

Areas identified for priority development are:

- technical skills
- computer-related skills
- management and supervisory skills
- craft skills
- specialist professional skills/further education programmes
- product design, research and development skills
- company-wide productivity improvement programmes
- Basic Education for Skills Training (BEST) programmes

The availability of SDF funds has had an impact in strengthening the financial viability of short-term managerial, technical and other specialized training institutions, such as those administered by the National Productivity Board.

The Skills Development Fund also operates a Development Consultancy Scheme in its effort to upgrade local technology. In this scheme, grants to defray up to 70% of the cost of engaging external experts for short-term assignments in improving operational methods, technical know-how, management and manpower training.

Industry-wide training centres are being encouraged. The Construction Industry Training Centre set up in 1984, trains local construction skilled workers. It is expected to train 2,000 to 3,000 skilled workers annually, including 1,200 workers from the Army's Construction Brigade.

The SDF has also stepped up its promotion of more employers association training centres as well as in-company training centres. The centres set up in 1982 were the Hotel Association Educational Centre and two in-company centres. In 1983, the Skills Development Fund

approved eight more employers associations to set up training centres. The SDF would fund 90% of the capital equipment and set-up costs of the centres. The operating costs would be fully recovered through course fees paid by participating companies with 70% reimbursements from the SDF.

The National Productivity Board (NPB)

This institution was set up in 1972 to coordinate programmes aimed at upgrading the productivity and efficiency of industries in Singapore. The National Productivity Board is vested with the responsibility of formulating and organising various programmes to improve work attitudes, productivity and labour-management relations as well as to conduct courses for various sectors of the economy. It has emphasized training in technology, management systems and human relations. Diploma and certificate courses offered by NPB are in areas of management, supervisory development, computer training and occupational safety.

Economic Development Board: Training Centres and Institutes

In line with the national objective of building up a sizeable pool of highly trained and experienced craftsmen, technicians and engineers who will serve as the base for the continuing development of Singapore, the Economic Development Board establishes and operates training centres and institutes geared towards the training of the appropriate skills. These centres and institutes therefore complement the efforts of other training institutions like the Vocational and Industrial Training Board (VITB) and the Polytechnics, in meeting the demands of the economy for manpower in manufacturing and production, electronic data processing and

engineering services. In its establishment and operation of training centres and institutes, the Board forms joint partnerships in training with multinationals, foreign governments and specialised manufacturers in high technology application areas.

The aim of such partnerships in training is to combine the expertise, established training systems and software of our partners with the resources of the Singapore Government. The results are training centres and institutes running programmes distilled and adapted from the vast experience and know-how of our partners. Such partnerships have to date, resulted in 3 training centres for technicians, technical middle management personnel and EDP professionals, and 5 training units for training in the specialised components of industrial automation, computer-aided design and manufacturing (CAD/CAM), industrial robotics, computer numerical control (CNC) machining and computer-aided engineering in custom IC design.

Human Resource Development in Singapore

The transition towards high technology development requires that the economy must undergo new industrialisation strategies which would involve at least the following developments :

- (a) industrial restructuring;
- (b) adjustment or introduction of training, education, employment, wage and labour market policies;
- (c) implementing a consistent policy between the labour market conditions and the proposed restructuring programmes, such as skill composition of the labour force and the capacity of the national institutional framework to meet this demand;

- (d) manpower planning, with careful planning regarding skills at the higher, middle and lower levels, without leading to excess capacity;
- (e) changing needs of the economy, due to technological innovations, that necessitate retraining of workers, most of whom have had no formal elementary education. The existing institutional (vocational) framework must provide these basic skills outside the formal educational system;
- (f) increased female participation in the labour force through incentives is another significant development. Other retired workers may have to be enticed into the workforce. For these developments, the retirement age may have to be raised in view of improved longevity.

The manpower development programme for the eighties is expected to encompass skilled, technical and professional manpower training in terms of engineers, graduates, technicians and skilled workers. This would necessitate increased intakes in tertiary and vocational institutions. In fact, shortfalls in specific skills have been predicted by Singapore planners: as many as 400 engineers, 1,050 other graduates, 900 technicians and some 2,000 skilled workers per year during the eighties, assuming a real GDP growth of 10 percent and productivity growth of 7-8 percent.

The skills composition of the workforce may be broadly studied from the occupation distribution of employed persons given in Table 1. Except for the sales and services occupations, the other categories have increased their relative shares in total employment. If the data were reclassified into three broad groupings - professionals technical,

administrative and managerial; clerical, sales and services; production, transport and others - the first group has significantly increased its relative share (6.8 to 14.8 percent during 1957 to 1983), while the rest have declined relatively.

The educational levels of the working population, shown in Table 2, offer further evidence of skills formation among the workforce. Relative increases are noticeable for secondary, post-secondary and tertiary qualifications, confirming improving trends in the educational attainment of the working population. For instance, working persons with post-secondary qualifications increased from 0.2 to 9.7 percent, while the tertiary-qualified increased from 3.6 to 4.1 percent during 1966-82. Though these trends are symptomatic of human resources development during the last 20 years or so, there is room for improvement. The post-secondary and tertiary educated working population is expected to spearhead the skills revolution and will be at the apex of the talent pyramid that is being built up in Singapore. Obviously, Singapore has some way to go in this respect.

The Government's expenditure on education is an indication of the commitment to human resources development. The growth in current educational expenditure is shown in Table 3.

The period 1959-70 witnessed 13 to 14 percent annual growth in educational expenditure. This growth could be attributed to the increasing demand for basic education arising from demographic growth, as well as growth in technical skills. The growth tended to slow down somewhat during the early part of the seventies but, after 1979, it accelerated. This was the result of the Government's thrust on economic restructuring and upgrading, and the increased emphasis on high-powered

manpower development. It may be noted that development expenditure has increased substantially, especially after 1979.

The major growth areas in respect of recurrent expenditure are in technical, vocational and tertiary education and training, as well as in university and polytechnic education.

Since human resources development has been the main emphasis of the Government's manpower development programme for the rest of this century, it is pertinent to study skills development in the recent past (say 1979 onwards). Very broadly, skills formation can be considered at three levels - higher, middle and lower levels. Enrolment growth in the respective university, polytechnics and vocational institutions may be used as proxy measure of skills such formation. (See Tables 4a-d for details of enrolment in various institutions).

The Government's thrust in skills development is borne out by these significant upward trends in enrolment. Training at the middle and lower levels is a vital growth sector. We would expect further increases in these trends as the Government development expenditure on education is converted to better systems and facilities in the next few years.

For polytechnics (imparting middle levels skills), enrolment and output increases are encouraging. The demand for engineering and computer courses remain quite high in these institutions. In the next few years, we may expect higher enrolment and output from these institutions, due to higher demand for technicians.

The vocational training institutes, grouped under the VITB, experienced marginal or negative enrolment growth during the early

eighties. New courses are being introduced in place of obsolete ones, and future enrolment would be expected to increase.

Since computer services is a priority growth industry, a high degree of skill training will be needed. There is a shortage of qualified computer manpower. The Institute of Systems Science at the National University of Singapore was set up in 1982 to provide computer training to postgraduates. The NUS Department of Computer Science is concerned with undergraduate computer science training. At the technician level, computer training is provided by the Japan-Singapore Institute of Software Technology (JSIST) and the new centre of Computer Studies at Ngee Ann Polytechnic. The Economic Development Board has also established a training unit to provide training in computer-aided design and manufacturing systems. This aspect of skills formation emphasises the high-technology content of new industries being set up in Singapore.

Besides National Productivity Board programmes for managerial training, other private bodies such as the Singapore Institute of Management (SIM), Singapore Institute of Personnel Management (SIPM) and Marketing Institute of Singapore (MIS) are also involved in management training in Singapore. Most of these programmes are for senior and middle level management, thus augmenting the tertiary level management training of the recently formed School of Management at the National University of Singapore.

The most exciting aspect of the skills development mooted by the Government is the Basic Education for Skills Training (BEST) Programme, launched in January 1983 to raise basic literacy and numeracy levels of some 322,000 workers. This retraining exercise will enable lower-

skilled workers to operate sophisticated machinery. Also, the BEST trainees will be encouraged to take up Vocational courses. (3)

The earnestness of the Government in developing the country's human resources potential is borne out by the various programme implemented at various levels and institutions across the country. No efforts have been spared to include all strata of the workforce. Manpower development in Singapore is, indeed, a serious business.

National Efforts Towards Productivity

In 1981, a national committee on productivity was formed to formulate recommendations to improve work attitudes, productivity and labour management relations. It was felt that national efforts at systematic human resource development is inadequate. It is necessary to ensure the concurrent development of a committed and effective workforce. One of the identified areas where productivity gains may be achieved lies in the area of human relations which embraces labour-management relations; company loyalty; employee welfarism; people-centred management systems. Subsequent national measures focused on people-management.

The National Productivity Board has been the main force behind the publicity and promotion of Quality Control Circles and the development of "productivity will". Quality Control Circles and house unions are also encouraged in all government and business organizations. This promotes worker participation and suggestions in the running of the firm.

(3) G. Shantakumar, "Human Resources Development in Singapore."

The increasing complexity of working in a rapidly changing technological environment requires the development of a trusting and cohesive working climate. This can be partially achieved through the implementation of more effective people-management systems and better inter-personal skills. There was a realization at the national level of the importance of providing such essential knowledge not only to practising executives but to graduates of all disciplines in all the institutions of higher learning in Singapore.

The Human Resource Management Unit At The National University of Singapore

After completing their academic preparation in the University, young graduates go into the professional environment with the idea that they can right away put all their technical and professional knowledge into practice. They may have achieved excellence in their academic preparation, but when they try to relate to people in their own areas of professional expertise, they may go wrong. An awareness and understanding of a few basic concepts and familiarity with some techniques in human resource management would enable a doctor, engineer, lawyer, architect, scientist or arts graduate to play a more effective role in whatever situation he or she is placed.

The Human Resource Management Unit at the National University of Singapore was established in 1982. The primary objective of the unit was to introduce courses on Human Resource Management to students from all faculties at the University. An awareness and recognition of the importance of national goals and objectives are kept in mind in planning and implementing courses.

Although one can spend a life time learning human resource concepts and techniques, given the time allocated for the study of human resource management, a few areas vital to the understanding of interpersonal relation in real-world work situations have been identified. However, it is in the hands of the students as to how much they are going to get out of this course. By acquiring this knowledge, they will be enhancing the effectiveness of their work role when placed in positions of responsibility.

The objectives of the human resource management course are :

1. To create an awareness in the students of the importance of human resource management so that the benefits of such an awareness can be carried over to work situations when they are placed in positions of responsibility for people, machinery, physical facilities and finances.
2. To enable the participants to understand the importance of human relations at work in order to achieve the twin goals of organization, namely, greater productivity at work and greater human satisfaction within an organization.
3. To expose the students to certain specific concepts in the area of human resource management such as motivation, communication, leadership, group dynamics, and conflict management.
4. To familiarize them with factors in the macro-environment (outside the organization) which have direct bearing on organizational performance and the effectiveness of individual work role.

Basically, it is believed that an understanding of what human resource management is and how one can put it to practical use, enhances the effectiveness of the graduate's work role as a doctor, dentist,

lawyer, engineer, architect, scientist, administrator, trainer, teacher, social worker or any other specialized function. (4)

Conclusion

"The success of our next stage of economic development depends on better education, higher standards of training, good work attitudes and team work. Good human relations is crucial for good team work. This understanding that good human relations is the basis of high productivity must penetrate our whole population".

Excerpts of a speech by the Prime Minister, Mr. Lee Kuan Yew at the opening of the National Courtesy Campaign on 27 June 1981.

"The present emphasis on human resource management in general, and good human relations in particular, is very appropriate. At the national level, HRD involves the process of enhancing the capacity of people to participate constructively in national development. This is done through education and training, for more productive employment. At the company level, it involves providing a motivating environment through which individuals can perform effectively to achieve both the organizational and their individual goals. At the individual level, it involves the development of one's competencies in the pursuit of a satisfying career. The satisfaction of the national, organizational and individual needs remains a daunting challenge for the government and the people of Singapore."

(4) Joseph Putti, "Out of Ivory Towers."

References

Acknowledgements are accorded to the following authors whose published papers are quoted and used in the preparation of this country report.

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3. G. Shantakumar, (1984), "Human Resources Development in Singapore", Singapore: Twenty-five Years of Development.
4. Joseph M. Putti, (1984), "Out of the Ivory Towers", proceedings of the ASAIHL Seminar on Human Resource Management and ASAIHL Universities, 13 - 15 December 1984.

TABLE 1

LABOUR

EMPLOYED PERSONS BY OCCUPATION, 1957, 1970, 1973-1982

Thousand

	1957 ¹	1970 ¹	1973	1974	1975	1976	1977	1978	1979	1980 ¹	1981	1982
Total	471.9	650.9	798.6	824.3	833.5	870.4	903.9	958.9	1,021.0	1,077.1	1,115.3	1,142.4
Professional & Technical Workers	24.5	56.1	61.0	90.5	89.1	86.9	84.6	81.8	87.6	95.1	101.2	106.3
Administrative, Managerial & Executive Workers	8.6	15.5	14.1	16.9	23.3	27.7	28.0	26.4	28.2	52.2	58.3	58.3
Clerical Workers	53.6	82.9	112.1	134.5	133.4	137.4	139.1	150.6	161.5	167.5	174.4	187.0
Sales Workers	86.3	102.6	129.8	117.3	127.0	136.2	141.6	147.5	156.0	132.0	142.7	153.7
Service Workers	71.1	88.8	96.9	84.3	95.0	92.7	97.6	107.1	113.5	112.2	123.0	124.5
Agricultural Workers & Fishermen	37.1	26.9	24.9	24.5	22.9	24.0	23.2	21.0	18.2	21.0	16.6	15.4
Production, Transport & Other Manual Workers	181.5	255.0	322.6	319.9	294.2	311.0	331.3	365.7	394.5	435.0	443.0	440.1
Workers Not Classifiable by Occupation	9.2	23.1	36.2	36.4	48.6	54.7	58.7	58.8	61.5	62.2	56.2	57.2

Note: Data for 1957, 1970 and 1980-1982 are classified according to the Singapore Standard Occupational Classification (SSOC) 1978 while data for 1973-1979 are classified according to the SSOC 1973.

Source: Ministry of Labour

1 Census of Population.

TABLE 2

Distribution of Working Population by Educational Attainment.
Selected Years, 1966-82

Educational Attainment	(Percent)					
	1966	1970	1975	1978	1980	1982
Below Primary	35.5	-	17.3	15.5	22.5*	15.5
Primary	15.2	36.7	31.0	33.1	50.0	30.0
Post Primary	12.9	-	0.8	0.9	-	0.8
Secondary	13.0	34.2	23.9	26.7	16.2	30.4
Post Secondary	0.2	3.7	6.8	7.7	7.7	9.7
Tertiary	3.6	2.5	2.3	2.5	3.6	4.1
Others	-	0.5	0.4	0.1	-	0.2
Never Attended School	19.5	22.4	17.5	13.4	-	9.4
T o t a l	100.0	100.0	100.0	100.0	100.0	100.0

Notes: *Includes "Never Attended School"

Except for 1980, estimates are based on sample enumeration. In some years, no data are available for some items (e.g. 1970)

Source: Computed from official sources (census, labour force surveys).

TABLE 3b - CONTINUED

GOVERNMENT EXPENDITURE ON EDUCATION, 1949-1982/83		Thousand Dollars									
		1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1972/73 Estimates
Total		264,877	334,462	391,264	405,872	415,823	459,105	556,419	686,379	942,518	1,263,149
Recurrent Expenditure		255,090	308,005	339,870	361,222	381,368	426,354	505,207	587,469	712,733	888,964
Primary		95,175	119,000	128,351	133,386	139,734	156,499	186,266	210,143	241,364	303,384
Secondary		62,280	80,004	88,900	95,146	103,200	119,794	181,545	211,841	244,930	289,170
Technical/Vocational ³		32,782	40,188	43,243	43,275	46,034	47,923	22,190	29,694	38,900	47,401
Tertiary		40,134	50,375	59,865	70,387	71,649	78,867	90,186	109,649	152,388	198,618
National University of Singapore ⁴		30,026	36,630	41,048	43,563	42,568	48,570	58,185	74,557	108,527	138,402
Institute of Education		3,593	5,785	6,487	9,113	11,043	10,257	7,831	11,089	10,240	13,626
Singapore Polytechnic											
& Ngee Ann Polytechnic ⁵		6,515	7,960	12,330	17,711	18,038	20,040	24,170	24,003	33,621	46,590
Adult Education		1,810	1,974	2,384	1,896	2,021	2,105	2,810	-	-	-
Others ⁶		22,909	16,464	16,127	17,132	18,730	21,165	22,210	26,142	35,151	50,391
Development Expenditure		9,787	26,457	51,394	44,650	34,455	32,751	51,212	98,910	229,785	374,185

Source: Ministry of Education

1 Refers to financial year 1st January 1969 to 31st March 1970. From 1970, figures refer to financial year 1st April to 31st March.

2 Data from 1969/70 include junior colleges.

3 Figures refer to Technical/Vocational Schools, Technical/Vocational Institutes and Industrial Training Centres. Expenditure for 1980/81 was included under Ministry of Science & Technology.

4 From 1981/82, figures include expenditure of Nanyang Technological Institute.

5 Figures for Ngee Ann Polytechnic were classified under others prior to 1975/76 and covered by the Ministry of Science & Technology during 1979/80 and 1980/81.

6 Includes Curriculum Development Institute of Singapore and Extra Curricular Activities Centre. Institute of Southeast Asia and HQ Expenditure are included from 1975/76.

TABLE 4 a

STUDENTS COMPLETED COURSES AT VOCATIONAL AND INDUSTRIAL TRAINING INSTITUTES, 1975-1982

Number

Course Level	1975			1976			1977			1978		
	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females
	Total	8,797	8,210	587	10,953	10,244	709	8,521	7,794	727	8,429	7,734	695
Full-time	6,358	5,870	488	8,309	7,711	598	7,336	6,676	660	7,004	6,402	602
Part-time	2,439	2,340	99	2,644	2,533	111	1,185	1,118	67	1,425	1,332	93
Diploma Certificate	-	-	-	-	-	-	-	-	-	-	-	-
Full-time	-	-	-	-	-	-	-	-	-	-	-	-
Industrial Technician Certificate	1,207	1,050	157	1,348	1,203	145	1,177	1,030	147	1,076	934	142
Full-time	792	664	128	1,144	1,010	134	986	848	138	1,024	886	138
Part-time	415	386	29	204	193	11	191	182	9	52	48	4
National Trade Certificate (Gr 2)	553	546	7	350	336	14	506	471	35	485	412	73
Full-time	-	-	-	-	-	-	-	-	-	-	-	-
Part-time	553	546	7	350	336	14	506	471	35	485	412	73
National Trade Certificate (Gr 3)	6,593	6,212	381	7,961	7,532	429	5,792	5,322	470	6,176	5,712	464
Full-time	5,190	4,872	318	6,429	6,086	343	5,304	4,857	447	5,288	4,840	448
Part-time	1,403	1,340	63	1,532	1,446	86	488	465	23	888	872	16
Artisan Certificate/Certificate of Competency	444	402	42	1,294	1,173	121	1,046	971	75	692	676	16
Full-time	376	334	42	736	615	121	1,046	971	75	692	676	16
Part-time	68	68	-	558	558	-	-	-	-	-	-	-

TABLE 4 b - CONTINUED

STUDENTS COMPLETED COURSES AT VOCATIONAL AND INDUSTRIAL TRAINING INSTITUTES, 1975-1982 (continued)

Course Level	1979			1980			1981			1982		
	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females
	Total	5,972	5,378	594	8,152	7,425	737	10,108	9,292	816	14,012	12,824	1,188
Full-time	5,101	4,555	546	5,227	4,609	618	4,909	4,400	509	6,068	5,401	667
Part-time	871	823	48	2,935	2,816	119	5,199	4,892	307	7,944	7,423	521
Industrial Technician Certificate	966	841	125	1,065	937	128	1,014	884	130	858	743	115
Full-time	883	762	121	970	848	122	985	858	127	811	705	106
Part-time	83	79	4	95	89	6	29	26	3	47	38	9
National Trade Certificate (Gr 2)	276	241	35	549	493	56	1,793	1,635	158	3,839	3,603	236
Full-time	-	-	-	14	14	-	225	188	37	484	443	41
Part-time	276	241	35	535	479	56	1,568	1,447	121	3,355	3,160	195
National Trade Certificate (Gr 3)	4,427	3,995	432	6,135	5,587	548	6,866	6,394	472	7,895	7,111	784
Full-time	3,915	3,492	423	3,830	3,339	491	3,394	3,065	328	3,629	3,112	517
Part-time	512	502	9	2,305	2,248	57	3,472	3,329	143	4,266	3,999	267
Artisan Certificate/Certificate of Competency	303	301	2	413	408	5	435	379	56	1,420	1,367	53
Full-time	303	301	2	413	408	5	305	289	16	1,144	1,141	3
Part-time	-	-	-	-	-	-	130	90	40	276	226	50

Source: Vocational & Industrial Training Board

Note: See note to Table 14.12.

TABLE 4c

ENROLMENT IN ADULT EDUCATION COURSES, 1962-1974

	Number												
	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
Total	25,559	39,160	52,134	64,444	70,800	76,840	73,709	49,611	49,677	40,884	50,663	56,578	55,833
Literacy & Language Classes	12,670	20,491	27,297	33,936	28,975	34,571	30,389	14,668	9,818	11,204	10,986	12,711	11,835
Special Language Classes	850	120	437	463	1,043	742	535	565	6,267	902	68	-	-
Foreign Language Classes	..	553	741	1,954	3,864	1,922	1,485	1,362	1,258	2,134	3,270	1,904	1,486
General Education Classes	6,191	7,916	9,941	12,671	16,082	16,270	16,627	11,032	9,823	7,967	9,210	11,399	10,783
Special Subject Classes	1,101	3,336	5,250	7,585	10,173	12,958	12,127	6,565	3,778	3,432	4,296	6,430	7,766
Commercial Classes	534	1,538	1,308	1,149	1,081	1,761	2,409	2,530	2,347	6,270	9,454	9,527	9,713
Vocational Classes	2,471	3,593	5,470	4,739	6,011	4,332	5,400	5,017	5,585	1,020	630	3,461	3,056
Recreational Courses	1,742	1,613	1,690	1,947	3,571	4,284	4,737	3,767	5,110	2,023	4,845	3,531	4,871
Vocational Preparatory Classes	..	..	..	..	..	..	..	4,105	5,691	5,351	5,772	5,015	4,065
Technical Classes	..	..	..	..	..	..	..	..	..	581	2,132	2,600	2,258

Source: Adult Education Board

TABLE 4 d

ENROLMENT IN UNIVERSITIES AND COLLEGES, 1960-1982

Number

Year	Total		University of Singapore ¹		Nanyang University ¹		Singapore Polytechnic		Ngee Ann Polytechnic ²		Institute of Education ³	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1960	6,110	2,061	1,215	426	1,483	378	2,287	55	..	..	1,125	1,202
1961	7,884	2,428	1,328	435	1,525	435	2,677	67	..	..	2,334	1,491
1962	7,680	2,483	1,570	579	1,655	455	2,867	68	..	..	1,738	1,381
1963	8,077	3,772	1,790	643	1,760	564	2,154	105	109	109	2,096	2,351
1964	8,465	4,228	1,885	687	1,676	597	2,199	100	180	180	2,197	2,664
1965	8,838	4,969	2,035	835	1,559	567	2,255	80	239	239	2,355	3,248
1966	8,534	4,650	2,063	949	1,331	520	2,536	106	250	250	2,002	2,825
1967	8,386	4,609	2,227	1,056	1,218	532	2,814	149	104	104	1,841	2,768
1968	8,598	3,939	2,505	1,209	1,345	646	3,207	167	65	65	1,163	1,852
1969	9,043	3,670	3,192	1,367	1,362	677	3,187	123	150	150	1,923	1,353
1970	9,484	4,199	3,167	1,513	1,392	918	3,877	217	161	161	611	1,390
1971	9,880	4,389	3,041	1,662	1,412	987	4,101	406	248	248	552	1,086
1972	10,826	4,492	3,203	2,023	1,469	1,127	5,147	617	289	289	111	436
1973	12,033	4,892	3,335	2,300	1,474	1,111	6,196	925	292	292	96	264
1974	12,259	5,543	3,236	2,566	1,332	1,094	6,581	1,204	326	326	98	353
1975	12,449	6,052	3,399	2,718	1,373	1,050	6,293	1,331	409	409	141	544
1976	13,626	6,968	3,509	3,004	1,362	1,000	6,950	1,537	506	506	269	921
1977	13,812	6,922	3,620	3,074	1,352	784	6,874	1,492	539	539	295	1,033
1978	13,248	7,129	3,756	3,082	1,241	680	6,248	1,466	549	549	253	1,352
1979	13,292	7,451	3,963	3,067	1,082	554	6,015	1,435	591	591	367	1,804
1980	14,029	8,482	5,067	4,011	..	..	6,562	1,712	782	782	351	1,977
1981	15,138	9,018	5,669	4,717	..	..	6,983	1,867	980	980	329	1,454
1982	16,998	9,738	6,061	5,687	..	..	7,713	2,033	1,153	1,153	192	808

Note: Total figures for 1982 include students enrolled in the Nanyang Technological Institute.

1 The University of Singapore and Nanyang University were merged to form the National University of Singapore on 8 August 1980.

2 Ngee Ann Polytechnic was known as Ngee Ann Technical College prior to 16 April 1982.

3 Institute of Education was known as Teachers' Training College prior to 1973.

Source: Ministry of Education

ANNEX J

Philippines' Country Report

COUNTRY REPORT

A number of educational, training and research institutions - both private and public - exist in the Philippines. Most of these regularly conduct courses for participants from Asia-Pacific countries.

However, during the Jakarta meeting on 28-29 January 1985, only a few technical areas wherein the Philippines can contribute to the planned Asia-Pacific Cooperation Network for Human Resources Development (APCN-HRD) were identified. Accordingly, and in preparation for this meeting, the corresponding Philippine training institutions engaged in these technical areas were contacted and their initial commitments to participate in the APCN-HRD have been obtained. They are the following:

- (1) University of the Philippine Institute of Small-Scale Industries in the area of entrepreneurship and management for small-and medium-scale industries;
- (2) The Philippine Ports Authority Port Personnel Training Center in the area of cargo handling and port equipment operation and maintenance;
- (3) The Transport Training Center of the University of the Philippines in the area of traffic engineering, traffic management and transportation planning; and
- (4) The Natural Resources Management Center of the Ministry of Natural Resources in the area of remote sensing technology and applications to natural resources management.

In the initial operational stages of the contemplated APCN-HRD, these four Philippine-based institutions can participate immediately since they all already have on-going training programs attended by Asia-Pacific participants in the past.

Allow me now to describe in detail each of these training institutions:

1. Institute for Small-Scale Industries

The University of the Philippines

The UP Institute for Small-Scale Industries (UP ISSI) is a research and training organization established in the Philippines in 1966 through a bilateral agreement between the government of the Republic of the Philippines and the Netherlands. Its principal aim is to assist and promote development of small enterprises in the Philippines. In 1969, the Institute was established by law as a semi-autonomous unit of the University of the Philippines.

The Institute's training efforts have always been directed towards improving the level of competence among entrepreneurs, managers, supervisors, and technicians of small and medium industries. By increasing the entrepreneurial and managerial supply in the countryside, the Institute's training programs aim to contribute to the national goals of employment, regional dispersal and growth.

In recent years, the greater part of training resources have been used to develop trainers, extension officers, consultants, regional development officers, project and loan officers and other such catalysts who shall hasten the development process.

The UP ISSI, a "center for small enterprise training, research and development" in the region, has expanded its activities by packaging and conducting training programs for similar agencies in Asian and other Third World countries.

A. Training Programs of UP ISSI

UP ISSI conducts training programs for: 1) entrepreneurs; 2) managers and supervisors; 3) engineers and technicians; 4) industrial extension workers; 5) trainers and other development workers; and 6) business educators. (Kindly refer to Annex-a for brief description and duration of each program and Annex-b for its 1986 program offerings.)

B. How to Avail of Training Services

(1) For Individuals

An individual wishing to participate may apply on his own but should preferably be sponsored by any of the following; his organization, his government or through bilateral/multilateral programs such as the UNDP, Colombo Plan, etc.

Foreign participants are requested to file their application at least three months before the opening of the program.

(2) For Institutions

Government agencies, private companies, industry chambers and groups, associations and other institutions may avail of training assistance in any or all of the following areas: training needs analysis; design of training program; program implementation; and course evaluation. ISSI though, usually conducts packaged programs intergrating all these services.

(3) Training Experience

The following is a partial list of foreign organizations and institutions which have availed themselves of ISSI's training services:

Georgia Institute of Technology

United Nations Environmental Program

Research Institute for Management Science, Holland

United Nations Industrial Development Organization

International Labour Organization

United States Agency for International Development

World Bank

Asia Productivity

Programme for Development Cooperation of the Helsinki School
of Economics

C. Publications and Researches

As part of its intensified efforts in industrial promotion, the UP ISSI has come up with several publications (Annex-c) and researches (Annex-d).

2. The Port Personnel Training Center (PPTC)

A. Organization

The Port Personnel Training Center, or PPTC, is the manpower training and development arm of the Philippine Ports Authority (PPA). It was originally created and administered by the Bureau of Customs in early 1973 but was transferred to the PPA on August 1, 1976. PPA has assumed the responsibility of implementing an integrated program for the planning, development, financing, operation and maintenance of ports or port districts for the entire country by virtue of Presidential Decree No. 505 as amended by P.D. No. 857.

PPTC aims to provide the port manpower with information and skills on port management, port operations and port equipment

maintenance and other undertakings through efficient manpower training and development programs designed to:

- a. promote the proper and maximum utilization of port manpower and ports facilities;
- b. reduce the cost of cargo handling; and
- c. minimize accidents, claims, losses and damages arising from faulty handling of cargo.

PPTC's training and development programs are designed for the supervisors, foremen, checkers, gangbosses, winchmen/signalmen, dockworkers, stevedores, operators of mechanical equipment for container operations, maintenance personnel, electricians, mechanics, technicians, machinists, and for the management and office personnel servicing all national ports, sub-ports and municipal ports including all ports-oriented industries, arrastre and stevedoring companies and port ancillary services all over the country.

PPTC has evolved formal and informal training and development programs for these manpower. The formal port training program is being undertaken through an organized class instruction process. The indirect or informal port training program is being implemented through the dissemination of instructional and informative hand-outs and aids to its target clientele and to the public.

The different PPTC functionaries that help in the discharge of its tasks and responsibilities are the Port Management Training Section, the Port Operations Training Section, the Port Equipment and Maintenance Training Section, the Curriculum and Research Development Section and the Administrative Services Section.

The Port Management Training Section designs programs to provide learning opportunities for arrastre and stevedoring managers, their middle-management men and supervisors to update their knowledge and make them aware of the port management science. It seeks to strengthen managerial performance, impart information and skills needed in the job, detect and minimize inadequacies in operations.

The Port Operations Training Section seeks to train and retrain the main bulk of port workers in the shortest possible time on standard port operations techniques and procedures.

The Port Equipment and Maintenance Training Section upgrades maintenance competencies, habits and attitudes of maintenance managers, engineers, supervisors, mechanics and all levels of motorpool personnel on the use of port equipment and on the system, methods and economics of maintenance.

The Curriculum and Research Development Section is charged with integrating and evaluating the design and processes of the training being conducted and by the different training sections of PPTC.

The Administrative Services Section extends general administrative services to PPTC.

B. Courses

Among the courses regularly conducted by PPTC are:

- (1) Pre-Employment Course for Checkers
- (2) Upgrading Course for Port Checkers
- (3) Winchman and Signalmen Course
- (4) Forklift Operations and Maintenance Course
- (5) Truck-Tractor/Trailer Operations and Maintenance Course
- (6) Crane Operations and Preventive Maintenance

- (7) Preventive Maintenance Course
- (8) Industrial Equipment Safety Course
- (9) Dangerous Cargo Handling Course
- (10) Cargo Control
- (11) Dockworkers/Stevedores Course
- (12) Porters Development Course

C. Summary of the Total Number of Trainees

SECTION	1983		1984		1985 (Jan. - Sep.)	
	No. of Courses	No. of Trainees	No. of Courses	No. of Trainees	No. of Courses	No. of Trainees
MANAGEMENT	23	483	6	73	6	125
OPERATIONS	43	1,107	17	451	35	891
MAINTENANCE	39	578	44	544	25	341
TRAIN/MAR [*]	-	-	5	109	5	101
Total	105	2,168	72	1,177	71	1,458

^{*}Training for Managers in the Maritime Sector

3. The Transport Training Center (TTC)

A. Foundation

The Transport Training Center is responsible for upgrading the capability and potential of government personnel concerned with transportation through intensive and practical training in the fields of traffic engineering, planning and management.

On January 28, 1978, by virtue of a presidential decree, the Center was placed under the National Engineering Center of the Philippines. On November 11, 1980, President Marcos issued Letter Instructions (LOI) No. 1080 superseding LOI No. 428. The former reiterated the need for well-trained transportation personnel and expanded the functions of the Center to include Transportation Research.

On April 12, 1977, a Record of Discussion was formalized outlining a four-year technical cooperation program to be provided by the Government of Japan through the Japan International Cooperation Agency (JICA).

Under the program, JICA was to assist the TTC in offering intensive and practical courses in traffic planning, engineering and management by:

- a) detailing to the Center a number of experts who shall assist the TTC staff in handling the training course;
- b) donating equipment for field and laboratory training and for research; and
- c) offering specialized training and observation tours to Japan for key TTC personnel.

Aside from the full time JICA experts, experts on a short-term basis were detailed to the Center to deliver special lectures on transport technology, to install the CCTV Monitor System and computer software and hardware, and to train the TTC staff on the new computer system.

Training and research equipment under the JICA technical cooperation program is regularly provided by Japan. The main equipment received consists of the FACOM M140 F computer system and the central and field equipment for the TTC Traffic Control System on Quezon Avenue.

At present, there are eight JICA experts headed by a Chief Advisor detailed on a full time-basis at the Center. They are from the Japan Highway Public Corporation, Ministry of Construction, Metropolitan Expressway Public Corporation and the National Police Agency of the Japanese Government.

B. Training Program

Since June 1978, the TTC has been offering non-degree courses biannually in the fields of transportation planning, traffic engineering, and traffic management. These are given simultaneously. During the session, the integrated approach to the solution of transportation problems is introduced to the participants. (Kindly refer to Annex-e for the objectives, description and curricula of the programs.)

C. Research

TTC's contribution to the upgrading of the state-of-the art of Traffic and Transportation Technology has been broadened through research and other extension activities.

Projects which the Center has undertaken include the Nationwide Traffic Volume Survey Study, Quezon Avenue Traffic Control System Study, UP Campus Traffic Study, Metro Manila Transit Analysis Project, LRT Traffic Assistance Project, Mass Transit Assignment (TANSIGN - acronym for the computer software that was designed as a public transit assignment model) Model and the Maryknoll Traffic Study. The Center also participated in the Davao City Urban Transport Cum Land Use Study (DCUTCLUS) and the Metro Cebu Land Use and Transport Study (MCLUTS).

4. Natural Resources Management Center (NRMC)

A. Organization

The Natural Resources Management Center, a resource information and research agency attached to the Ministry of Natural Resources (MNR), was created on October 25, 1976.

The NRMCM sees itself as:

- the agency through which the Philippine government will be participating in the worldwide program for satellite and aircraft remote sensing of natural resources and environment;
- the agency through which technology adoption and transfer to other government agencies concerned with resource management and development shall be facilitated;
- the agency that shall innovate systems and techniques in data collection, handling, processing, storage, retrieval and presentation for the benefit of the MNR and agencies under its supervision and control. To be developed and operationalized are the following key integrative systems: inventory and budget; human financial and physical resources; and records management;
- the agency shall provide strategic studies to policy and decision makers, pertaining to the natural resources of the country vis-a-vis local, regional and international situations; especially their socio-economic-political ramifications.

B. Programs

To carry out its mandate, the NRMCM has instituted four major programs. These are Remote Sensing Technology Application Program, Remote Sensing Systems Development and Maintenance Programs, Resource Policy and Strategy Research and Public Information Program, and Information and Systems Management Program. Two of these directly support the center's principal mission of applying remote sensing technology to natural resources management. The objectives and description of each program appear in Annex-f.

C. Past Experiences with Asia-Pacific Participants

NRMCM supported or co-sponsored various technical meetings/workshops. For example, from 1983 to 1984 it undertook the following:

- (1) 2nd Asian Agricultural Symposium on "The Application of Remote Sensing to Agriculture and Resources Development" (23 February

- 3 March 1983), with participants from India, Thailand, Bangladesh, Indonesia, Malaysia, Sri Lanka and Japan;
- (2) Extended Maritime Jurisdiction and Philippine National Marine Interests Workshop (11-13 January 1983) in cooperation with East-West Center, Hawaii;
 - (3) Technical Forum on (SPOT) Satellite Remote Sensing System (16 September 1983) co-sponsored by France;
 - (4) Workshop on the Management of Implementing Remote Sensing Technology for Economic Development (3-7 October 1983);
 - (5) ESCAP/NRMC Regional Conference on Multi-level Remote Sensing for Forestry Application (8-12 October 1984) attended by experts from China, India, Indonesia, Malaysia, Papua New Guinea, Sri Lanka, Thailand, and Vietnam;
 - (6) Regional Training in Digital Image Interpretation for Forestry Application (15-26 October 1984) attended by participants from Bangladesh, China, India, Indonesia, Iran, Malaysia, Sri Lanka, Thailand and Vietnam; and
 - (7) Asian Regional Workshop on Mangrove Information (30 April - 2 May 1984) co-sponsored by IDRC of Canada attended by participants from Thailand, Indonesia, Malaysia, India, Papua New Guinea and Australia.

Annex-a

UP ISSI PROGRAMS

1. For Entrepreneurs

- o How to Start A Business
Motivates individuals wishing to put up their own small businesses and appraises them on how to be a successful entrepreneur.
Duration: 3 days
- o Agribusiness Course for Entrepreneurs (ABCE)
Keeps participants abreast of technological trends and changes affecting agribusiness operations.
Duration: 10 days
- o Appreciation Course on Entrepreneurship (ACE)
Designed to develop the interest of potential entrepreneurs in establishing a small enterprise and to acquaint them with basic management concepts and techniques.
Duration: 2 days
- o Seminar on Potentially Viable Business
Provides participants with general descriptions of and insights into potentially viable ventures which entrepreneurs can pursue.

2. For Managers and Supervisors

- o Managers' Course (MC)
Covers the broad spectrum of management functions, tools and techniques and enhances the capability of managers to assess and respond to the economic crisis and other challenges from the environment.
Duration: 14 weeks
- o Cost Reduction Techniques for Managers
Provides practical guidelines for managers and supervisors to enhance productivity, reduce costs and prevent waste through systematic operations analysis and participative

management technique.

Duration: 3 days

o Marketing Management for Small Enterprises

Seeks to improve the small enterprise owners' and managers' competitive position in the market.

Duration: 10 evenings

o Financial Management for Small and Medium Enterprises for Non-Accountants

Provides participants with a working knowledge of proper accounting and financial management techniques in operating small-and medium-scale enterprises.

Duration: 10 evenings

o Productivity Through Effective Supervision (PES)

Aims to develop the supervisors and interpersonal skills of supervisors or those about to assume supervisory functions.

Duration: 15 evenings

3. For Engineers and Technicians

o Industrial Automation and Instrumentation Courses (IAIC)

Seeks to upgrade productivity among manufacturing firms through the design, operation and maintenance of industrial control systems. It consists of four independent modules, each of which covers a control system.

Module I - Pneumatics and Electro-Pneumatic Control Course

Module II - Digital Electronics Control Course

Module III- Instrumentation and Control Course

Module IV - Microprocessor-Based Control Course

Duration: 15 evenings per module

o Low-Cost Automation and Production Management Course (LCA-PM)

Seeks to train technical people in the application of low-cost automation for upgrading production techniques.

Duration: 4 months

4. For Industrial Extension Workers

- o Management Consultancy Course (MCC)

Provides participants with tools and skills to enable them to provide technical assistance, management advice and other extension services to small-and medium-scale industries.
Duration: 24 weeks
- o Project Study Preparation Course (PSPC)

Provides participants with tools to identify and evaluate venture opportunities as well as skills in preparing a project feasibility study.
Duration: 10 days
- o Small Business Consultancy Course (SBCC)

Aims to develop an extension worker's ability to provide management and technical consultancy services for small business establishments.
Duration: 12 weeks
- o Industrial Extension Training Course (INDEXTRAC)

Seeks to develop a pool of qualified extension workers in the developing countries who shall assist small enterprises to survive, grow and contribute to national development goals.
Duration: 7 weeks
- o Regional Industrial Development (RIDE) Course
Provides participants with the tools and skills for designing, running and monitoring the industrial component of a regional development program.
Duration: 22 weeks
- o Small Industry Information Management Course (SINFOMAN)

Seeks to upgrade the ability of development workers to package and deliver timely and relevant information to the small entrepreneur to help him make sound decisions and, generally, to improve entrepreneurial productivity.
Duration: 14 weeks

5. For Trainers and other Development Officers

- o Trainer's Course on Entrepreneurship Development (TRACED)

Provides participants with basic skills for training

entrepreneurs and would-be entrepreneurs in developing countries.

Duration: 10 weeks

o Training for Trainers

Aims to develop participants' ability in all aspects of the training function from training needs evaluation through implementing the training program to course evaluation.

Duration: 11 days

6. For Business Educators

o Entrepreneurship Development Program for School Administrators and Teachers

Exposes participants to the basic approaches, methods and techniques for teaching entrepreneurship within the formal educational system.

Duration: 20 days

Annex-b

1986 PROGRAMS OF UP ISSI

Small Business Consultancy Course for the Ministry of Foreign Affairs/ Technical Assistance Council	January 8 - March 26
Low-Cost Automation-Production Management Course (International)	February 4 - June 11
Agribusiness Course for Entrepreneurs	February 12 - 15
Manager's Course	March 18 - June 20
8th Industrial Automation & Instrumentation Courses	
Module I - Electro-Pneumatics	March 10 - 31
Module II - Digital Electronics Control	April 21 - May 13
Module III - Feedback Control Supplier and Instrumentation	June 23 - July 11
Productivity in Small & Medium Enterprises	May 10 - 24
Regional Industrial Development Course (International)	June 25 - November 28
Trainer's Course on Entrepreneurship Development (International)	September 2 - November 13

Annex-c

UP ISSI PUBLICATIONS

1. Small Business Entrepreneurs
2. Small Industry Journals
3. Apro-Tech (AT) Bulletins
4. Apro-Tech (AT) Directory
5. Small and Medium Industries in the Philippines: An Overview (1983 revised edition)
6. How to Start and Manage a Small Enterprise
7. Small Business Guide Series
8. Countryside Manufacturers and Suppliers Directory
9. Directory of National Sources of Information for Small-Scale Industries
10. Entrepreneur's Handbook
11. Trainer's Manual (For Entrepreneurship Development Programs)
12. Bibliography of Aprotech Materials
13. List of Potentially Viable Small Industries in the Philippines

Annex-d

UP ISSI RESEARCHES

1. Survey of Training Needs for Small-Scale Entrepreneurs
2. Changes in the Industrial Structure and the Role of Small and Medium Industries in Asian Countries: The Philippine Experience
3. Financial Factors and Small and Medium Business Improvement
4. Update on "Agriculture and Agribusiness Opportunities in the Twelve Regions."
5. Potentially Viable Small Enterprises
6. Regional Profiles
7. Relationship of Small and Medium Industries (SMI) with Large Scale Industries (LSI)
8. Marketing Factors and SMI Improvement
9. Rural Enterprise Development and Rural Employment Generation Project for Palawan Phase I & II
10. Inventory of Entrepreneurship Development Programs for the Filipino Youth
11. Perceptions of Selected Small and Medium Enterprises Towards Small and Medium Enterprise Financing
12. Study of Credit Facilities and the Establishment of a Lending Assistance Program for Small-Scale Industries
13. Sharing of Technology among ASEAN Members and the Transfer of Technologies from Developed Countries
14. Management of Technology Case Project
15. Feasibility Study of KKK Processing Village
16. A Study of Financial and Labor/Capital Ratios of Small and Medium Industries
17. State-of-the Art Survey of Small-Scale Industries Development in Five Asian Countries
18. Identification of Small-Scale Industries in the Rural Areas and Strategies for their Development
19. Updating of "Small and Medium Industries in the Philippines: An Overview"
20. Female Entrepreneurs in Small Industries in Developing Countries
21. Study on Vocabulary Control Devices to Facilitate Choice of Technologies (A Pilot Study)
22. Baseline Study of the Philippines' Twelve Regions
23. Research Paper on Venture Capital Corporations
24. Small Business Management Guide Series
25. Research on Barriers to the Popular Use of Selected Non-Conventional Energy Technologies
26. Identification of Potentially Viable Small Enterprises in the Provinces
27. Entrepreneur's Handbook and EDP Training Manual
28. Operating Manual on Laws and Regulations Affecting SMIs
29. Study on Mortality Rates and Causes of Failure of Small-Scale Industries
30. Achievement Motivation Training (AMT) Trainers' Guide
31. Validation of Selected Schemes for Entrepreneurial Development in Selected Asian Countries

Annex--e

TTC PROGRAMS

1. The Transportation Planning Course focuses on the planning process as applied to alleviate congestion and other transportation problems. It also tackles patterns of urban development conducive to the mitigation of these problems.
2. The Traffic Engineering Course is concerned with the technological factors which determine traffic characteristics and the necessary methods and equipment.
3. The Traffic Management Course deals with the operational aspects of traffic.

The subjects included in the revised curricula are:

GENERAL COURSE

GEN 11	Transportation in the Philippines
GEN 12	Transportation Technology
GEN 13	Statistics
GEN 14	Financial and Economic Evaluation
GEN 15	Environmental Impact Assessment
GEN 16	Human, Vehicle and Flow Characteristics
GEN 17	Introduction to Computers

TRAFFIC ENGINEERING AND MANAGEMENT COURSE

TEM 21	Introduction to Traffic Engineering and Management
TEM 22	Traffic Surveys
TEM 23	Traffic Flow Analysis
TEM 24	Traffic Safety Programs
TEM 25	Introduction to Geometric Designs of Roads
TEM 26	Intersection Design and Control
TEM 27	Road Facilities
TEM 28	Road Operation and Control

TRANSPORTATION PLANNING COURSE

TRP 21	Introduction to Transportation Planning
TRP 22	Land Use/Transportation System
TRP 23	Traffic Surveys
TRP 24	Travel Demand Forecasting
TRP 25	Road Network Planning
TRP 26	Public Transportation Planning
TRP 27	Planning of Facilities
TRP 28	Plan Implementation

JOINT PROJECT

TSM 31 Transportation Systems Management

Lectures and discussion sessions combined with laboratory or field studies appropriate for the various course topics are conducted

The Center graduates an average of 1,500 trainees per year.

4. A Senior Course on Transportation Technology (ASCOTT)

ASCOTT is the fourth course offering of the TTC under its Third Country Training Programme (TCTP) in the field of transportation and traffic. The Programme was formalized in the Record of Discussions between the Japanese consultation team and the TTC Advisory Committee on October 8, 1981.

The TCTP project is intended to provide a vehicle where transfer of knowledge and techniques in transportation and traffic may be effected to various Asian countries. The program attends to common transport problems caused by accelerated urban development and growth in Asian countries.

The countries invited to nominate participants for this year's course are Bangladesh, Brunei, Indonesia, Malaysia, Papua New Guinea, Singapore, Sri Lanka, Thailand and the Philippines. Each country is asked to nominate one principal participant and one alternate participant for each of the course options for a total of four nominees per country.

5. Short-Term Seminars

Short-term seminars on specific topics are also conducted to meet immediate training needs identified by various groups involved in transportation. Past seminars under this category were the Regional Seminar-Workshop on Introduction to Traffic Technology, A Seminar on Introduction to Road Traffic Safety and Control Devices (Feb. 5-8, 1980), a special Training Programs in Driver Education and Examination (June 23-25, 1980), The First Training Course on Project Planning, Management and Development (Dec. 8 - Jan. 31, 1981), and A Traffic Management Seminar for Senior Police Officers (May 12, 14 and 16 and June 2, 4 and 6, 1981).

Annex-f

NMRC PROGRAMS

1. Remote Sensing Technology and Application Program -

The objectives of this program are the following:

- to conduct natural resources and environmental survey, assessment and analysis;
- to provide remote sensing services and vital data on natural resources and environment to other government agencies and the private sector;
- to develop multi-level techniques for the acquisition, analysis, processing for remotely sensed data on natural resources and environment, and computerized analysis; and
- to develop the country's physical and manpower capabilities in the application of advanced technology for natural resources and environmental assessment and data analysis.

2. Remote Sensing Systems Development and Maintenance -

This program provides the vital technical support services in the form of software and hardware planning, development and maintenance. It develops new software programs for image analysis and classification. It also provides the assistance to researchers and analysts particularly on statistical and mathematical modelling and algorithm formulation for remote sensing imagery analysis.

The NRMC has a GE Image 100 Multispectral Image Analyzer System. This is a computer which processes remotely sensed data collected and transmitted by satellite or aircraft-borne sensors. It has a PDP 11/35 mini-computer, Gould Printer, Input Scanner and other related devices. The Center also has equipment for water quality analysis, geodetic surveying, mapping and drafting equipment and other support instruments for photographic processing and ground truth operations.

3. Program on the Application of Remote Sensing Technology to Coastal Zone Management -

NRMC has proposed that the Tokai University of Japan undertake research on the development of effective methods on the use of remote sensing technology to coastal zone planning and management. Its emphasis would be on the use of high resolution data of up-coming satellite such as SPOT and MOS-I. This proposal is included in the Memorandum of Agreement between NRMC and the Tokai University of Japan.

This joint project will, among others, train personnel on the interpretation of present satellite data (LANDSAT) and future satellite (SPOT-I and MOS-I) data to generate information needed in coastal zone planning and management.

ASEAN-PACIFIC COOPERATION NETWORK FOR
HUMAN RESOURCES DEVELOPMENT (APCN-HRD)

(A Reaction)

Objectives

The two objectives of the proposed ASEAN-Pacific Cooperation Network for Human Resources Development (APCN-HRD) as stated in the "paper for discussion and reference" are clear enough and thus no longer require any elucidation. The objectives are also within the framework of ASEAN-Pacific Cooperation (APC) reaffirmed at the Post-Ministerial Conference (PMC) in July 1985. Therefore disagreement over the objectives is not anticipated.

Approach

There is one observation. While the institutional approach is desirable, there are political and bureaucratic constraints regarding its implementation which may not be easy to surmount. The two approaches -- institutional and program -- are not mutually exclusive. They may be viewed as "serial", in the sense that the successful implementation of the program approach could precisely be the rationale and basis for the creation of a network linking the institutions that participate in the programs.

It may be worth mentioning that institutions, as those in the Philippines, could easily host or participate in programs agreed upon at the middle management level. But forging a network would require top management or board-level decisions insofar as the private sector is

concerned. With public institutions, decisions at the highest policy-level of the government would be necessary.

The Program Approach Network

(1) Fields of program and implementation agencies

That "each participating institution could take the initiative in the light of its own strength and capabilities and take charge of such programs" and that "programs will be carried out in the form of non-obligatory participation, where in each program only interested institutions take part" are very realistic proposals.

However, it must be noted that some public and/or private institutions may have the expertise to share with other countries although they do not have the logistics. A situation such as this needs to be considered.

Also, the fields of program and the number of implementing agencies could be expanded.

(2) Content of Programs

The listing is far-ranging and could subsume many more activities.

(3) Japan's cooperative method

The "core-university system" program is laudable. Since Japan has expressed the "...intention and readiness to expand this form of bilateral scientific cooperation..." it could, perhaps, expand the 'fields' to include the disciplines in the social sciences. Human resources development, in the final analysis, is behavioral.

Operational Procedure

The suggested operational procedures are clear and workable except for the funding requirements of the Council's meetings and the technical committees.

Since this is a pioneering attempt at ASEAN-Pacific Cooperation, the principle of flexibility in the light of existing practical limitations must be observed.

THE PHILIPPINE EXPERIENCE UNDER THE NSTA-JSPS JOINT SCIENTIFIC
COOPERATION PROGRAM (1979 - 1985)

Program Background and Description

Starting March 1979 a series of exploratory contacts and visits between Philippine and Japanese scientists and science administrators/educators were made. Subsequently, a Memorandum of Understanding for Science Cooperation between the then National Science Development Board (now National Science and Technology Authority) and the Japan Society for the Promotion of Science was formalized in Manila.

The Memorandum of Understanding (copy attached as Annex A) provides for an initial validity period of three years starting 1 April 1979 with automatic extension for successive periods of three years each unless terminated by either party. Thus, on 23 March 1982, NSTA and JSPS, in recognition of the impressive progress so far achieved in the implementation of agreed programs of cooperation and in anticipation of continuing fruitful collaboration in areas of mutual concern, had reaffirmed the Memorandum of Understanding. On 29 March 1985, NSTA and JSPS confirmed a third 3-year validity of the MOU in Tokyo.

The NSTA-JSPS Joint Scientific Cooperation Program aims to promote interinstitutional scientific exchange with emphasis on research through any of the following schemes:

1. exchange of scientists through short- or long-term visits;
2. holding of/attendance at scientific seminars and conferences;
3. coordinating degree research under joint guidance (Ph.D. Dissertation Fellowship).

Between FY 1979 and FY 1982, the agreed fields of cooperation had been agriculture, health sciences, breeder(basic)sciences, and to a limited extent, social sciences. Beginning FY 1983, however, the new field of engineering has been added, in effect resulting in the expansion of coverage of the Program. Beginning FY 1984, the field of Biotechnology (including genetic engineering) has been included.

It is assumed that the choice of the fields of cooperation has been based on the mutual interests of both the Philippine and Japanese scientific committees in these fields as priority areas of concern.

The NSTA-JSPS Program is considered unique in the sense that it is inter-institutional rather than a strictly government-to-government cooperative arrangement. The NSTA and JSPS as focal points for the Program have thus assumed the responsibilities of coordinating and monitoring the implementation of agreed scientific exchange programs as well as of charting the yearly direction of cooperation.

Immediately before the start of each Japanese fiscal year in April, NSTA and JSPS convene a Joint Executive Committee Meeting as an avenue for reviewing and assessing the status/progress of cooperation for the past year and for determining new programs as well as directions to be pursued for the on-going projects. The Meeting, which is held alternately in Tokyo and Manila, also allows the airing out and the resolution of administrative/technical problems confronted in the implementation of the Program, problems, which by and large, have been simple and minor.

Implementation of the NSTA-JSPS Program is pursued either through a core university exchange, where designated lead universities in the respective countries serve as lead/center for cooperative activity for a

specific field, or a general exchange scheme where corresponding liaison bodies act as coordinators in the respective countries of cooperative programs by field. Attached as Annex B is a list of the Designated Philippine and Japanese Core Universities and Coordinators by field, under the Program, as of FY 1985.

Status of Scientific Exchanges by Sector

Attached as Annex C is a summary table of the exchange program covering the years 1979-1985 distributed by sector. The total figures, with the exception of the Ph.D. Program, cover both the regular visiting scientists exchanged between the Philippines and Japan, occasionally offset by the prolongation of visits in terms of total man-days consumed.

Status of Cooperation in Agriculture

Under the leadership of the Tokyo University of Agriculture and the University of the Philippines at Los Baños, the following cooperative activities have been undertaken with the collaboration of other participating research scientists from other institutions:

1. Program of Research on the Postharvest Handling, Processing and Utilization of Rootcrops in the Philippines;
2. Nitrogen Fixation in Selected Rhizobium-Legume Association;
3. Potential of Microorganisms for Food and Industrial Uses;
4. The Preservation and Utilization of Tropical Forest Resources (including Mangrove);
5. The Improvement of Water Fowl Production and Inland Water Fisheries (including Breeding);

In addition to the generous support that JSPS has extended by way of the scientists exchange scheme under the sector, the Philippine cooperating institutions have also been fortunate to receive donations of equipment, supplies and apparatuses through the Special Research Fund of the MOMBUSHO under special arrangements.

For its part, the NSTA has extended financial assistance through its Grants-in-Aid Program to the cooperative projects in Agriculture at an estimated total amount of P391,000 between 1982-1985 to cover the running expenses of cooperative projects.

The research results and technical findings generated from the Projects are disseminated through Seminars/Conferences organized by JSPS and other cooperating institutions with the end in view of disseminating information as widely as possible.

Status of Cooperation in Health Sciences

Cooperative exchanges in the Health Sciences have been pursued in the following areas:

1. hepatology (initially focused on hepatitis, lately redirected to hepatocellular carcinoma);
2. perinatology and maternal child health care
3. community health

The cooperative program in hepatology is particularly noteworthy considering its goal which is to control hepatitis B virus (HBV) infection which has been definitely linked to the development of hepatocellular carcinoma (HCC) in the Philippines. Hand in hand, Philippine and Japanese researchers are working together to determine the extent of infection in the population, to establish the significant

modes of transmission, to develop practical, implementable preventive measures and eventually to produce a vaccine.

Donations of reagents from cooperating medical institutions and foundations in Japan have substantially boosted local facilities to further complement the additional skills that local scientists/researchers involved in the project have acquired through actual research visitations in Japan.

Status of Cooperation in the Breeder (Basic) Sciences

Philippine and Japanese exchange scientists under this sector have both confirmed the enormous gap existing between the level and pace of scientific research in Japanese universities as compared to those in the Philippines. The contrast of research conditions in the two countries has to a large extent rendered difficult the diffusion of research ideas in a research partnership under any of the breeder sciences.

The situation nonetheless has not discouraged leading Japanese scientists from reaching out to Philippine counterparts. Understandably, the cooperative program in the breeder sciences has had to focus on upgrading the local manpower capability by way of supplementing the newly instituted doctoral programs in mathematics, chemistry and physics under a 3-university consortium (University of the Philippines, Ateneo de Manila University and De La Salle University).

Status of Cooperation in Engineering

The field of Engineering (to include electronics, computer science, materials science) had been added to the Program, in response to the felt need in the Philippines to spur engineering research to meet the

demands of emerging industries. FY 1983 marked the initiation of efforts towards the establishment of linkages between Philippine and Japanese research institutions as well as the identification of specific research activities in the engineering sector.

Conferences/Seminars Conducted

Listed hereunder are seminars/conferences held either locally or in Japan where scientists had participated:

<u>Title</u>	<u>Venue</u>	<u>Date</u>
5th International Symposium on Tropical Rootcrops	UPLB	16-25 Sept. 1979
7th Seminar on Animal and Vegetable Protein Resources (SAEDA)	UPLB	1-7 Dec. 1979
Seminar of Socio-Economic Analysis on Production and Marketing Condition of Rice	UPLB	17-21 Mar. 1980
Conference on the Detection and Regulation of Environmental Mutagens, Carcinogens and Teratogens in Southeast Asia	UP	18-31 Oct. 1980
Seminar/Workshop in Electro-chemistry, Diffusion Phenomena	ADMU	5-10 Aug. 1980
Seminar/Workshop on Comparative Study of Agriculture in Tropical and Temperate Regions	TUA	26 Mar. - 2 Apr. 1980
Seminar on Mangrove	Okinawa, Japan	6-13 Nov. 1980
Seminar on Agricultural Research and Education in Asia	Tokyo, Japan	26-31 Oct. 1981
National Meeting on Polarography and Electroanalytical Chemistry	Sophia Univ.	16-29 Oct. 1981
International Seminar on Hepatitis and its Related Diseases	Kobe Univ.	29-30 Oct. 1981

Third Conference of Asian Sociologists	Tokyo, Japan	11-13 Oct. 1981
Seminar/Workshop in Fuel Alcohol	UPLB	25-30 Oct. 1982
Second Franco-Southeast Asian Mathematics Conference	ADMU	30 May - 10 June 1982
Seminar/Workshop on Organic Chemistry of Natural Products	ADMU	1-19 Aug. 1982
Workshop on Chemical Instrumentation	ADMU	16-31 Oct. 1982
Regional Seminar on Productivity of Different Soil Ecosystems	Nodai Research Institute	9-14 Nov. 1982
Seminar on Recent Advances In Perinatal Medicine	Kobe Univ.	20-21 Nov. 1982
Symposium on Chemistry of Natural Products	Tokyo, Japan	19-22 Oct. 1982
ASEAN-Japan Conference on Scientific Cooperation	Tokyo, Japan	18-19 Oct. 1983
International Seminar on Rootcrops in Southeast Asia -- Production and Utilization	Leyte & Los Baños	9-16 Nov. 1983
Seminar on Primary Environmental Factors in Agricultural Production	Songkla, Thailand	November 1984
International Seminar on Comparative Studies of Agriculture in Southeast Asia	Indonesia	20-24 Jan. 1986

Ph.D. Dissertation Fellowship Scheme

Under a Ph.D. Dissertation Fellowship Scheme (RONPAKU) Filipino researchers are given the opportunity to complete their doctoral dissertation under the cooperative research supervision of Japanese and Filipino advisers.

The NSTA-JSPS Program has thus far been able to award the Ph.D. degree to the following Filipino scientists:

1. Dr. Priscilla Sanchez, Assistant Professor of the Department of Food Science and Technology, UPLB with a Ph.D. in Applied Microbiology in collaboration with the Tokyo University of Agriculture.
2. Dr. Arturo Alejar, Professor of the Institute of Animal Science, College of Agriculture, UPLB for his dissertation research on the Improvement of Duck Production in the Philippines in collaboration with the Tokyo University of Agriculture.
3. Dr. Rogelio Juliano, Vice-Chancellor for Planning Development of the UP in the Visayas for his dissertation on The Biology of Milkfish, Chanos-chanos (Forsskal) and Ecology and Dynamics of Brackishwater Ponds in the Philippines in collaboration with the University of Tokyo.

As of FY 1985, three continuing candidates under the Ph.D. (RONPAKU) Program have been confirmed to orally defend their thesis for the current year (two from health sector and one from engineering sector). Also, a Ph.D. (RONPAKU) candidate under the field of Biotechnology has been added.

Other Forms of Cooperation

Additionally to the regular schemes of cooperation under the Program, donations of scientific publications and reference books have also been received from JSPS covering the fields of Agriculture, Health Sciences, Breeder Sciences and Engineering. The materials which are meant to supplement the library holdings of the institutions cooperating in the Program have been distributed by NSTA accordingly.

Comments and Observation on the Program

Undoubtedly, the NSTA-JSPS Program typifies the long-standing tradition of free exchange of ideas and scientific knowledge through inter-institutional linkages between the scientific community of one country and its counterparts in another. The Program is a showpiece of

how cooperation in the context not only of sharing knowledge and ideas, but also of resources in carrying out research activities, and manpower and institutional upgrading and development could be pursued to the mutual benefit of the collaborating partners.

Of critical significance is the unwavering support that JSPS has continued to extend to the Program not only in terms of pursuing cooperative areas that had been agreed upon as early as 1979 but more importantly, towards the expansion of the Program to cover additional priority areas of concern.

There were problems encountered, however, which are only inherent in any undertaking. To cite some of these problems, JSPS visitors to the Philippines experienced shortage of tools and equipment even for routine laboratory work, there had been very short notices on the travel proposals of visiting Japanese counterparts while on the other hand there were delays in the arrival and changes in the itinerary of Filipino counterparts travelling to Japan, there had been little or absence of prior communication regarding experiments to be performed and there were delays in the release of funds. These problems however have been gradually minimized.

Directions for Future Cooperation with JSPS

The NSTA-JSPS Program even now could see a window opening up to another very significant dimension, that is the opportunity by which significant results of cooperative endeavors under the Program could be maximized by way of dissemination and sharing with the other countries in ASEAN. The fact that JSPS now has existing similar cooperative arrangements with relevant institutions in Indonesia, Thailand and

Singapore augurs well for the eventual extension of the Program from a strictly bilateral arrangement to one with a regional outlook and dimension, i.e. between ASEAN and Japan. Hopefully, the NSTA could look forward to a scenario in the future where beneficial results from bilateral programs of the individual ASEAN countries with JSPS could be shared for their collective advantage.

In the past the agricultural sciences have been most actively studied, followed by the medical sciences. There should be greater involvement and participation of scientists in physics, chemistry, biology and mathematics. And due also to the growing industrial programs in the Philippines expanding the scope of engineering cooperation to include additional areas would be welcome.

A new direction for JSPS support could also be in sub-regional studies, seminars and exchange visits among ASEAN countries. A project could be identified jointly by ASEAN countries, two or three in number and JSPS could provide the necessary logistics. There is always some value gained, usually unanticipated, from scientific meetings on topics of common interest to ASEAN countries.

If JSPS resources would allow, the Philippines would welcome an expanded program that would involve other qualified universities and research agencies.

LIST OF ANNEXES

- Annex A - NSTA-JSPS Memorandum of Understanding for Science Cooperation
- Annex B - List of Designated Philippine and Japanese Core Universities and Coordinators for the NSTA-JSPS Program
- Annex C - Summary Table of the NSTA-JSPS Scientists Exchange Program 1979-1985

NSTA-JSPS Memorandum of Understanding
for Science Cooperation

The National Science Development Board of the Republic of the Philippines, hereinafter referred to as NSDB, and the Japan Society for the Promotion of Science, hereinafter referred to as JSPS, desiring to advance their mutual benefit particularly through a science exchange programme under the principle of reciprocity, have agreed as follows:

Article I. Framework of Cooperation

1. Implementing Agencies

NSDB and JSPS shall assume responsibilities for putting into effect the scientific exchange programs between cooperating institutions in their respective countries hereby agreed upon.

2. Fields of Coverage

The scientific exchange programs under this Memorandum shall cover all fields of the humanities, social, natural and applied sciences. Priority shall be given to those fields that are to be agreed upon at the Joint Executive Committee Meeting stipulated under Article V.

3. Participants

Participants in programs under this Memorandum shall be scientists belonging to academic and/or research institutions approved by NSDB and JSPS respectively.

Article II. Types of Exchange

This Memorandum of Understanding is intended to promote scientific exchange between cooperating academic and research institutions in the two countries by means of 1) exchange of scientists, 2) holding of scientific seminars, and 3) conducting degree research under joint guidance.

The exchange quota of each type shall be agreed upon at the annual Joint Executive Committee Meeting stipulated under Article V.

1. Exchange of Scientists

The exchange of scientists shall consist of the following two categories:

- A. Short-term visits of senior scientists for giving lectures and conducting research or exchanging ideas and information in their specialized fields with scientists in the receiving country.
- B. Long-term visits of junior scientists for conducting research under the supervision of senior scientists of the receiving country.

2. Scientific Seminars

Scientific seminars shall be held on themes agreed upon between NSDB and JSPS.

3. Degree Research under Joint Guidance

Degree research under joint guidance is intended for scientists who desire to earn a doctoral degree in either country by visiting the counterpart country for the purpose of completing their doctoral dissertation under the joint guidance of senior scientists from the two countries.

The senior research scientists involved in the joint guidance may visit each other's country.

Article III. Financial Arrangement

NSDB and JSPS will assume the responsibility for arranging the adequate funding necessary for the implementation of the exchange programs whose support has been agreed upon by NSDB and JSPS. Details of the financial arrangement shall be discussed at the Joint Executive Committee Meeting stipulated under Article V.

Article IV. Observation of Laws and Regulations

Philippine and Japanese scientists who participate in the exchange programs under this Memorandum shall abide by the laws of the receiving country and the regulations of the host institutions in which they remain visitors.

Article V. Joint Executive Committee Meeting

NSDB and JSPS will hold Joint Executive Committee Meetings for consultation on matters concerning the implementation of this Memorandum of Understanding. A meeting will be held annually and alternately in the Philippines and Japan.

Article VI. Effectivity of the Memorandum

This Memorandum of Understanding shall enter into force on 1 April 1979 and shall remain valid for a period of three years and be automatically extended for successive periods of three years each. The same may be modified by mutual consent of both NSDB and JSPS or terminated upon notification by either party of the intention to terminate six months prior to the expiration of each 3-year period, in which case any existing program will be brought to an orderly conclusion.

Done in Metro Manila, Republic of the Philippines in two original copies both in English on 15 March 1979.

MELECIO MAGNO
Chairman
National Science
Development Board

ISAO AMAGI
Director General
Japan Society for the
Promotion of Science

List of Designated Philippine and Japanese Core Universities
and Coordinators for the NSTA-JSPS Program

Annex B

Priority Field	Mode of Cooperation	Core University	Philippine Coordinator	Japanese Coordinator
1. Agricultural Sciences	Core University Exchange	UPLB/Tokyo University of Agriculture (TUA)	Ricardo M. Lantican (UPLB)	Jiro Sugi (TUA) Michio Kozaki (TUA)
2. Medical Sciences	Core University Exchange	UP-Manila/Kobe University	Conrado L. Lorenzo Jr. (UP-Manila)	Seizo Iwai (Kobe University)
3. Biotechnology including Genetic Engineering	Core University Exchange	BIOTECH/Osaka University	William G. Padolina (BIOTECH)	Hisaharu Taguchi (Osaka University)
4. Engineering 4-1. Electronics & Computer Sciences	Core University Exchange	UP-College of Engineering/ Tokyo Inst. of Tech. (TIT)	Edogardo S. Pacheco (UP-College of Eng.)	Takeshi Yanagisawa (TIT)
4-2. Others	General Exchange	-	same as above	Takeshi Yanagisawa (TIT) Tomoo Ishihara (JSPS)
5. Breeder Sciences	General Exchange	-	Antonio S. Samson (Ateneo de Manila Univ.)	Yasutada Uemura (Science University of Tokyo)
6. Social Sciences & Humanities	General Exchange	-	not applicable	not applicable

Note: In "5. Breeder Science", the followings are areas of cooperation and their related program leaders;

- 1) Mathematics
 - T. Kawada (Sophia Univ.)
 - K. Shiga (TIT)
- 2) Physics
 - R. Posadas (UP)
- 3) Chemistry
 - A. Samson (ADMU)
 - Y. Uemura (Science Univ. of Tokyo)
 - U. Sankawa (Univ. of Tokyo)

SUMMARY TABLE OF THE NSTA-JSPS SCIENTISTS
EXCHANGE PROGRAM 1979-1985

FIELD	PHILIPPINES TO JAPAN							JAPAN TO THE PHILIPPINES						
	1979	1980	1981	1982	1983	1984	1985	1979	1980	1981	1982	1983	1984	1985
AGRICULTURE	5 (70)	20 (146)	20 (280)	20 (272)	17 (260)	19 (340)	18 (280)	46 (424)	19 (413)	35 (654)	31 (629)	24 (335)	25 (266)	11 (147)
BREEDER SCIENCES	6 (51)	6 (56)	3 (208)	10 (324)	10 (427)	9 (450)	5 (360)	1 (5)	6 (88)	4 (93)	10 (176)	9 (170)	8 (175)	5 (111)
HEALTH SCIENCES	4 (38)	4 (310)	12 (373)	7 (231)	9 (592)	11 (675)	11 (467)	5 (30)	4 (20)	12 (86)	7 (78)	18 (136)	14 (210)	4 (35)
SOCIAL SCIENCES	—	—	1 (3)	1 (7)	—	—	—	—	3 (427)	—	—	—	1 (30)	1 (60)
ENGINEERING	—	—	—	—	4 (76)	5 (130)	3 (113)	—	—	—	8 (80)	11 (93)	10 (92)	4 (61)
PH.D. PROGRAM	—	—	1 (30)	1 (62)	2 (111)	4 (343)	5 (202)	—	—	—	—	1 (14)	2 (13)	—
BIOTECHNOLOGY	—	—	—	—	—	2 (60)	4 (175)	—	—	—	—	—	2 (42)	4 (46)
T O T A L	15 (157)	30 (512)	47 (894)	39 (896)	42 (1456)	50 (1998)	46 (1597)	52 (459)	32 (928)	51 (833)	56 (963)	63 (748)	62 (828)	29 (450)

Figure in parenthesis () represents total man-days consumed by the scientists.

ANNEX K

Thailand's Country Report

THAILAND'S COUNTRY REPORT

Introduction

The prospect for rapid economic expansion in the ASEAN region is considered to be relatively dim. The current world recession underlying the structural nature of such change is affecting ASEAN economy further. The ASEAN growth rates continue to grow slower than previously, reflecting high degree of dependence on current global economy. Thailand is of no exception. It is expected that the GDP during the next Development Plan (1986-1991) will not rise faster than 5%. For immediate prospect, the GDP for 1985 is expected to be around 4.5% while the prospect for 1986 is not very promising, growth rate is expected to grow only 4%.

Policy makers in Thailand are searching for appropriate strategy in coping with grim prospects. Admittedly, many strategies must be implemented concurrently. One strategy considered is to stimulate economy through higher government spending and foreign borrowing. Such prospect is not very promising in view of a severe foreign debt situation. Another strategy is to promote export expansion. The sentiment of protectionism is preventing such expansion. Human Resources Development (HRD) is a policy to increase skills, knowledge and experiences to match with the rapid change in the demand side which ultimately will lead to rising productivity.

What is HRD?

It is extremely crucial to define clearly what we mean by "Human Resources Development".

From the outset, it is crucial also to distinguish human resources from physical resources. Human resources are those which have feeling, they can breathe and they are so sensitive to the environment in which they live and work. Investing in the right kind of human resources is only a necessary but not a sufficient condition since motivating them to work effectively is as important as providing them with the right kind of education and training. Perhaps it is useful to list various definitions of HRD by various United Nations agencies. Garcia has compiled various definitions as follows:¹

The United Nations defines it this way: "Human resources are skills, knowledge and capacities of all human beings actually or potentially available for economic and social development in a community".

UNESCO looks upon human resources development as "the total skills of population in relation to countries' development".

ILO believes that the term encompasses a broader field than mere skills acquisition or even training in general. It is based on an acknowledgement of the needs of people to utilize their capacities to the full in the pursuit of gainful employment as well as job and personal satisfaction. Skills should be supported by relevant and updated knowledge in order to meet people's expectations. Similarly,

¹Garcia, Adriano. "Promotion of Pacific Cooperation in Human Resources Development" submitted for ASEAN Senior Official Meeting in Jakarta, Indonesia, January 1985.

individually and socially developed attitudes are necessary for the integration of the individual's aspirations into a cohesive social or national framework.

UNIDO's definition is "the systematic development of man as subject and object of national development which includes all economic and industrial aspects, such as the upgrading of personal abilities, the increase of production capacities and creative abilities, and fostering leadership functions through education, training and research".

FAO looks upon HRD as "the broadening process for possibilities in the effective participation in rural development, including increasing of productive capabilities".

Perhaps to sum up, it is the process of enhancing the capacity of people to participate productively in national development. As a distinguished economist and Nobel laureate, Professor Simon Kuznets found some years ago that much of development in the past in industrialized countries was due not to the addition to capital but to improvements in man's capacities: skill know-how, management. Man's capacities, not capital, are the main contribution for a more efficient use of resources as Kuznets concluded.

The Basket Does Not Include All

It is obvious from various definitions that HRD can encompass just about everything which can enhance man's capacity. However, if one takes a realistic view of HRD, one has to exclude many long-term HRD policies such as population control, health and nutrition and

concentrate basically on short and medium terms but achievable objectives.¹

The entry point of short and medium objectives is the adoption of the crucial link between knowledge, skills and experience needed for production sectors. Perhaps it is the supply availability of such qualities and how to fully improve utilization of such qualities. However, the improvement of such qualities is not enough. The fuller utilization of such qualities for maximum improvement in raising productivity and providing productive employment is the key. This definition is classified as narrow but achievable definition of HRD in the context of technology. HRD (a narrow definition) should not be viewed as a light at the end of the tunnel to solve all the ills of the society. HRD should be viewed at marginal improvement in view of changing world economic condition to maintain and improve your own international competitiveness in the world market as well as your own domestic production efficiency. Population control, health, nutrition, political participation, elimination of illiteracy are undoubtedly important for HRD to which each national government must pay attention but we are more concerned with improving HRD in a narrow definition because even with this rather modest and short and medium term objective, we still face paramount problems in ASEAN. Therefore, our contention to the modest objective of HRD reflects the sudden change of the global structural economy and attempt to survive in this rapidly changing world economy. HRD with possible regional co-operation will certainly speed up the process quickly.

¹However, this does not mean that long-term objective is not important.

What is to be expected?

The paper is prepared to provide information on existing institutions, organizations and programs of cooperation in connection with Human Resources Development among ASEAN and Pacific regions in Thailand. The first part of the paper is a presentation of existing universities and research institutes involved in cooperation for human resources development. The second part is a discussion on the possibilities of organizational linkages among existing training and encountered problems. Recommendations for further cooperation is formulated in the final part.

I. Existing Training and Educational Organizations and Programs.

In support of the promotion of ASEAN-Pacific cooperation in human resources development, Thailand has hosted a wide range of programs that are directly and indirectly involved in human resources development.

1.1 Asian Institute of Technology (AIT)

Asian Institute of Technology was established in 1959 in order to provide expertise and technical know-how needed in Asia. In 1967, it was chartered as an independent international, non-profit educational institution by special legislation of the Thai Government.

AIT provides high quality postgraduate training to students in Asia and technology appropriate to solve technical problems which obstruct the development processes in the countries of the region. As a regional institute, AIT emphasizes on providing maximum benefit to the countries it was found to serve. It is hoped that they will be able to benefit

from this Institute. The Institute which is very well equipped and qualified provides the needed services for human resources development discussed below.

1) Academic Programs

The Institute offers postgraduate degree and diploma in 24 fields of specialization in nine academic divisions:

- Agricultural & Food Engineering
- Computer Application
- Energy Technology
- Environmental Engineering
- Geotechnical & Transportation Engineering
- Human Settlements Development
- Industrial Engineering & Management
- Structural Engineering & Consturction
- Water Resources Engineering

Unlike other domestic universities and institutions, those academic programs at AIT have been emphasized on the problem-solving orientation rather than traditional disciplined of science and engineering in order to stimulate their students to cope with encountered problems especially in the technological fields.

2) Special Training in Selected Fields of Studies and In-Service Training and Upgrading of Personnel

The Continuing Education Center at AIT provides specialized training programs which are tailored to suit the requirement of the clients. These programs which can vary in length include seminars, whorkshops, short courses and conferences. The objective is to assist

the development and renewal of knowledge of practising engineers, scientists, managers and planners working in the region.

3) Research and Policy Formulation.

Since the Regional Research and Development Center (RRDC) at AIT has been considerably involved in the professional expertise and research experience for many years, the Institute can assist countries of the ASEAN and the Pacific region to identify problems or areas in which researches can be conducted as well as to undertake research studies which will provide information needed by these countries.

4) Consulting Services

Consulting services to countries and organizations related to the areas of specialization are offered by AIT especially the technical advice.

1.2 Human Resources Institute, Thammasat University

The Human Resources Institute was established in 1981 to foster studies on human resources development. The objectives set forth are as follows:

- to carry out research on the problems of human resources and labour development in Thailand
- to provide training in the field of human resources
- to provide advanced academic courses in the subject concerning human resources
- to promote dissemination of information and knowledge in human resources

The institutional functions are directed toward research, training, seminar and teaching with major emphasis in employment, manpower planning, industrial relation, wages and technology transfer. As a

source of information on ASEAN employment and human resources development, the Institute also provides expertise and materials for the public, both at the national and the international level, and integrate them into its programme activities.

In an attempt to incorporate a wide range of related disciplines and institutional bodies in human resources development for comprehensiveness, the staff members are professional from various faculties of the University. In addition the Institute has also provided consultancy services and closely collaborated with many other national and international organizations, both government and non-government organizations, some of them being: International Labour Organization, ESCAP, International Development Research Center, World Bank, USAID, Thailand Development Research Institute, George Washington University and University of Illinois.

The dissemination of information on human resources development both in Thai and English provides an opportunity of sharing ideas and experiences. Quarterly a Journal of Human Resources is published presenting progress and information in the field. Discussion papers and research reports are also available.

Regionally, the Institute has been known for its active involvement and significant role in ASEAN-Pacific Cooperation or Human Resources Development as well as ASEAN-EC Cooperation in the field of human resources development which is of great interest of the European Community. The recent seminar on World Structural Change II: the ASEAN-EEC Link and Human Resources Development enabled ASEAN countries to express their needed assistance in the specified fields from the European Community. The prospect of cooperation is very positive.

According to the conference conclusion, the ASEAN-EEC cooperation in HRD is vital for the future and the Institute has been assigned temporarily as the focal point for promotion of HRD in relation to ASEAN-EEC cooperation. The other important development of linkage on HRD among ASEAN-Pacific countries will be on the seminar on Human Resources Development: Concept Policies, Needs and Cooperation in the Region organized by the Institute.

1.3 Faculty of Economics and Faculty of Commerce and Accountancy of Thammasat University

The Faculty of Economics was established in 1949. Since then it has concentrated on producing qualified students in economics to serve the country. Its service also covers other countries in Asia, Europe, Australia and America as it offers one international programme teaching in English... M.A.(Economics). Approximately there are 5-6 students annually from foreign countries. Besides teaching, there is also expertise available in this Faculty for research as well as public services which mostly are performed in cooperation with international agencies and governments. The Faculty is, therefore, capable to expand for greater coverage and accommodation of the ASEAN-Pacific needs. For the Faculty of Commerce and Accountancy, a potential for programme expansion to widely include students from ASEAN and Pacific countries lies in the Master's in Marketing programme. Presently there are some students from Asia and Europe participating in the programme which is taught in English and offers a certificate after attendance. International collaboration with private firms in USA and Europe which annually serve as observation sites is one of its advantages to

strengthen technology transfer aspects which is one component in development of human resources.

1.4 Proposed Center for Transnational Corporations and Foreign Investment by Thammasat University

The pursuance of this project is consistent with the emphasis in human resources development as an essential component in development strategy. The growing importance of transnational corporations in the world economy suggests the need for an in-depth study of their role in expanding and enhancing human resources development of the countries characterized by considerable foreign investment. A concern is, therefore, understanding of the nature of transnational companies and their political, legal, economic and social effects on host countries. In consideration of these effects, one of their significance in the economic context confines to the promotion of technology transfer which is critical to the development of ASEAN and Pacific countries of which the majority are entering into industrialization and requiring various adjustments corresponding to their projected future prospect.

On the part of the host countries, creation of responsive educational system is crucial to industrialization. However, what is more important is skill acquisition developed through work experience and the provision of training provided by these transnational companies to their local workers in order to keep them alert with technology both in management and production, in which they bring. Hence, the implications and nature of their contribution require further study with a view to improving the capability of the host countries in dealing with transnational corporations in a way beneficial to national development.

The Human Resources Institute as a significant institution dealing with the promotion of human resources development, together with the Faculties of Commerce and Accountancy, Law, Economics have constituted a national focal group in establishing the Center for Transnational Corporations and Foreign Investment. The proposed center will place emphasis on teaching-learning, research and training on transnational corporations. In addition, it will also serve as a data bank on transnational corporations' subject. International cooperation of other ASEAN countries as host countries is an essential factor to assist in encouraging the participation of transnational corporations in the development of these host countries' economy. Cooperation in this area needs special consideration. The Human Resources Institute with its available resources can serve as a focus in coordinating with other countries in this endeavour.

1.5 Graduate Institute of Business Administration of Chulalongkorn University (GIBA)

GIBA was established in 1982 with cooperation of Northwestern University and University of Pennsylvania to offer international programmes on business and management to both Thais and other nationalities. The programmes offered are: 1) Master of Business Administration, 2) Master of Management, 3) short training courses on computer training, management development and business communication in English. Under its present capacity, GIBA is considered one of the institutions in Thailand of which its academic standard is internationally accepted.

1.6 ASEAN Scholarship for Graduate Studies in Preclinical Sciences (Life Sciences)

This program, under the ASEAN Committee for Social Development, is aimed at training lecturers in Preclinical Sciences up to doctorate degree. However, due to solicited fund to support the program has not yet been started.

1.7 ASEAN Agricultural Development and Planning Center

The ASEAN Agricultural Development and Planning Center at Kasetsart University in Bangkok was established under the assistance of the US government. Its main objective is to conduct training in the areas of agriculture and agricultural policy planning. It was aimed that about 150-200 personnel would be trained over the period of 5 years.

1.8 The Employers' Confederation of Thailand (ECOT)

ECOT is a vehicle for private sector contribution to human resources development. Private sector is important as an engine of growth in the future. The prime objective of ECOT is, therefore, promotion of labour relations at all levels ranging from enterprise, nation, region, and to the world. The major emphasis on its operations is placed on development of management and labour for national development. Hence, ECOT representing the private sector has also played a significant role in human resources development. Services provided to its members are technical - oriented involving journal, newsletters, working papers, research and training. In the context of external collaboration, ECOT has a strong linkage with other ASEAN countries in its programme management and activities.

1.9 Japan-Thai Cooperation in Promotion of Science : Japan Society for the Promotion of Science (JSPS)

The program is aimed at cooperative activities for promoting sciences between the two parties namely National Research Council of Thailand (NRCT) and JSPS. Agreed Programs are listed as follows:

1. Fields of Cooperation and Their Related Core Universities and Coordinators. In order to accommodate desire to initiate a systematic cooperation in the area of science and technology, related fields are aimed to cooperate through core universities listed.

2. Allocation for Exchange of Scientists. In case the receiving side wishes to invite counterpart scientists, such a matter will be considered on the case-by-case basis between NRCT and JSPS. However, the allocation for the RONPAKU program will be established because of the nature of the Program. Exchange visitors, namely dissertation fellows and Japanese research fellows will be considered and approved based on the need.

3. Cooperative Research. Researches in the area of science and technology will be proposed by the NRCT to JSPS.

4. Scientific Seminars. In general, seminars and conferences will be organized in such a way that they will be beneficial to those engaging in the field of science and technology. The seminars will be economically and effectively organized under the supervision of NRCT and JSPS. The expense of organized seminars will be on the cost-sharing basis such that local expenditure will be on the host country side.

5. RONPAKU (Dissertation Ph.D.) Program. It has been agreed on the cooperation between Thailand and Japan that Japan will provide

the dissertation program for qualified graduated students from Thailand to pursue their studies at the doctorate level in Japanese universities.

1.10 Other Scholarships

Teaching/Research fellowship awards project is managed by the Institute of Asian Studies, Chulalongkorn University. The project aims to promote academics among higher educational institutions in ASEAN. It enables qualified and interested scholars, professors and research fellows to teach or conduct research within ASEAN countries.

1.11 King Mongkut's Institute of Technology, Thonburi

With its over 25 years of experiences, King Mongkut's Institute of Technology, Thonburi Campus has possessed a unique expertise in the fields of engineering and technology. In addition to teaching, the Institute has contributed a great deal to the nation particularly in terms of technology for development. As approved by the ASEAN Committee on Science and Technology, research projects have been undertaken by the Institute with special emphasis on food technology, non-conventional technology and energy saving in industry. With the accumulated expertise, services can be extended to cover the ASEAN-Pacific Cooperation in Human Resources Development Programme for the benefit of the two regions. The newly proposed project on establishment of ASEAN Regional Pilot Training Institute will certainly be an effective and progressive training institute for ASEAN and Pacific personnel. The prospect of the benefit in promoting technology transfer and industrialization is very extensive, especially when considering the recent and the future trend of the world economy affecting manufacturing and trade within the two regions. One of the project components in the

development of R & D in food technology, process technology, production technology and instrumentation deserves special participation of all participating countries. Results from R & D will be featured in the pilot plant training programmes and short training courses.

II. HRD Coordination in Thailand

Apart from those programmes and projects, in support of the promotion of ASEAN-Pacific cooperation in human resources development each member country is setting up a national focal group to take a major role in executing the programme at the national and the regional level in regard to arrangements for programme coordination. In Thailand, a focal point of human resources development lies in a core committee comprising senior officials being representatives from the Department of ASEAN Affairs, the Ministry of Foreign Affairs, the National Economic and Social Development Board, Department of Technical and Economic Cooperation and the Human Resources Institute who will act as joint secretariate with the Department of ASEAN Affairs and help coordinate cooperation process and national programmes among participating countries. The core committee is designed to coordinate various private and public agencies, institutes or organizations in the areas of human resources development. Some of them are the Ministry of Interior, Agriculture and Cooperatives, Industry, Communications, AIT, National Institute of Development Administration, Chulalongkorn University, Thammasat University and King Mongkut Institute of Technology. A joint secretariate will serve as a manager to smooth coordinating process.

III. Future Programmes for HRD Activities in Thailand

Immediate Project

The cornerstone of HRD activity is to have common understanding of the issue among ASEAN and Pacific communities. Thailand is very concerned about the conceptual framework of HRD and attempts to mobilize support of HRD concept. The first step is to organize the International Conference on "Human Resources Development: Concept, Policies, Needs and Cooperation in the Region". For effectiveness of human resources development programmes implementation, in particularly those associated with APC-HRD, a forum of discussion where ASEAN and Pacific countries' policy-makers, planners and scholars meet and share experiences on human resources development in their respective countries, and through which a national commitment will be achieved is necessary. Identification of cooperative areas and development of an information network for ASEAN and Pacific countries with special consideration of raising efficiency in resource use and recognition of the crucial role of the private sector in promotion of human resources development are also expected. The active support and participation of the government and the private sector in this development effort will be dependent on understanding of the concept, policies of human resources development in the same direction and mutually clarify needs for cooperation in the region. Then commitment that such development involves will be achieved.

The conference has been planned to take place tentatively in March 1986 in Pattaya, Thailand. Four officials from each participating country, one from the government sector involved in human resources development, one from the Ministry of Foreign Affairs and two from the

private sector, will be invited to review the state of their country's development on human resources including required needs in the field due to constraints or limitation which can be solved or lessened by regional cooperation. In the ASEAN-Pacific regional context, this integration will strengthen the overall course of action taken to respond to the changing economy and society resulting from the world structural change. In this aspect, there emerges the necessity of involvement of all compositions in the society especially the private sector which has the utmost potential for assisting the development of a nation in a period of economic crisis.

Intermediate Projects

(1) Research & Development Project (R & D)

Research and development is an essential composition of the APC-HRD project. Since investment in R & D is very expensive, ASEAN countries should select few areas based on ASEAN comparative advantage and ask for some co-operation from Pacific dialogue partners to join. The good example is the Eureka project adopted by the European countries recently. The R & D project of APC-HRD should aim for industrial specific activities and the role of private sector.

(2) Research

- 2.1 ASEAN collectively should attempt to investigate the impact of global economy on HRD.
- 2.2 To investigate the longer prospect of what skills are needed in the next 10-15 years in ASEAN- Pacific countries especially in view of rapid technological changes.

2.3 To explore the existing links between trade and investment by exploring the skill transfer among foreign companies in ASEAN.

2.4 To study the role of HRD historically and currently adopted by Japan with special emphasis on applicability to ASEAN countries.

(3) Training

ASEAN-Pacific training in macro and micro manpower planning is needed. Such training should involve the macro economic strategy and the micro at the enterprise level. Software packages developed in Japan, the United States, Australia and Canada are now at the stage which can be successfully implemented in ASEAN. South Pacific countries can also join such training courses.

(4) The ASEAN-Pacific Center for Technology Transfer.

Over the past two decades, the structure of the Thai economy has been changing from agriculture based to industrialization. However, one element which is a key to successful industrialization is the transfer of technology. The country needs the assistance of developed and developing countries in promotion of transfer of technology. The program to promote technology transfer among participating countries will assist the development process and encourage trade within the region.

(5) Natural Resources Management.

The training programs in the areas of the use and conservation of natural resources should be established, perhaps at AIT. The theme of the program is the concept of integrating expertise in areas such as geography, resource surveying, forestry, geographical aspects of mineral resources, energy utilization planning and policy making etc. The

program should provide training for manpower needed in the field of natural resources, especially petroleum and forestry. It not only assists human resources development in these fields but also promotes the cooperation of ASEAN countries in the context of petroleum exploration and development.

ANNEX L

United States of America's Country Report

ANNEX L

ASEAN-PACIFIC INSTITUTIONAL NETWORKING

Rationale

One of the major benefits of Pacific Cooperation is the free flow of information and ideas among countries of the region. The sharing of such knowledge and experience promotes indigenous economic growth and improved intraregional intercourse. At present, there is a vast amount of ongoing economic and other activity, research and training associated with educational institutions in the Pacific Region. Much of this experience can be useful to other countries of the region, and to the ASEAN-Pacific HRD effort in particular. An effective coordination of training and information flows through a cooperative networking system could serve to increase efficiency, improve the quality of training and information services in the region, and reduce costs. Beginning with existing educational facilities and reaching out to other institutions (including appropriate private sector institutions), such a Pacific-wide network could serve to foster and promote the APC-HRD effort and at the same time magnify the beneficial impact of the cooperative information sharing process.

Concept

Existing educational institutions in the region constitute a major resource for Pacific HRD. Incorporation of such institutions into the ASEAN-Pacific HRD effort provides an opportunity to significantly

broaden the base of the HRD program, as well as develop visible and effective cooperation on a Pacific-wide basis. Parallel with existing HRD project proposals, consideration should be given to the development of a cooperative network of key Pacific educational institutions, as a central component of the HRD "intermediate program".

Structure

Educational institutions in the ASEAN-Pacific area vary considerably in both scope and function. Cooperative networks must therefore differentiate between different types of organizations. Two broad categories can be immediately identified: 1) universities, and 2) training/development institutes. While in some cases the functions of these different organizations overlap, consideration should be given to the development of two parallel networks, reflecting the varying functions of these bodies.

Participation

Participation in the above network(s) should be open to educational institutions of high calibre which have established records of either national or regional leadership. A representative list of possible participants would include (but is not limited to) the following:

University Network

Chulalongkorn University/Thammasat University (Thailand)
University of Malaya (Malaysia)
University of Singapore (Singapore)
University of Indonesia (Indonesia)

University of the Philippines (Philippines)
Australia National University (Australia)
Victoria University (New Zealand)
University of the South Pacific
University of British Columbia (Canada)
Tokyo University/International University (Japan)
Seoul National University (Korea)
University of California (U.S.)
East-West Center (Honolulu)

Training Institute Network

Asian Institute of Technology (Bangkok)
Asian Institute of Management (Manila)
Asia-Pacific Development Center (Kuala Lumpur)
Okinawa Center (Okinawa)
East-West Center (Honolulu)
selected universities and private centers (as appropriate)

In each case one institution should be designated to serve as a central secretariat and clearing house.

Functions

The above network(s) would seek to develop direct cooperative ties among regional educational and training institutions, so as to improve the coordination of existing resources, achieve greater efficiency in the use of those resources, support the broad objectives of HRD, and foster an enhanced sense of Pacific cooperation and identity. Activities to be directly encouraged would include:

- The exchange of students, faculty and researchers;
- Cross-recognition of credits;
- Development of joint academic programs;
- Joint research;
- Conferencing;
- Development of special courses of regional interest; and
- Data sharing

Procedure

Approval in principle of the above concept should be obtained at the HRD SOM, and more formally at the 6+5 Ministerial. One or more meetings should subsequently be held, attended by senior representatives of the participating organizations and a limited number of government representatives, to specifically discuss the desirability and parameters of these consortia. The East-West Center, with support from the Asia Foundation, is one possible venue. Japan may also be prepared to support such a conference. It is possible that if two meetings prove necessary (one to set policy and the other to decide implementation) alternating sites could be arranged. Such meetings might also include invited representatives of interested regional research organizations (possibly through Honolulu's Pacific Forum) and other appropriate private sector groups. Initial support for secretariat and other start-up costs should be sought from interested private foundations.

THE PRIVATE SECTOR ROLE
IN PACIFIC HUMAN RESOURCES DEVELOPMENT

HRD-related activities in the ASEAN-Pacific area take place on a variety of levels and through a wide range of organizations and institutions. To maximize their effectiveness, ASEAN-Pacific HRD programs should draw on the broadest possible base of entities conducting relevant training or programs, including those in the private sector. Incorporation of such private sector entities into the HRD framework offers several benefits:

- 1) new sources of technical expertise, beyond those immediately at the disposal of governments;
- 2) additional financial resources. This is particularly important in circumstances where budgetary stringency limits the availability of new financial or other contributions by governments;
- 3) more efficient use of existing resources, through better accountability and improved coordination of ongoing activities in specific functional fields; and
- 4) enhancement of ASEAN-Pacific cooperation among institutions and entities sharing common objectives.

The impressive economic growth experienced in the Asia-Pacific region in the last two decades has been the result of not only sound government policies, but more importantly of the dynamic activity of the private sector. Private trade and investment relationships, entrepreneurship, and the close cooperative ties which have independently arisen between professionals throughout the Pacific region

constitute the fabric of successful Asia-Pacific development. It is important that the structure of ASEAN-Pacific HRD cooperation give due recognition to this, and that it seek to build on the experience of the private sector.

Depending on the individual project, HRD cooperation might draw usefully on the (a) business community, (b) regional universities, development and training institutions, (c) foundations, and (d) non-governmental regional organizations.

A. Private Business

In-house training by overseas private businesses operating in the ASEAN area surpasses by a wide margin government-supported training. For the most part the skills thus developed are not only specific and immediately applicable to the job to be performed, but have wider tertiary benefits. Owing to the number of companies involved and the proprietary nature of many of their activities, the full extent and distribution of private sector training cannot be precisely determined. Pacific Dialogue Partner companies also support substantial "public" training efforts. For example:

- IBM sponsors, with the Government of Singapore, an Institute of Systems Software at the University of Singapore;

- Several major U.S. companies support training at the Asian Institute of Management, and IBM has established a computer training facility for managers there.

- Citibank, Wells Fargo and other banks regularly support training for executives from ASEAN banks in both the United States and the ASEAN area.

-- American International Group has assisted in the development of a curriculum for the ASEAN College of Insurance in Manila and for the Thai College of Insurance in Bangkok.

-- And U.S. companies actively support the training efforts of the Institute of Management Education (LPPM) in Jakarta, and the Mara Institute of Technology in Malaysia.

Through these and other institutional efforts, private companies from Dialogue Partner countries contribute directly to human resources development in the ASEAN area in fields in which they have highly developed expertise.

Given the depth of private business as an HRD resource, maximum effort should be made to encourage broadscale participation by relevant business entities in the HRD planning effort. The US-ASEAN Center of Technology Exchange, for example, is structured to facilitate the direct transfer of skills and technologies from U.S. businesses to their ASEAN counterparts; it has indicated a specific interest in contributing to the HRD effort. In addition to support for traditional training programs and institutional development, internships may also be available in private companies for graduates of selected ASEAN-Pacific regional training programs. The APC HRD program should solicit the active and early involvement of the private sector, and should maintain ongoing liaison and information exchange with individual private sector entities.

B. Regional Universities, Development and Training Institutions

Regional educational institutions comprise the single greatest vehicle for general human resources development in the ASEAN-Pacific

area. These include major universities, as well as more specialized training institutions such as the Asian Institute of Technology and the Asian Institute of Management. Specialists from those institutions can, where relevant, bring added depth to governmental discussions of potential HRD programs. More importantly, the development of new channels of communication and coordination among key institutions of the region offers a unique opportunity not only to pool existing resources, but also to realize visible, effective regional cooperation. Such cooperation can be brought about through joint arrangements leading to mutual recognition of credits, exchange of students and faculty, joint conferencing and program development, and data sharing. Initial steps toward the creation of such networks require the early and active liaison of key institutional representatives with the ASEAN-Pacific HRD program.

C. Foundations

Private foundations, particularly those which have a specific interest in supporting Pacific regionalism, are a potentially significant source of support for HRD cooperative activities.

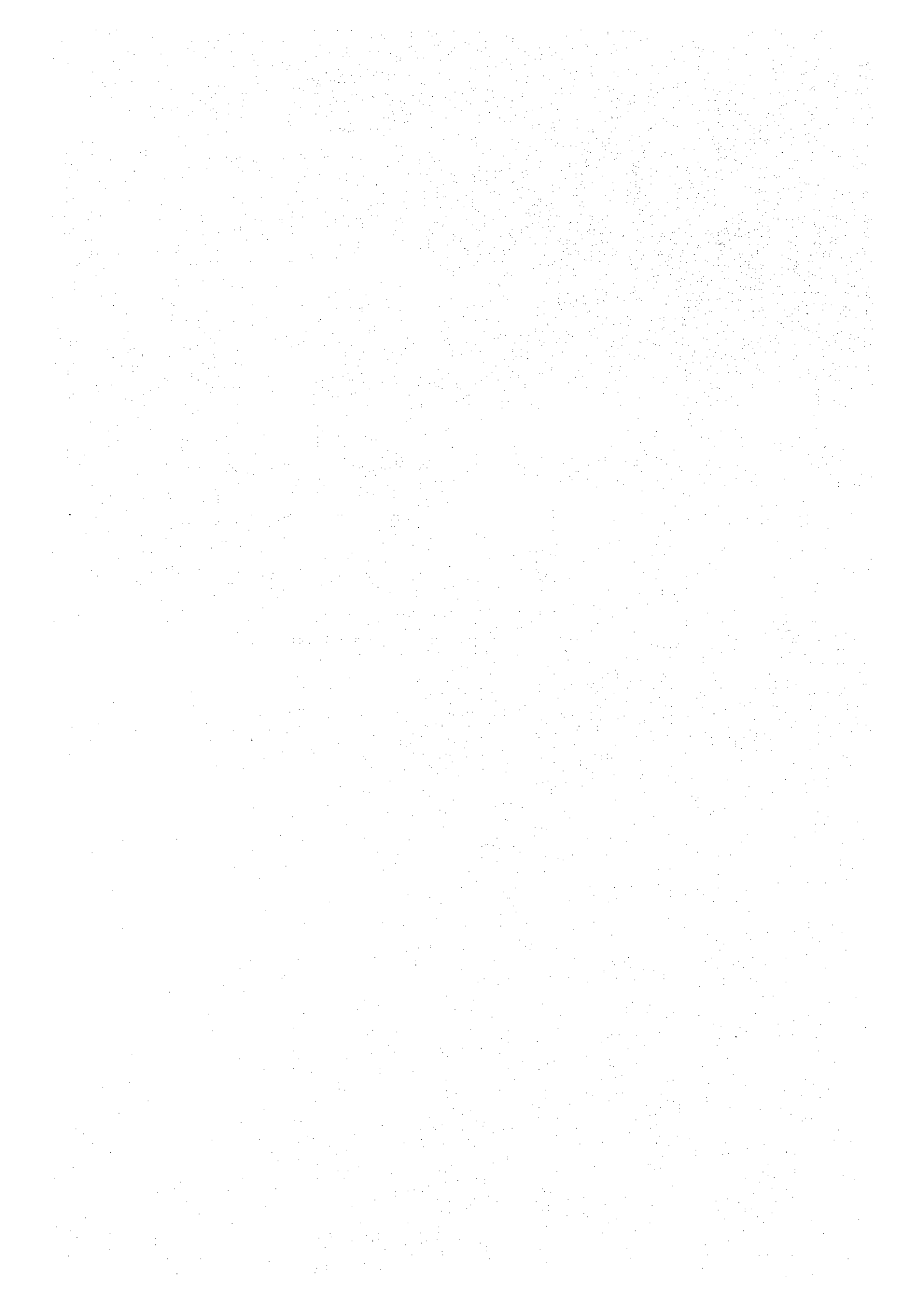
D. Non-Governmental Regional Organizations

A number of non-governmental, multilateral bodies are active in the Pacific area, which have the ability to contribute significantly to ASEAN-Pacific HRD. The Pacific Economic Cooperation Conference (PECC), through its specialized functional task forces and broad-based membership, and Pacific Science Association (PSA), among others, possess considerable specialized expertise, giving them the ability to serve, on

a consultative basis, as resources for both present and future ASEAN-Pacific cooperative projects. The PECC at its most recent meeting in Seoul in April-May 1985, specifically offered its assistance and expertise to the ongoing work of ASEAN-Pacific cooperation.

ANNEX M

List of APC-HRD Immediate Action Programmes



ANNEX M

APC-HRD IMMEDIATE ACTION PROGRAMME

NO.	TITLE	PROPOSING COUNTRIES
1.	Basic Training for Seamen	Indonesia/Japan
2.	Basic Oil Field Production Operation	Indonesia/Japan
3.	Irrigation Engineering	Indonesia/Japan
4.	Development of Appropriate Training Courses for Trainers of Cargo Handling Operators' Staff	Philippines/Japan
5.	Training on Remote Sensing Technologies and Applications	Philippines/Japan/Australia
6.	Transportation and Traffic Engineering	Philippines/Japan
7.	Construction Project Management in Building	Singapore/Japan
8.	Port Management and Operations Course	Singapore/Japan
9.	Port Engineering and Project Management	Singapore/Japan
10.	Search and Rescue Mission Coordination	Singapore/Japan
11.	Airport Management Course	Singapore/Japan
12.	Regional Training Course in Agricultural Extension and Communication	Thailand/New Zealand/Japan
13.	Training Needs Survey for Regional Pilot Plant Training Institute at King Mongkut's Institute of Technology	Thailand/Australia
14.	Seminar on HRD: Concept, Policies, Needs and Cooperation in the Region	Thailand/Australia
15.	Community Forestry	Thailand/New Zealand/Japan
16.	Tropical Pasture Research Network	Australia
17.	ESCAP: Women in Management Workshop	Australia

NO.	TITLE	PROPOSING COUNTRIES
18.	Australia-New Zealand Association for the Advancement of Science (ANZAAS) Festival of Science	Australia/New Zealand
19.	Scholarships for Graduate Studies in Development Administration	Canada
20.	Community Development Scholarships/ Workshops/Conference	Canada
21.	Asian Institute of Technology Scholarships	Canada
22.	Management Development Workshop	Canada
23.	Law and Economic Workshop	Canada
24.	APC Fisheries Study Tour	Canada
25.	Joint Study for Pacific Human Resources Development Cooperation	Japan/Australia/USA
26.	Trade Promotion Training Course	Japan
27.	Dairy Technology Course	New Zealand
28.	Extension Training Course in Agriculture	New Zealand
29.	Training Awards for Participation in Courses at Regional Institutions	New Zealand
30.	Study of English Language Facilities in Indonesia, Thailand, Malaysia and Singapore	New Zealand/Australia
31.	Workshop to Study the Use of Compressed Natural Gas as an Alternative Transport Fuel	New Zealand
32.	Pacific People-to-People Exchange	USA

JICA