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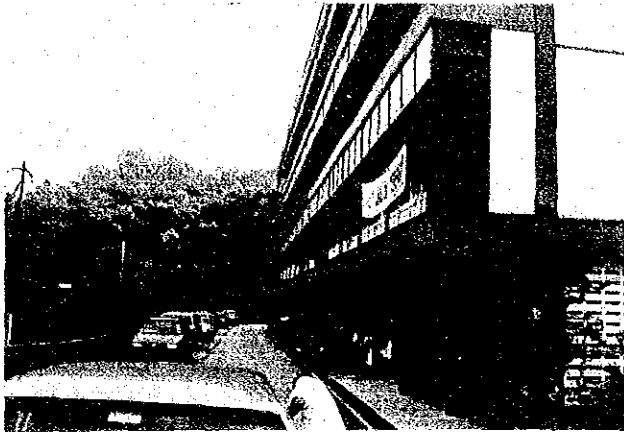
**DEVELOPMENT OF HUMAN RESOURCES
FOR
THE TROPICAL FOREST MANAGEMENT
(STRATEGY FOR MALAYSIA)**

JULY 1992

**JAPAN OVERSEAS FORESTRY CONSULTANTS ASSOCIATION
(JOFCA)**

国際協力事業団

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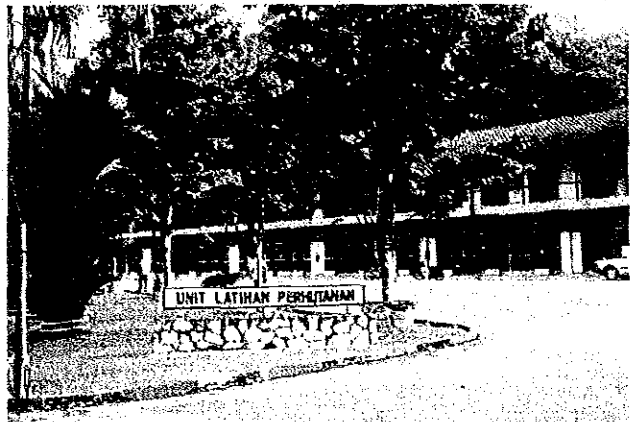
A FRIM laboratory building



A FRIM laboratory of FRIM



A class-room lesson

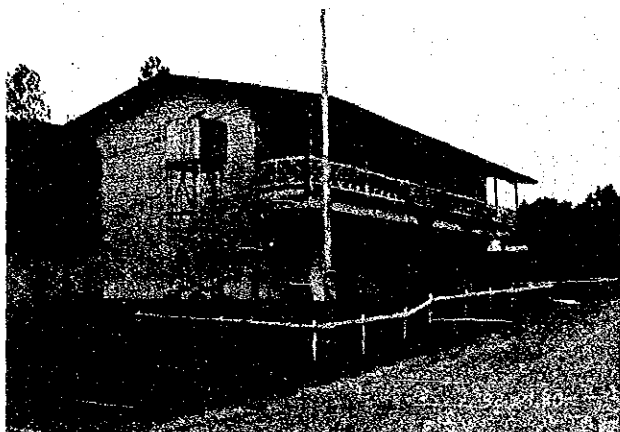


The Forestry Training Unit
in the FRIM premises



Surrounding forests and an
indispensable football ground

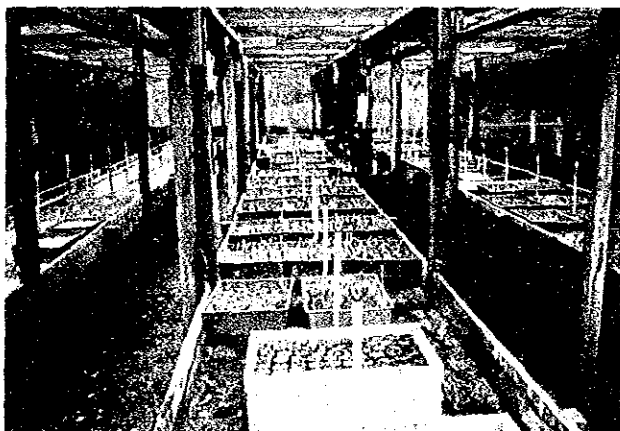
Reforestation Development and Training
Project, SABAH, MALAYSIA (A, B, C, D)



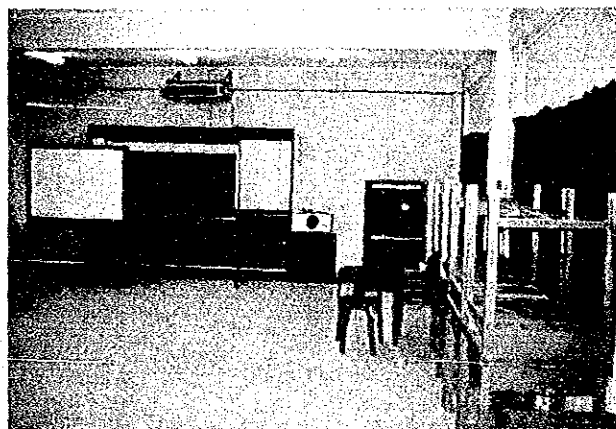
Ⓐ Kinarut project office with
a laboratory and a class-room



Faculty of Forestry, UPM



Ⓑ A model nursery



Ⓒ A class-room for 20 students



Ⓓ A mangium plantation forest

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1. Introduction

The current rapid decrease and deterioration of tropical forests are posing a grave threat to human beings, and the settlement of this problem has drawn world-wide attention.

Such a decrease in tropical forests has exerted a serious influence on the social economy of developing nations that depend on agriculture, livestock farming and forestry. In addition, the decrease has also become the subject of discussion relating to the whole world, and allows no time for delay in settlement to protect the global environment from the extinction of living species in tropical forests, global warming, and other difficulties.

In order to resolve the problem, diversified measures are required, and steps for the protection of forests and afforestation in developing nations are fundamental. However, it is an undeniable fact that in taking such steps, developing nations are short of local forestry officials, qualitatively and quantitatively, for forest management and afforestation.

Based on the recognition of problems mentioned above, this study aims at preparing and proposing, by nation, guidelines and method for training tropical-forest management officials.

The study was conducted in Malaysia in May, 1992.

2. Current Situation of Forests

The current situation of forests in Malaysia is summarized in the following table.

1989 (in million ha)

Region	Land Area	Forest Area	Other Area	Percentage of Forests
(1) Peninsula	13.16	6.32	6.84	48.0
(2) Sabah	7.37	4.44	2.93	60.0
(3) Sarawak	12.33	8.45	3.88	68.5
Total	32.86	19.21	13.65	58.5

Sources: (1) "Annual Report, 1989" by Forestry Department.

(2) & (3) Data from The Kota Kinabalu Consulate.

Note: For data, see Tables 1-1 and 1-2.

Forests in Malaysia are designated as permanent forest estates (PFEs) for sustainable management because they have multifunctions to play a major role in regional and national economy.

PFEs are functionally divided into three categories:

- (1) Protective Forest: Required for water and soil conservation and environmental protection
- (2) Productive Forest: Required for sustainable production of forest products
- (3) Amenity Forest: Required for recreation, education, study, and wildlife protection.

Natural forests in this country are as a rule state-owned, and administered by the Forestry Department.

Table 1-1 Comparative Statement of Forested and Non-Forested Land in Peninsular Malaysia, as of December 31, 1989

State	Permanent Forest Estate				Other Forest Land			Total			
	Area (2)	Existing Forest Reserve (3)	Proposed Forest Reserve (4)	Total (5)	Wildlife Reserve (6)	State Land (7)	Total (8)	Forested Land (9)	State Land (10)	Alienated Land (11)	Total (12)
JOHORE	1,898,568	409,901	7,271	417,172	-	138,488	138,488	555,660	1,386,635	204,293	1,342,928
KEDAH	942,560	334,135	38,745	372,880	-	-	-	372,880	204,908	364,742	569,650
KELANTAN	1,493,181	422,234	212,382	634,616	108,783	158,361	267,144	901,760	255,935	355,486	591,421
MALACCA	164,988	7,247	89	7,336	-	1,200	1,200	8,536	21,985	134,467	156,452
N. SEMBILAN	664,591	176,737	-	176,737	-	35,362	35,362	212,099	73,578	378,914	452,492
PAHANG	3,596,585	1,266,597	140,927	1,407,524	352,095	464,330	816,425	2,223,949	812,264	560,372	1,372,636
PERAK	2,102,122	650,747	362,999	1,013,747	7,458	53,927	61,385*	1,075,132*	n.a.	n.a.	n.a.
PERLIS	79,515	6,067	-	6,067	-	4,564	4,564	10,631	27,285	41,901	69,186
PENANG	103,150	6,406	-	6,406	-	848	848	7,254	1,537	94,359	95,896
SELANGOR	796,054	271,079	11,324	282,403	2,129	3,129	5,258	287,661	23,850	n.a.	29,850
TERENGGANU	1,295,566	317,183	224,068	541,251	77,507	46,000	123,510	664,761	339,001	291,804	630,805
F. TERRITORY	24,400	63	-	63	-	-	-	63	24,337	n.a.	24,337
TOTAL	13,161,271	3,868,396	997,805	4,866,201	547,972	906,212	1,454,184	6,320,386	2,929,315	2,406,338	5,335,653

* Excluding district of Kuala Kangsar
n.a. Not available

Table 1-2 Statement of Progress in Gazettement of Permanent Forest Estate in Peninsular Malaysia, as of December 31, 1989 (ha)

	On Jan. 1, 1989 (1)	Under Consideration of EXCO (2)	Preliminary Notification (3)	Gazatted During the Year (4)	Excluded During the Year (5)	On Dec. 31, 1989 (6)
JOHORE	441,176	7,271	-	-	1,275	417,172
KEDAH	334,135	34,391	4,354	-	-	372,880
KELANTAN	197,491	-	281,619	228,868	73,362	634,616
MALACCA	7,358	-	-	-	22	7,336
N. SEMBILAN	177,083	-	-	-	346	176,737
PAHANG	1,407,524	-	-	-	-	1,407,524
PERAK	648,428	362,999	-	2,319	-	1,013,746
PERLIS	5,739	328	-	-	-	6,067
PENANG	6,406	-	-	-	-	6,406
SELANGOR	271,079	11,324	-	-	-	282,403
TERENGGANU	541,251	-	-	-	-	541,251
F. TERRITORY*	63	-	-	-	-	63
TOTAL	4,007,733	416,313	285,973	231,187	75,005	4,866,201

* FEDERAL TERRITORY (K. Lumpur)

3. National Forestry Policies

Malaysia adopts the following fundamental policies for national forestry.

- (1) Close cooperation between federal and state governments
- (2) Efficient management in order to realize sustainable production by request for developing the nation.

These national forestry policies will be implemented to attain the following goals:

- (1) To designate permanent forest reserves (PFRs)
- (2) To protect PFRs from destruction
- (3) To execute sound forest management
- (4) To promote multipurpose use of forests
- (5) To promote various forest industries and improve the recovery ratio of timber
- (6) To apply achievements of modern science and proper technology to forestry.
- (7) To upgrade study, education and training in forestry.
- (8) To facilitate sound trade of forest products
- (9) To encourage the general public to deepen their understanding of forestry.

These goals of the national forestry policies have been repeatedly announced in somewhat different terms of the Fifth Malaysian Plan, the Sixth Malaysian Plan, and the goals set by the Malaysian Forestry Department.

Prime Minister Mahathir's statement represents Malaysian forestry policies and the future direction of the worldwide forestry. In this respect, he is a very influential leader in developing countries.

We think it useful to introduce his statement here in discussing forestry policies of Malaysia and other developing countries.

His statement has two large aspects: i.e., one is to make several requests for cooperation to advanced countries in the North. To give some examples, (1) Financial and technical cooperation for

afforestation/reforestation and forest product processing from North to South; (2) Conclusion that non-government organizations which oppose the exploitation of tropical forests are just favorable to the North; (3) Comprehensive solution to the CO₂ problem by reducing emission as well as absorbing exhaust by not only tropical forests but also forests in the North; and (4) Improvement in the market price for tropical forest products.

The other aspect is to propose that 30% or more of land all over the world should be preserved as forests by the year 2000 as a goal of the program for global environmental measures. In this connection, he explains that (1) forests currently cover 27.6% of the earth, and an increase of no more than 2.4% will be needed to raise the percentage to 30%; (2) Malaysia will conserve 50% of its national land as forests; and (3) a "Global Fund" should be urgently established for every country to be committed to achieving the target of 30%.

4. Organization of Forest Management

(1) This study mainly covered peninsular Malaysia.

Malaysian forest management is organized as shown in Fig. 1, and the details of the organization are shown in Tables 1 to 4. There are a total of 5,492 employees as shown below by group.

Group A:	148	management, professional (university graduates or higher)
Group B:	100	executive, subprofessional (diploma holders)
Group C:	462	technical, clerical (senior high school graduates or higher)
Group D:	4,782	others (elementary school and junior or senior high school graduates)
Total	5,492	

Most of forests in peninsular Malaysia are under the jurisdiction of the Forestry Department, and properly administered by the above-mentioned personnel.

The Forestry Department Headquarters has a staff of 257 largely divided into the two Divisions of Forest Operation, and Planning and Industrial Development.

The director of Forest Operation under the direction of deputy Director-General is in charge of forest management, forest resources development, forest administration, training and manpower development.

The director of Planning and Industrial Development also under deputy Director-General is in charge of resources planning, industrial development, and extension of applied technologies, as well as guidance to and supervision over local agencies, including forestry offices.

Although the number of about 5,500 employees is not large for the area of jurisdiction, execution of operation is entrusted to contractors who have a sufficient number of workers.

Forestry officials who graduated from universities, colleges or senior high schools (Groups A, B and C) have not a large share in the total staff. It is considered, however, that forestry has been properly managed in an efficient and effective manner in this country.

Forestry officials are clearly classified as follows and remunerated according to their backgrounds.

- i) University/college graduate (doctor, master, bachelor)
- ii) Diploma
- iii) Ranger
- iv) Senior high school graduate
- v) Others

(2) Forests in Sabah are administered by the following agencies.

- 1) Forestry Department
- 2) Sabah Forest Industries
- 3) Sabah Parks
- 4) SAFODA
- 5) Sabah Softwood (SSSB)
- 6) Sabah Foundation

The Forestry Department has jurisdiction over forests throughout this state. Sabah Forest Industries is a state-owned pulp and paper mill which also executes afforestation/reforestation. Sabah Parks is in charge of six parks with a total area of 245,400 ha. SAFODA is a public corporation established in 1976 for the purpose of afforesting wasteland and grassland in the western part of this state. Sabah Softwood is the first joint venture that executed full-scale afforestation in Sabah, founded by Sabah Foundation and North Borneo Timber. Sabah Foundation is engaged in a wide range of forestry-related businesses, including felling, planting, and social forestry, and distributes some of its profits to welfare of inhabitants.

Of them, the Forestry Department is the largest organization, which will be shown as follows:

Fig. 1

Director General

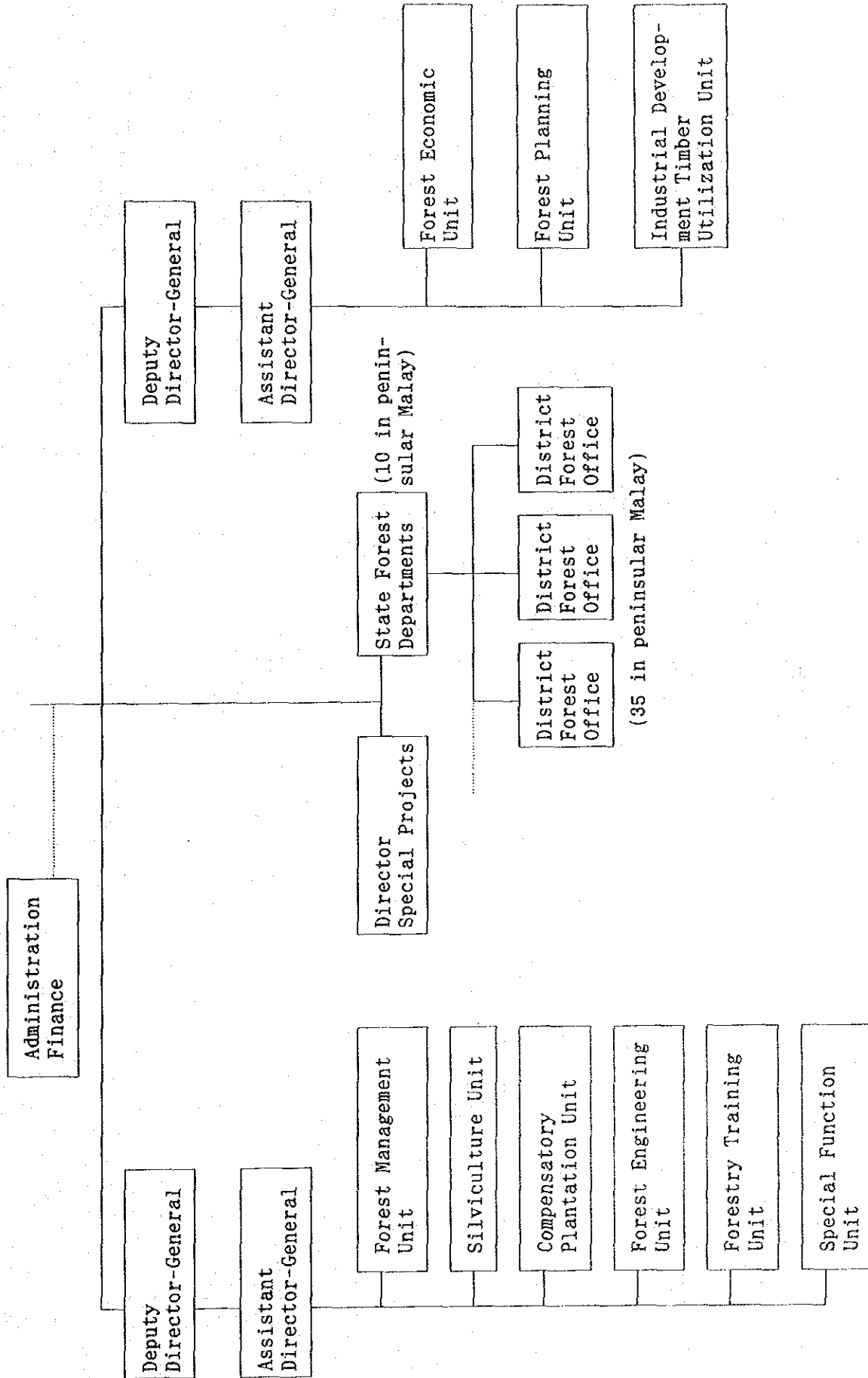


Table 2 Personnel by Group

In 1989 the total posts approved at senior officers' level was 295. Of this total, 238 posts were filled, while the balance of 47 was vacant and 10 posts were supernumerary posts. Details of the number of posts, vacancies and appointments of senior officers are shown in Table 2. Staff strength in the Forestry Department Peninsular Malaysia at the end of 1989 was 5,492. Breakdown of staff based on categories was as follows:-

Group A :	148
Group B :	100
Group C :	462
Group D :	<u>4,782</u>
TOTAL :	<u>5,492</u>

Details of staff are shown in Table 4.

Table 3 Number of Posts, Vacancies and Appointments of Senior Officers
1989

Schemes	Code	No. of Posts			No. of Vacancies			New Appointments
		H.Q.	State	Total	H.Q.	State	Total	
Conservator of Forest Grade I	A05	1	-	1	-	-	-	-
	A06	2	-	2	-	-	-	-
	A07	1	-	1	-	-	-	-
	A08	2	3	5	1	-	1	-
	A09	2	3	5	-	-	-	-
	A10	7	5	12	1	-	1	-
	A11	5	8	13	-	-	-	-
	A19	23	36	59	11	9	20	-
Assistant Conservator of Forest	A12	5	25	30	-	-	-	-
	A22	1	9	10	-	1	1	-
Engineers	A10	2	-	2	-	-	-	-
	A11	3	-	3	-	-	-	-
	A18	8	-	8	4	-	4	-
Forest Economists	A10	1	-	1	-	-	-	-
	A11	1	-	1	-	-	-	-
	A20	2	-	2	-	-	-	-
Administrative Officer	A12	1	-	1	-	-	-	-
Systems Analysts	A20	1	-	1	-	-	-	-
Statistician	A20	1	-	1	-	-	-	-
Assistant Conservator of Forest	B08	47	72	119	7+ (10)	9	16+ (10)	3
Technical Assistant	B08	2	-	2	-	-	-	-
Programme	B08	1	-	1	-	-	-	-
Accounts Officer	B09	1	-	1	-	-	-	-
Executive Officer	B11	1	-	1	-	-	-	-
JUMLAH		134	161	295	28+ (10)	19	47+ (10)	3

(10) Supernumerary posts

Table 4. Strength of Forestry Department on December 31, 1989

	H.Q./ W.P.*1	Joh	Ked	K'tan	Malacca	N.S.	Phg	P.P. *2	Perak	Perlis	Sel	T'gannu	Total
Management and professionals: Posts mainly for university graduates													
Superscale G & above	16	2	1	1	-	1	2	-	2	-	1	1	27
Conservator of Forest Gred I	18	3	2	4	-	2	15	1	3	1	3	4	56
Engineers:													
Mechanical Engineers	3	-	-	-	-	-	-	-	-	-	-	-	3
Civil Engineers	4	(1)	-	-	-	-	(1)	-	(1)	-	-	(1)	4
Forest Economists	3	-	-	-	-	-	-	-	-	-	-	-	3
Administrative Officer	1	-	-	-	-	-	-	-	-	-	-	-	1
Statistician	1	-	-	-	-	-	-	-	-	-	-	-	1
Systems Analysts	1	-	-	-	-	-	-	-	-	-	-	-	1
Assist. Conservator of Forest	12	4	4	4	1	3	5	1	7	-	5	6	52
Sub Total	58	9	7	9	1	6	22	2	12	1	9	11	147
Executive and Sub-Professionals: Posts mainly for diploma holders													
Assist. Conservator of Forest	24	9	2	8	1	3	14	1	5	-	3	9	79
Executive Officer	1	-	-	-	-	-	1	-	1	-	-	-	3
Accounts Executive	1	1	-	-	-	-	1	-	-	-	-	1	4
Technical Assistants	11	-	-	(1)	-	-	(2)	(1)	(2)	-	-	(1)	11
Computer Programmers	1	-	-	1	-	-	-	-	-	-	-	1	3
Sub Total	38	10	2	9	1	3	16	1	6	-	3	11	100
Technical and Clerical: Posts mainly for senior high school graduates													
Forest Rangers *2	5	26	11	11	3	5	53	5	18	1	4	17	159
Technicians	30	-	(2)	(2)	-	-	(3)	1(1)	1(5)	-	1	(2)	33
Tracers	1	-	3	4	-	1	2	-	-	-	-	1	12
Clerks	19	24	18	20	2	11	40	3	34	1	19	30	221
Stenographers	4	1	1	1	-	-	1	-	1	-	1	1	11
Assistant Researchers	12	-	-	-	-	-	-	-	-	-	-	-	12
Assist. Librarians	1	-	-	-	-	-	-	-	-	-	-	-	1
Boatmen	-	-	-	-	-	-	-	-	2	-	-	-	2
Logging Instructors	9	-	-	-	-	-	-	-	-	-	-	-	9
Store Keepers	1	-	-	-	-	-	-	-	-	-	-	-	1
Museum Assistant	-	-	-	-	-	-	-	1	-	-	-	-	1
Sub Total	82	51	33	36	5	17	96	10	56	2	25	49	462

*1: W.P. stands for Wailaya Persekutuan

P.P. stands for Pulau Penang

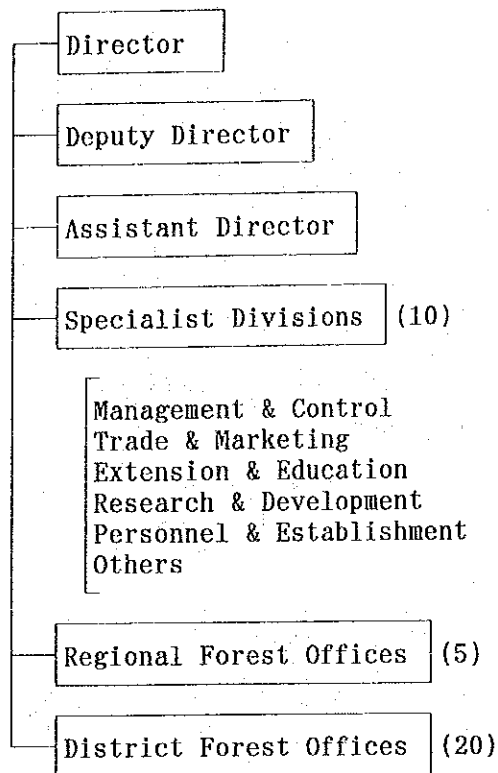
*2: Two-year course graduates.

Table 4 (Continued)

	H.Q./ W.P.*1	Joh Ked	K'tan	Malacca	N.S.	Phg	P.P.	Perak	Perlis	Sel	T'ganu	Total	
Others: Posts mainly for elementary school and junior or senior high school graduates													
Junior Clerks	5	2	4	3	1	3	24	3	7	1	3	62	
Typist	16	6	6	6	-	4	25	1	10	1	6	97	
Junior Store Keepers	2	-	-	-	-	-	3	-	-	-	-	5	
Junior Laboratory Assistants	1	-	-	-	-	-	-	-	-	-	-	1	
Foresters Grade I/II *3	9	210	104	145	15	99	443	7	259	4	123	266	1,684
Junior Technicians	2	1	-	-	-	-	-	-	7	-	1	-	11
Telephone Operators	1	-	1	1	-	-	2	-	1	-	-	-	6
Junior Tracers	5	4	1	3	1	2	12	-	8	-	3	9	48
Data Processing Operators	2	2	-	-	-	-	3	-	-	1	-	-	8
File Searchers	1	1	1	1	-	-	5	-	-	-	3	1	13
Despatcher	1	-	-	-	-	2	-	-	-	-	-	-	3
General Assistant Office/Museum	6	8	6	6	1	3	12	1	9	1	4	12	69
Cleaners	1	-	-	-	-	-	-	1	-	-	-	-	2
Forest workers Grade I/II	4	81	198	271	21	129	636	29	209	3	174	442	2,197
Guards	7	-	-	-	-	-	3	1	2	-	3	2	18
Drivers	22	13	22	17	1	15	105	2	35	1	31	61	325
General Workers	12	36	-	-	-	-	-	18	-	19	-	-	85
Mechanics	-	-	1	-	-	-	4	1	1	-	-	2	9
Boatman	-	14	6	1	-	2	2	1	38	-	-	2	65
Others	-	-	-	-	-	-	-	1	-	-	-	73	74
Sub Total	97	378	350	454	40	259	1,279	66	586	31	351	891	4,782
GRAND TOTAL	257	448	392	508	47	285	1,413	79	660	34	388	962	5,492

() Federal Posts

*3: One-year course graduates



There are a total staff of 2,000, including 1,100 full-time employees and 900 temporary employees. Of them, around 500 employees work at local offices, including regional and district forest offices.

- (3) Despite being not covered by this study, the distribution of the forestry personnel in Sarawak is shown in Table 5.

Table 5 Appendix F: Staff Distribution in Sarawak as at Dec. 31, 1984

CATEGORY	HQ	Forest School	MPO	FRO	SFO/K	SFO/S	SFO/B	SFO/M	TR&TTC	NP&WLO	TOTAL
Superscale & Division I	9	2	13	17	4	7	5	5	10	8	80
Division II	6	1	11	14	7	10	7	9	11	7	83
Intermediate	3	2	12	26	19	27	20	20	22	9	160
Forest Ranger	-	-	-	-	8	10	9	12	-	-	39
Forest Guard	12	-	23	60	106	172	129	157	-	36	695
Clerical Staff	20	2	3	8	10	15	8	14	8	5	93
Mapping Staff	-	-	16	3	3	6	3	5	1	1	38
Other Staff	16	11	20	70	26	50	34	23	87	35	372
Daily Paid											
TOTAL	66	18	98	198	183	297	215	245	139	101	1,560

NB: Staff of MPO, Silviculture, NP&WLO who are stationed in the Section Forest Offices are considered as section's staff for the purpose of this statistic to avoid double counting.

5. Forestry Education

In Malaysia, University Pertanian Malaysia (UPM) is the only university that has the Faculty of Forestry. It also has the Faculties of Veterinary Medicine and Agriculture.

The Faculty of Forestry has three basic functions (education, research, and extension). It has two courses, namely the Bachelor of Forestry Science established as a four-year college course in 1973, and the Diploma of Forestry established as a three-year junior college course in 1976.

The Bachelor of Forestry Science is divided into two special courses in forestry management and wood industries. In the first year, however, the same curriculum is applied to both courses, where common subjects will be studied. In the second and following years, their respective special studies will be started. In the final year, preparing theses will be required.

In the first year of the Diploma of Forestry, basic natural and social sciences will be studied. In the second and third years, forestry will be studied. Nineteen weeks of practice will be required in the course.

In the 1980s compared with the 1970s when UPM was founded in the present form, the situation of Malaysian forestry and forest industries and their problems changed to a remarkable extent, and forestry managers and technicians were required to become "experts with a wider range of basic knowledge" rather than "general businessmen". As a result, silvicultural education has also gradually changed in content. They are required to have a higher level of knowledge and awareness of significant problems, including (a) intensive management of natural forests of indigenous species as well as man-made forests of fast-growing species; (b) more efficient utilization of timber resources harvested from reduced forests; and (c) a new forestry system and a new role of forestry technicians associated with the local community, including social or community forestry.

In particular, in the recent decade, applications of forests other than timber production, namely environmental protection, water supply,

and recreation have become important items of forestry policies. Special forest products other than timber such as bamboos, rattans and medical weeds have also come to play a major role for the benefits of local industries. These changes in forestry exert effects on higher education.

For instance, the committee including public officials concerned with forestry reviews programs and examines the reorganization of curricula.

6. Training of Forestry Technicians

(1) Forestry Training under Forestry Department

Forestry Training School affiliated to the Malaysian Forestry Department is located in Kepong. The Logging Training Center is located in Terengganu. The former has two courses for foresters (an one-year course with two semesters) and forest rangers (a two-year course with four semesters). The latter has an one-year course in forest inventory and survey. The details of these courses are shown in Tables 6 and 7, including subjects, and learning and practice hours.

The forester course was completed by 270 trainees from 1986 to 1991, while the forest ranger course was completed by 520 trainees in the same period. The Logging Training Center trained 704 persons in sixteen years from 1975 to 1991.

According to slightly old data, the Forestry Department had a staff of 6,130 in 1984, of which 202 were professionals in management, 101 subprofessionals, 551 technicians and the remaining 5,276 workers who did not received special education. The staff are currently increasing, and it is strongly expected that lower groups should be upgraded through the above-mentioned training.

(2) Training of Technicians in Timber Processing Industries

According to a report in 1982, 64,617 workers are engaged in timber processing industries as shown in Table 8. About 60% of them or 38,770 workers actually produce products. To train and upgrade about 5% of all technicians or 1,900 in the production sector in six years, an annual average of 300 technicians need to be trained. This type of training was previously given by Forest Research Institute (FRI) on as a small scale as about 4 or 5 trainees per year. After that, the Malaysian Timber Industry Board (MTIB) launched systematic training, and the program from 1979 to 1985 was as shown in Table 9.

Although basic training of technicians in timber processing industries and transfer of new know-how to them are extremely

Table 6 Training School under Forestry Department

(1) Subjects for the Forester Course: One year (two semesters)			
Subject	Learning	Practice	Semester
Silviculture	80 hrs	72 hrs	1
Tree identification	10 hrs	120 hrs	1
Forest Mensuration	70 hrs	30 hrs	1
Land survey	66 hrs	60 hrs	2
Forest Aid	16 hrs	16 hrs	2
Law, Engineering & Management	62 hrs	12 hrs	2
Wood Identification	-	88 hrs	2

Table 6 (Continued)

(2) Subjects for the Forester Ranger Course: Two year (four semesters)			
Subject	Learning	Practice	Semester
Silviculture	80 hrs	72 hrs	1
Forest Botany	29 hrs	101 hrs	1
Forest Mensuration I	70 hrs	30 hrs	1
Land survey	66 hrs	60 hrs	2
Administration	34 hrs	-	2
Forest Aid	16 hrs	16 hrs	2
Utilisation	74 hrs	18 hrs	2
English	72 hrs	-	2
Silviculture II	40 hrs	36 hrs	3
Mensuration II	50 hrs	36 hrs	3
Management	80 hrs	36 hrs	3
Principle of Accounts (Basic)	60 hrs	-	3
Wildlife	40 hrs	54 hrs	3
Forest Law & Related Laws	80 hrs	18 hrs	4
Engineering	71 hrs	27 hrs	4
Supervision	100 hrs	18 hrs	4
Soil Science	66 hrs	18 hrs	4

Table 7 Logging Training Center under Forestry Department

(i) Forest Inventory & Survey: One year		
Subject	Learning	Practice
Basic Forestry	31 hrs	-
Tree Identification	10 hrs	200 hrs
Wood identification	2 hrs	56 hrs
Land Survey	57 hrs	67 hrs
Forest Inventory	56 hrs	268 hrs
Forest Development	62 hrs	104 hrs
(ii) Handling of Heavy machinery in Logging Activities: One year		
Subject	Learning	Practice
Basic Forestry	31 hrs	-
Tree Identification	10 hrs	200 hrs
Basic Mechanic & Engineering	17 hrs	20 hrs
Basic Forest Engineering	17 hrs	20 hrs
Maintenance of Heavy	10 hrs	20 hrs
Safety Precaution	4 hrs	-

important especially to develop local industries, a shortage of instructors and incomplete training equipment in the MTIB training facilities inhibit a sufficient level of training. Improvement in these aspects will be required for future.

(3) The Reforestation Development and Training Project in Sabah

The purpose of this project promoted by JICA is to train technicians to reinforce SAFODA and develop and improve silvicultural techniques.

Since training is one of major props of this project, three levels of general training courses were established at the outset of this project. Besides these, special technical courses in "computer" and "forestry machinery" are planned to be made available (Table 10). A model forest, which is originally designed for technical development, also includes test plots prudently distributed for field practice as part of training. Although this type of training represents significant activities under this project, experts in such training or C/P were not initially assigned, but the same person assumed both technical development and training in each special sector. Short-term experts in training were dispatched to Malaysia for two and a half months from June, 1987 in order to conduct a necessary survey. Moreover, one C/P was allowed to study training in Japan for one and a half months from February 1989 (Table 11).

Past performance of training courses from 1998 to 1991 is summarized in Table 12. From this experience, the following matters are pointed out to improve training programs.

The present scale of training the SAFODA staff is not sufficient for securing manpower to promote afforestation in Sabah. In the future, it is preferable to reinforce cooperation with other afforestation-related institutions in training the staff, including workers employed by contractors. For the time being, however, it is important to establish a training system under this project.

To be concrete, curricula and teaching materials should be improved, and instructors should also be trained for satisfying needs for

Table 8 Employment in timber Processing Industries

Sector	Total of Employees	Unpaid Employees	Paid Employees
Sawmills	31,044	220	30,824
Plywood, hardboard and particleboard mills	17,073	7	17,066
Planing mills, window and door mills and joinery works	5,392	87	5,305
Prefabricated wooden houses	305	1	304
Other timber manufacturing industries	1,575	21	1,554
Furniture & furniture fixtures	9,228	579	8,649
TOTAL	64,617	915	63,702

*Source: Industrial Surveys, Statistics Department, Kuala Lumpur.

Table 9 MTIB's Training Program (1979 - 1985)

Year	Course	Period	Trainees
1979	i) Course on MGR	3 days	68
	ii) Kiln Drying Course	3 weeks	35
1980	i) Course on MGR	3 days	60
	ii) Course on The Use of Timber in Construction	5 days	62
	iii) Timber Grading Course I	3 months	47
	iv) Timber Grading Course II	3 months	50
1981	i) Course on MGR	3 days	49
	ii) Kiln Drying Course	4 weeks	40
	iii) Technical Seminar on MGR	1 day	209
1982	i) Metrication Workshop (Kuala Lumpur)	1 day	65
	ii) Timber Grading Course	3 months	50
1983	i) Timber Identification Course	2 weeks	38
	ii) Visual Stress Grading Course	4 days	49
	iii) Timber Identification of Under-Utilised Timbers	3 days	38
	iv) Basic Wood Technology Course	3 days	38
	v) Training Seminar On Rubberwood Processing	1 day	66
1984	i) Furniture Design Course	1 day	56
	ii) Training Seminar On Rubberwood Processing I	2 days	60
	iii) Training Seminar on Lacquer finishing	1 day	34
	<u>Expected to be done:</u>		
	iv) Visual Stress Grading Course	4 days	
	v) Wood Carving Course	2 weeks	
	vi) Training Seminar On Rubberwood Processing II	2 days	
1985 (Planned)	i) Seminar on Wooden Mouldings	1 day	
	ii) Workshop on New MGR 1984	1 day	
	iii) Visual Stress Grading Course	4 days	
	iv) Timber Identification of Under-Utilised Timbers	5 days	
	v) Workshop on Furniture Design	2 weeks	
	vi) Training Seminar on Rubberwood Processing		
	vii) Specifications of Timber in Building	1 day	
	viii) Wood Preservation Course	3 weeks	

Source: MTIB, Kuala Lumpur.

securing manpower.

For this purpose, we should tackle the following problems as part of this project.

1) Improving Courses and Curricula

As the original plan provides special courses in computer and forestry machinery and also general training according to the level of trainees, we consider it effective to select subjects useful for jobs of trainees because one unit of training is limited to about two weeks if their time available for on-the-job training is taken into account. Accordingly, teaching materials should be replenished by more special contents, and the specialization of training courses should also be taken into consideration.

2) Improving Teaching Materials

This year, English versions of general teaching materials have been prepared by using materials and information available. It is planned to enrich special contents of teaching materials in some subjects so that they can be used in Course C by the end of this year. In the future, textbooks should be improved by introducing illustrations, referring to different textbooks available from other projects or international organizations, and using the results of technical development under this project.

3) Training Instructors

The SAFODA staff, including C/P under this project are less experienced in training. To maintain and promote training after the completion of this project, instructors should be trained in addition to the present on-the-job training of C/P.

4) Promoting Technical Development for Better Training

The staff who graduated from universities, colleges or senior high schools and benefited from this project tend to assume only

management and avoid field work in Malaysia. In Japan, however, Malaysian trainees actively touch trees and soil after the manner of Japanese researchers. Therefore, we are requested to improve the opportunity of field practice in training in Japan.

Table 10 Outline of Courses

1. General Courses in Forestry Technology		
(1) Junior college graduates (APO) <Course B>	15 (annual)	3 weeks
(2) Senior high school graduates (FA) <Course C>	40 (semiannual)	7 weeks
(3) Junior high school graduates (Mandor) <Course D>	40 (semiannual)	4 weeks
2. Special Technical Course Computer, forestry machinery, etc.		

Table 11 C/P Training

1. Trainee	Mr. Rodolfo Blantocas (23 years old) Work coordinator Graduated from Mara Institute of Technology (Kota Kinabalu)
2. Content	Visit to forestry training institutions (1) Acquiring basic knowledge of forestry (2) Mastering the process of developing forestry training plans (3) Understanding the actual management of forestry training (4) Visiting main forestry areas and facilities
3. Training Institution	Forestry schools, Agriculture & Forestry Training Center, General Forest Research Institute, Numata Forestry Machinery Center, Kanto Timber Breeding Center, national and private forests, etc.
4. Period	February 28, 1989 - April 14, 1989

Table 12 Summary of Past Training Courses

Year	Course	Grade	Period	Trainee
1998	Assistant Plantation Officer (General) Course	B	Jun. 13 - Jun. 25, '88 (12 days)	8
	Assistant Field Supervisor (General) Course	C	Jun. 19 - Aug. 18, '89 (2 months)	16
	Computer Operation	Primary	Oct. 11 - Oct. 19, '89 (1 week)	10
	Mandor (General) Course	D	Nov. 27 - Dec. 22, '89 (1 month)	30
	Silviculture Development	C	Feb. 12 - Mar. 10, '90 (4 weeks)	13
	Forest Mensuration and Land Survey	C	Mar. 12 - Mar. 24, '90 (12 days)	8
	Silviculture Planning	B	May 7 - May 19, '90 (12 days)	7
	Instructional Technique and Effective Lecturing	E&C/P	May 21 - May 26, '90 (5 days)	12
	Forest Mensuration and Survey	D	Jun. 4 - Jun. 16, '90 (12 days)	14
	Nursery	C	Jun. 25 - Jul. 7, '90 (12 days)	8
1990	Nursery Practice	D	Jul. 24 - Aug. 4, '90 (12 days)	14
	Forest Inventory	B	Aug. 13 - Aug. 25, '90 (12 days)	9
	Establishment of Silviculture Development	D	Sep. 3 - Sep. 15, '90 (12 days)	10
	Nursery	B	Sep. 24 - Oct. 6, '90 (12 days)	7
	Forest Protection	C	Feb. 25 - Mar. 9, '91 (12 days)	9

Table 12 (Continued)

Year	Course	Grade	Period	Trainee
1991	Silviculture Technique Development	C	Apr. 22 - May 4, '91 (12 days)	7
	Nursery	C	May 13 - May 25, '91 (12 days)	12
	Forest Management	B	Jul. 15 - Jul. 27, '91 (12 days)	6
1991	Nursery Practice	D	Aug. 5 - Aug. 17, '91 (12 days)	10
	Silviculture Technique Improvement	D	Sep. 2 - Sep. 14, '91 (12 days)	10
	Forest Disease and Pest	B	Oct. 28 - Nov. 9, '91 (12 days)	4

7. Proposals

This study in Malaysia was focused on the Malay Peninsula. In the following, we should like to make some proposals for peninsular Malaysia.

(1) Forest Management in General

As already mentioned, a forestry staff of 5,500 (excluding contractors) administer and manage 6.3 million ha forests. They gave us an overall impression of proper forest management. We judge so on the ground that (a) boundaries of national forests are clearly defined; (b) forests are created to attain a particular goal; and (c) the area of forests converted into grassland is small. Malaysia can be regarded as a leader in forestry management in ASEAN countries.

(2) Sustainable Management

Sustainable management is also a critical policy of Malaysia. Significant measures for sustainable management are to (i) prevent loss of forests, (ii) create forests, and (iii) utilize forest product in a more effective manner.

As for (i), Malaysia should prevent illegal shifting cultivation and forest fires.

With regard to (ii), Malaysia should breed tree species by selecting (a) better-growing species, (b) species resistant to diseases, such as heart rot disease, and (c) quality marketable species.

With respect to (iii), Malaysia should make efforts to improve efficiency in processing and using forest products.

These measures will be successfully achieved step by step through various types of training and study.

(3) Training in Third Countries

The Malaysian tropical forest management will give a great model to neighboring countries.

Malaysia is more advanced than any other countries in technology for the efficient management of tropical rain forests and mangroves.

If more trainees are instructed in such management in Malaysia, it will also benefit other countries and the earth as a whole.

(4) Measures for Sabah and Sarawak

Forestry is the most important industry in Sabah and Sarawak. More intensive afforestation than the present level will be required.

(5) More Active Afforestation

A peak of timber output in the three regions of the Malay Peninsula, Sabah and Sarawak is around 10 million m³, respectively.

Afforestation is urgently needed at a rate of 40,000 ha per year for a sustainable production of 10 million m³. This is because sustainable harvests of timber at a rate of 250 m³ per ha require 40,000 ha of plantation (10,000,000 m³/250 m³/ha).

Study and training concerning the above-mentioned fire prevention and tree breeding are indispensable to creating forests.

(6) Problems for Educational and Training Institutions

Although university, college or senior high school graduates do not have a large share in the staff, efficient management is executed, and there is no problem in management.

However, one problem which should be pointed out here is that Sabah State has no university or college which provides any course in forestry, though the state depends on forestry and forest industries as the mainstay of industry in general. The people concerned in Sabah are enthusiastic for education in forestry.

In this connection, UPM located in Kuala Lumpur in peninsular Malaysia has the faculty of forestry, which has a branch school in Sarawak. Murawarman University and Rambunmankula University in

Kalimantan on Borneo have their respective faculties of forestry. Tanjungpura University has the section of forestry. Therefore, there are not a few people who consider that one or more universities or colleges in Sabah should give education in forestry.

