter.

Agenda 21 also devotes one whole chapter to the conservation of biological diversity although this subject is dealt in greater depth in the Convention on Biological diversity. The chapter in Agenda 21 deals with strategies to protect biological diversity and to use biological resources sustainably.

The Convention on Biological Diversity, which the USA did not sign at Rio, places great emphasis on the conservation of biological diversity and the sustainable use of its components. As tropical forests contain more than half of the world's biodiversity, with some estimates being as high as 80-90%, the responsibility to ensure protection of tropical forests is high indeed.

Issues of developing national strategies, plans or programmes for biodiversity, of establishing a system of protected areas for biodiversity, of maintaining viable populations of species in natural surroundings, of rehabilitation and restoring ecosystems, of legislating provisions for the protection of threatened species and populations, of managing relevant process and activities that adversely affect biodiversity and of *ex situ* conservation of biodiversity are those relating to forestry that have been brought into focus by the Convention.

The framework Convention on Climate Change which Malaysia has not signed, makes reference to forests and forestry in several contexts. The need to control, reduce or prevent anthropogenic emissions of greenhouse gases in the forestry sector is stressed. The need to conserve and enhance forests as a sink and reservoir of greenhouse gases is referred to.

No legal instrument on forestry was developed for signing at UNCED due to widely differing views between developed and developing countries. Nevertheless, a Statement of Principles on Forests was agreed upon at Rio, and this may well be precursor to a legal instrument being developed in the future.

The Statement of Principles on Forest is clear in the multiple and complementary functions and uses of forests, and stresses that forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations. The principles in the Statement apply to all types of forest, boreal, temperate and tropical.

CHALLENGES AFTER RIO

Rio placed the issues of the environment firmly on the global map. The gathering of 104 Heads of States ensured that world attention was focussed on Rio. The mass media reached into homes in all corners of the earth in vividly reporting all activities at the UNCED.

The issues of forest figured prominently throughout the period of the UNCED because of the significant role it plays in maintaining the climate, in being a major storehouse of biodiversity, as well as in maintaining structural and functional biodiversity at the ecosystem level. It would be justifiable to say that public awareness of the importance of forests was increased as a result of Rio. Because the mass media is more efficient in reaching the layman in developed countries, the main consumers of our tropical timbers were made aware of the issues of tropical forestry.

An anti-tropical hardwood timber campaign has already been waged for several years now by powerful non-governmental organisations (NGOs) and lobby groups in developed countries. These bodies have been able to exert influence on certain governments and consumers alike. An evolution of these campaign is eco-labelling of timber products.

The impact of UNCED has also been felt in Malaysia where there is greater awareness of forestry at the highest level of government and by the public. The issues of forestry and environment have been widely discussed in the local press and recent serious actions by the government to curb illegal logging, promote reforestation, promote private sector involvement in forestry, encourage downstream value added processing and reduce log export, are direct manifestations of greater concern on forestry, and a greater commitment to sustainable forestry in the country. However UNCED has also raised new issues on the forestry agenda which have impacts on forestry at the national and international levels. Some of the issues are discussed.

NON-WOOD RESOURCES

Forest management has too long been "timber-oriented" and has not considered other non-wood resources which are becoming increasingly important and which have tremendous potential in economic contribution. Past practices concentrated on the exploitation of economically important non-wood resources such as rattan, but did not attempt to manage these resources on a sustainable basis. While it is impractical to cater for the requirements of all non-wood resources, it is possible and potentially economical to consider some of the more important resources from the forests. For example, it is possible for forest management to integrate management and growing of rattan and bamboo within the management of trees. However, such efforts need to be researched into but preliminary indications show that it is potentially possible.

The management of natural stands of rattan, bamboo, other palms of economic potential, fruits, clean water and other products such as game, could be integrated into forest management. However, there is much research to be carried out into logging and harvesting techniques and silvicultural methods in order to cater for the increased range of economic products from the forest.

TROPICAL FORESTS AS CARBON SINK

The role of forests as carbon sink is a very complex issue and the purpose of raising this issue is to indicate that Malaysia is aware and concerned on the increasing importance of this issue. The carbon sink role of tropical forests is well established and the need to sustain this capacity must be considered.

Unlike a monoculture plantation, the complexities of species, tree sizes, plant communities and vertical and horizontal structural differences make the understanding of the complex carbon sink role difficult, especially understanding the changes resulting from the logging of such forests. Nevertheless, the significant contribution of tropical forests in the global environment balance has to be kept in mind as we harvest our forests but a

more indepth study is required in order to understand the complex phenomena that exist in the forest ecosystems.

While Malaysia did not sign the Convention on Climate Change in Rio de Janeiro during the Earth Summit, the implications of that convention on forestry and land use practices in this country have to be evaluated.

BIOLOGICAL DIVERSITY

The issue of biodiversity is becoming global where the rich biodiversity of life in the tropical forest is even being considered a common heritage of Man. The task of documenting the biodiversity of the forest is urgent but is a daunting task. Peninsular Malaysia has taken active steps in this direction and is one of the very few, if not the only country in the tropical world to have published an account of its tree flora. It took 25 years to produce a 4 volume publication and efforts are now underway to document the tree flora of Sabah and Sarawak. However, this effort is only for the tree flora and there is much more biodiversity that needs to be urgently documented. Other issues on biodiversity are many such as the impacts of logging on biodiversity, and the need to monitor loss or changes in biodiversity due to harvesting.

TABLE 7. Species diversity in Peninsular Malaysia (from Cranbrook {1988})

Plant/animal group	Number of species
Flowering plants	8000
Ferns	500
Fungi	>300
Mammals	203
Birds	616
Snakes	141
Frogs	93
Lizards	>80
Butterflies	1022
Moths	>5000 *
Other insects	>20000 *
Other invertebrates	>10000 *

* estimates

The task to fully address biodiversity is enormous. An evaluation of the nation's biological wealth, its location, quality and quantity, is most urgent. Table 7 illustrates some of the complex biodiversity that exists in Peninsular Malaysia that needs to be considered. While the potential of economic harvesting of the wealth of the biodiversity is great through such uses as

pharmaceutical products, Malaysia does not have the technology to embark into this aspect of research. That technology exists in developed countries. The implications of the Convention on Biodiversity especially with regard to use of biodiversity and transfer of technology, have to be examined. Malaysia has made initial efforts at preparing a national policy and strategy on biodiversity.

AESTHETIC VALUE OF FORESTS

As the country develops, the demand on the aesthetic value of our forest environment will increase significantly. Demand for the recreational use of forests has increased and will continue to increase. It is therefore important that sites of unique recreational features, such as waterfalls, caves, "big tree plots" and areas of unique interest, be protected now.

Protection of such upstream facilities is critical for long-term sustainability of such unique sites. Lest these facilities become isolates in a sea of development areas that eventually could erode the existence of these very facilities, a buffer zone of forested area of sufficient size will need to be retained. Efforts have already begun and the Forestry Departments have established numerous recreational sites along accessible public roads to cater for the increasing demand. Facilities in national parks are also being improved.

INDIGENOUS PEOPLE

The issue of indigenous people or "Orang Asli" living in forest areas has been sensationalised by the international press and NGOs. In Peninsular Malaysia there are 83000 "Orang Asli" or 0.6% of the population. The basic government policy is to assist the Orang Asli to come into the mainstream of economic life. In Peninsular Malaysia, a special Department of Aboriginal Affairs was established in 1953 with the main objective of looking after the welfare of the Orang Asli by assisting them in meeting their needs for medical, educational and other needs. Resettlement schemes based on perennial agriculture have been established. Schools have been built while a special hospital was built for them. Other schemes, including income generating projects such as small scale industries based on rattan and bamboo, upgrading of skills, establishment of cooperatives and family planning, have been provided free to the "Orang Asli" population. Education is given priority and within 20 years, there are now 18 University graduates and 60 college graduates from the Orang Asli population. These people are now fully integrated into the Malaysian mainstream of life.

The natives of Sarawak and Sabah make up the majority of the population in the two states. In Sarawak, of the total of 1.3 million people in 1980, 905,800 (or 69%) were categorized as natives (including the Malays). Of the

total of 1 million people in Sabah in 1980, 838,100 (or 83%) were natives. In both these states, efforts similar to those in Peninsula Malaysia are being implemented to assist the indigenous people.

The issue on the development of the native communities in East Malaysia, especially in Sarawak has been sensationalized at the international level. The environmentalists merely emphasize the need to preserve the traditional way of life of the natives, especially the remaining 400 freely nomadic Penans, and ignore the fact there is also a need to bring the natives into the mainstream of national development. Since 1987, efforts to develop the Penan community were intensified when the Sarawak State Government formed a special Cabinet Committee to formulate policies and strategies to facilitate the development of the community. Other than the ongoing rural development programs, special programs were introduced to uplift the living standards of the Penans, such as the establishment of service centers, Penan Volunteer Corps (PVC), and providing virgin forests as reserves for the nomadic Penans.

OTHER CELLULOSIC RESOURCES

Malaysia first introduced rubber trees in the country in 1876 and now has over 1.89 million ha of rubber plantations, established for the production of latex. At the end of its economic life of 25 years, the trees are felled for replanting. It is estimated that about 9 million cu.m. of logs of 15 cm. diameter and above are available annually, based on an average production of 180 cu.m. per ha. From a humble beginning in the late 1970's, rubberwood is now a major timber in the timber industry. Once protected, the timber is extremely versatile and beautiful and is used in reconstituted panel products as well as for furniture.

From a humble beginning of 17,515 cu. m. of rubberwood valued at MR 4.4 million (US\$1.76 million) in 1980, the volume and value of rubberwood exported has escalated to 221,361 cu.m. at MR 98 million (US\$39.2) in 1989. It was only in the late 1970's, partly due to the rising cost of indigenous timber species that rubberwood was introduced to the furniture industry. The recent anti-tropical hardwood campaign has also resulted in an increase in the use of such plantation species. Currently, it is estimated that about 70 % of the wooden furniture exported is made of rubberwood. The material is also being used in the manufacture of particle-board, cement and gypsum board as well as medium density fibreboard. With the projected average annual availability of 9.0 million cu.m. for the next decade, and the wide acceptance of rubberwood in the wood-based industries, it is not surprising that rubberwood is now the material, and will continue to be, the major source of cellulosic material for the wood-based industries in the coming years. Since rubber plantations are man-made and replanting is actively pursued, rubberwood timber is therefore sustainably managed. In this

respect, the rubber plantation sector has recognised its role, contribution and responsibility to the rubber-wood industry.

With about 2 million ha of oil palm estates, a similar story to rubberwood is about to unfold. The oil palm trees are felled and replanted after an economic life of about 25 years and it is estimated that the trunks can total to about 3 million tonnes of dry material a year. However, being a palm, the trunk is not wood and therefore not suitable for sawn timber. However, research in FRIM has shown potential uses as pulp and paper, and for reconstituted panel products. Steps are actively being pursued to promote the establishment of industries based on these resources.

By all definitions, rubber and oil palm plantations are "forests" and supply of cellulosic materials from these resources should be considered in the sustainable supply equation for the country.

NGOS AND FOREST MANAGEMENT

With the global concern on environment and after UNCED, forestry has found itself in the global limelight, especially tropical forestry. Non-Governmental Organisations (NGOs), both national and international, have voiced concern on forestry practices in Malaysia. Besides the issue of sustainability and biodiversity, the issue of forest dwellers has been highlighted.

International NGOs can exert great influence on the policies of countries. The call for sustainable management of tropical forests is loud and clear, and the international NGO movements can have a far reaching impact on forestry practices in developing countries. The role of national NGOs are also important but national NGOs are not as strong as to make significant impacts on national decision making process. However, this is improving gradually. The government recognises the role of NGOs and keeps an open channel of communication with the local NGOs to take heed the views of well meaning NGOs.

ROLE OF THE FORESTRY PROFESSION

A conference of senior foresters in Yokohama in 1991, organised by ITTO and the Forestry Agency Japan, emphasised the role of the forestry profession in sustainable forest management. This is a critically important aspect in the overall sustainable forest management scenario.

Without true professionals, the practice of the profession will not be sustained. There needs to be greater professionalism within the forestry profession. The international and global interest on tropical forestry is both a challenge and an opportunity. The opportunity for forestry is now. Governments and policy-makers are more aware of forestry, its potential and its role. Government and policy-makers are also aware of their own responsibility. In this respect, training of professionals in all aspects of forest management is direly necessary.

CONCLUSIONS

Whatever was the outcome of decisions taken at Rio, the topic of forestry much debated in the run-up to and at Rio, is likely to become a burning issue in the years to come. Public opinion is likely to grow stronger for the protection of forests worldwide, whether they be boreal, temperate or tropical. Consumers in the more affluent societies will increasingly shun products that come, or are believed to come, from forest that are not sustainably managed. These consumers are likely to be willing to pay more for products that come from sustainably managed forests.

Malaysia recognises its moral duty to ensure that all her natural resources, including forests, are sustainably managed so that the needs of our future generations are not compromised. Insofar as forest are concerned, efforts are being made to implement plans to ensure sustainability. The political commitment needed to do this is there.

The nation is fortunate in that it is amply endowed with such a valuable resource as the rain forest which took about 130 million years to evolve to the present complex structure. It is a natural resource that is really being held in trust for future generations by the present generation. Efforts are underway to ensure that utilisation of this resource will be sustainable and that the impact on the environment is minimal and the quality of life not threatened. It is now mandatory that for any logging in excess of 500 ha. and for any land clearing over 50 ha., an Environmental Impact Assessment (EIA) be carried out. However, due to technical and institutional limitations, this is not fully implemented yet. However, there is a commitment in this direction and efforts are being directed at implementing this legal requirement. This will ensure that we fulfill our obligations to future generations.

Malaysia was a vocal voice in UNCED where our leaders expounded the responsibilities of all nations with regard to the global environment and forests. We recognise that international eyes are on our country. We are serious with respect to our environment and our forests, and while we recognise that we have many shortcomings, there is a concerted commitment to address the many complex issues being faced by forestry in the country. With policies to curb logging, reduce export of logs, increase value added processing, expand silviculture, expand forest plantations and maximise use of rubber wood and oil palm trunk, Malaysia is confident that the timber sector will continue to play a prominent and important role in the national economy.

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