

ASIAN DEVELOPMENT BANK

RES: THA XXX

**REEVALUATION
OF THE
SECOND VOCATIONAL EDUCATION PROJECT
(Loan No. 441-THA[SF])
IN
THAILAND**

December 1998

CURRENCY EQUIVALENTS

Currency Unit — Baht (B)

	At Appraisal (Sept. 1979)	At Completion (February 1987)	At Postevaluation (January 1988)	At Reevaluation (August 1998)
\$1.00 =	B20.00	B25.80	B25.30	B40.00
B1.00 =	\$0.0500	\$0.0388	\$0.0395	\$0.0250

ABBREVIATIONS

DOVE	-	Department of Vocational Education
ITVE	-	Institute of Technology and Vocational Education
OJT	-	On-the-Job Training
PPAR	-	Project Performance Audit Report
RIT	-	Rajamangala Institute of Technology
SSPL	-	Social Sector Program Loan
TA	-	Technical Assistance

NOTES

- (i) The fiscal year (FY) of the Government ends on 30 September.
- (ii) The school year (SY) at the upper secondary level in Thailand runs from June to March. For example, SY1998 began in June 1997 and ended in March 1998.
- (iii) In this Report, "\$" refers to US dollars.

EXECUTIVE SUMMARY

The Project was designed as a follow-up to the Vocational Education Project,¹ the Bank's first project in support of technical education and vocational training in Thailand. The objective of the Project was to improve the quality of vocational education by upgrading six provincial technical institutes, developing new courses relevant to regional industrial needs, and providing additional specialized equipment (in civil, electrical, electronics, machine tool, mechanical power, and metal technologies) to the four regional campuses supported under the first project. The Project was envisaged to benefit around 9,000 diploma-level students, as well as around 6,500 certificate-level students. It was also envisaged to upgrade the quality of teachers by improving technical teacher training facilities. Project inputs comprised civil works, equipment, consulting services, and fellowships.

The Project was appraised in September 1979, approved in December 1979, and completed in December 1986 with a delay of 3.6 years. The actual cost at Project completion was \$23.82 million, 12 percent more than estimated at appraisal. The loan amount (\$15 million) was completely disbursed. The Project Completion Report was circulated in July 1987; it concluded that, while a preliminary assessment confirmed that a positive start had been made, an evaluation of the long-term impact of the Project would be needed. The Project Performance Audit Report, which was circulated in April 1988, rated the Project as generally successful.

The Project was reevaluated 11.5 years after its completion in order to reassess the Project's operational impact and sustainability. The reevaluation is considered useful in view of the concerns over the social impact of the current economic and financial crisis in Thailand, and makes recommendations on how to increase efficiency and effectiveness in matching labor supply with demand. The reevaluation provides an indication of the relevance and impact of technical education on the country's overall development. An accompanying tracer study investigated the employment, careers, and socioeconomic status of a sample of Project-assisted graduates; evaluated the educational development of Project-assisted institutions; and examined employers' skill requirements. A control group comprising ten similar technical colleges not assisted by the Project was used.

Findings of the tracer study show that graduates in general place high value on their vocational training and technical education. There is a high correlation between their training and employment/careers, and between employment/careers and socioeconomic improvement. Graduates of Project-assisted institutes also reported high correlation between training and socioeconomic improvement. However, graduates from non-Project-assisted institutes showed no significant correlation. Employers rated work habits, attitudes, and ethics as significantly more important than domain knowledge and technical skills. Project-assisted teachers and administrators rated educational development in Project-assisted institutions higher overall compared with non-Project schools. They rated teaching and learning management and quality of students and graduates significantly higher in Project schools, specifically in the areas of curriculum

¹ Loan No. 156-THA(SF) and Loan No. 157-THA: *Vocational Education Project*, for \$3.1 million, and \$3.3 million respectively, approved on 4 December 1973 and closed in 1980.

and instruction and teacher development. However, teachers and school administrators of non-Project schools rated the area of industry linkages significantly higher in importance than did the Project-assisted institutes' teachers and administrators.

While the objective of the Project was to improve quality more than to increase capacity, enrollment in Project schools doubled since 1980 to 39,700 students in SY1999. The increase reflects the even more dramatic increase in the number of applicants to Project schools: more than three applicants for every admission to certificate and diploma courses. The single biggest departure from the Project objectives was the Government's policy to phase out certificate programs from the Rajamangala Institute of Technology (RIT) technical campuses, and to introduce degree programs. The Project provided assistance for the improvement of diploma and certificate programs only. However, degree program enrollment now comprises 15 percent of total RIT enrollment. Certificate-level enrollment dropped from 37 percent in SY1987 to 22 percent of total enrollment in SY1998. Responsibility for industrial certificate and diploma programs is now with the Department of Vocational Education of the Ministry of Education.

The numbers of teachers with bachelor's and master's degrees have also been increasing over the years. For the same period, the number of teachers with bachelor's degrees increased by 17 percent, and teachers holding master's degrees increased more than twofold. The teacher training programs in the four regional campuses have now been fully institutionalized as postdiploma and degree programs with more than five times the envisaged target during appraisal.

The study confirms earlier findings that Thailand's policies and strategies in technical human resource development are progressing in a direction consonant with national goals as evidenced by the improvement in the quality of and access to technical/vocational education and the achievement of a high level of external efficiency. The dramatic increase in the demand for technicians and in enrollments in the technical institutes over the last ten years gives an indication of the relevance and sustainability of the system that the Project strengthened. On the other hand, the economic crisis that is now forcing a reevaluation of policies and strategies in the region shows the need for a more flexible and up-to-date system that would enable quick adjustments in its technical personnel supply to meet rapidly changing demands. Due to cost-cutting measures, Thai industries are seeking workers with multiple, broad-based skills. There is a need for better selection and improvement of relevant course offerings in order to bridge the gap between technical personnel demand and supply.

The findings of this study show that the Project contributed not only to Thailand's industrial development in the past two decades, but also to expanding its technical and vocational education system. Data show that the quality of technical education has improved, especially with respect to internal and external efficiencies. While graduates readily found jobs in the past, the economic recession has adversely affected industry over the last two years, and many interviewees report difficulty in finding jobs. Government officials agree that initial awareness of and drive for the improvement of technical education and vocational training were largely provided by the Project. Project objectives and targets set out at the time of appraisal have been achieved. The Project assisted Government in providing equitable access to quality

technical education for more balanced regional growth within the country. Sustainability is assured in light of the institutional and policy framework in which technical and vocational education is now viewed and implemented. The Project continued to perform well after postevaluation and achieved the long-term impact of promoting development of technical education. The benefits have been sustained. The reevaluation confirms the conclusion of the postevaluation that the Project was generally successful. The Project's success in upgrading the quality of technical schools in Thailand highlights the importance of providing assistance and policy guidance over the long term in the education sector.

I. BACKGROUND

A. Technical and Vocational Education Subsector

1. Upper secondary schooling in Thailand (grades 10-12) is provided in two streams: (i) general or academic secondary schooling under the responsibility of the Department of General Education; and (ii) technical/vocational training, which is delivered through both public and private technical institutes and colleges. Formal technical/vocational education is provided at three levels: (i) certificate, a three-year program at the upper secondary level to develop broad-based technical skills to prepare workers or craftspeople for industry; (ii) diploma (postsecondary), a two-year program after the certificate to prepare technicians; and (iii) degree, a further two- to three-year engineering program. Of Thailand's upper secondary student enrollment, 45 percent are enrolled in the technical/vocational stream, 54 percent are enrolled in the general stream, and the rest in schools under other ministries.

2. The Ministry of Education provides public formal technical/vocational education at the certificate, diploma, and degree levels through the Department of Vocational Education (DOVE), Rajamangala Institute of Technology (RIT), Rajabhat institutes (former teachers training colleges), and the Department of Nonformal Education. DOVE and RIT have about half of all technical/vocational education enrollment (more than 400,000 students). The King Mongkut's Institute of Technology, under the Ministry of University Affairs, offers certificate and diploma courses (around 2,500 enrollment in SY1998) in industrial technology, with the bulk of its students in degree programs (around 17,200). Short-course vocational training is also provided by some ministries, notably the Ministry of Labor and Social Welfare (around 85,500 trainees). The Office of the Private Education Commission supervises private institutions (around 45 percent of the total technical/vocational education enrollment).

3. In 1975, the Government established the Institute of Technology and Vocational Education (ITVE) to be responsible for diploma-level courses, while DOVE was to retain responsibility over certificate-level courses. During appraisal of the Project in 1979, ITVE was responsible for 10 technician institutes; 10 agricultural institutes; and 8 home economics, commercial, and handicrafts institutes at various levels up to the first degree, as well as teacher training. In 1988, ITVE was transformed into RIT, and as such now has 35 campuses—12 in Bangkok and 23 in the provinces—offering seven major study programs: industrial technology and engineering, business administration and commerce, fine arts, home economics, agricultural engineering and technology, science, and technical education at the certificate, diploma, and degree levels. There are 12 faculties at the degree level. Government policy is that RIT will offer diploma and degree programs only. Currently, the total enrollment is 80,000 students in 237 fields of studies at all three levels. There are 25,000 graduates annually of whom 6,000 are with bachelor's degrees. RIT enrolls 36,000 new students each academic year, employs 9,393 personnel, and is provided a budget of about B3,200 million from the Government annually.

4. The Bank was among the first to recognize the need to assist formal

technical/vocational education in Thailand,¹ but the subsector has received external assistance

¹ Loan No. 156-THA(SF) and Loan No. 157-THA: *Vocational Education Project*, for \$3.1 million, and \$3.3 million respectively, approved on 4 December 1973 and closed in 1980.

from a number of funding and aid agencies over the last 25 years.¹ After the Project, no other assistance to technical/vocational education was provided by the Bank until the Skills Development Project² in 1996. In March 1998, the Bank provided the Social Sector Program Loan (SSPL)³ to assist the Government in addressing the social consequences of the current financial and economic crisis, particularly for the poor, laid-off workers, unemployed, and other vulnerable groups. In the late 1980s, the Overseas Economic Cooperation Fund (OECF) of Japan provided assistance to DOVE to improve technical colleges and plans a second phase for the improvement of industrial training programs. In 1996, the World Bank approved a loan of \$31.6 million equivalent to finance part of the \$52.7 million needed to upgrade the industrial training programs on 11 RIT campuses (8 of these 11 campuses were assisted in the Project). Assistance to polytechnics under DOVE is also being planned for financing under a World Bank project.

B. The Project

5. The Project was appraised in September 1979 at a total cost estimated at \$21.3 million. The loan was approved on 14 December 1979 in the amount of \$15 million from the Bank's Special Funds resources to finance the foreign exchange cost. The loan became effective on 30 April 1980 and the Project was implemented over a period of 6.3 years. The executing agency responsible for Project implementation was ITVE (now RIT). The expected closing date of 31 December 1984 was extended once and the loan was closed on 15 April 1987, a delay of 2.4 years. At loan closing, the total amount of \$15 million had been disbursed.⁴ The actual cost at Project completion was \$23.82 million, 12 percent more than estimated at appraisal (Appendix 1).

6. The objective of the Project was to improve the quality of vocational education by upgrading six provincial RIT campuses⁵ and by developing new courses relevant to regional industrial needs and providing additional specialized equipment (in civil, electrical, electronics, machine tool, mechanical power, and metal technologies) to the four regional campuses⁶ supported under the first project (para. 4). The Project was envisaged to benefit around 9,000 diploma-level students, as well as around 6,500 certificate-level students annually. It was also envisaged that the Project would upgrade the qualifications of around 400 teachers and instructors annually by improving technical teacher training facilities. Project inputs comprised civil works, equipment, consulting services, and fellowships. Appendix 2 shows a comparison between loan allocations to these components and actual disbursements, and each component's share of the total allocations.

¹ The main contributors have been the World Bank, the Overseas Economic Cooperation Fund of Japan, the Bank, the United Nations Development Programme, and the International Labor Organization. Among the bilateral aid agencies, the Government of Japan through the Japan International Cooperation Agency has been the single biggest source. Other aid providers include Australia, Austria, Belgium, Canada, and Germany.

² Loan No. 1494-THA: *Skills Development Project*, for \$80 million, approved on 28 November 1996.

³ Loan No. 1611-THA: *Social Sector Program*, for \$500 million, approved on 12 March 1998. It became effective on 17 March 1998.

⁴ The Government provided an additional \$2.5 million to finance an increase in Project cost due to changes in currency exchange rates and higher costs of equipment.

⁵ Located in Tak, Khon Kaen, Nonthaburi, Bangsorn, Uthenthawai, and Thewet.

⁶ Bangkok Technical Institute, the Northern Technical Institute at Chiang Mai, the Northeastern Technical Institute at Khorat, and the Southern Technical Institute at Songkhla.

C. Major Findings of the Project Completion Report

7. The Project contributed to the development of educational infrastructure, including provision of new technician courses, additional equipment for existing courses; curricula improvement and formulation; and upgrading the quality of teachers and school administrators. The external efficiency of the Project schools was reportedly high. As a result of the Project, a closer working relationship was developed between ITVE and industry. By 1987, when the Project Completion Review Mission was fielded, enrollment in diploma (technician) courses had increased by 80 percent to 16,300, and in certificate courses by 60 percent to more than 10,300. The Project had contributed to providing employable skills to Thailand's youth and to redressing an imbalance in the distribution of educational opportunities throughout the country. The Project Completion Report was circulated in July 1987 and concludes that "a preliminary assessment confirms that a positive start had been made," and that an "evaluation of the long-term impacts of the Project on manpower development will have to be deferred until more generations of graduates have been produced by Project institutes."

D. Postevaluation Findings

8. A Postevaluation Mission was fielded in January 1988, and the Project Performance Audit Report (PPAR) was circulated in April 1988. Findings show that the Project improved curricula and provided new courses in consonance with emerging industrial needs in the various regions. It established centers for upgrading teaching skills. A review of internal efficiency indicators—e.g., staff-student ratio, class size, teaching loads, staff capability and qualifications, instructional methodology, graduation and dropout rates, utilization of Project facilities and the level of recurrent funding—showed a reasonably high level of internal efficiency. An assessment of external efficiency was constrained by lack of data. Nevertheless, based on the available project benefit monitoring and evaluation records of ITVE (RIT) and the postevaluation mission's survey, prospects of employment for ITVE (RIT) graduates were found to be good. The PPAR concluded that "the Project was generally successful in achieving its immediate objectives and is well on its way to achieving its long-term objectives."

9. The PPAR recommended that the Government execute a number of follow-up actions: (i) coordinate technical education planning, reduce duplication in activities in the subsector, and ensure balanced supply and demand; (ii) develop institutional linkages with industries in line with needs and priorities; (iii) improve the efficacy of the monitoring and evaluation system by institutionalizing procedures and strengthening staff capabilities; (iv) establish a central monitoring and evaluation unit; and (v) undertake a comprehensive review of courses not in demand. While initial measures have been taken to address these recommendations, the underlying issues remain. Chronic systemic constraints and recent economic developments have highlighted the need for the Government to take concrete steps to address these issues (para. 54). The PPAR also recommended that the Bank provide advisory technical assistance (TA) to support (iii) above. The Bank provided two TAs for this purpose.¹

¹ TA No. 864: *Government Manpower Planning and Information System*, for \$350,000, approved on 30 March

E. Context for Change

10. Thailand's industrialization began accelerating in the mid-1980s, supported by its comparative advantage in low-cost labor in labor-intensive industries. Thailand has increased the proportion of manufactured goods in total exports, from 32 percent in 1980 to 80 percent in 1995, with a consequent decline in the share of agricultural exports. However, while exports of medium- to high-technology products have grown, Thailand's industrial activity has been more the assembly type rather than the high value-added domestic production that requires considerable skill.¹ In addition, relatively lower labor productivity and higher wage costs compared with other countries in the region, as well as the appreciation of the baht and slowdown in the demand in export markets, resulted in severe erosion of the competitiveness of Thai exports.

11. International competition and patterns of comparative advantage have changed the demand for skills and made the adoption of new manufacturing processes and technologies imperative. To be able to compete internationally, production of higher value-added goods requires workers with higher levels of technical skill as well as those with a broader base of skills. Thailand's lack of qualified technical personnel and its weak human resource base is a major constraint in competing with newly industrialized economies. The low level of skills of the labor force and weaknesses in the education system have made it difficult for Thailand to adopt new technologies and to increase productivity in both traditional and emerging industries. Vocational training has not been able to keep pace with the demands of high-technology industries.

F. Rationale and Objectives of Reevaluation

12. Reevaluation of the Project was considered useful in view of concerns about the social impact of the present economic and financial crisis in Thailand. To help Thailand's education system respond to industry demand for qualified technical personnel as well as to the requirements of emerging technologies, and to help it adjust the preparation and retraining of technical personnel to the new economic environment, the reevaluation (i) assessed the benefits and impacts of the Project with a view to assessing its long-term sustainability; (ii) evaluated the performance of Project-assisted institutions in addressing industry needs; and (iii) drew lessons from the past in the context of the new economic exigencies. The reevaluation was also intended to make recommendations on how to increase efficiency and effectiveness in matching labor demand and supply. A Reevaluation Mission was fielded from 27 July to 11 August 1998 and discussed its findings with Government officials. The Mission coordinated its work with the Bank's operations departments in relation to providing inputs for operational strategy and assistance plans, especially as they affect prioritization of education in general and technical education and vocational training in particular. The reevaluation was undertaken 11.5 years after Project completion, and 10.5 years after PPAR preparation. Copies of the draft report were provided to the Borrower, executing agency, other Government agencies, and Bank staff concerned for review and comments.

1987, with a supplement of \$20,000 approved on 11 May 1988; and TA No. 1285: *Government Manpower Planning and Information System II*, for \$600,000, approved on 29 March 1990.

¹ Asian Development Bank. 1998. *Asian Development Outlook, 1998*. Manila, Philippines, pages 108-109, 208.

Comments received have been taken into consideration in finalizing the report.

13. A tracer study was carried out from April to August 1998,¹ focusing on two groups of respondents: (i) students, instructors, school administrators, and graduates, measuring the success of the technical institutes in preparing students for employment; and (ii) employers in small, medium, and large industrial companies/firms that require and employ graduates from technical institutes. The study investigated the employment, careers, and socioeconomic status of graduates from Project-assisted institutes; evaluated the educational development of Project-assisted institutions; and examined employers' skill requirements. Because of the relatively small sample sizes used, the study's findings and conclusions were cross-checked for consistency and reasonableness with the results of school visits, interviews and discussions, and with those of the workshop conducted at the end of the tracer study. The tracer study's methodology, findings, qualitative analyses, and recommendations are summarized in Appendix 3.

II. REEVALUATION FINDINGS

A. Effectiveness of Project Design and Implementation

14. The Project was designed as a follow-up to the first vocational education project,² which provided assistance to the four regional technician training campuses under the supervision then of ITVE. At the time, there were six other provincial technical institutes under the responsibility of ITVE that were not assisted under the first project. Although the Government provided funds for their development, the quality of educational programs, facilities, and teachers was in general substantially lower than at the four campuses assisted under the first project. The Project aimed to redress this imbalance.

15. In response to the Government's request to finance a follow-up project, a detailed project proposal was prepared in June 1979. The Project was in support of the Government's Fourth National Economic and Social Development Plan (1977-1981). The Plan strategies aimed broadly to improve access to technical/vocational education, increase employment opportunities, and develop balanced growth throughout the country. The Government considered the upgrading of regional technical institutes one of the means by which these objectives could be achieved. The Project was designed to provide better training facilities for technicians, develop courses more relevant to industrial needs, provide more equitable opportunities for training throughout the country, and improve the quality and increase the number of teachers.

16. One of the reasons for the low level of education of Thailand's labor force was the

¹ Postevaluation Office. 1998. *Tracer Study for the Second Vocational Education Project*. Asian Development Bank, Manila.

² Also known in Thailand as the Loan for the Improvement of Technical Education (LITE I). Both the Project Completion Report (October 1981) and the PPAR (PE-80, December 1982) rated it as successful. LITE I was the Bank's third loan in the education sector (the first two were for Singapore and Republic of Korea), and the first loan in the education sector in Thailand. Accordingly, the Project was known locally as LITE II.

poor physical infrastructure of many schools. Thus, the Project was necessarily hardware oriented, with about 89 percent of actual Project cost expended on construction, instructional equipment, furniture, and training materials. Physical facilities for the six basic courses were substantially improved, supplemented by workshops, laboratories, and teaching equipment for the 13 new courses. The academic capability of the supervising staff and teachers of the RIT technical campuses was strengthened through external training. As well, the institutional capacity of RIT in terms of organization and management of the technical campuses and the varied programs offered was considerably improved. This could have been further enhanced had the consulting services component been implemented as envisaged. Delays in the implementation of the sector survey (by nine months) and the recruitment of consultants (by around three years), had adverse effect on the logical sequencing of the implementation of the various Project components.

17. Policy dialogue or reform considerations were not specifically included in the design of the Project (as was the practice at the time). Awareness of issues and the formulation of measures toward reform could have been provided in areas indicated in the PPAR. Nevertheless, awareness of the importance of technical/vocational education brought about by the Project prompted some initial steps toward lasting reforms. Examples are the delineation of the roles of RIT and DOVE, establishment of new course options that are more in demand in industry and that supplement the six basic technician courses, and more equity in the distribution of educational opportunities to provincial centers.

B. Operational Performance

18. Progress in the development of the technical education and vocational training system, as indicated by the progress of Project schools and teacher training institutions as well as that of the DOVE schools surveyed, has been remarkable since the time of the Project's postevaluation in 1988. During visits of the Reevaluation Mission to the Project and control group institutions, a high level of student interest and diligence was observed. Teacher and staff morale was equally high. While the Bank was among the first to assist in the subsector, the Government and other aid providers, notably the World Bank, Austria, Germany, and the Japan International Cooperation Agency, among others, have made considerable contributions to the system over the last ten years. Various aspects of this development are discussed in the following paragraphs.

1. Educational Development

a. Enrollment

19. Total enrollment in Project schools increased 2.5 times to 39,700 students in SY1999 compared with the 15,500 envisaged at appraisal¹ (Appendix 4). At Project completion in

¹ During appraisal, only diploma and certificate programs were planned. Degree programs were not envisaged.

1987, the total enrollment was 27,600 (certificate and diploma enrollment was 70 percent more than the target). In SY1999, certificate and diploma enrollment increased to 30,760, almost twice the envisaged number. While enrollment levels have been kept at full capacity, certificate level enrollments are gradually being reduced (down by 15 percent between SY1997 and SY1998) on RIT campuses in keeping with the policy to offer only diploma, teacher training (postdiploma), and first degree programs within RIT. Diploma course enrollments have increased by 34 percent, and postdiploma and degree program enrollments have grown ninefold between SY1987 and SY1998.

20. The increase reflects the even more dramatic growth in the number of applicants to Project schools (Appendix 5). In 1987 at Project completion, there were 3.6 applicants for certificate and diploma courses for every admission. In 1998, the ratio is slightly lower at 3.2 applicants for every place mainly because of the phasing out of certificate courses. On the other hand, applications to degree programs increased 4.2 times. The economic contraction since July 1997 has substantially affected the financial capacity of the populace, especially those in urban areas. For SY1999, applications for admission to all programs at three RIT campuses in the Bangkok Metropolitan Administration area fell by 64 percent to 4,826 applications per school, compared with the average of 7,546 applications per school in 1987. By contrast, applications at five provincial schools (Khorat Technical Campus, Northeastern; Songkhla Technical Campus, Southern; Chiang Mai Technical Campus, Northern; Tak Technical Campus; and Khon Kaen Technical Campus) increased 2.4 times between 1987 and 1998.

21. The single biggest departure from the Project objectives was the Government's policy to phase out certificate programs from the technical campuses in line with the mandate of RIT,¹ and to introduce degree programs. The Project provided assistance for the improvement of diploma and certificate programs only. However, degree program enrollment now comprises 15 percent of total RIT enrollment. Certificate-level enrollment dropped to 22 percent of total enrollment in SY1999 from 37 percent in SY1988 (Table 1). RIT enrollment comprises just 9 percent of total national enrollment in technical/vocational education at the certificate, diploma, and degree levels, while DOVE has 41 percent and the private sector has 45 percent (mostly in commerce and business courses). While women in all RIT programs comprise about 40 percent of total enrollment, women in the ten Project schools—where the courses are predominantly industrial skills (Appendix 6)—comprise only 11 percent. Conversely, in the commerce and business administration courses, women account for 79 percent of enrollment.

Table 1: Comparison of Enrollments in Various Programs in Project Schools

Program	1980		1987		1998		1987-1998 Increase (Decrease)
	Number	Percent	Number	Percent	Number	Percent	
Certificate	8,658	42.6	10,346	37.4	8,840	22.3	(14.56%)
Diploma	11,534	56.8	16,319	59.1	21,921	55.2	34.33%
Postdiploma	114	0.6	397	1.4	2,990	7.5	750%
Degree	0	—	569	2.1	5,960	15.0	1000%
Total	20,306	100.0	27,631	100.0	39,711	100.0	43.72%

¹ Certificate programs were to be the responsibility of DOVE.

— = magnitude zero.

b. Teacher Profile

22. In SY1999, there were 2,073 teachers working in Project schools compared with about 4,000 teachers in all of RIT and more than 25,000 teachers in the public vocational education system. While the enrollment in Project schools increased by 44 percent between SY1988 and SY1999, the numbers of teachers increased by only 10 percent. The result was increased student-teacher ratio from 15:1 in SY1988 to 20:1 today, as well as a greater teaching load of up to 25 hours per week per teacher. Up to 30 percent of all teachers teach 20-30 hours per week in the second shift (twilight session) in order to augment incomes (additional B10,000-12,000 per month). The number of teachers with a bachelor's or master's degree has also been increasing over the years. Between SY1988 and SY1999, the number of teachers with a bachelor's degree increased by 17 percent, and the number of teachers holding a master's degree more than doubled (Appendix 7). In comparison, in DOVE institutions comprising the control group, 11 percent of teachers had a master's degree and 83 percent had a bachelor's degree (Table 2). Teachers with a bachelor's degree comprise 65 percent of all teachers in Project schools in SY1999 compared with 61 percent in SY1988. The trend at RIT will be toward an increase in teachers with a doctorate, master's or bachelor's degree in view of its phasing out of certificate programs and increasing degree programs. Teachers are predominantly men (66 percent, Appendix 8), with 66 percent having at least 11 years of work experience (Table 3).

Table 2: Teacher Qualifications
(%)

Highest Degree Attained	Project Schools			Control Group
	1980	1987	1998	1998
Doctorate	—	0.3	0.8	—
Master's	6.8	12.2	22.7	11.1
Bachelor's	50.1	60.9	65.0	83.4
Below Bachelor's	43.1	26.6	11.5	5.5
Total No. of Teachers	1,414	1,888	2,073	(n=225)^a

^a n = absolute number of teachers.

Source: Postevaluation Office. 1998. *Tracer Study for the Second Vocational Education Project*. Asian Development Bank, Manila.

Table 3: Teachers' Work Experience

Work Experience	Project Schools		Control Group	
	Number	Percent	Number	Percent
1-5 years	45	21.8	53	22.6
6-10 years	24	11.7	21	8.9
11-15 years	63	30.6	98	41.7
Over 15 years	73	35.4	60	25.5

		15		
Missing	1	0.5	3	1.3
Total	(n = 206)^a	100.0	(n = 235)^a	100.0

^a n = absolute number of teachers.

Source: Postevaluation Office. 1998. *Tracer Study for the Second Vocational Education Project*. Asian Development Bank, Manila.

c. Internal Efficiency

23. While there has been a 60 percent increase in the number of graduates (Appendix 9) and a 96 percent increase in enrollment in Project schools since the Project started in 1980, the academic productivity rate (ratio of graduates to total enrollment in any given year) declined by an average of 0.4 percentage point per year between SY1981 and SY1999 (Appendix 10). This decline could be indicative of lower aptitude of students, higher drop out and retention rates, and/or more stringent academic passing criteria. School profiles generated by the tracer study show that drop out rates vary from 2 to 5 percent per year (Bangkok Tech, Songkhla, Khon Kaen) to 10-14 percent (Khorat, Tak). Students dropped out mainly because of low aptitude, financial constraints, poor work attitude, language difficulties, and family responsibilities. The mix of graduates in 1998 reflects the policy of phasing out certificate programs in favor of degree programs in RIT (para. 21). Table 4 shows the halving of certificate program graduates and the increasing share of degree program graduates relative to the total number of graduates. There is also a substantial increase in postdiploma teacher graduates, while the share of diploma program graduates is constant at about 62 percent.

Table 4: Graduate Mix in Project Schools

	1980		1987		1998	
	Number	Percent	Number	Percent	Number	Percent
Certificate	3,130	37	3,423	32	2,454	18
Diploma	5,296	62	6,615	61	8,623	63
Postdiploma	83	1	199	2	541	4
Degree	0	0	460	5	2,044	15
Total	8,509	100	10,967	100	13,662	100

Source: Postevaluation Office. 1998. *Tracer Study for the Second Vocational Education Project*. Asian Development Bank, Manila.

d. Instructional Methodology

24. Instructional methods remain conventional, consisting of a combination of classroom lectures (60 percent), demonstrations, workshop and laboratory sessions (40 percent), and on-the-job training (OJT) in industry (10 weeks per course). Production of simple basic machine tools, e.g., drill presses, grinders, lathes, is done by students as projects supervised by workshop instructors. Different parts are contracted out to various technical campuses. The final assembly is done at Khon Kaen Technical Campus, and the machines are sold to other schools. Some equipment provided under the Project, as well as in the first project, were observed to be still in use, although outdated. The use of overhead projectors, computers, models, and other audio-visual equipment is frequent and widespread. Basic computer operation is now offered in all schools. Computer numerically controlled machine tools (CNCs) are standard equipment in the

machine and production shops.

e. Teacher Training

25. The Project provided inputs to establish regional facilities in Chiang Mai (northern), Khorat (northeastern), and Songkhla (southern) for the upgrading of teacher qualifications. In 1987 at the completion of the Project, these three regional centers and the Bangkok Technical Campus were offering postdiploma programs in teacher training with a total enrollment of 397 teacher trainees (three short of the 400 per year target). Additionally, Thewes Technical Campus in Bangkok offered degree programs. Currently, the three regional campuses have more than 2,000 students enrolled in postdiploma programs—more than adequate to supply the needs of all technical campuses. Tak and Nonthaburi (Bangkok) also offer postdiploma programs (Appendix 4). Measures have been taken by the Government to address limitations on the utilization of these teacher training facilities as observed in the PPAR.

2. Curriculum Development

26. Curricula for the 13 new courses¹ were developed by academic consultants (specialist technical services) under the Project. While the ITVE system was geared mainly to providing basic skills in the six standard engineering programs, technological advancements and the demand for specific technical skills by industry at the time made it necessary to diversify. A sector survey was designed to be implemented early in the Project to examine these new options and regional locations, proposed initially in the Bangkok Metropolitan Administration area, northern, northeastern, and southern regions, as well as to study the demand for such specialized personnel and to make recommendations on the scale of enrollment at the various campuses. Increased specialization required more advanced and sophisticated equipment and more specialized instructors. The PPAR noted the poor performance of courses in construction management, heavy equipment, and surveying, and the growing unemployment among some categories of vocational graduates. The school profiles generated in the tracer study show that enrollment in nine of the new courses (exceptions are highway/transportation, textile, printing, and teacher training) have dropped substantially over the last ten years in relation to enrollment in the six basic engineering programs. As a result of the current economic contraction and the need for industry to become more efficient, the demand for training programs in multiple skills is growing. This needs to be linked to a competency-based training system where there is flexibility in the entry and exit in the training programs taking into consideration the needs of industry.

27. Graduates working in industry who were interviewed during the tracer study cited the importance and the need for more emphasis on computer training, English, accounting, and management in school, and not in any specific trade skill. Employers, by contrast, cited the need for skills training at intermediate levels, rather than at too specific or too general levels. These observations point to a need for high-quality basic knowledge and skills training in school, leaving specialized technical training to industry or as part of OJT. Teachers placed more importance on

¹ Metallurgy, construction management, highway engineering, printing, photography, industrial chemistry, textile designing and finishing, mining, surveying, heavy equipment, farm mechanics, marine technology, and teacher training.

attitude formation and would like to see their students develop in the areas of creative thinking, honesty, responsibility, punctuality, and discipline. The teachers themselves would like to be more developed in the areas of work ethics of the teaching profession, industry experience, and didactics for vocational training. Students had other priorities, putting the school environment, e.g., more space for recreation, better facilities, clean restrooms, availability of drinking water, and a safe (drug- and crime-free) school community, before the teaching and learning (better quality teaching, library service, and vocational guidance).

3. External Efficiency

28. The findings of the tracer study show that the majority of graduates of Project-assisted institutions are employed by either private companies (36 percent) or by Government (35 percent, mainly technical education teachers). State-owned enterprises employ 19 percent, and around 6 percent of graduates are self-employed. Few engage in entrepreneurial work. This is to be expected, as graduates are largely from low-income families and simply do not have the financial resources to start their own businesses. The majority of graduates have bachelor's degrees, which explains the high level of employment as technical education teachers. Diploma graduates earned between B6,000-10,000 per month, while graduates with bachelor's degrees earned slightly more, B8,000-12,000 per month, a significant contribution to the family income. Graduates report general satisfaction with their work conditions, salaries, and other benefits. It was found that most of the interviewees got jobs according to their lines of studies. All were moderately satisfied with their career and regarded their diploma education in trade and industry as the fundamental background for their present work, even those that had subsequently earned bachelor's degrees. Most of them did not think about changing jobs. The majority were not interested in self-employment.

29. The findings of the tracer study, combined with the reevaluation mission's field investigations, confirmed a high employment rate for graduates of Project-assisted schools. The findings show that graduates are in high demand, easily found jobs (within 1-6 days), and are sufficiently qualified for immediate employment (mostly needed 1-3 months for adjustment, especially those in the teaching profession). There is a continuing demand for RIT graduates to fill mid-level positions. As well, there is a demand for skilled workers and technicians in jobs abroad, mainly in neighboring countries. A sampling of small, medium, and large industrial firms confirmed the high regard of employers for the technical expertise of the graduates. The tracer study shows that the rapid growth that characterized the economy before the financial crisis in 1997 created a shortage of skilled workers, technicians, and engineers in the manufacturing sector, agro-industry, and management. However, while employment prospects in the past were highly favorable for technical personnel, unemployment, especially in industry, will be a major problem for the near-term future. The interviewees perceived that finding jobs seemed to have become more difficult, perhaps due to the economic recession.

4. Employers

30. Employers rated skill requirements, current technologies, and planning for future

trends in the use of technology at a high level of importance. Employee skill requirements were categorized in three groups: domain knowledge, technical skills, and work habits and attitudes. Employers rated the importance of work habits and attitudes as significantly higher than domain knowledge and technical skills. Work habits and attitudes include work ethics and habits, discipline, and interpersonal skills with co-workers. Employers also preferred those who desired further learning and self-improvement, and those possessing problem-solving skills. They pointed out that, while domain knowledge and technical skills could be supplemented and improved in the workplace, work attitudes were a necessary foundation that should be inculcated in the school. This preference among employers is probably a reaction to the country's widespread difficulties caused by lack of discipline, loyalty, poor work ethics, and basic skills of employees.

31. Currently available technology and trends in technological development will have implications for the quality and adequacy of technology and the workforce in Thailand both now and in the future. The employers rated their use of technology at present as probably higher than in future. This seems to indicate a general pessimism about the Government's ability to stimulate recovery of an economy that is now approximately one year into recession. Although recovery is predicted within the next 2-3 years, most employers interviewed said they are not planning for expansion and development of their businesses in the next ten years.

5. Industry Linkages

32. Various forms of industry linkages were employed: OJT, dual training system,¹ students' scholarship, production units and community service (giving trade training to people in the community). The linkages were based on personal relations and formal Government contacts. Many interviewees cited benefits gained from industry linkages. Enterprises gained the colleges' and communities' recognition and participated in meetings, conferences, and social occasions, e.g., Teachers' Day orientation. Enterprises got the workforce they needed while saving money on training and teaching materials. However, teachers and school administrators in Project-assisted institutes did not give as much importance to industry linkages as did those in DOVE technical colleges.

33. Interviews conducted in the tracer study showed that there is a need for Government regulations and laws for skill development or the implementation of the dual training system to be enacted. Regulations should include policies of the government, methodology, implementing agencies, information dissemination (in terms of public relations), and actual practice. The enterprises participating in cooperative training should be entitled to tax deductions and gain support from the Board of Investment.² These provisions could be addressed in the Act on Vocational Education and Occupational Training, part of the National Education Bill which is being finalized by the Office of the Prime Minister. Most institutions have developed good relationships with enterprises through OJT programs. The most important condition in promoting cooperation between institutions and the enterprises depended upon the

¹ A technical education and vocational training model combining an educational program in school with a skills acquisition program in industry or other employment-related institution in a monitored, sustainable, and systematic manner.

² Procedures for obtaining tax deductions for employee training were simplified under conditions for the release of the first tranche under the SSPL.

sincere intention of all parties, including industrial councils, and the various ministries and Government agencies involved, e.g., Ministry of Industry or Ministry of Labor and Social Welfare. Employers met the following problems: unclear guidelines for coordination and Government policy, lack of Government support, and the absence of regulations relating to training and worker development. There is a need to clarify the scope of work, duties of each party, and support from all concerned. Currently, there is no agency responsible for direct coordination between the school, industry, and respective Government regulating agency.

C. Financial Impact

34. As a share of gross domestic product, Government spending on education increased from 3.18 percent in FY1987 to 3.80 percent in FY1997. Total educational expenditure as a percentage of total Government expenditure increased steadily from 18.1 percent (B41,111 million) in FY1987 to 25.4 percent (B202,983 million) in FY1998 (Appendix 11). The education sector has received the largest share of the total public expenditure since 1991. In nominal terms, education expenditure increased nearly five times from 1981 to 1998. However, technical and vocational education expenditure, as a proportion of the total education budget, decreased over the last ten years from 4.75 percent in 1980 to 1.68 percent in 1998. Under the SSPL (para. 4), technical and vocational education is given less emphasis in terms of budgetary allocation relative to general education. This is based on the prevailing notion that private sector participation in technical and vocational education should be promoted, and that efficiency can be enhanced with a strong general education foundation at the secondary level.

35. Nevertheless, in recognition of the key role technical and vocational education has in industrial development, the Government has increased the budgetary allocation for recurrent expenditure in the Project schools over the last ten years by 76 percent, and recurrent cost allocation per student by 22 percent, in real terms (Appendix 12). However, recurrent budgetary allocations across all sectors are being reduced as a result of the recent cuts in Government budgets due to the regional currency crisis. While budgetary cuts are seen as a temporary problem, alternative sources of funding and other forms of cost recovery measures are continually being sought, and the Government is developing new proposals and initiatives to enhance future budgetary provisions. Tuition and other fees are generally about 25-30 percent of unit cost and are higher compared with DOVE institutions. Cost recovery is greater in the case of students enrolled in the second (twilight) shift. These students pay around B7,000-10,000 per semester, in addition to other fees amounting to about B30,000 upon enrollment, compared with the B3,000-4,000 per student per semester paid by regular students. The percentage is lower in less developed regions.

D. Institutional Impact

36. The major inputs provided under the Project to enhance institutional capability comprised (i) the modern and well-equipped facilities for the upgrading of the technical schools, six of them in new locations; (ii) the establishment of 13 new courses in certificate and diploma programs; (iii) the establishment of teacher training programs; (iv) fellowships for teacher and

staff training; and (v) consultant services for curriculum upgrading, instructional resource development, and teacher training. Some equipment provided in the Project is still operational, albeit outdated, and being used by the students. The new courses, which provided the needed specialized skills in the past, now must be reevaluated in light of the present economic constraints. Teacher training programs at the four regional campuses have now been fully institutionalized as postdiploma and degree programs with more than five times the envisaged target to train 400 teachers annually. Other campuses are also offering these programs. Fellowships were provided to some senior administrators, 113 technical instructors, and 8 senior academic teachers and contributed to the upgrading of teacher expertise and qualifications. Consultant services were provided for the sector survey, planning and management (including teacher upgrading), and specialist technical services (development of new courses to address emerging industrial needs). These institutional development contributions have been sustained and are evident in the operations of RIT. The Act on Vocational Education and Occupational Training will also address the participation of the private sector and the cooperation of educational institutions and enterprises. Policy directions need to be formulated to coordinate efforts to modernize technical and vocational education and training, facilitate implementation through networking, and make study programs more efficient and cost effective. Systemic deficiencies such as duplication of functions, centralized management, rigid training programs in terms of entry and exit points, and lack of industry inputs need to be addressed.

E. Socioeconomic Impact

37. Survey results of the tracer study show that graduates from Project-assisted institutes report a high level of socioeconomic improvement. The majority of Project students come from low and middle-income families, and studying in a technical school enhanced their likelihood of finding jobs. However, with regard to earnings, it was found that the income received only slightly to moderately improved their family's economic status. Graduates felt that their education and their jobs helped them fairly well in gaining social recognition, self-esteem, and respect from their co-workers, relatives, and acquaintances. Those who worked for private or Government enterprises were moderately to highly satisfied with their income earnings, as well as with the resulting savings. Those who worked as teachers in public schools reported that, while they were very satisfied with their teaching jobs, they were not very pleased with their earnings, which were seen as lower than those in other sectors. However, the lower income was compensated for by social benefits such as free or subsidized rent, hospitalization, and/or pension.

38. Cognizant of the financial needs of their families, employed graduates used their income to defray some family expenses. In this way, the Project contributed indirectly to poverty reduction. In summary, survey results show that there was a positive significant correlation between vocational training and employment/career, vocational training and socioeconomic improvement, and employment/career and socioeconomic improvement of the Project-institute graduates.

39. Due to the nature of the technical programs assisted under the Project, and the public perception that RIT industrial programs are male oriented, women on the technical campuses of RIT comprise only 11 percent of the enrollment. On the other hand, enrollment of

women in commerce and business programs is 79 percent, and in all of RIT programs accounts for about 40 percent of total enrollment. However, participation by women in technical programs has shown an increasing trend, particularly in electronics and electrical courses. A number of technologies are now being planned for introduction on the RIT technical campuses. More and more, women are obtaining formal schooling. Improvement in women's education, postponement of marriage, and implementation of family planning have contributed to an increase in the number of women entering industry and the service sectors. For example, in Project-assisted schools women comprise 37 percent of all teachers.

F. Environmental Impact

40. There were no adverse environmental effects at any of the Project sites. Of much greater impact, with very significant long-term implications, is the opportunity to educate the youth and other community members in the importance of sustainability and environmental awareness. This is quite relevant in an era of increasing environmental pollution and its adverse effects on human health and economic activity. Updating of curricula is expected to include environmental programs as part of an integrated national curriculum.

G. Sustainability

41. Sustainability is assured through the institutional and policy framework in which technical and vocational education is viewed and implemented. One of the major programs of the Government's Eighth National Education Development Plan (1997-2001) is the training and development of technical personnel. The participation of RIT and DOVE staff in providing inputs for the formulation of policies and reforms to be embodied in the Act on Vocational Education and Occupational Training will ensure effective operations and sustainability. The dramatic increase in the demand for skilled workers and technicians, and in enrollment in the technical institutes (as well as in the technical colleges of DOVE) over the last ten years gives an indication of the relevance and sustainability of the system that the Project strengthened.

42. The physical infrastructure provided under the Project for the technical schools has been well maintained over the years and is still being used. The rising enrollment and the introduction of the second shift (evenings) have increased the use of classrooms, workshops, and laboratories provided under the Project. Some equipment and teaching aids supplied under the Project, although outdated, are still operational. The modern and well-equipped facilities, as well as the high quality of training provided in the technical schools, have raised the status of technical education and of these institutions. The numbers and academic capability of teachers and the management skills of RIT staff have been substantially improved. The institutionalization, increased capacity, and high quality of the technical teachers training programs will ensure the continuing improvement of technical teachers. The high demand for technical graduates in industry and the good performance of those working in industry are other indicators of sustainability. Recurrent budgetary allocations have increased by 76 percent in real terms since 1987. They have been supplemented by tuition and other school fees, contributions from industry, and foreign assistance.

III. KEY ISSUES

43. The economic crisis that is now forcing a reevaluation of policies and strategies in the region brought to light a need for a more flexible and up-to-date system that would enable quick adjustments in the supply of technical personnel to meet rapidly changing demands. As well, the social demand for higher levels of education and qualification is growing faster than the Government can respond. The new economic conditions in Thailand and in the region have raised a number of important issues that need to be addressed in order to make technical/vocational education more responsive to both society and industry. Some of these issues were part of the follow-up actions that the PPAR had recommended, and although steps have been initiated to address them, they continue to be unresolved.

A. Educational Policies and Human Resource Planning

44. There is no national coordinating body or agency for technical education (diploma and degree programs) among Government institutions at different levels of education and training, between Government and private schools, or between formal and nonformal education.¹ There is a need for coordination within Government technical/vocational education agencies to reduce duplication of functions, for example, the roles of RIT and DOVE under the Ministry of Education. As well, there is a need for coordination with other ministries and with industry organizations. RIT needs to support and follow through on the policy reforms being addressed under the Bank's SSPL (para. 4) with the Government concerning policy priorities on programs, personnel, decentralization, and the private sector, as it affects technical/vocational education. A proactive stance among managers, teachers, and staff of the various campuses will contribute much to the ongoing formulation of the Act on Vocational Education and Occupational Training.

B. Budgetary Support and Broadening of Funding Sources

45. The system needs the sustained assurance of a safety net in the form of a steady and adequate yearly allocation for recurrent expenditure, to ensure proper operation and maintenance and continuing improvement in quality. There is insufficient budget for research relating to policy, technical/vocational education administration, and media. In addition, attention needs to be given to monitoring and controlling the cost of Government-provided training in relation to its social and individual rates of return. Other forms of cost recovery and broadening of the sources of financing need to be explored.

¹ The National Vocational Training Coordination Committee chaired by the Prime Minister, was established under Loan No. 1494-THA: *Skills Development Project*.

C. Broader Skills-Based Training and Industry Linkages

46. The costs involved in gearing up schools for more specialized courses are prohibitive. As well, due to cost-cutting measures, industry is opting for workers with more broad-based, multiple skills. There is a need for better selection and improvement of relevant course offerings in order to address technical personnel demand and supply. Thus, a more effective partnership between school and industry is desirable in which the school continues to provide basic knowledge and skills, and industry linkages and cooperation are sought for OJT and training in specific skills. Training in the schools now is geared mainly toward employment in industry with too little attention given to entrepreneurial training. On the other hand, the curricula as well as teaching practice in the schools seem to be directed toward preparing students for further studies. The curricula lack a component on OJT, as well as emphasis on work attitude and work ethics development. The orientation of technical education from a supply-driven system based on a large social demand needs to shift to a demand-driven system guided by labor market exigencies.

D. Quality of Education

47. Institutions lack sufficient vocational information and guidance services. There is a need to improve further the capability of existing teachers. Skills required for present day work are not sufficiently provided, i.e., computer studies and access to information technology, language (especially English), and basic management. There is a need to reinforce the foundation in science and mathematics, especially at the secondary level. A performance-based monitoring and evaluation system for internal efficiency, as well as for following up on graduates employed in industry, will provide indicators that will be useful in improving the quality of education. The Ministry of University Affairs is currently reviewing such a system as part of the process for making universities autonomous.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Overall Assessment

48. The findings of the reevaluation study show that the Project contributed not only to the country's industrial development in the past two decades, but also to expanding the technical and vocational education system in the country. Data show the improved quality of technical education especially with respect to internal and external efficiencies. Graduates readily find jobs and use some of their income to provide for financial requirements of their families. Government officials agree that initial awareness of and drive for the improvement of technical education and vocational training was largely provided by the Project. Project objectives and targets set out at the time of appraisal have been achieved. The Project helped the Government in providing equitable access to quality technical education for more balanced national growth. Sustainability is assured

by the institutional and policy framework in which technical and vocational education is now viewed and implemented. The Project continued to perform well after the PPAR and achieved the long-term impact of promoting development of technical education. The benefits have been sustained. The reevaluation confirms the conclusion of the PPAR that the Project was generally successful.

B. Lessons Learned

49. Postevaluation findings indicate that Bank-assisted projects in Thailand have generally been successful in achieving their objectives. Of the 52 completed projects, 39 have been postevaluated. Of these, 35 projects were rated as generally successful, and 4 projects were rated as partly successful. The analyses show that major contributing factors in the success of projects are (i) Government commitment and ownership, (ii) institutional capability, (iii) executing agency experience, and (iv) adequate preparation of the project. These factors were all in place in this Project. The following are some lessons learned.

50. **Need for Long-term Assistance.** The success of the quality upgrading of technical education and vocational training in Thailand underlines the importance of providing assistance and policy guidance over the long term in the education sector. The implementation of the first project and the Project spanned a total of 14 years. While there was no further Bank assistance to the subsector, a number of bilateral assistance projects were provided. The World Bank took over where the Bank left off and provided the Technical Education Project in 1996. There are also examples of long-term assistance in other developing member countries, such as Bank assistance in technical education in Indonesia, and the long-term assistance provided by the Swiss Government to technical education in Nepal. In contrast, technical teacher training institutions established by the Bank in other developing member countries have performed poorly because of the short-term nature of assistance.

51. **Sector Analysis, Institutional Capability, Commitment, and Ownership.** One of the causes of delays in the implementation of the Project was the delay in the start-up of the sector study, which was linked to other components of the Project, notably the identification of new courses. Activities related to the new courses such as curriculum development, equipment specification, recruitment of academic consultants (specialist technical services), and civil works were in turn delayed. Bank practice today will have such a sector survey completed prior to appraisal of the Project. Considering the lessons learned recently from the financial failures in the region, investment decisions that involve significant amounts of loan funding should be well researched. To enhance the prospect of project success, it is important to ensure beneficiary participation as early as possible, preferably during Project planning and formulation; and adopt a flexible project implementation system based on the process-oriented approach with a built-in midterm review of operations. Analyses of performance of Bank projects in general show that the satisfactory performance of projects is due mainly to adequate project preparation (sector analysis), strong institutional capability, commitment of the executing agencies, and firm government support (result of ownership).

52. **Performance Management and Monitoring.** Performance measurement and monitoring at the time of Project implementation was not as structured as it is currently. While

computer-based information, management, and monitoring systems as they are known today were not used as a tool, a project benefit monitoring and evaluation system was used to collect and process basic Project data. The Ministry of Education has set up a monitoring system to evaluate a cost recovery administrative model that was introduced in some skills development institutes. The Bank's project performance management system (PPMS) has been formulated to serve as a management tool for designing, planning, monitoring, managing, and evaluating progress and impact during the entire project cycle.

53. **Coordination, Planning, and Financial Resources.** There is a need for greater coordination (among agencies) and decentralization (to provincial and regional levels) of human resource planning to ensure the relevance of training provided in technical schools to industry and the local community needs. Human resource planning strategies need to adopt labor market analyses, including market-based assessment of skill demand and supply, and shift from a supply-oriented to a demand-driven system. Under the SSPL (second tranche condition), vocational schools will be given the authority to develop their own programs and curricula based on the labor market situation and to institute personnel and financial administration reforms. Alternative financial resources need to be institutionalized so as to lessen the dependence of RIT operation on the regular budgetary allocations of the Government. While increasing cost recovery, care must be exercised not to penalize the poor. The enabling framework should take into account these and other alternative resource mobilization concepts and put into place policies and directives to encourage their adoption.

C. Follow-up Actions and Recommendations

1. For the Government

54. The following remedial measures to improve the efficiency and effectiveness of operational performance are suggested:

- (i) Ensure adherence to the specific reform measures and various activities as agreed in the SSPL to address policy priorities and systemic problems relating to technical education and vocational training.
- (ii) Establish a high-level national body to coordinate and update policies for technical education (diploma and degree programs) among Government institutions at different levels of education and training, and to facilitate implementation through networking among agencies, schools, and industry.
- (iii) Establish institutional linkages with industries to improve competency-based curricula, provide for OJT for both students and teachers, facilitate employment marketing in line with regional needs and priorities, and provide a venue for maintaining and sustaining research relating to policies and strategies specific to the technical/vocational subsector and to the education sector as a whole.
- (iv) Explore private sector sponsorships or scholarships for teacher development, and intensify formal cooperative (twinning) arrangements with local and foreign institutions in order to maintain and regularly upgrade teacher qualifications.
- (v) Establish a comprehensive employment promotion system that would have the following functions: labor market monitoring, career guidance, job placement, and feedback to institutions/schools for curriculum review.
- (vi) Ensure that a proper regulatory framework for skill development and vocational training, and for provision of incentives for enterprises to promote these activities, be included in the Act on Vocational Education and Occupational Training.
- (vii) Establish more gender-neutral industry courses, such as those in the service industry, which are in high demand.
- (viii) Set up appropriate review mechanisms for curriculum and textbook improvement or development on a regular and structured basis, placing emphases on entrepreneurial training, work attitudes and ethics, industry linkages, and better foundations in science and mathematics.
- (ix) Upgrade the management information system to include continuous monitoring and auditing measures to determine a project's impact and effectiveness on educational development throughout the project period and after project completion.

2. For the Bank and Other External Donors

55. The following actions are recommended for future donor involvement in the education sector in Thailand.

- (i) A review of the strategy to support Government efforts in preparing quality technical personnel for the country's revised industrialization program is needed. There is scope for further improvement of the quality of technical education and vocational training. While the Government has made great strides in the subsector, it requires further assistance to ensure the realization of the full potential of past investments.
- (ii) The findings of the tracer study show that technical colleges under DOVE were relatively inferior to the Project-assisted technical campuses of RIT in the areas of curricula and instruction, quality of students and graduates, and teacher development. Any financial assistance to the technical colleges under DOVE should be structured to ensure the improvement of these weak areas in its programs. Donor assistance to the subsector should consider the upgrading of selected DOVE technical colleges, as DOVE has been given responsibility for industrial certificate and diploma programs.

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