RRP:MAL 22052

ASIAN DEVELOPMENT BANK

REPORT AND RECOMMENDATION

OF THE

PRESIDENT

TO THE

BOARD OF DIRECTORS

ON A

PROPOSED LOAN

TO

MALAYSIA

FOR THE

TECHNICAL AND VOCATIONAL EDUCATION PROJECT

April 1995

CURRENCY EQUIVALENTS
(As of 15 April 1995)

Currency Unit	-	Ringgit (RM)
RM1.00	-	US$0.411
US$1.00	-	RM2.436

(i) Since June 1973 the ringgit has been linked to a weighted basket of currencies of the country's major trading partners. For the purpose of calculations in this Report, the rate of US$1.00 = RM$2.55 has been used.

ABBREVIATIONS

BME	-	Benefit Monitoring and Evaluation
CAGILPU	-	Career Guidance, Industrial Liaison and Placement Unit
DASD	-	Development and Supply Division (MOE)
EMIS	-	Educational Management Information System
EPRD	-	Education Planning and Research Division (MOE)
ERC	-	Equipment Repair Center
HRD	-	Human Resources Development
IAB	-	Institute Aminuddin Baki
ISSC	-	Integrated Secondary School Curriculum
ISSC-TVE	-	Integrated Secondary School Curriculum with Technical and Vocational Education electives
MOE	-	Ministry of Education
MOHR	-	Ministry of Human Resources
NVTC	-	National Vocational Training Council
PIU	-	Project Implementation Unit
STS	-	Secondary Technical School
SVS	-	Secondary Vocational School
TAVED	-	Technical and Vocational Education Division (MOE)
TTTC	-	Technical Teachers Training College
TVE	-	Technical and Vocational Education

NOTES

(i) The Government's Fiscal Year ends on 31 December.

(ii) In this Report "$" refers to US dollars.

(iii) The academic year is from December to October the following year.

(iv) The Sixth Malaysia Plan period is 1991-1995.

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MALAYSIA
TECHNICAL AND VOCATIONAL EDUCATION

LOAN AND PROJECT SUMMARY

Borrower	:	Malaysia
Project Outline	:	The Project will provide the Government with the necessary support for upgrading the technological capacity and skills of the labor force, to meet the rapidly changing needs of industry, support human capital formation, and sustain export performance. The Project will improve the quality of upper secondary technical and vocational education (TVE), increase its efficiency, and support the implementation of a new integrated curriculum with greater emphasis on technical subjects. The Project will establish eight new secondary technical schools (STSs) and upgrade and increase the capacity of nine STSs and 31 secondary vocational schools (SVSs) throughout Peninsular Malaysia, Sabah, and Sarawak. The Project will also upgrade facilities for technical teacher training, improve management systems, strengthen equipment maintenance, and enhance female participation in TVE.
Classification	:	Human Development
Rationale	:	Human resources development, including the provision of an educated, skilled and trainable labor force, is a major priority of Malaysia's development strategy. In the context of the country's rapid economic growth, in which the manufacturing sector accounts for the largest contribution to gross domestic product (31.5 per cent in 1994), there is a pressing need to upgrade the technical knowledge and skill level of the work force. This is crucial for further economic development, and in particular to support Malaysia's transition from a manufacturing sector based mainly on assembly to one based on knowledge and high technology processes. At the same time, with virtually full employment, the Malaysia economy continues to experience a shortage of skilled technical manpower. Enrollment in TVE programs is low by regional standards, as is enrollment in postsecondary education. The present enrollment capacity of the TVE system is a constraint and needs to be expanded.

Objectives and Scope : The principal objective of the Project is to improve the quality of TVE in Malaysia, to prepare students for further engineering and business education, and to meet the emerging manpower needs of industry and commerce. The second objective is to increase access to TVE throughout the country by expanding the capacity of the TVE system. Particular emphasis will be placed on improving access for low income groups and female students. The third objective is to enhance the internal efficiency and cost-effectiveness of TVE by strengthening management systems and staff development.

The Project will include the following components:

(i) constructing eight new STSs;

(ii) upgrading and expanding nine STSs and 31 SVSs;

(iii) upgrading and strengthening the Technical Teachers Training College;

(iv) strengthening the four existing Equipment Repair Centers; and

(v) other measures to support policy reforms and strengthening management capacity, including: (i) creating School Advisory Committees, and establishing career guidance, industrial liaison and placement units in SVSs and STSs to strengthen linkages with industry and enhance career guidance for students; (ii) assisting the Ministry of Education (MOE) in reviewing and evaluating the integrated secondary TVE curriculum; (iii) promoting female participation in TVE; (iv) reviewing and strengthening the new secondary TVE curriculum to enhance its content on environmental awareness and occupational safety and health; (v) strengthening the educational management information system and benefit monitoring and evaluation and supporting educational studies; and (vi) institutional strengthening and staff development.

Cost Estimates : The total cost of the Project including taxes and duties and interest and other charges during implementation is estimated at $238.4 million, of which $104.8 million is the foreign exchange cost and $133.6 million is the local currency cost.

Financing Plan :

	Foreign Exchange	Local Currency	Total	Financing Percentage
Bank	72.0	0	72.0	30
Government	32.8	133.6	166.4	70
Total	104.8	133.6	238.4	100

Loan Amount and Terms : A loan, in the amount of $72.0 million, from the Bank's ordinary capital resources is proposed. The loan will have an amortization period of 26 years, including a grace period of 6 years, with an interest rate determined in accordance with the pool-based variable lending rate system for US dollar loans and a commitment charge of 0.75 per cent per annum.

Period of Utilization : Until 30 June 2002

Implementation Arrangements : The Project will be centrally managed by the Project Implementation Unit within the Development and Supply Division of the MOE, and will be assisted by the Technical and Vocational Education Division and State Education Officers at the state and district levels. A Project Coordination Committee will provide policy guidance and intersectoral coordination.

Executing Agency : The Ministry of Education

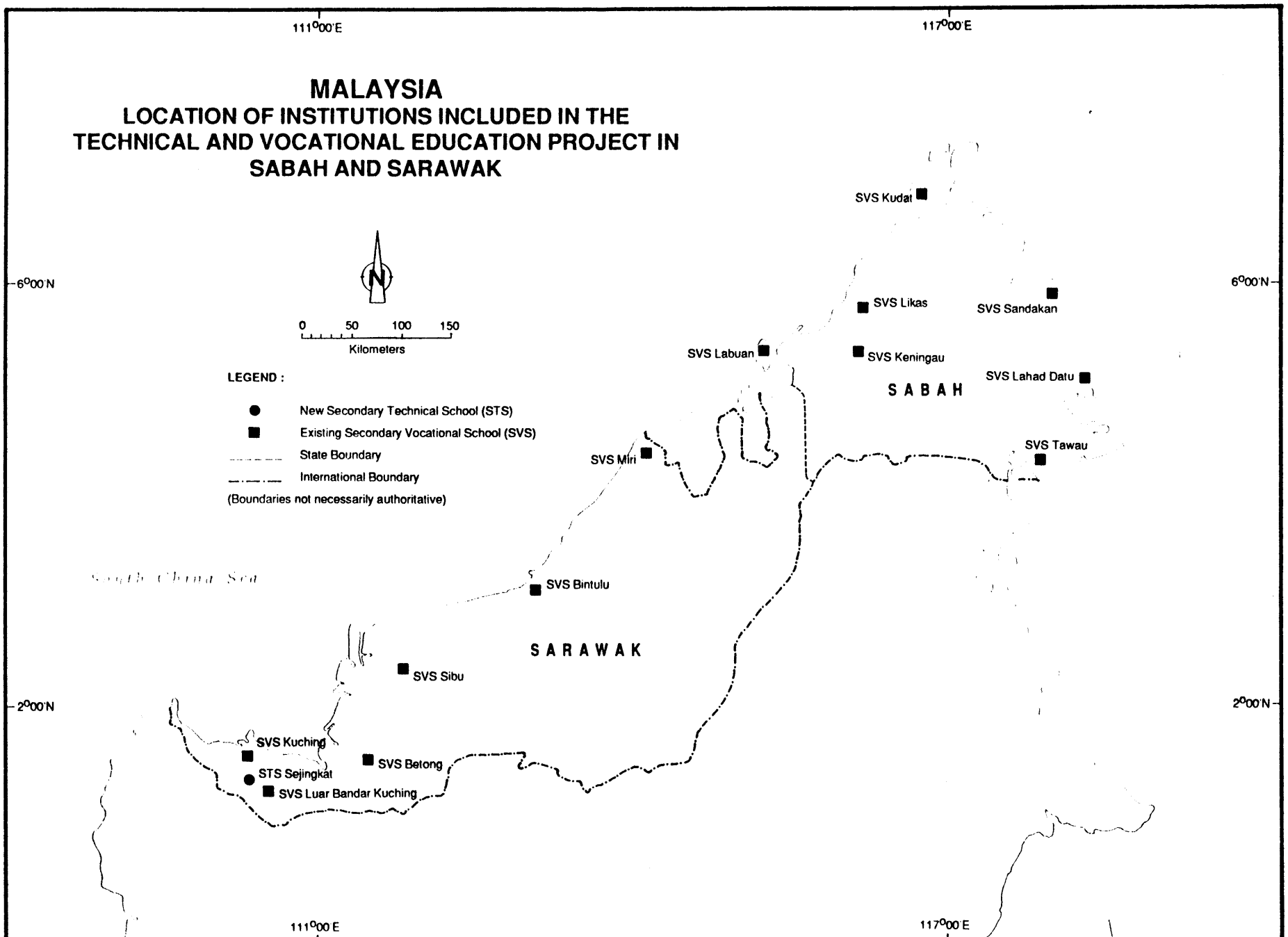
Procurement : All procurement to be financed out of the proceeds of the Bank's loan will be carried out in accordance with the Bank's *Guidelines for Procurement*. Civil works contracts for the eight new STSs will be awarded on the basis of international competitive bidding. All other civil works contracts will be awarded on the basis of local competitive bidding among prequalified bidders in accordance with procedures acceptable to the Bank. Supply contracts for equipment or materials estimated to cost $500,000 equivalent or more will be awarded on the basis of international competitive bidding; contracts for less than $500,000 will be awarded following international shopping.

Consultant Services : The Project will require a total of 117 person-months of specialist services including local consulting services in five fields of specialization (60 person-months) and foreign consulting services in five specializations (57 person-months). Selection and engagement of all consultants will be in accordance with the Bank's *Guidelines on the Use of Consultants* and Government procedures acceptable to the Bank.

Estimated Project Completion Date : 31 December 2001

Project Benefits and Beneficiaries : The main benefit of the project will be a substantial improvement in the technical knowledge and skill level of the graduate output of the TVE system. The Project is also expected to enhance the external efficiency of TVE, in particular its capacity to produce skilled labor to meet the emerging needs of industry and to channel graduates into further technical education. The Project will expand the quantitative capacity of the TVE system by approximately 27,900 student places. The Project will improve the external efficiency and cost-effectiveness of TVE. The Project will also have social benefits in terms of improving access to TVE in different regions of the country, for low-income groups and for female students. The immediate beneficiaries of the Project will be about 51,000 students enrolled in the Project schools. Beneficiaries also include approximately 5,120 teachers and staff members of Project institutions, and about 4,140 personnel who will participate in staff development programs. Ultimately industries and businesses will benefit from the improved and expanded flow of graduates with technical qualifications and skills.


100°00'E
104°00'E
MALAYSIA
LOCATION OF INSTITUTIONS INCLUDED IN THE
TECHNICAL AND VOCATIONAL EDUCATION PROJECT
6°00'N
2°00'N
PERLIS
SVS Arau
STS Alor Setar
KEDAH
P. PINANG
STS Penang
STS Seberang Prai
SVS Nibong Tebal
SVS Kulim
STS Grik
STS Bachok
SVS Bunut Susu
SVS Besut
SVS Kuala Krai
STS Terengganu
KELANTAN
TERENGGANU
PERAK
STS Ipoh
STS Dungun
SVS Kemaman
SVS Kuala Lipis
SVS Slim River
PAHANG
STS Kuantan
SVS Bentong
STS Kuala Selangor
TTTC Cheras
STS Kuala Lumpur
SVS Sungai Buloh
STS Gombak
SELANGOR
NEGERI SEMBILAN
SVS Kuala Rompin
STS Seremban
SVS Port Dickson
SVS Segamat
STS Jasin
STS Melaka
SVS Melaka Tengah
MELAKA
JOHOR
SVS Batu Pahat
STS Pontian
SVS Kota Tinggi
STS Johor Bahru
SVS Johor Bahru
N
0 50 100 150
Kilometers
LEGEND :
New Secondary Technical School (STS)
Existing Secondary Vocational School (SVS)
Existing STS
Technical Teachers Training College (TTTC)
State Boundary
International Boundary
(Boundaries not necessarily authoritative)


MALAYSIA
LOCATION OF INSTITUTIONS INCLUDED IN THE TECHNICAL AND VOCATIONAL EDUCATION PROJECT IN SABAH AND SARAWAK
111°00'E
117°00'E
6°00'N
2°00'N
0 50 100 150
Kilometers
LEGEND :
New Secondary Technical School (STS)
Existing Secondary Vocational School (SVS)
State Boundary
International Boundary
(Boundaries not necessarily authoritative)
SVS Kudat
SVS Likas
SVS Sandakan
SVS Labuan
SVS Keningau
SVS Lahad Datu
SABAH
SVS Miri
SVS Tawau
SVS Bintulu
SARAWAK
SVS Sibu
SVS Kuching
SVS Betong
STS Sejingkat
SVS Luar Bandar Kuching
(vii)

I. THE PROPOSAL

1. I submit for your approval the following Report and Recommendation on a proposed loan to Malaysia for the Technical and Vocational Education Project.

II. INTRODUCTION

2. The Government of Malaysia places strong emphasis on human resources development (HRD) to sustain the growth momentum and to achieve balanced social economic development in its Sixth Malaysia Plan (1991-1995) and the Second Outline Perspective Plan 1991-2000. At the Government's request, the Bank approved a project preparatory technical assistance[1] (TA) that provided the basis for the formulation of the Project. The TA included a subsector study that contributed to the Government's review of its policy on technical and vocational education (TVE) at the upper secondary level. A Fact-Finding Mission visited Malaysia in November 1991 and provided inputs into the review process. Following the Government's confirmation of the TVE policy framework, a Bank follow-up Fact-Finding Mission visited Malaysia in December 1993 and reached a preliminary understanding with the Government about various aspects of the Project.

3. An Appraisal Mission (the Mission) visited Malaysia from 4 to 21 April 1994 to appraise the Project.[2] This Report is based on the recommendations of the study, the Mission's findings and discussions with Government officials, teachers, administrative staff, and students of the institutions covered by the Project, and representatives of parent-teacher associations and the private sector.

III. BACKGROUND

A. Subsector Framework

1. Technical and Vocational Education

4. Education in Malaysia is the responsibility of the Federal Government, with administrative and financial control of formal education vested in the Ministry of Education (MOE). A high-level Education Planning Committee chaired by the Minister of Education is in charge of policy formulation and quantitative planning, with the Education Planning and Research Division (EPRD) of MOE as the secretariat. The responsibility for nonformal education and various forms of skills training is shared by MOE, other Government agencies, and private organizations. An organization chart of MOE is in Appendix 1.

5. The formal school system in Malaysia has a 6-3-2-2 pattern, consisting of six years of primary, three years of lower secondary, two years of upper secondary, and two years of post-secondary education. Primary education aims to provide a firm foundation in writing, reading, and arithmetic. Secondary education is divided into the lower and upper secondary levels. At

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[1] TA No. 1300-MAL: Technical and Vocational Education and Industrial Training Study, for $468,000, approved on 17 May 1990.

[2] Comprising Messrs T.M. Oo, Sr. Education Specialist/Mission Leader; R. Wihtol, Project Specialist; B. Hitchcock, Programs Officer; R. Allaburton, Technical Education and Teachers' Training Consultant, S. Mendoza, Finance and Costing Consultant and Ms. E. Fischer, Sr. Counsel.

the upper secondary level, students are channeled into either the academic or the vocational stream. The academic stream is further divided into three courses of study: arts, science, and technical education. Students channeled into the technical course of study in the academic stream or into the vocational stream are placed in secondary technical schools (STSs) and secondary vocational schools (SVSs) respectively, which prepare them for further technical education or entry into the work force. Post-secondary education prepares students for tertiary education, which in both the academic and the professional fields is provided by universities, colleges, and polytechnics.

6. The TVE programs producing semiskilled and skilled industrial workers and technicians are offered by various types of educational and training institutions. Public institutions play the leading role in the subsector. In addition to the network of technical and vocational schools under MOE, vocational and industrial training institutes and centers are administered by the Ministry of Human Resources (MOHR), the Ministry of Youth and Sports, and the Majlis Amanah Rakyat.[1] All TVE related skills training programs, standards, and certification are coordinated by the National Vocational Training Council (NVTC), which includes equal representation from Government and private business and industry.

7. Although the private education sector is growing at the tertiary level, it is not active yet in TVE. In-plant training in industry is still in its formative stages, as most industrial establishments are small and medium-scale enterprises. Recently, there have been efforts to increase the role of the private sector in TVE, including the establishment of a Human Resources Development (HRD) Fund. Pursuant to legislation enacted in 1993, manufacturing firms with 50 or more workers must register with and contribute the equivalent of 1 per cent of their payroll to the HRD Fund. A matching contribution is made by the Government. The HRD Fund, administered by a HRD Council established by MOHR, finances the training of workers of registered establishments either on the job or in approved TVE institutions (both public and private) and other institutions including specialized training centers established with local government support in some industrial zones (e.g. Penang Skill Development Center in Penang State and similar centers in eight other states).

8. The MOE offers TVE programs at the upper secondary level (Grades 10-11). Under MOE's Technical and Vocational Education Division (TAVED), there are 69 SVSs, which prepare students for further education and for employment in industry in a number of technical and vocational trades. The SVSs offer both two-year formal TVE programs leading to the award of the Malaysian Certificate of Education (Vocational) and formal and nonformal skills training programs for lower secondary school graduates who do not qualify for admission to certificate programs. Graduates of the skills training programs can take trade tests conducted by the NVTC. These programs constitute a major source of semiskilled and skilled workers for the manufacturing sector. TAVED also administers nine STSs that admit students with higher academic attainment to prepare them for post-secondary level technological education.

9. In 1994, the 69 SVSs and the nine STSs had a total enrollment of 41,800 vocational and 4,750 technical students, respectively. Malaysia's gross enrollment ratio[2] at the

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[1] The Council for Advancement of Indigenous Peoples administers education and training institutions for indigenous ethnic groups only.

[2] The number of students enrolled on a full-time basis at a particular level of education expressed as a percentage of the corresponding school-age population.

upper secondary level, at 50 per cent, is low by regional standards. The total SVS and STS enrollment, which is about 7 per cent of total upper secondary enrollment, is also low by regional standards (compared with 12 per cent in Indonesia and 30 per cent in Korea). The limited capacity of the existing SVSs and STSs poses a significant constraint on expanding the enrollment.

10. Recently, the Government's efforts have focused on reforming the curriculum and improving the quality of education. Following the implementation of the new primary school curriculum in 1983, a new integrated secondary school curriculum (ISSC) was introduced in 1989 at the lower secondary level (starting from Grade 7), and since 1992 at the upper secondary level (starting from Grade 10). In addition to core subjects, the ISSC at the upper secondary level offers four groups of electives, one of which is TVE. The ISSC with TVE electives (ISSC-TVE) is being implemented in STSs starting from 1994, and will gradually be implemented in the SVSs to replace the existing vocational programs. An ongoing concern of the MOE over the coming years will be to review the implementation of the ISSC-TVE and to make the necessary revisions and adjustments.

11. The Technical Teachers Training College (TTTC) under the MOE is responsible for training technical and vocational teachers for secondary level TVE programs, while academic secondary teachers are trained in universities. There are also twinning arrangements[1] with some local universities for degree courses for secondary technical and vocational teachers. The TTTC has twinning programs with University of Technology Malaysia, which produces about 120 engineering studies teachers annually. The secondary mathematics and science teachers needed in the future will be produced by public universities, which are expanding these programs to meet the growing need. However, given the requirements of fully implementing the ISSC-TVE, and the pace of development required for TVE to keep up with the technological needs of industry, upgrading the standards of teachers' training will require continuing attention.

12. Between 1981 and 1992, total public recurrent and development expenditures on education as a proportion of total Government expenditures ranged from 13 per cent to 19 per cent. Expenditure on education has remained at about 6 per cent of gross national product which is one of the highest in the region (compared with about 2.1 per cent in Indonesia and 3.5 per cent in Thailand). The allocation to TVE as a proportion of the total education budget increased from 2 per cent to 4 per cent during the same period. At present, limited cost recovery is attempted only at the post-secondary and university levels. In particular, in the context of the high level of public financing for TVE, MOE gives priority to assessing and improving the internal efficiency and cost-effectiveness of TVE.

2. Demand for and Supply of Manpower

13. Malaysia is undergoing vigorous industrial growth brought about by strong export performance, expanding domestic demand, and a substantial inflow of foreign investment. This growth is attributable mainly to rapid development of the industrial sector, which is currently undergoing a transition from manufacturing based mainly on assembly operations to manufacturing with a higher domestic value added. In particular, Malaysia is expanding into knowledge-based and high-technology industries. This diversification, upgrading, and

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[1] A formal arrangement between two educational institutions for the exchange of faculty and administrative staff to promote institutional development.

deepening of production capacity is designed to sustain the competitive position of the country's export production in the medium and long term. However, the further development of manufacturing, and the need for the sector to absorb and develop new technologies, places significant new demands on the labor force, not only for semiskilled and skilled workers, but in particular for high-level technical skills. The present capacity of the education system to provide such high-level skills falls short of demand, and unless rapidly upgraded may constrain sustained export growth. Therefore, upgrading of the quality of technical work force is a priority.

14. At the same time, the quantitative shortages of skilled manpower will persist. Based on the Government's human resource projections and Mid-Term Review of the Sixth Malaysia Plan forecasts, the labor force was projected to increase from 7.0 million in 1990 to 9.3 million in 2000, while the number of available jobs was correspondingly projected to increase from 6.6 to 9.0 million, thus leading to a decline in unemployment from 6 to 4 per cent. By 1994, the expansion of jobs had exceeded projections and the Malaysian economy had virtually full employment, with unemployment at 2.9 per cent. The projected demand for workers by major category of occupation is shown in Table 1.

Table 1: Projected Demand for Workers by Major Category of Occupation 1995-2000

Category of Occupation	Employment (000's)		
	Estimated 1995	Projected 2000	Increase 1995-2000
Professional and Technical	741	901	160
Administrative and Managerial	222	264	42
Clerical	777	891	114
Sales	986	1,243	257
Services	952	1,132	180
Agriculture	1,869	1,818	(51)
Production	2,303	2,738	435
Total	7,848	8,987	1,139

Source: Mid-Term Review of Sixth Malaysia Plan (1991-1995), Second Outline Perspective Plan (1991-2000) and Mission estimates.

15. Based on the projections in Table 1, which are considered conservative by the Government, there will be an increase in demand for production workers of 435,000 during the period 1995-2000. Assuming that approximately 40 per cent of production workers will need systematic skills training, this implies that the TVE system will need to produce 35,000 semiskilled and skilled production workers each year over the period 1995-2000. Surveys on the human resources needs of new investors in the manufacturing sector undertaken by MOHR and the Malaysian Industrial Development Authority in 1993 concluded that about 285,000 trained production workers would be needed for new factories alone for the period 1990-1998, or an average of 31,670 per year. Allowing for the expansion of existing industrial establishments, and for attrition, this confirms that the annual estimate of 35,000 is conservative.

16. The main sources of semiskilled and skilled production workers will continue to be SVSs, STSs, Industrial Training Institutes under MOHR, Youth Training Centers, the skills training institutes and centers of Majlis Amanah Rakyat, private TVE institutions, and in-plant training in industry. Within the SVS and STS network, the introduction of ISSC-TVE will encourage students to pursue higher technological education rather than entering the labor force directly, and it is estimated that upon full implementation of the ISSC only about 40 per cent of SVS and STS graduates will enter the labor force as semiskilled or skilled workers. At the current levels of enrollment capacity, the total number of semiskilled and skilled production workers produced annually by these institutions is estimated at 31,500.

17. In the present labor market situation, the shortage of professional and technical personnel is also acute. Conservative projections of demand indicate that there will be a need for about 160,000 new professional and technical personnel between 1995 and 2000 (see Table 1). Of this, it is estimated that 74,000 engineers and technicians in engineering fields will be needed. The total supply of engineering and technician graduates during the period 1995-2000 is estimated at 54,000, which falls short of projected demand. The thrust of these projections is supported by labor market signals compiled by the MOHR and the Malaysian Industrial Development Authority, which indicate that demand generated by industrial investment projects throughout the 1990s will be particularly high for engineers and technicians. Owing to the significant gap between the demand for and the supply of industrial manpower, the TVE system will need to expand its output substantially not only to help meet the demand for skilled and semiskilled manpower, but also to increase the participation of technical and vocational students in further technical education and training at the post-secondary level and to upgrade the general technical knowledge and skill level of the work force.

3. Issues in TVE Subsector

18. There have been substantial qualitative and quantitative improvements in the TVE subsector since the 1980s. However, some issues have persisted and new ones have emerged. At present, the following are the principal issues in the subsector that require attention:

(i) the TVE programs have not kept pace with industrial development and technological advancement and need to be made more responsive to the increasing demand for better educated and adaptable technical workers needed for industrial expansion which, in turn, is essential to sustain the international competitiveness of Malaysian industry;

(ii) the quantitative capacity of the TVE system continues to be insufficient to meet the demand for semiskilled and skilled workers, and for high-level technical manpower, particularly technicians and engineers;

(iii) the access to TVE programs throughout the country is uneven and the gross enrollment ratio at the upper secondary level and enrollment in TVE are low by regional standards;

(iv) the internal efficiency of TVE needs to be increased, particularly by developing and strengthening TVE management information systems; using physical facilities more intensively; and strengthening equipment maintenance and repair systems;

(v) in the light of the continuous technical upgrading of TVE, and the introduction of ISSC-TVE, both the facilities of the TTTC and the knowledge and qualifications of teachers' trainers will require upgrading; there is a need to establish recurrent in-service vocational teacher training programs to meet the new needs of the STS and SVS system; and

(vi) the links between TVE institutions and industry exist on a formal and informal basis, but need to be improved to strengthen the external efficiency of the TVE system.

B. Government Policies and Plans

19. The Government's educational policy aims at generating a united, educated, and trained society and at meeting the nation's need for a skilled labor force. The strategies formulated to implement this policy include (i) providing formal education opportunities for eleven years; (ii) equalizing education in terms of opportunity and quality, and providing special attention to disadvantaged groups and those in rural and remote areas; (iii) enhancing TVE; and (iv) diversifying and increasing educational facilities at the post-secondary level, particularly in applied sciences and applied arts.

20. Recognizing that an educated, skilled, and trainable labor force is a prerequisite to socioeconomic development, a major emphasis has been placed on HRD in the Sixth Plan. The main thrust of the Sixth Plan is to sustain the growth momentum and manage it effectively to achieve the more balanced development of the economy envisaged in the National Development Policy. The strategy for balanced development encompasses policies to diversify the industrial base, enhance HRD, promote technological upgrading, and reduce the structural imbalances among sectors and regions in the country. The Government gives priority to TVE as a means of creating a trained and productive work force, to meet the needs of industrialization and to sustain international competitiveness. HRD is one of the prerequisites to the attainment of the national goal to achieve industrialized country status by the year 2020.

21. In the light of increasing adoption of knowledge-based technology and new manufacturing processes, the Government has accorded high priority to TVE producing competent higher level skilled workers for business and industry. In accordance with the recommendations of the 1991 Report of the Cabinet Committee on Training and Employment, the Government's strategies for improving the quality and supply of skilled workers include increasing the effectiveness and efficiency of existing TVE institutions. The Sixth Plan

educational objectives related to TVE include: (i) expanding the capacity of the upper secondary level from 369,000 in 1990 to 590,000 in 1995; (ii) increasing the share of STS and SVS enrollments of total upper secondary enrollment (through establishing new and upgrading existing TVE institutions); (iii) providing the necessary mandate to TVE institutions to be more flexible, market-driven, and responsive to the training needs of local community and industry; (iv) strengthening the coordination of all vocational and industrial training programs (including instructor and technical teacher training) and the cooperation between educational institutions and business and industry; and (v) promoting female participation in TVE programs.

22. At the same time, the Government gives priority to education as a means of reducing poverty, promoting regional development, and improving income distribution. The Government recognizes that providing greater access to TVE for the socially disadvantaged will help them to acquire employable skills, and increase their employment and income opportunities. MOE has estimated that about 40 per cent of the SVS and STS students from rural areas come from socially disadvantaged groups. Besides its focus on improving the quality and efficiency of education, the Sixth Plan aims to provide low-income groups and underserved regions with greater access to education and training. Consequently, the Government has introduced policy measures to promote equitable access to TVE, in particular by providing hostel accommodation and subsidizing the living costs of selected students.[1] At present, the students using the hostel accommodation and benefiting from subsidies constitute about 70 per cent of total SVS and STS enrollments. These measures have improved access to TVE for students from poor families and rural areas, and have encouraged women's participation in TVE. In addition, some staff quarters are provided to attract and retain qualified teachers.

23. The Government's efforts to upgrade and expand the TVE network include locating the schools near areas of industrial and commercial concentration and throughout the country. Priority has been given to upgrading SVSs and STSs and building new STSs in all regions, including both Peninsular Malaysia and Sabah and Sarawak. The MOE's concern with the relevance of TVE is reflected in its decision, subject to Government approval, to phase out the NVTC skills training programs offered in SVSs in stages after the year 2000, and to gradually convert SVSs into STSs (see paras. 83 and 84).

24. The ISSC-TVE has been implemented in existing STSs starting with the 1994 school year. Following an interim evaluation, the ISSC-TVE curriculum will be implemented in the new STSs and subsequently in the SVSs. ISSC-TVE emphasizes the development of technical competency through the acquisition of numerical and communication skills. Mathematics, science, and English have been given priority as proficiency in these subjects will ensure that the graduates of the program will be trainable and adaptable to the changing technological needs of the country.

25. The implications of the introduction of the new curriculum on STSs and SVSs include the following: (i) ISSC-TVE programs will prepare students for higher technological education, although their graduates can also seek employment in industry with a minimum of on-the-job training; (ii) only junior secondary school (Grade 9) graduates with higher educational attainment will be admitted to ISSC-TVE courses; (iii) subject to Government approval, the current Malaysian Certificate of Education (Vocational) programs will be replaced by ISSC-TVE

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[1] The criteria for selection of students for admission to the hostels include the level of family income, place of origin, and distance from the school.

programs in stages beginning in 1995; and (iv) technical and vocational teachers teaching ISSC-TVE programs should be university graduates with a teacher training certificate.

C. External Assistance to the Sector

26. The education sector in Malaysia has received support from both multilateral and bilateral agencies. The World Bank has provided twelve loans to the education sector totalling $694 million for primary and secondary education, industrial training, polytechnic education, and higher education. The World Bank remains active in the sector. Its most recent loan to develop polytechnic education was approved in March 1993. (See Appendix 2)

27. While the overall bilateral aid is declining as a result of Malaysia's rapid economic growth and rising income levels, the country continues to receive significant support from bilateral aid agencies for education in general and technical and vocational training in particular. The countries that have ongoing scholarship programs for overseas study include Australia, France, Japan, Sweden, and the United Kingdom. France and Germany have recently assisted in the establishment of institutes for high-level technical and skills training. With Government policy now encouraging the role of the private sector in education, twinning and other forms of cooperation, essentially on a commercial basis, are likely to emerge as the main form of external cooperation. It is less certain to what extent TVE will become involved in this trend because of the higher investment costs involved. At present, most of the cooperative programs with twinning arrangements involve academic courses and a few engineering programs at the undergraduate level.

D. Lessons Learned

28. The Bank has assisted the Government in strengthening TVE at the upper secondary level since 1980 through three vocational education projects: the (first) Vocational Education Project[1], the Second Vocational Education Project[2], and the Third Vocational Education Project[3] which supported qualitative improvement and quantitative expansion of the vocational education system by upgrading existing SVSs and establishing new ones in selected locations. All three projects have been completed. Under each of these projects, new SVSs were constructed in underserved locations with growth potential. These schools have modern facilities for both theoretical and practical instruction (including facilities for skills training programs), libraries, residential hostels for students from remote areas, and staff housing for teachers. The Project Completion Reports for the Vocational Education Project and Second Vocational Education Project concluded that they not only achieved their objectives, but also enhanced the image and status of vocational education in Malaysia. The Project Performance Audit Reports concluded that the Projects were successful in laying the foundations for implementing qualitative improvements in vocational education in the country, enhancing staff competencies, and increasing the efficiency of the SVSs.

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1 Loan No. 476-MAL: Vocational Education Project, for $20.0 million, approved on 30 Oct. 1980.
2 Loan No. 673-MAL: Second Vocational Education Project, for $58.0 million, approved on 20 Dec. 1983.
3 Loan No. 840-MAL: Third Vocational Education Project, for $68.0 million, approved on 1 Sept. 1987.

29. The Third Vocational Education Project involved the upgrading of 24 existing SVSs, establishing 12 new SVSs, upgrading the equipment at TTTC, and providing academic and architectural consulting services, staff development fellowships, equipment for SVSs, and instructional materials. The recruitment of the consultants (financed by the Government) to develop the benefit monitoring and evaluation (BME) system was not finalized until August 1993. The consultancy contract was awarded to the Institute Aminuddin Baki (IAB), a MOE staff training college responsible for in-service training of senior management personnel in education and for undertaking research and extending assistance to educational institutions. The IAB has developed a strategy to institutionalize BME by establishing data bases at the school level and providing appropriate training to school principals. Apart from the delay in developing BME and the delays in civil works because of unanticipated site problems, implementation of all the other components was carried out generally according to the agreed schedule. Government compliance with loan covenants, except for the delays in implementing BME and in submitting audit reports was satisfactory.

30. The major lessons learned from these projects include the need for (i) careful site selection and preparation; (ii) horizontal coordination between project components; (iii) more frequent review and revision of the curriculum of the SVS programs to keep pace with the emerging needs of the rapidly developing industrial sector in the country; (iv) mechanisms to improve institution-industry linkages and the placement of SVS graduates; (v) institutionalization of BME within the framework of the national educational management information system (EMIS), including tracer studies of SVS graduates; (vi) improving the technical and vocational teachers' training program; (vii) improving the curricular content on environmental education; and (viii) strengthening the operation of the equipment repair centers (ERCs) to assist the SVSs in implementing preventive maintenance and repair of laboratory instruments and training equipment.

31. The issues identified and recommendations made to address them have been appropriately considered in the design of the Project. In addition to the educational aspects mentioned, the detailed assessment of the requirements for renovation of existing buildings, for additional equipment, and for special implementation arrangements have been discussed with the Government, and suitable measures have been undertaken by the Government and incorporated in the Project.

E. The Bank's Sectoral Strategy

32. One of the prime objectives underlying the Bank's operational strategy in Malaysia is to support the Government's efforts to address the acute shortage of skilled technical manpower brought about by the fast pace of development and industrialization in the country. This will lead to greater access to technical and vocational skills, which in turn will help increase employment opportunities and incomes, especially for those belonging to disadvantaged groups who constitute the majority of students admitted to SVSs and STSs. While World Bank assistance has concentrated on primary and secondary education, industrial training and polytechnic development, the Bank's assistance has focused on TVE.

F. Policy Dialogue

33. The project preparatory TA included a subsector study which contributed to the Government's thorough review of its TVE policy. During the processing of the Project, the Bank discussed with the Government issues related to the policy and organizational framework for TVE. The MOE's principal policy concern was to upgrade the level and quality of TVE and to strengthen the role of TVE not only as a source of semiskilled and skilled manpower, but as a basis for further technical education and a source of high-level technical skills. This concern is reflected in the substantive curriculum innovations and changes in the ISSC-TVE, which is being introduced in STSs and will gradually also be introduced in SVSs.

34. Through the dialogue with the Bank, the Government has agreed to implement the following measures under the Project:

(i) strengthen the formal linkages between TVE institutions and industry by establishing an advisory committee comprising representatives from the local industries and the community and senior teachers in each SVS and STS;

(ii) introduce cost recovery measures and promote a market-oriented approach by establishing mechanisms to permit SVSs and STSs to generate income and offer tailor-made short-term training programs to local industry;

(iii) adopt more economic designs for physical facilities to minimize investment costs, and adopt management measures to increase utilization rates and cost-effectiveness;

(iv) review, evaluate and strengthen ISSC-TVE, including environmental education, work ethics, and occupational safety and health in the curriculum;

(v) promote female participation in secondary TVE programs by providing physical facilities and appropriate information and communication measures; and

(vi) establish a technical committee on and undertake BME in conjunction with issues-oriented educational research and tracer studies of TVE graduates.

IV. THE PROJECT

A. Outline

35. The Project will provide the Government with the necessary support for upgrading the technological capacity and skills of the labor force, to meet the rapidly changing needs of industry, support human capital formation, and sustain export performance. The Project will improve the quality of upper secondary TVE, increase its efficiency, and support the introduction of a new integrated curriculum with greater emphasis on technical subjects. The Project will establish eight new STSs, and upgrade and increase the capacity of nine STSs and 31 SVSs throughout Peninsular Malaysia, Sabah, and Sarawak. The Project will also upgrade the facilities for technical teacher training, improve the management, and strengthen the equipment maintenance in the TVE system.

36. The new STSs under the Project will be established in underserved locations, which have been selected in accordance with criteria that include equitable geographic distribution, presence of large enrollments in lower secondary schools, existing and potential future industrial development, rational distribution of development resources, planned township and industrial development, State government planning priorities, and availability of suitable land for the sites. Similar criteria were applied in selecting the SVSs for upgrading. None of the STSs and only 17 of 31 SVSs being upgraded under the Project have been assisted by previous Bank projects. The expansion of the remaining 38 SVSs in the country is planned to be financed from Government resources in phases according to their ability to satisfy MOE's criteria for selection to implement ISSC-TVE programs. The Project will also support staff development, curriculum review and evaluation, BME and EMIS related research studies, environmental education, and measures to enhance female participation in TVE.

B. Rationale

37. Investment in formal education and in training of the labor force plays a crucial role in economic development. A strong positive link exists between the educational and skill levels and the productivity of the labor force. HRD, including the provision of an educated, skilled, and trainable labor force, is a major priority of Malaysia's development strategy. In the context of the country's rapid economic growth, in which the manufacturing sector accounts for the largest contribution to gross domestic product (31.5 per cent in 1994), it is a matter of priority to upgrade further the technical knowledge and skill level of the work force. This is crucial for further economic development, and in particular to support Malaysia's transition from a manufacturing sector based mainly on assembly to one based on knowledge and high-technology processes. The present gross enrollment ratio at the upper secondary level, at 50 per cent, and the share of enrollments in TVE programs as a proportion of total upper secondary enrollments, at 7 per cent, are low by regional standards. The present enrollment capacity of the TVE system is a constraint and needs to be expanded.

38. At the same time, with virtually full employment, the Malaysian economy continues to experience a shortage of trained manpower at all skill levels. Economic growth and industrialization have to be sustained by a rise in labor productivity and the use of more capital intensive technologies. The shortage of skilled workers, such as mechanics and electricians, is already being felt in the manufacturing sector and is expected to persist throughout the Second Outline Perspective Plan period. To meet short-term needs, the Government is permitting the employment of skilled foreign labor. To overcome shortages, it places priority on rapidly increasing in-country capacity to train not only skilled workers with a higher level of educational attainment and theoretical knowledge, but also technicians and engineers to develop a domestic capability in industrial product design. The supply of technical workers from the existing major technical and vocational training institutions falls short of the demand. To meet these needs, the Government is expanding the capacity of the TVE system and introducing a broad based curriculum (ISSC-TVE) at the upper secondary level. This will serve the dual purpose of increasing the supply of trainable and adaptable skilled workers for high technology industry and of promoting the participation of TVE graduates in higher technical education programs.

C. Objectives

39. The principal objective of the Project is to improve the quality of TVE, to prepare students for further engineering and business education, and to meet the emerging manpower needs of industry and commerce. The second objective is to increase access to TVE throughout the country by expanding the capacity of the TVE system. Particular emphasis will be placed on improving access for low income groups and female students. The third objective is to enhance the internal efficiency and cost-effectiveness of TVE by strengthening its management systems and developing its staff.

40. The Project will assist the Government in implementing a curriculum reform that will improve the preparation of students for postsecondary engineering and business education programs in response to the emerging higher level human resource needs and to the increasing social demand for postsecondary education. SVS and STS graduates who do not pursue further studies will augment the supply of skilled workers required to diversify the industrial base and sustain the growth momentum of the country. The Project will contribute to the achievement of the education sector objectives of the Second Outline Perspective Plan, support implementation of the Government's TVE policy reforms, and address the major issues identified in the TVE subsector.

D. Scope

1. Project Components

41. The project consists of five components. These are described in detail in Appendix 3. A brief description of each component is presented below.

(a) Establishing Eight New Secondary Technical Schools

42. Eight new STSs, seven in Peninsular Malaysia and one in Sarawak, will be established in currently underserved areas and provided with classrooms, special purpose teaching facilities for TVE subjects, and administrative and support facilities. Dormitories for students and some staff housing will be provided. Furniture and equipment appropriate to their administrative, educational, and technical requirements, a stock of library and instructional materials and vehicles will be provided for each new STS. The new STSs each have a projected enrollment of 1,200. The list of schools included in the Project is in Appendix 4.

(b) Upgrading Nine Secondary Technical Schools and 31 Secondary Vocational Schools

43. Nine STSs in Peninsular Malaysia and 31 SVSs (13 in Sabah and Sarawak and 18 in Peninsular Malaysia) will be upgraded and expanded by altering the existing facilities and providing additional facilities such as classrooms, workshops, laboratories, drafting rooms, and student dormitories. The enrollment capacity of the existing STSs will be expanded by 47 per cent from an average of 600 to 880. The capacity of the 31 SVSs will be upgraded by 88 per cent, from an average of 580 to 1,100. Additional basic equipment and furniture for science and computer laboratories, engineering workshops, and drafting rooms will be provided for the schools to accommodate increased enrollment. The list of schools and their current and projected enrollments is in Appendix 4.

(c) Upgrading and Expanding the Technical Teachers Training College

44. Additional buildings and equipment will be provided to expand the facilities of the TTTC at Cheras, Kuala Lumpur for the training of secondary technical and vocational teachers to meet the growing needs of STSs and SVSs, in connection with implementing ISSC-TVE programs. International and local fellowships for development of TTTC staff will also be provided.

(d) Strengthening Equipment Repair Centers

45. Four existing ERCs will be strengthened, to fulfill their role in institutionalizing preventive maintenance and repair. Computers will be provided for inventory control and for monitoring equipment maintenance. A consultant will prepare guidelines on equipment maintenance and repair and conduct training programs for ERC staff. Fellowships will be provided for staff of ERCs to be trained in industry.

(e) Policy Support and Capacity Building

(i) Improving Institution-Industry Linkages

46. The MOE will establish school advisory committees in all the schools covered by the Project, chaired by the principal of the school and including local industry representatives, community leaders, and teachers. The committees will establish a formal link between the schools and local industry, and will involve the latter in reviewing TVE curricula and courses and their relevance to the needs of industry.

47. The MOE will also establish career guidance, industrial liaison and placement units (CAGILPUs) in all the schools. The CAGILPUs will liaise with local business and industry, maintain data on labor markets and employment, arrange industrial visits and in-plant training, and help graduates to find employment. The MOE will also take steps towards cost recovery, by preparing guidelines for and encouraging schools to generate income and offer tailor-made short-term training programs to local industry.

(ii) Reviewing and Developing Curricula

48. ISSC-TVE is being implemented in nine STSs starting in 1994 and the first group of students will graduate in 1996. The MOE will evaluate, review, and revise ISSC-TVE with the assistance of consultants to be engaged under the Project. The consultants will also review and suggest the changes needed in the technical and vocational teacher training curriculum.

(iii) Promoting Female Participation in Technical and Vocational Education

49. The MOE will be assisted by a women-in-development expert to develop strategies to promote female participation in TVE, including information programs and publicity campaigns. The role of the Project in promoting female participation in TVE is discussed in paras. 81-82.

(iv) Enhancing Environmental Awareness and Occupational Safety and Health

50. The Government recognizes the need to develop environmental awareness, sound work habits, and safety consciousness among TVE students. MOE with the assistance of Project consultants will review ISSC-TVE and improve the curriculum content to enhance students' environmental awareness, work ethics, and understanding of occupational safety and health.

(v) Strengthening Educational Management, Benefit Monitoring and Evaluation and Educational Research

51. The TAVED will develop an EMIS for TVE within the framework of the national EMIS. All SVSs and STSs in the country will be provided with a computer and accessories including a modem to transmit data to TAVED. Appropriate EMIS software will be developed, tested, and installed by a consultant who will prepare manuals and conduct training programs. A computerized BME system will also be developed and a committee on BME will be established within MOE. In addition, a computer program will be developed for efficient scheduling of classes and allocation of facilities.

52. Educational research and development, on operational issues, contributes to planning and policy formulation, and review and evaluation of the curriculum improves its relevance to the needs in the clientele of TVE. To this end, provision is made for carrying out studies on selected topics. The TAVED in collaboration with EPRD, IAB and the academic consultants under the Project will be responsible for designing and conducting the research program. A list of tentative research topics is in Appendix 5.

(vi) Institutional Strengthening and Capacity Building

53. The availability of qualified, trained, and competent staff is a prerequisite to maintaining high standards of instruction and institutional management at the national and school levels. Given the institutionalization of policy and curricular reforms and the expansion of the TVE subsector, the managerial and technical capacity of TAVED, TTTC, ERCs, and the schools involved in the Project as well as the supporting capacity of other MOE units needs to be strengthened. A comprehensive staff development program, through overseas as well as local fellowships, has been included in the Project. Candidates will be selected from TAVED and institutions included in the Project to undertake mainly short, intensive programs in selected training venues, in Malaysia and overseas.

2. Project Inputs

54. The main Project inputs consist of: (i) civil works for constructing new and rehabilitating existing buildings; (ii) equipment (including computers and vehicles), furniture, library books, and instructional materials; (iii) staff development fellowships; (iv) consulting services; and (v) funds for TVE related educational research studies. These are briefly described below.

(a) Civil Works

55. The Project will provide buildings for eight new STSs and upgrade and renovate buildings and facilities for 31 SVSs, 9 STSs, and the TTTC. The existing workshop buildings will be renovated to facilitate the installation of new equipment as needed and additional buildings will be provided to increase the enrollment capacity.

(b) Equipment and Furniture

56. The Project will provide equipment and furniture for the 8 new STSs, upgrade 31 SVSs and 9 STSs, and upgrade the TTTC and 4 ERCs. The type and amount of equipment to be provided has been determined based on curriculum implementation needs, the need to improve efficiency and effectiveness of instruction, and the present equipment in the existing schools. Provision has been made for books, instructional materials and teaching aids, reference materials for libraries in the institutions, and vehicles for new STSs and other institutions covered by the Project.

(c) Staff Development

57. A comprehensive staff development program is included in the Project, consisting of in-country training programs for approximately 4,000 staff and overseas fellowships for about 140 staff members. The general objective of the program is to improve the quality and effectiveness of the programs offered in STSs, SVSs, and TTTC, enhance the educational management skills and technical capability of TAVED, improve the competence of the staff of ERCs, and strengthen the supporting capacity of selected other MOE units. Study programs will focus on skill and academic upgrading, curriculum development and innovation, student assessment and evaluation, management training, and instructor training in computer operations to be introduced in the institutions covered by the Project. A summary of the staff development program is in Appendix 6.

(d) Consulting Services

58. Local architectural and civil engineering consultants will be recruited by the Government for the supervision of civil works in Sabah and Sarawak (see para. 67). Local and international academic consultants will be provided under the Project. Sixty person-months of local consultants will be provided in five fields of specialization: computer applications; career guidance, industrial liaison, and placement; BME; environmental education; and women-in-development. Five international consultants (57 person-months) will be recruited, in the following fields: civil engineering studies; mechanical engineering studies; electrical/electronics engineering studies; equipment maintenance and repair and computerized inventory control; and educational research including tracer studies and BME.

(e) Research and Development

59. Under the Project, TAVED will be responsible for issues-oriented educational research, EMIS and BME studies in consultation with EPRD and IAB. The services of consultants will also be provided to assist TAVED in this regard. Five research topics have tentatively been selected to support curriculum evaluation and innovation, technical teacher training, EMIS, and BME activities.

E. Cost Estimates

60. The total cost of the Project is estimated at $238.4 million equivalent (inclusive of taxes and duties) of which $104.8 million, or about 44 per cent, is the foreign exchange cost, including $24.7 million of interest and other charges on the proposed Bank loan during construction (IDC); local currency costs are $133.6 million equivalent, or about 56 per cent. A summary of cost estimates of the Project is shown in Table 2 and more detailed cost estimates are in Appendix 7.

Table 2: Project Cost Summary
($ 000s)

Category	Foreign Exchange	Local Currency	Total
I. Base Costs			
A. Physical Facilities	43,773	92,017	135,790
B. Furniture and Equipment	25,474	5,419	30,894
C. Staff Development	1,971	2,082	4,053
D. Consultants' Services	758	6,723	7,481
E. Research and Development	32	128	160
F. Taxes and Duties	0	11,077	11,077
Total Base Cost	72,008	117,447	189,455
II. Contingencies			
A. Physical Contingency	4,590	6,550	11,140
B. Price Escalation	3,540	9,646	13,186
Total Contingencies	8,130	16,196	24,326
III. Interest and Other Charges	24,662	0	24,662
Total Project Cost	104,800	133,643	238,442
Percentage	44	56	100

F. Financing Plan

61. The Government has requested the Bank to provide a loan of $72.0 million to finance the foreign exchange base costs of the Project. The Government will finance the remainder of the cost of the Project of $166.4 million equivalent. The Government will finance part of the foreign exchange costs including contingency allowances and interest and other charges during implementation and construction (IDC) as well as the entire local currency costs of the Project. The loan will have an amortization period of 26 years including a grace period of 6 years. The financing arrangements are summarized in Table 3 and shown in more detail in Appendix 8.

Table 3: Financing Arrangements Summary

	Foreign Exchange		Local Currency		Total	
	$ million	Per Cent	$ million	Per Cent	$ million	Per Cent
Bank	72.0	69	0	0	72.0	30
Government	32.8	31	133.6	100	166.4	70
Total	104.8	100	133.6	100	238.4	100

62. An analysis of the impact of the Project on the forecasted Government education budget indicates that the development funds for the Project (expressed as a proportion of MOE's total development budget for each year of the Project) will not exceed 6.2 per cent. Incremental operating costs are estimated to be about $16.5 million during the implementation period of the Project. In the year 2000, when all the institutions covered by the Project are operational, the additional annual operational and maintenance costs are estimated to be about $10.0 million which would be equivalent to 0.2 per cent of the projected MOE operating budget in the year 2000.

G. Implementation Arrangements

1. Executing Agency

63. The Executing Agency for the Project will be MOE, which has considerable experience in implementing education projects financed by the Government and external agencies, including the Bank.

2. Project Implementation Unit

64. The Development and Supply Division (DASD) within MOE has sole responsibility for implementation of all MOE development projects that are funded by either the Government or external agencies. The DASD is also responsible for land acquisition and procurement of recurrent and capital goods and services for all MOE divisions. The Project Implementation Unit (PIU) within DASD has implemented three Bank-funded projects and will be responsible for implementation of the Project using the existing staff and organizational arrangements. The PIU has a full-time staff of 15 qualified personnel and receives significant support from technical staff seconded from the Public Works Department and the Supply Unit of DASD. A Principal Assistant Secretary will be designated as the Project Director and head of PIU under the overall guidance of the Secretary of DASD. An Assistant Secretary will be designated as the Project Manager with responsibility for the day-to-day implementation of the Project under the supervision of the Project Director. This arrangement has worked effectively in the implementation of previous Bank-funded projects and allows the full range of DASD's resources to be used by the PIU as required.

3. Project Coordination Committee

65. The Project Coordination Committee that coordinated the Third Vocational Education Project will be responsible for the Project. Its role will be to provide policy guidance and to coordinate all implementation activities. Its membership will comprise the Secretary General of MOE, or his representative, as Chairman, the Secretary of DASD, the Project Director (as Member Secretary), the Project Manager and senior representatives of TAVED, the Teacher Education Division, the Federal Treasury, the Economic Planning Unit, EPRD, and IAB as well as such other representatives as may be required for the effective coordination and implementation of the Project. The Committee will meet at intervals of no more than six months to discuss the progress of the Project and to decide on appropriate action to resolve any problems that may be encountered.

4. Implementation Schedule

66. The Project will be implemented over a period of six years, taking into account the dispersed locations and number of Project institutions. The implementation schedule, showing the timing of major actions by programs and components, is in Appendix 9.

5. Procurement of Goods and Services

(a) Consulting Services

(i) Consultants for Design and Supervision of Civil Works

67. The Public Works Department will be responsible for preparation of designs, site plans, specifications, cost estimates, tender documents, evaluation of bids, award of contracts, and contract supervision relating to civil works in Peninsular Malaysia under the Project. For the design and supervision of the civil works in different locations in Sabah and Sarawak, local architectural and engineering consulting firms that have been approved by and registered with the Government will be recruited in accordance with the Government standard procedures. The selected consulting firms will carry out detailed surveys of the institutions to be upgraded and prepare preliminary cost estimates, designs, and documentation for respective civil works under the Project.

(ii) Academic Consultants

68. International and local academic consultants will be engaged under the Project. The international consultants (including qualified Malaysian consultants) to be financed under the loan will be engaged in accordance with the Bank's *Guidelines on the Use of Consultants*. Local academic consultants, financed by the Government, will be engaged in accordance with the Government standard procedures. The terms of reference of the consultants will be by agreement between the Government and the Bank. The draft terms of reference are in Appendix 10.

(b) Fellowships

69. The Project will provide overseas and local fellowships for selected teachers, teacher trainers, administrators, and technical staff to undertake relevant study programs. The

program of overseas fellowships to be provided under the Project and the criteria for the selection of the recipients will be agreed to by the Government and the Bank, prior to commencement of the program, which will be within 6 months of the loan effective date. The recipients of fellowship will be obliged to remain in service for an appropriate period of time in accordance with the Government's existing regulations.

(c) Equipment, Furniture and Instructional Materials

70. All procurement of equipment, furniture, instructional and consumable materials to be funded from the proceeds of the Bank's loan will be in accordance with the Bank's *Guidelines for Procurement*. Procurement will follow international competitive bidding, international shopping or other procedures as appropriate. A tentative list of equipment, furniture and instructional materials is in Appendix 11.

(d) Land Acquisition

71. The Government has given assurance that the selected sites that satisfy the established criteria for the construction educational institutions, rights in land and rights-of-way required for the Project will be acquired in a timely manner, for the eight new schools covered by the Project. The upgrading of 31 SVSs, 9 STSs and TTTC will not require additional land because the existing campuses can accommodate moderate expansion.

(e) Civil Works

72. The civil works contracts for the eight new STSs will be awarded on the basis of international competitive bidding, in accordance with the Bank's *Guidelines for Procurement*. Based on past experience under Bank-financed projects, civil works contracts with a value below about $5.0 million are unlikely to attract foreign construction firms. Because the civil works for the 40 existing schools and TTTC are relatively small in size and are dispersed throughout the country, the contracts will be awarded following local competitive bidding among prequalified contractors.

73. MOE will submit to the Bank for review and approval final site plans and final sketch plans for the eight new STSs and for the existing STSs, SVSs, and TTTC. The MOE will ensure the approved standard modular designs that have been developed for schools built under the previous three vocational education projects are used wherever appropriate.

6. Acceleration of Project Implementation

74. To expedite implementation of the Project, the Government has formally assigned staff in DASD to the posts of Project Director and Project Manager. Advance action has been taken by DASD to select and engage prequalified local architectural and engineering consultants (financed by the Government) for the architectural design and construction supervision including the preliminary site surveying and soil testing for the schools under the Project in Sabah and Sarawak. For the schools in Peninsular Malaysia, the Public Works Department has begun the necessary site exploration, soil testing, and preparation of master plans. The DASD will also take advance action in collaboration with other agencies about the selection of academic consultants and candidates for the award of staff development fellowships under the Project.

7. Midterm Review

75. A midterm review of all aspects of the Project will be carried out by the Government and the Bank after the completion of the second phase of the BME survey at the end of the third year. This will include an assessment of the progress made in relation to the targets set, as well as the evaluation of the implementation of the ISSC-TVE in nine existing STSs. Based on the findings of the review, necessary changes to the Project will be considered by the Government and the Bank.

8. Educational Management Information System and Benefit Monitoring and Evaluation

76. Although a national framework for EMIS exists and is being developed further by EPRD, there is a need for developing a more specific subsystem for TVE within the national framework. Building on the start made under the Bank's Third Vocational Education Project, the Government has given assurances that the BME system being set up by IAB will be developed further. The BME system will ensure that the Project facilities are managed efficiently and that the Project benefits are monitored. The BME system for TVE will include the systematic gathering at the school level of institutional, educational, and socioeconomic data on the inputs, process, and outputs of TVE. The basic data will be collected in a standard format and communicated at regular intervals to MOE for consolidation and analysis.

77. With reference to the Project, BME activities will include (i) collecting educational indicators and institutional data to establish a baseline within nine months of the loan effective date; (ii) surveys of the institutions for the midterm review of the Project, to monitor the progress achieved at that stage; and (iii) surveys upon completion of the Project. In addition, tracer studies of students leaving the various institutions covered by the Project will be conducted. BME activities will receive support from the consultants to be engaged under the Project, and selected staff will be trained in BME activities. MOE will establish, within TAVED, a technical committee on BME with the Director of TAVED or his representative as Chairman and representatives of EPRD, TAVED, the Teacher Education Division, and IAB as members. The BME Committee will advise the Project Director and will report to the Project Coordination Committee on matters relating to incorporating BME as an integral part of EMIS. A description of the framework for BME is in Appendix 12.

9. Operation and Maintenance

78. The Government will operate the educational institutions and facilities included in the Project in accordance with sound administrative and educational practices and with due regard to economy. The Government will provide promptly and as needed the staff, funds, facilities, services, and other resources to maintain adequately the buildings, furniture, and equipment of the Project facilities and will make necessary repairs and renewals. A computerized system for monitoring regular preventive maintenance of equipment and a program for scheduling classes and assigning rooms will be introduced in all the schools covered by the Project to optimize utilization factors.

H. Environmental and Social Measures

1. Environment

79. The residential nature of the new STSs and SVSs calls for an integrated planning approach to the development of the school sites. Appropriate facilities will be established for educational, residential, and recreational purposes, and due provision will be made for services, drainage, and landscaping. Judging by the schools constructed under previous Bank-financed vocational education projects, the schools included in the Project can be expected to enhance and improve the environment where they are established. The sites for the proposed new schools are located mainly in nonurban areas near industrial areas, where there are existing roads, utility networks, and communication services. Government regulations require an environmental review as an integral part of all site appraisals for infrastructure development in the country. The site appraisals for the eight new STSs have revealed no significant adverse environmental impacts.

80. The MOE, with assistance from the consultant on environmental education and occupational safety and health, will review the TVE curriculum to ensure that environmental topics are appropriately covered. This will enhance the environmental awareness of teachers and school administrators, as well as STS and SVS graduates, most of whom will eventually enter the industrial work force.

2. Gender and Other Social Issues

81. As a result of rapid growth and industrial development, female participation in the labor force has increased to 47 per cent in 1994 with the majority working as factory workers in the manufacturing sector. This will increase further the demand for females with technical qualifications for technical supervisory positions. In principle, female students have equal access to TVE at all levels, and in recent years progress has been made in expanding female enrollments (see Appendix 13). However, due partly to sociocultural reasons and partly to lack of appropriate vocational guidance at the lower secondary level, lack of awareness of TVE, and the limited capacity of SVSs and STSs, there is considerable scope for expanding female participation in TVE. Female students constitute about 31 per cent of total enrollment in SVSs (more than 80 per cent in home economics and commerce courses, but only 5 to 10 per cent in technology programs) and about 36 percent in STSs which, at present, offer more academic courses in science and humanities.

82. The Project will introduce measures to promote female participation in TVE. Steps to promote equitable access to TVE for women and disadvantaged groups, in particular the provision of dormitory facilities, will continue. Additional measures will be initiated, based in part on the findings of the Bank's regional study on Education of Women in Asia [1] and consultancies implemented under the Project. MOE will be assisted by a women-in-development expert to develop strategies to encourage female enrollment in programs leading to employment in fields in which female participation is traditionally low. In consultation with the Women's Affairs Division of the Ministry of National Unity and Social Development, the Project will develop strategies for the dissemination of information on TVE programs to lower secondary schools, publicity

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[1] RETA 5513: Education of Women in Asia, for $500,000, approved on 4 December 1992.

campaigns through the media, and seminars on promoting female participation in TVE for school administrators.

I. Policy Issues

83. In 1993, the Education Planning Committee made a policy decision to offer vocational education of a higher level and to phase out basic skills training programs offered in SVSs. The decision was based on the assumption that the skills training would be conducted by other public and private institutions, or by the industrial sector supported by the HRD Fund. This would allow the SVSs to focus on broad-based and more theoretically oriented ISSC-TVE programs, the graduates of which can either seek employment or pursue higher technical education. The following are some of the major implications of the decision: (i) the output of semiskilled/skilled industrial workers, who are in high demand, would be reduced; (ii) about 1,300 TVE teachers who are underqualified to teach the new ISSC-TVE programs would need to be retrained or redeployed; and (iii) the capital-intensive industrial training equipment and corresponding workshop buildings for NVTC programs will be under utilized, leading to waste of resources, unless the equipment and facilities are redeployed.

84. Because of these implications, the Education Planning Committee's decision will be subject to Government review and final approval. At present, the phasing out of NVTC skills training programs, if approved, will only take place after the year 2000. Although the policy decision itself will not affect the Project, which will assist the Government in the implementation of only ISSC-TVE programs in the SVSs and STSs, the Government will keep the Bank informed about all developments and proposed actions.

V. PROJECT JUSTIFICATION

A. Socioeconomic Analysis

85. Rapid economic growth and industrial development in Malaysia, while improving income and employment opportunities, have resulted in labor shortages at all skill levels. As the level of production technology used by the manufacturing sector continues to rise and diversify, the need for the TVE system to produce workers with high-level technical skills has become a matter of particular priority. The Project will assist the Government both in improving the quality of TVE and in increasing the quantitative capacity of the TVE system.

86. The upgrading of TVE will enable the system to produce graduates with a better knowledge of mathematics and science and who are more trainable, in response to emerging industrial manpower needs. By improving the level of technical knowledge and skills available and increasing the output at the upper secondary level, the Project will also contribute to an increase in enrollments in science and technology programs at the postsecondary and tertiary levels. Ultimately, the quality and supply of technicians (from polytechnics at the postsecondary level) and engineers (from universities) will improve. By establishing new STSs and upgrading existing STSs and SVSs, the Project will also support a quantitative expansion of the number of semiskilled and skilled workers produced by the TVE system. Thus, the Project will support Government efforts to overcome manpower shortages in manufacturing, business, and commerce.

87. The Project will assist the MOE in improving the internal efficiency of the TVE system. By substantially increasing the average enrollment in STSs and SVSs, the Project will promote the cost-effective use of TVE physical facilities and staff. The expansion in overall school capacity will result in significant economies of scale at the school level, both in administration and support services and in the use of staff and facilities for the implementation of TVE programs.

88. The Project will also introduce or strengthen various support measures to enhance managerial efficiency of TVE. These include (i) introducing a computer-based system for the preparation of timetables, allocation of rooms, and assignment of staff, which is expected to help schools achieve optimal utilization of physical facilities; (ii) strengthening the ERCs, and establishing a computerized inventory, maintenance, and repair system for equipment, spare parts, materials, and supplies, which will enhance both the smooth implementation of TVE programs and the cost-effectiveness of preventive maintenance and repairs; and (iii) strengthening and computerizing the BME system, within the context of an EMIS, to provide TVE management with regular data on the internal and external efficiency of the system. These measures will be supported under the Project by fellowship training programs for staff.

89. The main expected benefit of the project will be a substantial improvement in the quality of the graduate output of the TVE system. The Project will undertake various activities to support Government efforts at bringing about educational improvements. These include supporting the implementation of ISSC-TVE, with emphasis on mathematics, science, basic technology theory and communications skills; upgrading teachers' knowledge and skills; upgrading equipment levels; and improving instructional materials and training aids. These activities will substantially improve the quality of TVE, which will be reflected in higher progression and pass rates of students.

90. The Project will strengthen the external efficiency of the TVE system, and its ability to channel graduates into either employment or higher technical and business education, and to meet the needs of the labor market. The curriculum changes in TVE will enhance its relevance to rapid industrial and technological development. At the same time, the establishment of School Advisory Committees and CAGILPUs in each school will strengthen the TVE system's linkages with the private sector and assist STS and SVS graduates in gaining admission to higher education or securing employment in local business or industry. It is estimated that up to 60 per cent of the graduates of schools covered by the Project will pursue further education, while the remaining 40 per cent will directly augment the skilled labor force.

91. The upgrading of TTTC facilities and the qualifications of its faculty members will enable it to offer in-service technical and vocational teacher training programs of high quality and relevance. This is of growing importance to ensure that the pedagogical skills and technical knowledge of the teachers keep pace with the standards of commerce and industry.

92. The Project will expand the enrollment capacity of the TVE system by an estimated 27,900 student places.

93. The MOE and PIU are well qualified and sufficiently experienced to implement the Project. The PIU has considerable experience gained in implementing three Bank-financed vocational education projects. The Government has demonstrated its high priority for development of technical and vocational schools through the timely and adequate provision of

local funds for these projects. Accordingly, there are no significant risks with the implementation arrangements. To minimize the risk of delay in implementing the components of the Project in remote locations, particularly in Sabah and Sarawak, MOE will establish a direct channel of communication with the respective State Education Departments, which will be responsible for physical implementation. In addition, local engineering consultants will be recruited to assist the Public Works Department to oversee the design and construction supervision of the civil works in Sabah and Sarawak. Because Malaysia has virtually full employment, and a shortage of skilled labor in the specializations addressed by the Project, the risk that graduates of schools included in the Project will be unable to obtain appropriate employment is small.

B. Social Dimensions

94. The immediate beneficiaries of the Project will be about 51,000 students enrolled each year in the 48 schools. The beneficiaries also include about 4,000 teachers in the schools, about 1,000 technical and vocational teacher trainers, and 80 teacher trainers at TTTC and about 40 staff members of four ERCs. Approximately 140 teachers, teacher trainers and selected other staff will enhance their professional qualifications and competence by participating in overseas training programs, while about 4,000 personnel will benefit from in-country training programs.

95. By improving the quality of output and the external efficiency of technical and vocational education, the Project will improve the system's capacity to meet the manpower needs of industry and commerce, and their ability to contribute to economic growth and development. In particular in the areas served by the schools covered by the Project, industries and businesses will benefit directly from the improved and expanded flow of graduates with technical qualifications and skills.

96. The Project will have social benefits in promoting equitable access to TVE for students from low-income families and remote areas. The Government provides hostel accommodation for 70 per cent of the total enrollment in SVSs and STSs, and subsidizes the living costs. The level of family income is taken into account in selecting students for admission to hostel accommodation, without which students from low-income groups and remote areas could not afford to pursue TVE programs. As the schools included in the Project are located throughout the country, the Project will also contribute to increasing equitable access to TVE regionally within Malaysia.

97. The Project includes measures to promote female participation in TVE. The new STSs and upgraded SVSs and STSs will offer ISSC-TVE programs (engineering sciences and commerce), which are expected to attract greater female enrollment. Special facilities for female students including hostels will be provided. The average female enrollment in TVE programs in STSs and SVSs is expected to increase as a result of information and publicity measures to promote female participation in TVE and career advancement of women in technological fields, which will be implemented with the assistance of a consultant under the Project.

VI. ASSURANCES

98. The Government has given the following assurances, in addition to the standard assurances, which have been incorporated in the legal documents:

(i) To improve institution-industry linkages, the MOE will:

(a) establish School Advisory Committees in all the existing schools covered by the Project within 6 months of the loan effective date and in the new STSs as soon as classes have commenced; and

(b) formulate guidelines for and establish CAGILPUs in all existing schools within 6 months of the loan effective date and in the new STSs as soon as classes have commenced.

(ii) The MOE will review and evaluate the initial implementation of ISSC-TVE in selected schools with the assistance of consultants to be engaged under the Project. The MOE will update ISSC-TVE and the in-service technical and vocational teacher training curriculum, taking into account the consultants' recommendations.

(iii) The MOE, with the assistance of a consultant and in consultation with the Women's Affairs Division of the Ministry of National Unity and Social Development, will develop and implement appropriate strategies to promote female participation in TVE.

(iv) The MOE, with the assistance of the consultants for the Project, will review ISSC-TVE and strengthen the content of relevant curriculum on environmental awareness and occupational safety and health.

(v) The MOE, with the assistance of a consultant, will establish an EMIS for TVE, develop software, prepare manuals, and conduct training programs. A computer program will be used for efficient scheduling of classes and allocation of facilities.

(vi) A technical committee on BME will be established within three months of the loan effective date, with the Director of TAVED as chairperson and representatives of EPRD, IAB, DASD and the Teacher Education Division as members. TAVED, with the assistance of consultants and in collaboration with EPRD, will develop a computerized BME system within the framework of EMIS, and will conduct tracer studies of students leaving the Project schools.

(vii) All implications of the decision to phase out the skills training programs in the SVSs including the future availability of skilled labor, retraining and re-deployment of vocational teachers, and utilization of skills training equipment and facilities, will be analyzed and the Bank will be kept informed of all actions proposed in this regard.

VII. RECOMMENDATION

99. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank and recommend that the Board approve the loan of $72.0 million to Malaysia for the Technical and Vocational Education Project from the Bank's ordinary capital resources, with interest to be determined in accordance with the Bank's pool-based variable lending rate system for US dollar loans and with an amortization of 26 years, including a grace period of 6 years and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan Agreement presented to the Board.

MITSUO SATO
President

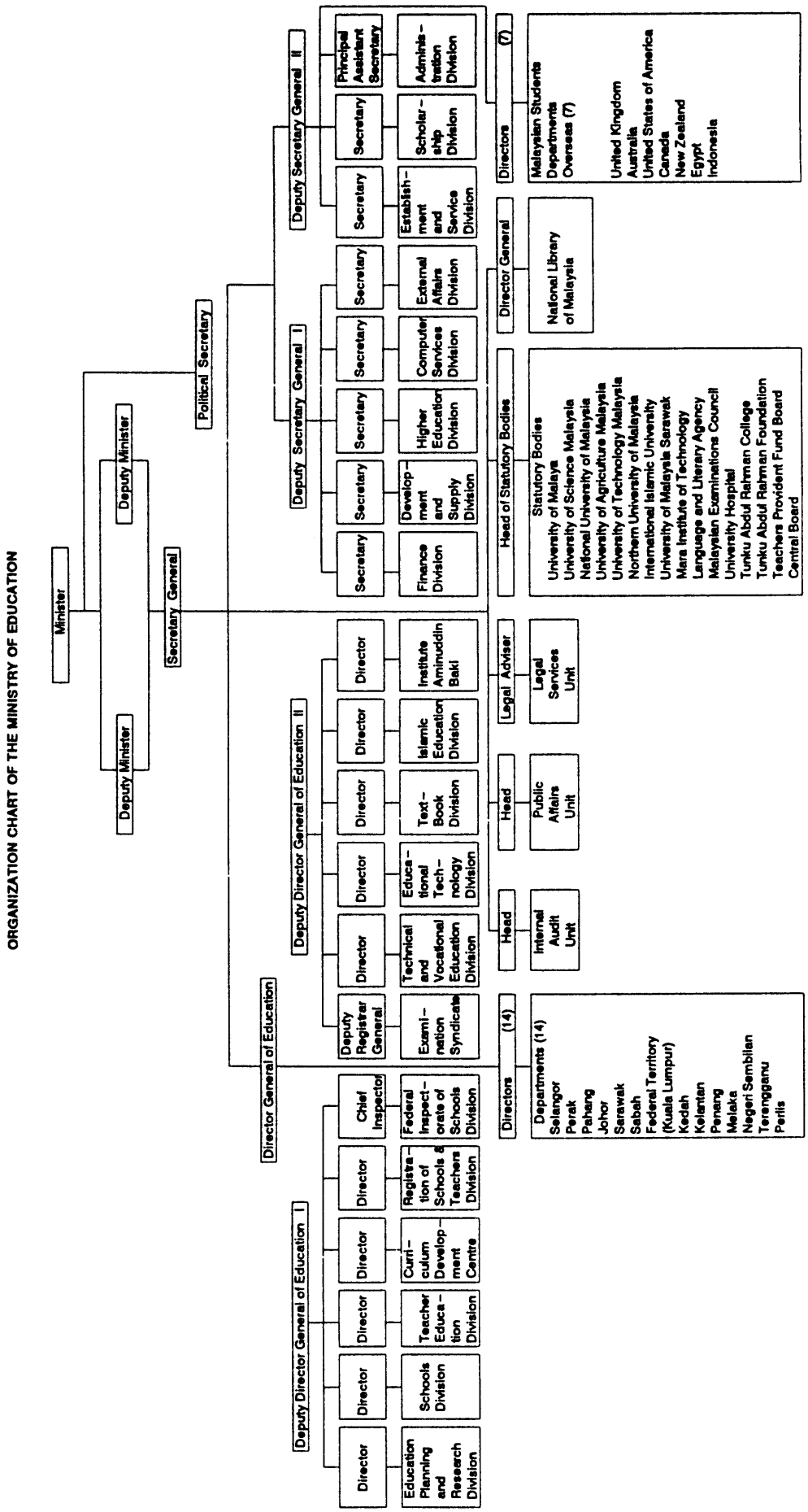
27 April 1995

APPENDIXES

Core Appendixes

Supplementary Appendixes
(Available if required)

Appendix 1



(Reference in text: page 1, para. 4)

Appendix 2

EXTERNAL ASSISTANCE TO THE EDUCATION SECTOR

	WORLD BANK		ASIAN DEVELOPMENT BANK	
Year	Project	Amount ($ million)	Project	Amount ($ million)
1969	Education	8.8	–	–
1972	Second Education	15.5	–	–
1974	Third Education	19.0	–	–
1976	Fourth Education	28.5	–	–
1979	Fifth Education	26.8	–	–
1980	–	–	Vocational Education	20.0
1982	Industrial Training	40.6	–	–
1983	–	–	Second Vocational Education	58.0
1985	Second Industrial Training	73.3	–	–
1986	Primary and Secondary Education	127.0	–	–
1987	University Development	48.2	Third Vocational Education	68.8
1988	Second Primary and Secondary Education	58.8	–	–
1992	Third Primary and Secondary Education	141.0	–	–
1993	Polytechnic Development	107.0	–	–
	Total	**694.4**		**146.8**

Source: IBRD, Statement of Loans, January 31, 1995.
ADB, Loan, Technical Assistance and Private Sector Operations Approvals, January 1995.

(Reference in text: page 8, para. 26)

PROJECT COMPONENTS

1. The Project consists of five components, the last of which is broken down into six subcomponents. A description of each component is presented below.

Component 1: Establishing Eight New Secondary Technical Schools

2. Eight new STSs, seven in Peninsular Malaysia and one in Sarawak, will be established and provided with classrooms, special purpose teaching facilities for civil, mechanical, and electrical/electronics engineering and science studies, drawing and computer training prescribed in ISSC-TVE, and administrative and support facilities. The capacity of the new schools will be 1,200, and dormitory accommodation will be provided for students from other districts or states, who are estimated to constitute 70 per cent of the enrollment. Some staff housing will also be provided. Furniture and equipment appropriate to the administrative, educational, and technical requirements, a library, instructional materials, and vehicles will be provided for each new STS. The locations of the new STSs have been selected on the basis of criteria that include: equitable geographic distribution; presence of large enrollments in lower secondary schools; existing and potential future industrial development; rational distribution of development resources; planned township and industrial development; State government planning priorities; and availability of land for the sites.

Component 2: Upgrading Nine Secondary Technical Schools and 31 Secondary Vocational Schools

3. Nine STSs (established in the 1960s and 1970s) will be upgraded and expanded by altering the existing facilities and providing additional standard facilities such as classrooms, workshops, laboratories (for science and computer training), drafting rooms, and workshops to support implementation of ISSC-TVE. Their enrollment capacity will be expanded by approximately 47 per cent, from an average of 600 to 880. Dormitories will be provided for students from poor and remote areas. Additional basic equipment and furniture for science and computer laboratories, engineering workshops, and drafting rooms will be provided for the schools to accommodate the increased enrollment.

4. Thirty-one SVSs (13 in Sabah and Sarawak, and 18 in Peninsular Malaysia) with a relatively uneconomical average capacity of about 580 students will be upgraded and their capacity expanded by approximately 88 per cent, to 1,100. Alterations will be made to the existing facilities and additional standard facilities will be provided, including classrooms, workshops, laboratories (for science and computer training), drafting rooms, and workshops needed for implementation of ISSC-TVE with civil, mechanical, and electrical/electronics engineering studies and drawing as electives. Additional basic equipment and furniture for science and computer laboratories, engineering workshops, and drafting rooms will be provided for the schools to accommodate increased enrollment, which will improve the cost-effectiveness of the schools. In selected schools, student dormitories will be provided.

(Reference in text: page 12, para. 41)

Component 3: Upgrading and Expanding the Technical Teachers Training College

5. Additional buildings will be provided to expand the facilities of the TTTC and its capacity to provide pre-service and in-service secondary technical and vocational teachers' training to meet the needs of STSs and SVSs that will be implementing ISSC-TVE programs. Additional equipment will be provided to upgrade the TTTC's technical capacity in mechanical, civil, and electrical/electronic engineering, as well as engineering drawing. International and local fellowships for development of TTTC staff will also be provided.

Component 4: Strengthening Existing Equipment Repair Centers

6. Four existing ERCs will be strengthened to fulfill their role in institutionalizing preventive maintenance and repair. Fellowships will be provided for staff of ERCs to undertake training in the industries that manufacture the type of equipment generally used in the schools in Malaysia. Computers will be provided to develop a computerized inventory control of consumable materials, spare parts, and supplies, and monitor the preventive maintenance of equipment with the assistance of a foreign consultant who will also prepare guidelines on systematic equipment maintenance and repair, and conduct training programs for ERC staff.

Component 5: Policy Support and Capacity Building

(i) Improving Institution-Industry Linkages

7. The NVTC is responsible for ensuring collaboration between TVE institutions and private industry on matters relating to curriculum, courses, sharing of training resources, and in-plant training for instructors and TVE students. NVTC has established various technical committees at the national level in which MOE is represented. Despite this, the linkage is weak at the school level. Although a few SVSs have established School Advisory Committees with the principal as the chairman and local business, industry and community representatives and senior teachers as members, they are not effective yet. The main function of these Committees is to establish a formal linkage with local industry and to involve the latter in reviewing and evaluating the relevance of the TVE curricula and courses to the emerging needs of industry. The School Advisory Committees will be complementary to the role of NVTC. Other SVSs and STSs have not established these committees yet. MOE will take appropriate action to ensure their establishment and effective operation in the SVSs and STSs covered by the Project.

8. Career guidance, industrial liaison and placement units (CAGILPUs) will also be established in each school covered by the Project to: (i) liaise with local business and industry and obtain labor market information (also from MOHR local offices) to help school graduates find employment; (ii) compile a computerized data base on employment rates and related information to provide an input to EMIS and BME; (iii) solicit feedback from employers and tertiary institutions on the performance of graduates; and (iv) arrange industrial visits and in-plant training in industry for students as well as TVE teachers. The CAGILPUs will be headed by the principal of the school concerned and comprise a TVE teacher/vocational guidance counsellor as an industrial liaison and placement officer, and an appropriate support staff. The School Advisory Committees will assist CAGILPUs in fulfilling their functions.

9. The 1991 Cabinet Committee on Training and Employment recommended utilization of public TVE and training facilities either to offer tailor-made part-time (evening or weekend) training programs for private sector industrial skilled workers on the basis of cost recovery arrangements with their employers or for industry to lease the school training facilities for a fee to conduct training programs during weekends and school vacations. The prospects for such collaborative arrangements have been enhanced with the advent of the HRD Fund, which will finance the training of workers from industries that subscribe to the HRD Fund. Under this scheme the utilization factor of the training facilities will be increased, the schools will generate revenue to augment their operational budgets, and institution-industry linkage will be improved. MOE has issued directives to SVSs and STSs to take necessary steps to implement appropriate programs. MOE will formulate appropriate guidelines and issue further directives in conjunction with the establishment of School Advisory Committees and CAGILPUs and will monitor such activities with the assistance of consultants to be engaged under the Project.

(ii) Reviewing and Developing Curricula

10. The ISSC-TVE is being implemented in nine STSs starting in 1994 and the first group of students will graduate in 1996. The MOE will review ISSC-TVE offered in nine STSs and four SVSs with the assistance of academic consultants to be engaged under the Project in 1996 when an evaluation of ISSC-TVE will be conducted to identify the strengths and weaknesses of the curricula and problems encountered. Based on the findings, the consultants will formulate appropriate recommendations to MOE for revision or innovation of the ISSC-TVE. Parallel to this, the consultants will also review and suggest changes needed in the in-service technical and vocational teacher training curriculum.

(iii) Promoting Female Participation in Technical and Vocational Education

11. The Project will introduce measures to promote female participation in TVE. Steps to promote equitable access to TVE for women and disadvantaged groups, in particular the provision of dormitory facilities, will continue. In addition to engineering fields, the Project will expand the capacity of the TVE system in areas of traditionally high female enrollment, in particular business and commerce studies. MOE will be assisted by a women-in-development consultant to develop strategies to encourage female enrollment in programs leading to employment in fields in which female participation is traditionally low. The consultant will review female participation rates and other relevant data, identity constraints, and recommend appropriate steps to promote female participation in TVE. In consultation with the Women's Affairs Division of the Ministry of National Unity and Social Development, the Project will develop strategies for the dissemination of information on TVE programs to lower secondary schools, publicity campaigns through the media, and seminars on promoting female participation in TVE for school administrators.

(iv) Enhancing Environmental Awareness and Occupational Safety and Health

12. The Government has endorsed the concept of sustainable development and is committed to preservation and conservation of the environment in the process of pursuing rapid economic growth. The Government also recognizes the need to develop environmental awareness, sound work habits, and safety consciousness among TVE students, who will constitute the future work force. To this end, MOE with the assistance of Project consultants will review ISSC-TVE and improve the content of relevant subject curriculum to enhance students' environmental awareness, work ethics, and understanding of occupational safety and health.

(v) Strengthening Educational Management, Benefit Monitoring and Evaluation and Educational Research

13. While a national framework for EMIS exists at present and is being further developed by EPRD, there is a need for developing a more specific subsystem for TVE within the national framework. To this end, a computerized EMIS for TVE will be developed by TAVED. Each of the 69 SVSs and 9 STSs in the country will be provided a computer and accessories including a modem to transmit the data to TAVED in Kuala Lumpur. Appropriate EMIS software will be developed, tested, and installed by a consultant who will prepare manuals on EMIS and conduct training programs. A computerized BME system will also be developed, tested, and institutionalized. In addition, a computer program will be used for efficient scheduling of classes and allocation of facilities to achieve optimal utilization and raise internal efficiency.

14. Provision has been made for conducting research on selected issues-oriented topics as well as for data collection, analysis, processing, and report preparation for the Government and the Bank. TAVED in collaboration with EPRD, IAB and the academic consultants under the Project will be responsible for designing and conducting the research program. Five research topics have been tentatively selected, including tracer studies of the 1996 graduates of nine STSs that are implementing ISSC-TVE starting in 1994, a review of some aspects of ISSC-TVE, a study on a sample of new TVE teachers, and EMIS/BME studies. (See Appendix 5 for a list of tentative research topics.)

(vi) Institutional Strengthening and Capacity Building

15. A scheme of comprehensive staff development, through overseas as well as local fellowships, has been included in the Project, based on an assessment of training needs and taking into account the training provided under previous and ongoing TVE projects. Candidates will be selected from TAVED and institutions covered by the Project to undertake mainly short, intensive programs in selected training venues, in Malaysia and overseas. Local study programs will focus on in-service training for teachers, curriculum development, instructional materials development, school management, and student counselling. Overseas programs will focus on technical curriculum development and implementation, instructional skills, design and use of instructional materials, management systems, and computer operations to be introduced in institutions covered by the Project.

LIST OF SCHOOLS AND ENROLLMENT BY FIELDS OF STUDY

A. New Secondary Technical Schools

No.	State	Name/Location	Field of Study Courses to be offered in: Civil Engineering	Electrical Engineering	Mechanical Engineering	Commerce	Projected Enrollment (2000)
1	Kelantan	STS Bachok	X	X	X		1,200
2	Malacca	STS Jasin	X	X	X		1,200
3	Penang	STS Seberang Prai	X	X	X		1,200
4	Perak	STS Grik	X	X	X		1,200
5	Sarawak	STS Sejingkat	X	X	X		1,200
6	Selangor	STS Gombak	X	X	X		1,200
7	Selangor	STS Kuala Selangor	X	X	X		1,200
8	Terengganu	STS Dungun	X	X	X		1,200
		Subtotal A.					9,600

B. Secondary Vocational Schools for Upgrading (Peninsular Malaysia)

No.	State	Name/Location	Field of Study New Courses or for Upgrading: Civil Engineering	Electrical Engineering	Mechanical Engineering	Commerce	Enrollment 1994	Projected (2000)
1	Johor	Batu Pahat	X	X	X		810	1,200
2	Johor	Johor Bahru (Com.)				X	397	1,200
3	Johor	Kota Tinggi	X	X	X		693	1,200
4	Johor	Segamat	X	X	X		664	1,200
5	Kedah	Kulim	X	X	X	X	812	1,200
6	Kelantan	Kuala Krai	X	X	X	X	647	1,200
7	Kelantan	Bunut Susu (Com.)				X	349	1,200
8	Melaka	Melaka Tengah	X	X	X		804	1,200
9	N. Sembilan	Port Dickson	X	X	X	X	757	1,200
10	Pahang	Bentong	X	X	X	X	749	1,200
11	Pahang	Kuala Lipis	X	X	X		541	1,200
12	Pahang	Kuala Rompin	X	X	X		601	1,200
13	Perak	Slim River	X	X	X		669	1,200
14	Perlis	Arau	X	X	X		499	1,200
15	Penang	Nibong Tebal	X	X	X		715	1,200
16	Selangor	Sungai Buloh	X	X	X		776	1,200
17	Terengganu	Besut	X	X	X		744	1,200
18	Terengganu	Kemaman	X	X	X		662	1,200
		Subtotal B.					11,889	21,600

(Reference in text: page 12, para. 42)

C. Secondary Vocational Schools for Upgrading (Sabah and Sarawak)

No.	State	Name/Location	Field of Study New Courses or for Upgrading				Enrollment	
			Civil Engineering	Electrical Engineering	Mechanical Engineering	Commerce	1994	Projecte (2000)
19	Labuan	Labuan	X	X	X	X	513	1,00
20	Sabah	Keningau	X	X	X	X	468	80
21	Sabah	Kudat	X	X	X	X	462	88
22	Sabah	Lahad Datu	X	X	X	X	235	1,12
23	Sabah	Likas	X	X	X	X	619	1,20
24	Sabah	Sandakan	X	X	X	X	281	48
25	Sabah	Tawau	X	X	X	X	524	1,00
26	Sarawak	Betong	X	X	X	X	539	1,00
27	Sarawak	Bintulu	X	X	X	X	606	1,00
28	Sarawak	Kuching	X	X	X	X	411	1,20
29	Sarawak	Luar Bandar Kuching	X	X	X	X	790	1,20
30	Sarawak	Miri	X	X	X	X	297	80
31	Sarawak	Sibu	X	X	X	X	488	70
		Subtotal C.					6,233	12,38

D. Secondary Technical Schools for Upgrading

No.	State	Name/Location	Field of Study New Courses or for Upgrading				Enrollment	
			Civil Engineering	Electrical Engineering	Mechanical Engineering	Commerce	1994	Projecte (2000)
32	Kedah	Alor Setar	X	X	X		548	88
33	Penang	Penang	X	X	X		733	88
34	Perak	Ipoh	X	X	X		566	88
35	K. Lumpur	K. Lumpur	X	X	X		628	88
36	N. Sembilan	Seremban	X	X	X		627	88
37	Melaka	Melaka	X	X	X		567	88
38	Johor	Johor Bahru	X	X	X		666	88
39	Pahang	Kuantan	X	X	X		543	88
40	Terengganu	K. Terengganu	X	X	X		566	88
		Subtotal D.					5,444	7,92
		TOTAL A,B,C,D					23,566	41,90

E. TTTC Additional Teacher Training Facilities

41	Kuala Lumpur	Cheras	X	X	X		8

EDUCATIONAL RESEARCH AND DEVELOPMENT PROGRAM

Tentative Research Topics		Cost Estimates ($)
1.	A tracer study of graduates of about 10 sample schools who are working, to evaluate the trainability of the students to job requirements (1996 to 1997).	40,000
2.	A study of a sample of STS graduates (1996 group) who are pursuing studies in polytechnics and other higher education institutions to monitor their progress and any learning difficulties (1997-1999).	30,000
3.	A review of ISSC-TVE electives, with focus on adequacy of teacher preparation, instructional materials, teaching methods, and pupil assessment.	20,000
4.	A study of the performance of a sample of technical teacher training graduates who join the teaching service in the Project schools including trends in the achievement levels of their students (1996-1998).	30,000
5.	EMIS/BME Studies on Project schools and beneficiaries:	
	i). at the beginning of the implementation of the Project to establish baseline data;	15,000
	ii). at the midterm stage (3 years after loan effective date) to identify problems and assess progress and changes made; and	10,000
	iii). at the completion of the Project to measure achievements made in relation to targets set and assess the socioeconomic impact of the Project.	15,000
	TOTAL	**$160,000**

(Reference in text: page 14, para. 52)

STAFF DEVELOPMENT PROGRAM

Type of Training/Study Program	Duration	No. of Participants	Estimated Cost ($ 000s)
In-country			
1. In-service training for teachers and officials on integrated secondary school curriculum	1-2 weeks	1,120	
2. In-service training on school management and development management	2 weeks	160	
3. In-service training on student counselling	2 weeks	80	
4. Study visits to institutions	1 week	50	
5. Induction training for center and program coordinators	3 days	510	
6. Induction training for assessors and internal verifiers	3 days	1,330	
7. In-service training in competency-based education	1 week	450	
8. In-service training in module writing	3 weeks	300	
Sub-total		4,000	$2,082
Overseas			
1. Curriculum development (technical subjects)	6 weeks	20	
2. Testing and evaluation	4 weeks	11	
3. Instructional materials design	4 weeks	10	
4. Teacher training systems	4 weeks	8	
5. Instructional delivery	4 weeks	20	
6. Classroom teaching	4 weeks	11	
7. Curriculum development (academic subjects)	4 weeks	6	
8. Computers in education	4 weeks	6	
9. Project management	4 weeks	4	
10. Benefit monitoring and evaluation	4 weeks	10	
11. Educational management information systems	4 weeks	7	
12. Strategic planning	2 weeks	10	
13. Civil works project management	4 weeks	4	
14. Study visits	2-3 weeks	15	
Sub-total		142	$1,971
TOTAL		4,142	$4,053

(Reference in text: page 15, para. 57)

Appendix

PROJECT COST SUMMARY
($ 000s)

Category	Foreign Exchange	Local Currency	Total
I. **BASE COSTS**			
A. Physical Facilities			
1. Site Development	5,004	20,017	25,022
2. Construction - New STSs	16,020	29,752	45,772
3. Construction - Upgrading	22,749	42,248	64,997
Subtotal	43,773	92,017	135,790
B. Furniture and Equipment			
1. Furniture	914	2,742	3,655
2. Equipment	23,220	2,580	25,800
3. Vehicles	949	0	949
4. Books and Instructional Materials	392	98	489
Subtotal	25,474	5,419	30,894
C. Staff Development			
1. Local Fellowships	0	2,082	2,082
2. Overseas Fellowships	1,971	0	1,971
Subtotal	1,971	2,082	4,053
D. Consultants' Services			
1. Local Consultants			
a. Civil Works Design and Supervision	0	6,384	6,384
b. Academic	0	150	150
2. International Consultants	758	189	947
Subtotal	758	6,723	7,481
E. Research and Development	32	128	160
F. Taxes and Duties	0	11,077	11,077
Total Base Cost	72,008	117,447	189,455
II. **CONTINGENCIES**			
A. Physical Contingency	4,590	6,550	11,140
B. Price Escalation	3,540	9,646	13,186
Total Contingencies	8,130	16,196	24,326
III. **INTEREST AND OTHER CHARGES**	24,662	0	24,662
TOTAL PROJECT COST	104,800	133,643	238,442
Percentage	44	56	100

Notes: 1. Base costs are as of April 1995.
2. Taxes and duties are estimated at 10 per cent of civil works.
3. Physical contingency is computed at 5 per cent of base costs for new schools construction, 10 per cent for upgrading construction and 5 per cent for furniture and equipment.

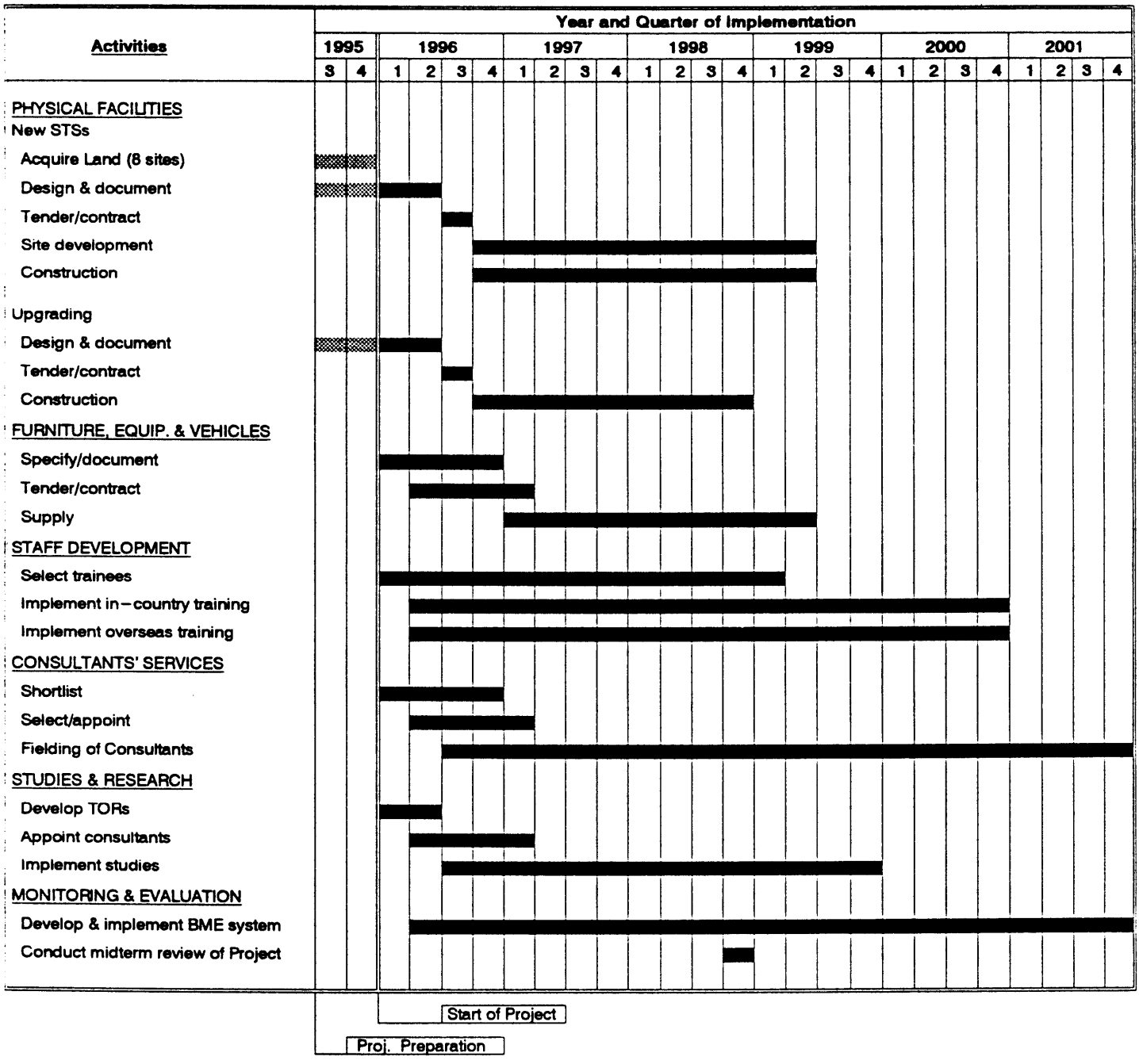
(Reference in text: page 16, para. 60)

FINANCING ARRANGEMENTS ($'000)

	TOTAL PROJECT COST			BANK FINANCING			GOVERNMENT FINANCING			
COST COMPONENTS	Foreign Exchange	Local Currency	Total	Foreign Exchange	Local Currency	Total	Foreign Currency	Local Currency	Total	Per Cent Bank
I. BASE COST										
A. Physical Facilities										
1. Site Development	5,004	20,017	25,022	5,004	0	5,004	0	20,017	20,017	20
2. Construction – New STSs	16,020	29,752	45,772	16,020	0	16,020	0	29,752	29,752	35
4. Construction–Upgrading	22,749	42,248	64,997	22,749	0	22,749	0	42,248	42,248	35
Subtotal	43,773	92,017	135,790	43,773	0	43,773	0	92,017	92,017	32
B. Furniture & Equipment										
1. Furniture	914	2,742	3,655	914	0	914	0	2,742	2,742	25
2. Equipment	23,220	2,580	25,800	23,220	0	23,220	0	2,580	2,580	90
3. Vehicles	949	0	949	949	0	949	0	0	0	100
4. Books & Instructional Mats.	392	98	489	392	0	392	0	98	98	80
Subtotal	25,474	5,419	30,894	25,474	0	25,474	0	5,419	5,419	82
C. Staff Development										
1. Local Fellowships	0	2,082	2,082	0	0	0	0	2,082	2,082	0
2. Overseas Fellowships	1,971	0	1,971	1,971	0	1,971	0	0	0	100
Subtotal	1,971	2,082	4,053	1,971	0	1,971	0	2,082	2,082	49
D. Consultants' Services										
1. Local Consultants										
a. Civil Works Design & Supv.	0	6,384	6,384	0	0	0	0	6,384	6,384	0
b. Academic	0	150	150	0	0	0	0	150	150	0
2. International	758	189	947	758	0	758	0	189	189	80
Subtotal	758	6,723	7,481	758	0	758	0	6,723	6,723	10
E. Research & Development	32	128	160	32	0	32	0	128	128	20
F. Taxes & Duties	0	11,077	11,077	0	0	0	0	11,077	11,077	0
TOTAL BASE COST	72,008	117,447	189,455	72,008	0	72,008	0	117,447	117,447	38
II. CONTINGENCIES										
A. Physical Contingency	4,590	6,550	11,140	0	0	0	4,590	6,550	11,140	0
B. Price Escalation	3,540	9,646	13,186	0	0	0	3,540	9,646	13,186	0
TOTAL CONTINGENCIES	8,130	16,196	24,326	0	0	0	8,130	16,196	24,326	0
III.INTEREST & OTHER CHARGES	24,662	0	24,662	0	0	0	24,662	0	24,662	0
TOTAL PROJECT COST	104,800	133,643	238,442	72,008	0	72,008	32,792	133,643	166,435	30
PERCENTAGE	44	56	100	30	0	30	14	56	70	

(Reference in text: page 16, para. 61)

PROJECT IMPLEMENTATION SCHEDULE



(Reference in text: page 18, para. 66)

LIST AND TERMS OF REFERENCE OF CONSULTANTS

FIELD OF SPECIALIZATION	TENURE (Person Months)	DUTY STATION
A. Local Academic Consultants		
1. Computer Applications Expert for Educational Management Information System (EMIS), and Benefit Monitoring Evaluation (BME)	12	Technical and Vocational Education Division (TAVED), Technical Teacher Training College (TTTC), and Schools
2. Career Guidance, Industrial Liaison and Placement and Entrepreneurship Expert	6	TAVED and Schools
3. Educational Research/EMIS and BME Expert (3 x 8 person -months)	24	Education Planning and Research Division (EPRD), and TAVED
4. Environmental Education, Work Ethics and Occupational Safety and Health Expert	6	TAVED and TTTC
5. Women-in-Development Expert	12	TAVED and TTTC
TOTAL PERSON MONTHS	60	
B. International Academic Consultants		
1. Curriculum Development and Teacher Training Expert:		
a. Electronics/Electrical Engineering	12	TAVED and TTTC
b. Mechanical Engineering	12	TAVED and TTTC
c. Civil Engineering	12	TAVED and TTTC
2. Preventive Maintenance/Repair and Computerized Inventory Control Expert	9	TAVED, Equipment Repair Centers and Schools
3. Educational Research, EMIS and BME Expert (3 x 4 pm)	12	TAVED/EPRD and Schools
TOTAL PERSON MONTHS	57	

(Reference in text: page 18, para. 68)

Terms of Reference

A. Local Consultants:

1. Computer Applications Expert

Type: Local Tenure: 12 months

The expert will have the following duties:

(i) review the current system of compiling data for the educational management information system (EMIS) in the Ministry of Education (MOE) and Technical and Vocational Education Division (TAVED);

(ii) design appropriate software for use in setting up computerized databases for EMIS and benefit monitoring and evaluation (BME) in consultation with TAVED, the Education Planning and Research Division (EPRD), Institute Aminuddin Baki (IAB), and the EMIS consultants engaged under the project; (the databases to include personnel and enrollments by gender and course of study, fixed and moveable assets, educational performance indicators, annual budgets etc. appropriately integrated and interfaced to enable TAVED to prepare forecasts of facility requirements and budgets based on enrollments etc.);

(iii) test the software for its effectiveness and user-friendliness in collaboration with TAVED and EPRD and make necessary improvements;

(iv) install and configure software according to the type of computer hardware available in the schools;

(v) develop user-friendly instructional materials and training exercises and design program to train teachers and administrators in installation, configuration and application of software; and

(vi) conduct appropriate training programs for staff concerned.

2. Career Guidance, Industrial Liaison and Placement and Entrepreneurship Expert

Type: Local Tenure: 6 months

The consultant will have the following duties:

(i) define the role of career guidance, industrial liaison and placement units (CAGILPUs) in schools and suggest a suitable organizational pattern;

(ii) advise TAVED on appropriate mechanisms for ensuring that close liaison is achieved between Project schools and the local industry and community (including the setting up of School Advisory Committees);

(iii) develop working plans for the operation of such units in the Project schools;

(iv) develop user-friendly materials that can be used by staff and students in determining the range of career paths that are open to students including a readily accessible and easily updated jobs database for use locally;

(v) develop training materials and conduct workshops aimed at equipping selected staff to ensure effective operation of the CAGILPUs in each of the Project schools;

(vi) assist TAVED in reviewing entrepreneurial elements in the curriculum for commerce (elective) and suggest strategies for promoting entrepreneurship among secondary school students;

(vii) prepare teachers' guides and sample questions on the commerce curriculum, develop appropriate research materials and conduct workshops and seminars for teachers; and

(viii) develop training materials and conduct suitable workshops to train staff of CAGILPUs in the schools in industrial liaison.

3. Educational Research/EMIS and Benefit Monitoring and Evaluation

Type: Local (to work in collaboration with one international consultant)

Tenure: 8 months x 3 assignments

(See International Consultant Item No. 3 under terms of reference.)

4. Environmental Education, Work Ethics, and Occupational Safety and Health

Type: Local Tenure: 6 months

The consultant will, among other things, carry out the following duties:

(i) review the technical and vocational education curricula and appropriately include curricular elements to promote environmental awareness among students;

(ii) develop curricula to instil occupational safety and health consciousness, work ethics, safety standards and good industrial practices consistent with the Occupational Safety and Health Act of 1993;

(iii) recommend changes in relevant curricula to reflect environmental issues and concerns to promote environmental awareness among technical and vocational students;

(iv) advise on the design/modification of facilities, course outlines and curricula and assist in the identification and selection of equipment and instructional materials for environmental topics; and

(v) develop appropriate staff development programs with relevant support materials to raise the awareness of all teaching staff and to ensure that the issues of environmental education, work ethics and occupational safety and health are appropriately incorporated in all subjects within the curriculum.

5. **Women-in-Development Expert**

Type: Local Tenure: 12 months

The consultant will carry out the following duties:

(i) review the female participation rates in technical and vocational education especially in engineering science courses at the upper secondary level and in technological courses at the tertiary levels by field of specialization;

(ii) investigate the low rate of participation by females in technical and vocational education (including technical teacher training) and recommend measures to increase their participation;

(iii) examine social and economic factors to determine the extent to which they may militate against increased participation by women, and suggest appropriate steps to overcome them;

(iv) review pertinent data and determine labor force participation rates of women and analyze the employment rates of women in professional and technical level positions in industry;

(v) conduct visits to industry, identify and interview female technical workers and engineers;

(vi) develop and implement measures to promote and increase the participation of females in technical/engineering education and career advancement of women in technological fields through workshops and seminars, publicity campaigns, etc.;

(vii) assess the scope and number of scholarships and other forms of assistance available to women and indicate what steps may be required to increase this assistance;

(viii) consider the extent of special support facilities available to women in schools and colleges (transport, hostels, restrooms, etc.) and advise on the extent to which these should be improved; and

(ix) recommend on the advisability of setting up within TAVED a special Women's Strategy Group to advise on ways of increasing participation of women in technical and vocational education.

B. International Consultants:

1. Curriculum Development and Teacher Training Expert

Type: International x 3 Tenure: 12 months each

Three international consultants will be required for assisting in review and innovation of the curricula for the engineering science electives of the integrated secondary school curriculum (ISSC) and related staff development programs and strengthening the institutional capacity of the Technical Teachers Training College (TTTC) in each of the engineering studies subjects. These consultants will need to take into account the greater emphasis on education with a career focus which will enable students to prepare for the world of work or further study in a technical area. The fields of specialization of the three consultants will be: civil engineering studies, mechanical engineering studies and electrical/electronics engineering studies. Each of the consultants will:

(i) assist in the review of the new curriculum for the respective elective of ISSC being implemented in the technical and vocational schools and the technical teacher training institutions for its suitability and relevance in meeting course objectives and with a view to improving the content and relevance;

(ii) design appropriate questionnaires and assist in monitoring progress and identification of problems encountered in implementation of the curriculum for engineering electives of ISSC through visits to schools and TTTC;

(iii) assist in the evaluation of the curricula for elective of ISSC and help in the preparation of criteria, manual of operations, guidebooks and instructions for the planning, implementation, monitoring and evaluation of curricular implementation and related activities and carry out a final evaluation with the first batch of students graduating under the new curricula, in collaboration with TAVED and EPRD;

(iv) review the hardware and software, including textbooks, pertinent to educational delivery and develop curricular materials for schools and teacher training institutions, conduct workshops on pertinent aspects of evaluating curriculum implementation and suggest suitable textbooks and teaching and training aids;

(v) prepare and conduct in-service technical teacher training programs, and prepare teachers' guides, and test questions for ISSC elective;

(vi) identify training needs of teachers and teachers' trainers to implement new curricula and identify the development needs of staff in schools, teacher training institutions, education offices and TAVED;

(vii) review current curricula and twinning arrangements between TTTC and selected universities and assist in the design, implementation and evaluation of degree level teacher training programs; and

(viii) ensure effective liaison between the schools, business and industry and post secondary education providers to ensure the effectiveness of teaching and learning in the preparation of students for work and/or further studies.

2. Preventive Maintenance/Repair and Computer Inventory Control Expert

Type: International Tenure: 9 months

Duties of the consultant will include:

(i) review and identify strengths and weaknesses of four ERCs;

(ii) suggest measures to improve operation of ERCs;

(iii) develop a computerized monitoring and reporting system for preventive maintenance of equipment in the technical and vocational schools, including computerized inventory control suitable for use in the workshops of the schools;

(iv) identify sources of spare parts for major categories of training equipment used in Project schools;

(v) formulate guidelines on systematic preventive maintenance and repair of equipment; and

(vi) design, develop and conduct appropriate seminars and workshops to ensure effective implementation of the system.

3. **Educational Research, Educational Management Information System and Benefit Monitoring and Evaluation**

Type: International (in collaboration with one local consultant)

Tenure: 4 months x 3 assignments

One local consultant and one international consultant will be based in TAVED and in close coordination with EPRD and IAB will assist TAVED, the Project Implementation Unit, and State Education Offices and Project school administrators in the refinement of an EMIS for secondary technical and vocational education. The system will take into account external and internal efficiency, including (a) BME data and indicators, and (b) conducting tracer and reverse tracer studies of secondary technical and vocational school graduates. The establishment of the EMIS will be supported by the provision, under the Project, of computers for all secondary technical and vocational schools as well as the EPRD. The EMIS will be complemented by specific educational records and studies. Specifically, the consultants will:

(i) review and adapt BME evaluation criteria and indicators developed under the Third Vocational Education Project and other projects;

(ii) review and advise on guidelines and measures to be developed concurrently by TAVED for collection of baseline information and data, and review and advise on the questionnaires currently used for tracer studies;

(iii) as a result of (i) and (ii) above, develop a basic EMIS for the monitoring and evaluation of the internal and external efficiency of secondary technical education based on a logical framework (input, process, output, outcome) to enable the achievement of the objectives of technical and vocational education generally and the Project specifically, to be monitored and evaluated;

(iv) develop guidelines and manuals for (a) the data gathering to be undertaken by individual schools using basic software applications, and (b) the tracer studies to be conducted by the project schools under the guidance of TAVED, EPRD and IAB;

(v) review the research programs for their relevance in meeting the informational needs of MOE for policy formulation, planning, curriculum evaluation, efficiency, and quality improvements, etc;

(vi) provide assistance to MOE staff in developing research instruments and materials and prepare reviews of relevant data at the start of the Project, at the midterm review and at Project completion; and

(vii) conduct appropriate training programs for TAVED and other staff of MOE as well as for staff in the network of Project schools who are responsible for gathering data and conducting surveys as part of the EMIS.

TENTATIVE PROCUREMENT ARRANGEMENTS

Appen
P

A. CIVIL WORKS

No.	State	Location	Cost Estimates ($ million)	Method of Procurement
		A. New STSs		
1.	Kelantan	Bachok	7.05	ICB
2.	Malacca	Jasin	7.05	ICB
3.	Penang	Seberang Prai	7.05	ICB
4.	Perak	Grik	7.05	ICB
5.	Selangor	Gombak	7.05	ICB
6.	Selangor	Kuala Selangor	7.05	ICB
7.	Terengganu	Dungun	7.05	ICB
8.	Sarawak	Sejingkat	11.30	ICB
		B. Upgrading SVSs (Peninsular Malaysia)		
1.	Johor	Batu Pahat	2.00	LCB
2.	Johor	Johor Bahru (Commerce School)	2.42	LCB
3.	Johor	Kota Tinggi	1.96	LCB
4.	Johor	Segamat	2.00	LCB
5.	Kedah	Kulim	1.99	LCB
6.	Kelantan	Kuala Krai	1.99	LCB
7.	Kelantan	Bunut Susu (Commerce School)	2.56	LCB
8.	Malacca	Melaka Tengah	2.00	LCB
9.	Neg. Sembilan	Port Dickson	1.60	LCB
10.	Pahang	Bentong	1.60	LCB
11.	Pahang	Kuala Lipis	2.00	LCB
12.	Pahang	Kuala Rompin	1.96	LCB
13.	Perak	Slim River	2.00	LCB
14.	Perlis	Arau	1.96	LCB
15.	Penang	Nibong Tebal	2.00	LCB
16.	Selangor	Sungai Buloh	1.96	LCB
17.	Terengganu	Besut	1.96	LCB
18.	Terengganu	Kemaman	2.00	LCB
		C. Upgrading SVSs (Sabah)		
1.	Labuan	Labuan	3.72	LCB
2.	Sabah	Keningau	2.06	LCB
3.	Sabah	Kudat	2.07	LCB
4.	Sabah	Lahad Datu	2.53	LCB
5.	Sabah	Likas	3.30	LCB
6.	Sabah	Sandakan	1.38	LCB
7.	Sabah	Tawau	1.98	LCB
		D. Upgrading SVSs (Sarawak)		
1.	Sarawak	Betong	1.75	LCB
2.	Sarawak	Bintulu	2.19	LCB
3.	Sarawak	Kuching	1.48	LCB
4.	Sarawak	Luar Bandar Kuching	1.74	LCB
5.	Sarawak	Miri	3.10	LCB
6.	Sarawak	Sibu	1.61	LCB
		E. Upgrading STSs		
1.	Kedah	Alor Setar	2.06	LCB
2.	Penang	Penang	1.82	LCB
3.	Perak	Ipoh	2.27	LCB
4.	K. Lumpur	Kuala Lumpur	2.30	LCB
5.	N. Sembilan	Seremban	2.23	LCB
6.	Malacca	Malacca	2.20	LCB
7.	Johor	Johor Bahru	1.97	LCB
8.	Pahang	Kuantan	2.09	LCB
9.	Terengganu	Kuala Terengganu	2.28	LCB
		F. Upgrading TTTC		
1.	Kuala Lumpur	Cheras	0.36	LCB
		T o t a l	146.87	

(Reference in text: page 19, para. 70)

B. EQUIPMENT

List No.	Equipment Specifications a/	Cost Estimates ($ million)
1.	Electrical/Electronics Engineering Electrical and electronics trainer kits, measuring devices, power meters and insulation and continuity testers, regulated power supply, and hand tools and basic workshop materials.	2.85
2.	Mechanical Engineering Portable arc welding machines, bench drill, bench grinder, basic hand tools, basic laboratory test sets, and other equipment and supplies.	1.90
3.	Civil Engineering Basic safety equipment, concrete testing apparatus, basic soil equipment, surveying equipment and plumbing installation equipment and supplies.	1.30
4.	Engineering Drawing Basic drawing studio equipment and computer aided design equipment.	1.20
5.	Computer Laboratory Standard instructional computer room equipment, peripherals and software related to the curriculum.	9.98
6.	Audio Visual Copy printer and duplicator, overhead projector, color video equipment, audio and slide projection equipment .	1.39
7.	Physics Laboratory Basic physics laboratory instruments and supplies.	1.48
8.	Chemistry Laboratory Basic equipment, laboratory apparatus and supplies.	1.48
9.	Library Materials Reference books, textbooks, science and technical journals and magazines.	1.59
10.	Administration, Canteen and Multipurpose Hall Office and essential communication equipment, kitchen equipment, cooking utensils, crockery, audio system.	1.98
11.	Sports Equipment Prescribed sports equipment for schools.	0.65
	Total	25.80

a/ The equipment will be grouped in packages linked to the schedule for the completion of the schools. Procurement will follow international competitive bidding, international shopping, local competitive bidding or other procedures as appropriate.

THE FRAMEWORK FOR BENEFIT MONITORING AND EVALUATION

1. The Ministry of Education (MOE) operates an educational management information system (EMIS), which is used to address the information needs for the management, monitoring and evaluation of the educational system. Within the framework of EMIS, the Technical and Vocational Education Division (TAVED), will cooperate with the Educational Planning and Research Unit (EPRD) in the formulation and initial implementation of a system for benefit monitoring and evaluation (BME) of technical and vocational education (TVE) at the upper secondary level.

2. The BME system will be coordinated by TAVED in consultation with the EPRD and will include systematic gathering at the school level of basic data on inputs to, the process of, and outputs of TVE. The basic data will be collected at each school in a standard computerized format that will be communicated at regular intervals to TAVED for consolidation and analysis. This will be complemented with tracer and other studies of salient aspects of the output and impact of TVE. Within the context of the Project, the BME system will be used to carry out studies on the schools and beneficiaries (i) at the commencement of Project implementation to establish baseline data; (ii) prior to the midterm review at the end of the third year of Project implementation to assess progress and identify problems; and (iii) at completion of the Project, to measure achievements in relation to targets set and to assess the socioeconomic impact of the Project. Once the Project is completed, the BME data will continue to be gathered and used as part of the EMIS of TVE.

3. The BME system will provide basic data on the internal and external efficiency of TVE and of its socioeconomic impact. The data will be entered on a uniform data base by each school, and will be coordinated and consolidated by TAVED in collaboration with EPRD. The data will be gathered under the following headings:

(i) internal efficiency of schools:

  (a) student flow rates: admission rate; enrollments; progression rates; dropout rate; repetition rate; and pass/fail rate;

  (b) efficiency indexes: average time to produce graduate; output-input ratio;

  (c) staff load: student-staff ratio; average class size; average teacher workload;

(ii) cost-effectiveness and unit costs: total cost; number of students; number of graduates; annual cost per student; cost per graduate; and breakdown of school costs by budget category (staff salaries, consumable materials, maintenance, and others);

(Reference in text: page 20, para. 77)

(iii) external efficiency: tracer studies, reverse tracer studies, surveys of graduates, and surveys of employers; and

(iv) social impact: the above data and studies should be broken down by gender, income group and geographical origin of the student, as appropriate, to facilitate the analysis of access to vocational and technical education and the social implications of education, including social and regional mobility.

4. The monitoring of the external efficiency of TVE will be based on tracer studies of samples of graduates and will cover such issues as (i) performance of graduates on higher technological programs; (ii) time taken by graduates not pursuing higher education to find employment; (iii) the nature of employment in relation to training and level of income derived; and (iv) employer's evaluation of the education provided.

5. The use of the indicators outlined above will provide MOE and TAVED with information for the monitoring and management of TVE, and for considering short, medium and long-term policies and actions required to improve the TVE system. In particular, the tracer studies will provide important information on the placement of graduates and of the system's ability to cater directly and indirectly (by serving as a basis for further education) to the needs of industry and the labor market.

PARTICIPATION OF WOMEN IN TVE AND HIGHER EDUCATION

The participation of women in TVE in Malaysia has increased steadily over the past two decades. In vocational education, it increased from 16.3 per cent in 1970 to 31.0 per cent in 1990, while in technical education it increased from 4.3 per cent to 35.5 per cent during the same period (Table 1).

Women's participation in institutions of higher learning also increased steadily, particularly in teachers' training colleges, polytechnics and universities (Table 2). This was accompanied by a substantial increase in the proportion of female teachers in STSs and SVSs in Malaysia, which increased from 18.4 to 46.0 per cent and 8.1 to 29.7 per cent respectively, from 1970 to 1990 (Table 3).

Table 1: Distribution of Students in Secondary Vocational and Technical Schools (Grades 10-11) 1970-1990
(Per cent)

Level of Schooling		1970	1980	1990
Vocational	Male	83.7	69.6	69.0
	Female	16.3	30.4	31.0
	Total	100.0	100.0	100.0
Technical	Male	95.7	72.9	64.5
	Female	4.3	27.1	35.5
	Total	100.0	100.0	100.0

Source: MOE

(Reference in text: page 21, para. 81)

Table 2: Enrollment by Gender and Type of Institution of Higher Learning
1980 and 1990
(Per cent)

Institution		1980	1990
Teachers' Training Colleges	Male	60.7	43.9
	Female	39.3	56.1
	Total	100.0	100.0
Other Colleges	Male	51.7	54.5
	Female	48.3	45.5
	Total	100.0	100.0
Polytechnics	Male	79.7	74.8
	Female	20.3	25.5
	Total	100.0	100.0
Universities	Male	64.5	54.3
	Female	35.5	45.7
	Total	100.0	100.0
Total	Male	61.4	54.3
	Female	38.6	45.7
	Total	100.0	100.0

Source: Department of Statistics

Table 3: Distribution of Teachers in Secondary Technical and Vocational Schools
1970 - 1990
(Per cent)

Year	STS		SVS	
	Male	Female	Male	Female
1970	81.6	18.4	91.9	8.1
1975	68.6	31.4	78.3	21.7
1987	58.9	41.4	77.2	22.8
1990	54.0	46.0	70.3	29.7

Source: MOE