

IV. その他

I V . その他

R/Dに基づく技術協力のうち各分野毎の活動状況および成果は前述の通りであるが、この他全分野に関連する活動として本プロジェクトではジョモケニヤッタ農工大学プロジェクトと技術交換を行った。またプロジェクトとの直接の関係は無いが在タイの日系企業から多大の協力を受けた。さらに1990年にはKMITLの前身である電気通信訓練センターが1960年に設立されて以来30年になることから、KMITL設立30周年記念行事が行われた。

1. ジョモケニヤッタ農工大学プロジェクトとの技術交換

ジョモケニヤッタ農工大学 (Jomo Kenyatta University College of Agriculture and Technology / 以下JKUCAT) は日本政府の無償援助とケニヤ政府の努力により1979年に専門学校 (JKCAT) として設立され、その後JICAの技術協力プロジェクトにより1981年に開校した。プロジェクトは1990年に終了したが、この間1988年にケニヤ政府はJKCATをケニヤ大学の一部とし、名称をJKUCATと変更した。このプロジェクト終了後日本政府はケニヤ政府より建物の拡張と新規の技術協力の要請を受け1990年4月より新たな無償援助と技術協力を開始した。

JKUCATの規模は理学部、工学部、農学部3学部1500人 (内700人はディプロマ学生) の学生数であるが、JICAでは工学部と農学部へ協力を行っている。

(1) 1991年3月 KMITLよりJKUCATへ技術交換チームを派遣

1) 目的

- ・機械工学分野の技術協力についての意見交換
- ・KMITLで行っている第三国研修や両大学の交流についての意見交換

2) KMITLチームの構成

KMITL学長	Dr. Kosol Petchsuwan
KMITL工学部長	Dr. Somkiat Supadech
KMITL機械工学科主任	Dr. Mongkol Mongkolwongroj
JICA機械工学専門家	飯島敏雄

3) 派遣期間

1991年3月24日～31日

4) 主要成果

- ・カリキュラムの改訂、教員の研究状況、教科書作成などについて意見交換
- ・KMITLとJKUCATとの学術交流覚書の締結

(2) 1991年11月 JKUCATよりKMITLへ技術交換チームを派遣

1) 目的

- ・JKUCATとKMITLとの学術交流覚書に基づく具体的な交流計画の作成
- ・コンピュータ教育の内容及びコンピュータの管理・運営についての意見交換
- ・JKUCAT教授によるセミナーの開催

2) JKUCATチームの構成

JKUCAT理学部長	J.W.Ndombi教授
JKUCAT電気・電子工学科	S.M.Kangethe博士
JICA数学科専門家	小野泰文
JICA業務調整員	佐藤武明

3) KMITL滞在期間

1991年11月12日～14日

4) 主要成果

- ・ JKUCATとKMITLとの学術交流覚書に基づく第一次交流計画（1992～96年）作成
- ・ コンピュータ教育のカリキュラム及びコンピュータセンターの管理・運営について意見交換
- ・ JKUCAT教授による地学に関するセミナー開催

(3) 1993年1月 KMITLよりJKUCATへ技術交換チームを派遣

1) 目的

- ・ 第一次交流計画の実施
- ・ 大学に対する技術協力についての意見交換

2) KMITLチームの構成

KMITL通信工学科	Sukon Nampetch
KMITL土木工学科	Surat Wangcharoen
KMITL電気工学科	Somchet Thiemmuang
JICAアドバイザー兼 ネットワーク通信専門家	箱石千代彦

3) 派遣期間

1993年1月29日～2月7日

4) 主要成果

- ・ KMITLの技術交換チーム並びにJKUCATスタッフ及び日本人専門家によるセミナー開催
- ・ 通信工学、土木工学及び電気工学分野の教育・研究に関する意見交換
- ・ 大学に対する技術協力の効果的実施方法についての意見交換

以上3回の意見交換を通じてKMITLとJKUCATとは相互理解を深め各々の教育・研究の参考とするとともに、共同研究の可能性について議論を行うなど徐々に共通の関心事項に目を向けつつある。また日本人専門家の側としても技術協力、とくに大学のような高等教育に対する技術協力のあり方について認識を深めることができた。

2. 在タイ日系企業の協力

1971年に在タイの日系電子関連企業（Japan Electronic Companies/JEC）は、日本貿易振興会（JETRO）の協賛のもとKMITLの学生に対する奨学金制度JECスカラシップ

ブを開始した。これが大学及び学生に歓迎されたことを受けて1989年には建設関連企業がKMITLの学生に対する奨学金制度”Kensetu”スカラシップを開始した。

また、JETROの協賛のもと工学部学生に対し1977年から企業実習が行われている。

(1) JECスカラシップ (日系電子関連企業奨学金)

この奨学金制度は1971年に開始され、以下に掲げる企業からの毎年の寄付によって運営されており、工学部の学生に対し貸与されている。

奨学金は学部学生に対して月額1,000バーツ、大学院生に対して月額3,000バーツである。(一修業年は10カ月)

- 企業名一覧 -

1. Hitachi Sales (Thailand) Ltd.
2. Kang Yong Watana Co., Ltd.
3. Sanyo (Thailand) Co., Ltd.
4. NEC Corporation
5. Siew National Sales & Service Co., Ltd.
6. Toshiba Thailand Co., Ltd.
7. Kokusai Denshin Denwa Co., Ltd. (KDD)
8. Thai Yazaki Electric Wire Co., Ltd.
9. Sharp Appliances (Thailand) Ltd.
10. Yamaha Sports (Thailand) Co., Ltd.
11. Nisshin Electric (Thailand) Co., Ltd.
12. Nippon Telegraph & Telephone Corporation (NTT)
13. Fujitsu Limited
14. Fujikura (Thailand) Ltd.

(2) ”Kensetu”スカラシップ (日系建設関連企業奨学金)

この奨学金制度は1989年に開始され、以下に掲げる企業からの毎年の寄付によっており、工学部以外の学生にたいして貸与される。

奨学金の額は、JECスカラシップと同額である。

- 企業名一覧 -

1. Kajima Corporation
2. Thai Meidensha Co., Ltd.
3. Thai Toda Corporation Ltd.
4. Taisei (Thailand) Co., Ltd.
5. Thai Kenzaisha Co., Ltd.
6. Thai Fukui Construction Co., Ltd.
7. Thai Konoike Construction Co., Ltd.
8. Thai Takenaka International Ltd.
9. Thai Simizu Co., Ltd.
10. Thai Hazama-Gumi Co., Ltd.

11. Thai Sumicon Co.,Ltd.
12. Thai Ohbayashi Corporation Ltd.
13. Thai Nishimatu Construction Co.,Ltd.
14. NKK Engineering (Thailand) Co.,Ltd.
15. Kumagai Gumi Co.,Ltd.
16. Thai Nippon Steel Engineering & Construction Corp.
17. Sanken (Thailand) Co.,Ltd.
18. Ch.Karnchang-Tokyu Construction Co.,Ltd.
19. Thai Semcon Co.,Ltd.
20. Daikin Airconditioning (Thailand) Ltd.
21. Thai-Asahi Glass Co.,Ltd.
22. Fujidenki Engineering Co.,Ltd.
23. Wakachiku Construction Co.,Ltd.
24. Padeco (Thailand) Ltd.
25. Nippon Koei Co.,Ltd. Consulting Engineers
26. Sakata-Thai Corporation Ltd.

(3)日系企業による企業実習

KMITLは、1977年からJETOROの協賛のもと学生の企業実習を行っている。当初は協力企業の数も少なく、またほとんどが日系企業であったが徐々に協力企業の数が増えてきている。現在、企業実習は工学部学生の必須科目となっており3年の夏季学期に実施されている。

3. KMITL設立30周年記念行事

30年前の1960年8月24日にKMITLの前身であるノンタブリ電気通信訓練センター設立のための技術協力協定が日本政府とタイ政府との間で調印されたことを記念して、1990年8月24日、KMITL設立30周年記念の式典とパーティが催された。また翌25日と26日の両日には、30周年記念「電気通信・放送における新技術セミナー」が開催された。

1990年2月、KMITLより30周年記念行事においてHDTVのデモンストレーションを行いこのなかでKMITLの発展の歴史を関係者に見せたいとの要望が出されたのを受けて、プロジェクトの長期専門家がアドバイスをを行い、また郵政省、JICA及びNHKがバックアップを行った。

110インチ投射型ディスプレイ等HDTV用機材は、HDTV説明のための短期専門家の輸送機材として日本から運搬し、この他の音声拡声装置等は現地のものを利用した。HDTVビデオ「KMITL-STORY」（日本語タイトル「KMITLの30周年と日本政府の協力」）は、KMITLによって製作された35mmフィルムを基に、NHKでHDTVに変換しタイトルを付け、タイ語のナレーションに日本語をスーパーインボウズした。尚、音声のHDTVへのダビングにあたってはタイ国営放送CH7の協力を仰いだ。

◆「KMITLの30周年と日本政府の協力」(約14分)

製作：KMITL

撮影編集：アリアバーブラボKK

協力：NHK、タイ国営放送CH7

このビデオは8月24日、バンコク市内のシャングリラ・ホテルで開催されたKMITL設立30周年記念パーティにおいて上映された。

次いで8月25日、26日には「電気通信・放送における新技術(New Technology in Telecommunication and Broadcasting)セミナー」が同ホテルで開催された。第1日は、関連政府機関、大学、電気通信・放送関係会社からの出席者を対象に基調講演を含めて8名の講演者がそれぞれの専門分野の演題について講演を行った。第2日は、一般公開としHDTVについて技術的解説を加えながら視聴会を4回開催した。このためセミナー講演等のためNHKから短期専門家2名の派遣をおおぎ、HDTV用機材を短期専門家の輸送機材として運搬したほかHDTV機器の技術操作のためNHKの協力により操作員の派遣をおおいだ。

以上のほか、KMITLは30周年記念にあわせて「30th ANNIVERSARY - KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG, BANGKOK THAILAND -」(英語)を新聞折込広告としたほか、30年の歴史等をまとめたパンフレット(タイ語・英語・日本語)を作成し、また先に述べたKMITLの製作した35mmのフィルムをもとにVHSビデオ(タイ語・英語・日本語)を作成した。

V. 総合考察

V. 総合考察

本プロジェクトは、電気通信・放送工学・データ通信及び機械工学のいずれの分野においても所期の到達目標を達成しえたと考える。また、分野によっては所期の目標を大幅に上回る成果を挙げたものと考えられる。分野毎の活動状況及び成果は各々の記述によっていただくとし、ここでは各分野に共通の事項を述べることとする。

まず第一に4分野に共通の主要成果を整理すると次となる。

(1)カリキュラム

各分野ともカリキュラムの改訂が行われ、また幾つかの分野では新しいコースが新設された。

(2)教科書

各分野で現地語教科書の出版が行われ、合計67冊の教科書が出版された。

(3)機材

各分野に於て多くの機材が供与され、教育・研究の環境が向上した。

(4)技術論文

専門家による指導、カウンターパートの日本研修などの成果として、大部分の分野に於て研究論文の発表数が着実に伸びた。

1992年11月にJICAから派遣された本プロジェクトの評価チームは、タイ国政府の関係機関と会合をもち本プロジェクトの進捗及び評価について議論を行いミニッツを作成した(付属資料2参照)。このミニッツにおいて以下の3点が結論としておべられている。

- (1)日本側は、プロジェクトにおける円滑な技術移転のためにタイ側がとったカウンターパートの指名、予算の配分等多大の努力に対し高く評価する。
- (2)タイ側も、日本人専門家の派遣、タイ側カウンターパートの日本での研修及び、機材の供与等日本側が必要な措置を取ったことを高く評価する。
- (3)双方はR/Dに基づいてプロジェクトが達成されたことに対して充分満足し、かつプロジェクトの遂行がタイ国における電気通信・放送工学・データ通信及び機械工学の発展に対し重大な寄与をするであろうことを確信する。

第二に4分野に共通した事項であって、KMITLあるいはタイ国政府に対する勧告事項を整理すると次のようになる。

(1)カリキュラム

新カリキュラムの実施状況等についてさらによく検討し、今後も改善の必要があれば積極的に改訂すること。

(2)教科書

現地語教科書のフォローアップ体制を確立し、学外にも広く使用しうるものとする。

(3)機材

供与された機材の保守を充分に行い、利活用を進めること

(4)研究

自ら新規の研究テーマを見だし、これを研究論文にまとめてゆける努力を怠らぬこと。

(5)教育研究環境

大学スタッフが教育研究に専心できる経済的環境を整備すること。

第三に援助側の援助方法について検討を要すると考えられる事項を整理すると次となる。

- (1)計画、実施、評価の各段階において、援助側、被援助側が共通の意志・共通の努力でプロジェクトに取り組めるように政策対話を充実させる。
- (2)長期専門家にたいして現地語学習を奨励する。

第四に前述の評価チームが作成したミニッツにおいては、タイ側から将来計画等がのべられている。

(1)タイ側はKMITLの教育、研究活動を強化充実するため、以下の将来計画を提案した。

1. タイ国及び本地域の経済社会発展のため、科学技術分野の人材を開発する。
2. 協力の技術分野としては少なくとも電気通信及び情報技術をコア技術としてカバーする。
3. 卒業生の質及び量の両方が考慮されなければならない。教育と研究は国際的基準と質とにまで強化されなければならない。
4. 大学スタッフを支援支持する手段方法のような協力の成功の鍵となる事項が考慮されなければならない。

タイ側は、将来の協力を形成するのを支援するため個別専門家を要望する旨付け加えた。日本側は、これらの将来計画を日本の関係機関に伝える旨応え、また同時に日本側はタイ側に将来計画の種々の計画についてはJICA事務所と協議するよう助言した。

(2)情報科学技術学部の設立について、タイ側はこれまでにJICAによって行われたような協力が効率的かつ効果的な達成のために必要である旨要望した。

(3)タイ側は、将来の”アフターケア・コーポレーション”について関心を表明した。日本側は、”アフターコーポレーション調査団”がプロジェクト終了の日から数年後にタイ側の要望によって派遣されることを述べた。

タイ国の工業化が急速に進められているなかで、人材をこそ開発しなければこれは永続せず途中で失速してしまうおそれをもっている。また、教育と研究は国際的基準なり質をもっていない限り、タイ国としての付加価値を生み出すことはむずかしい。KMITLとしては電気通信及び情報技術という大学として特色ある分野で日本の協力をも得てタイ国及び地域に寄与したいとしているわけであるが、国際的基準なり質ということは大変むずかしくとも本プロジェクトによっては達成できておらず。(1)4の解決を図りつつ将来の協力計画が作成されることを切望する次第である。

終わりに、本プロジェクトの実施にあたり多大のご協力をいただいた日本大使館、郵政省、日本電信電話株式会社、日本放送協会、東海大学の関係各位に対し、この機会を借りて深甚の謝意を表します。また、現地の日系企業のご協力なしにはプロジェクトはこのような成功を納めることはできませんでした。さらに、国際協力事業団及び同タイ事務所の方々からもあたたかい励ましと適切な助言を得てプロジェクトが遂行されてきたことを申し述べます。

VI. 付属資料

THE RECORD OF DISCUSSIONS
BETWEEN THE JAPANESE IMPLEMENTATION SURVEY TEAM
AND THE AUTHORITIES CONCERNED
OF THE GOVERNMENT OF THE KINGDOM OF THAILAND
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE EXPANSION PROJECT
OF KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG

The Japanese Implementation Survey Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Masao Hasegawa, Director of Institute for International Cooperation, JICA, visited the Kingdom of Thailand from December 8, 1987 to December 16, 1987, for the purpose of working out the details of the technical cooperation program concerning the Expansion Project of King Mongkut's Institute of Technology Ladkrabang.

During their stay in the Kingdom of Thailand, the Team exchanged views and had a series of discussions with the Thai authorities concerned in respect of the desirable measures to be taken by both Governments for the successful implementation of the above-mentioned Project.

As a result of the discussions, the Team and the Thai authorities concerned agreed to recommend to their respective Government the matters referred to in the document attached hereto.

Bangkok, December 15, 1987



Dr. Kosol Petchsuwan
Rector, King Mongkut's Institute
of Technology Ladkrabang,
The Kingdom of Thailand



Mr. Masao Hasegawa
Leader
Implementational Cooperation
Japan International Cooperation
Agency, JAPAN

THE ATTACHED DOCUMENT

I. COOPERATION BETWEEN BOTH GOVERNMENTS

1. The Government of Japan and the Government of the Kingdom of Thailand will cooperate with each other in implementing the Expansion Project of King Mongkut's Institute of Technology Ladkrabang (hereinafter referred to as "the Project") for the purpose of promoting and strengthening education and research activities in the fields of Telecommunications, Broadcasting, Data Communication and Mechanical Engineering in King Mongkut's Institute of Technology Ladkrabang (hereinafter referred to as "KMITL").
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

II. DISPATCH OF JAPANESE EXPERTS

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense services of the Japanese experts as listed in Annex II through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Japanese experts referred to in 1 above and their families will be granted in the Kingdom of Thailand the privileges, exemptions and benefits no less favourable than those accorded to experts of third countries working in the Kingdom of Thailand under the Colombo Plan Technical Cooperation Scheme.

III. PROVISION OF MACHINERY AND EQUIPMENT

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to provide at its own expense such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III, through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Equipment will become the property of the Government of the Kingdom of Thailand upon being delivered c.i.f. to the Thai authorities concerned at the ports and/or airports of disembarkation, and will be utilized exclusively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.

IV. TRAINING OF THAI PERSONNEL IN JAPAN

1. In accordance with the laws and regulations in force in Japan, the Government of Japan will take necessary measures through JICA to receive at its own expense the Thai personnel connected with the Project for technical training in Japan through the normal procedures under the Colombo Plan Technical Cooperation Scheme.
2. The Government of the Kingdom of Thailand will take necessary measures to ensure that the knowledge and experience acquired by the Thai personnel from technical training in Japan will be utilized effectively for the implementation of the Project.

V. SERVICES OF THAI COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. In accordance with the laws and regulations in force in the Kingdom of Thailand, the Government of the Kingdom of Thailand will take necessary measures to secure at its own expense the necessary services of Thai counterpart and administrative personnel as listed in Annex IV.

2. The Government of the Kingdom of Thailand will allocate the necessary number of suitably qualified personnel corresponding to each Japanese expert to be dispatched by the Government of Japan as specified in Annex II for the effective and successful transfer of technology under the Project.

VI. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE KINGDOM OF THAILAND

1. In accordance with the laws and regulations in force in the Kingdom of Thailand, the Government of the Kingdom of Thailand will take necessary measures to provide at its own expense:
 - (1) Land, buildings and facilities as stated in Annex V;
 - (2) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than those provided through JICA under III above;
 - (3) Transportation facilities and travel allowance for the official travel of Japanese experts within the Kingdom of Thailand;
 - (4) Suitably furnished accommodations for the Japanese experts and their families.

2. In accordance with the laws and regulations in force in the Kingdom of Thailand, the Government of the Kingdom of Thailand will take necessary measures to meet:
 - (1) Expenses necessary for the transportation of the Equipment provided by Japan within the Kingdom of Thailand as well as for the installation, operation and maintenance thereof;
 - (2) Customs duties, internal taxes and any other charges, imposed on the Equipment in the Kingdom of Thailand;
 - (3) All running expenses necessary for the implementation of the Project.

VII. ADMINISTRATION OF THE PROJECT

1. The Rector of KMITL will bear overall responsibility for the implementation of the Project.
2. The Rector of KMITL, as the Head of the Project, will be responsible for the administrative and managerial matters of the Project.
3. Deans of Faculties, Director of Centre and Heads of Departments in respective fields of Technical Cooperation will be directly responsible for the administrative and technical matters in each field of the Project.
4. The Japanese Chief Advisor will provide necessary recommendation and advice on technical and administrative matters concerning the implementation of the Project to the Head of the Project.
5. The Japanese experts will give necessary technical guidance and advice to the Thai counterpart personnel on matters pertaining to the implementation of the Project.
6. For the effective and successful implementation of the Project, a Joint Committee will be established with the function and composition as referred to in Annex VI.

VIII. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Kingdom of Thailand undertakes to bear claims, if any arises, against the Japanese experts engaged in the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Kingdom of Thailand except for those arising from the willful misconduct or gross negligence of the Japanese experts.

IX. MUTUAL CONSULTATION

There will be mutual consultation between the two Governments on any major issue arising from, or in connection with this Attached Document.

X. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from April 1, 1988.

However, there will be a general review by the authorities concerned of both Governments on the progress of the implementation of the Project during the third year of the cooperation period in order to evaluate whether the term and scope of technical cooperation should be modified.

ANNEX

ANNEX I. MASTER PLAN

1. Objective of the Project

The objective of the Project is to promote and strengthen education and research activities in the fields of Telecommunications, Broadcasting, Data Communication and Mechanical Engineering in KMITL, and thus to contribute to the development of above-mentioned fields in the Kingdom of Thailand.

2. Contents of Japanese Technical Cooperation

- (1) The contents of Japanese technical cooperation are to provide technical guidance and advice to the Thai counterpart personnel who are engaged in education and research activities in KMITL.
- (2) The contents of the technical guidance for the Thai counterpart personnel are shown in the following table.

Fields	Contents
1. Telecommunications	(1) Digital Transmission Technology (2) Optical Fiber Communication Techniques (3) Digital Switching Technology
2. Broadcasting	(1) Measurement Techniques (2) Digital Techniques (3) Camera and VTR Techniques
3. Data Communication	(1) Management, Operation and Maintenance of the System (2) Management and Utilization of Programming Languages, Subprogram Libraries and Utility Programs (3) Analysis of Protocol (4) Online Utilization of the System (5) Development, Management and Utilization of Application Programs
4. Mechanical Engineering	(1) Material and Workshop Engineering (2) Mechanics and Control Engineering (3) Thermal and Fluid Dynamics Engineering (4) CAD/CAM (5) Mechatronics

ANNEX II. JAPANESE EXPERTS

1. Chief Advisor
2. Coordinator
3. Experts in the fields of:
 - (1) Telecommunications
 - (2) Broadcasting
 - (3) Data Communication
 - (4) Mechanical Engineering

Note: 1) Chief Advisor will be concurrently an expert in one of the above-mentioned fields.

2) Short-term experts will be dispatched when necessity arises, for the smooth implementation of the Project.

ANNEX III. LIST OF EQUIPMENT

1. Telecommunications
 - (1) Optical fiber transmission equipment
 - (2) Digital microwave transmission equipment
 - (3) Digital switches and terminals
2. Broadcasting
 - (1) Measurement equipment
 - (2) Digital devices
 - (3) CCD-camera and three-tube camera equipment
3. Data Communication
 - (1) Host processor and peripheral equipment
 - (2) Network and terminals
4. Mechanical Engineering
 - (1) Measurement equipment
 - (2) Machine tools
 - (3) CAD/CAM equipment

ANNEX IV. LIST OF THAI COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Head of the Project
2. Counterpart Personnel in the fields of:
 - (1) Telecommunications
 - (2) Broadcasting
 - (3) Data Communication
 - (4) Mechanical Engineering
3. Administrative Personnel
 - (1) Administration
 - (2) Accounting
 - (3) Clerical work
 - (4) Other necessary supporting staff

ANNEX V. LAND, BUILDING AND FACILITIES

1. Land, building and facilities necessary for the Project.
2. Room and Space necessary for the installation and storage of the Equipment.
3. Office space and necessary facilities for the Japanese Chief Advisor and the other experts.
4. Other facilities mutually agreed upon as necessary.

ANNEX VI. THE JOINT COMMITTEE

1. Functions

The Joint Committee will meet at least once a year and whenever necessity arises, and work:

- (1) To formulate the Annual Work Plan of the Project in line with the Tentative Schedule of Implementation formulated under the framework of this Record of Discussions;
- (2) To review the overall progress of the technical cooperation program as well as the achievements of the above-mentioned Annual Work Plan;
- (3) To review and exchange views on major issues arising from or in connection with the technical cooperation program.

2. Composition

(1) Chairman

Rector of KMITL

(2) Members

(a) Thai Side:

- (i) Dean of Faculties, Director of Centre and Heads of Departments in respective fields of Technical Cooperation
- (ii) Representative of the Department of Technical and Economic Cooperation
- (iii) Representatives of the Ministry of University Affairs, the Bureau of the Budget and Office of the Civil Service Commission.

(b) Japanese Side:

- (i) Chief Adviser
- (ii) Coordinator
- (iii) Other experts
- (iv) personnel concerned to be dispatched by JICA, if necessary
- (v) Resident Representative of Thailand Office, JICA


Note: Officials of the Embassy of Japan may attend the Joint Committee as observers.

MINUTES OF MEETING
BETWEEN
THE JAPANESE IMPLEMENTATION SURVEY TEAM
AND THE AUTHORITIES CONCERNED OF THE KINGDOM OF THAILAND
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE EXPANSION PROJECT
OF KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG


The Japanese Implementation Survey Team, headed by Mr. Masao Hasegawa and the authorities concerned of the Government of the Kingdom of Thailand had a series of discussions in order to reconfirm or revise the issues as described in the minutes of discussions signed on September 24, 1987. As a result of discussions, both parties have agreed to make effort within budget as follows.

1. Technical training for six counterpart personnel in Japan will be arranged in Japanese fiscal year 1988.
2. The Japanese side will consider the request on collaboration of textbooks for technology transfer in Thai language.
3. The Japanese side requested to provide appropriate number of secretary and necessary office space.

Bangkok, December 15, 1987



Dr. Kosol Petchsuwan
Rector, King Mongkut's Institute
of Technology Ladkrabang,
The Kingdom of Thailand



Mr. Masao Hasegawa
Leader
Implementation Survey Team
Japan International Cooperation
Agency, JAPAN

TENTATIVE SCHEDULE OF IMPLEMENTATION
ON THE JAPANESE TECHNICAL COOPERATION
FOR THE EXPANSION PROJECT
OF KING MONGKUT'S INSTITUTE OF TECHNOLOGY LADKRABANG

The Japanese Implementation Survey Team and the Thai authorities concerned have jointly formulated the Tentative Schedule for the Implementation of the Project as annexed hereto.

This Schedule has been formulated in connection with the Attached Document of the Record of Discussions signed between the Leader of the Japanese Implementation Survey Team and the Thai authorities concerned on the Japanese technical cooperation for the Expansion Project of King Mongkut's Institute of Technology Ladkrabang, on the conditions that necessary budget will be allocated for the implementation of the Project by both sides and that the schedule is subject to change within the framework of the Record of Discussions when necessity arises in the course of implementation of the Project.

Bangkok, December 15, 1987



Dr. Kosol Petchsuwan
Rector
King Mongkut's Institute
of Technology Ladkrabang
THE KINGDOM OF THAILAND



Mr. Masao Hasegawa
Leader
Implementation Survey Team
Japan International Cooperation
Agency, JAPAN

TENTATIVE SCHEDULE OF IMPLEMENTATION

Item	C. Y.					
Term of Cooperation	1988	1989	1990	1991	1992	1993
Dispatch of Japanese Experts 1. Long-term Experts *(1) Chief Advisor (2) Coordinator (3) Experts in the fields of: ① Telecommunications ② Broadcasting ③ Data Communication ④ Mechanical Engineering *Chief Advisor will be concurrently an expert in one of the above-mentioned fields. 2. Short-term Experts	April (April~ June)					
Provision of Equipment Training of Thai Personnel in Japan						
Services of Thai Personnel 1. Head of the Project 2. Counterpart Personnel 3. Staff for Management of the Equipment 4. Administrative Personnel						

MINUTES OF MEETINGS
BETWEEN
THE JAPANESE EVALUATION TEAM
AND
THE AUTHORITIES CONCERNED OF
THE GOVERNMENT OF THE KINGDOM OF THAILAND
ON
THE JAPANESE TECHNICAL COOPERATION
FOR

THE EXPANSION PROJECT OF KING MONGKUT'S INSTITUTE OF
TECHNOLOGY LADKRABANG

The Japanese Evaluation Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Norinobu Hayashi visited the Kingdom of Thailand from 18 November to 26 November 1992, for the purpose of evaluating the Expansion Project of King Mongkut's Institute of Technology Ladkrabang (hereinafter referred to as "the Project"), as agreed in the Record of Discussions signed on 15 December 1987 between the Thai side and the Japanese side.

During its stay in the Kingdom of Thailand, the Team had a series of discussions with the Thai authorities concerned on the progress and evaluation of the Project.

In conclusion, both sides reaffirmed that the implementation of the Project has made significant contribution and agreed to report on the results of the evaluation to their respective governments as referred to in the attached document.

Bangkok, 25 November, 1992

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Mr. Norinobu Hayashi
Leader
Evaluation Team
Japan International Cooperation
Agency

P. Thajchayapong

Dr. Pairash Thajchayapong
Rector
King Mongkut's Institute
of Technology Ladkrabang
The Kingdom of Thailand

ATTACHED DOCUMENT

I .INTRODUCTION OF THE PROJECT

1.Project Background

Upon the request for the technical cooperation of the Thai Government, the Japanese Government through JICA dispatched the Preliminary Survey Team and the Technical Survey Team in March and in September 1987 to conduct the study for the needs and the situation of King Mongkut's Institute of Technology Ladkrabang (KMITL). As the results of this survey, the necessity for technical cooperation had been confirmed by the Japanese Government.

In this connection, The Japanese Implementation Survey Team was dispatched in December 1987 in order to have further discussion with the Thai authorities concerned regarding the contents of the Project, and subsequently based on mutual consent, the Record of Discussions (R/D) has been signed by both sides. The cooperation period of the Project was decided to be for five (5) years from 1 April, 1988 to 31 March,1993.

2.Project Objective

The objective of the Project is to promote and strengthen education and research activities in the fields of Telecommunications, Broadcasting, Data Communication and Mechanical Engineering in KMITL, and thus to contribute to the development of above-mentioned fields in the Kingdom of Thailand.

II .OBJECTIVE AND METHODOLOGY OF EVALUATION

1.Objective

- (1)To make overall review of the inputs and the results of the Project performance so far obtained since the beginning of the Project.
- (2)To make a comprehensive evaluation on the achievements in line with R/D of the Project, on the impact of the Project and on the expected sustainability.
- (3)To feedback the results of the evaluation for the improvement of formulation and implementation of technical

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cooperation project in the future.

2.METHODOLOGY

(1)Materials used as Reference

In order to evaluate the past performance and achievements both qualitatively and quantitatively, the following materials are used as a basis of reference:

- The Record of Discussions
- The Tentative Schedule of Implementation
- The Minutes of Discussions agreed by both sides in the process of the implementation of the Project
- The Report for the Fifth Joint Committee Meeting
- Others

(2)Discussion and Observation

The both sides evaluated various aspects of the Project through discussions among the members in Appendix 1, and also observed the provided machinery and equipment how they are utilized effectively and maintained properly.

III .INPUTS

1.Cooperation from the Japanese Side

1.1 Dispatch of Japanese Experts

(1)Long-term Experts

One long-term expert each in the four fields mentioned in R/D and a project coordinator have been stationed during the project. The dispatch of experts was made on schedule.

Details of the dispatch of long-term experts are in Appendix 2.

(2)Short-term Experts

More short-term experts than planned at the starting time of the Project have been dispatched. Ninety-four (94) short-term experts in the four fields will have been dispatched by the end of the Project.

Details of the dispatch of short-term experts are in Appendix 3.

1.2 Provision of Equipment

The total amount of machinery and equipment provided for the Project objective during the Project period has a

value of about 882 million yen. This includes the amount of provided equipment which is allocated for each expert.

Most of the provided equipment is utilized effectively and is kept in good condition in general.

The list of the provided equipment and the condition of their utility is in Appendix 4.

1.3 Training of Thai Counterparts in Japan

Thirty-five (35) Thai counterparts of the four fields received training in Japan, and three more are planned to be sent by the end of the Project.

Details of the counterparts training are in Appendix 5.

1.4 Others

(1) Local cost

As the project running cost, about 14 million yen was allocated within the cooperation period.

(2) Cost for Textbook Publication

Under the support program for textbook publication, the Japanese side provided the cost for the first printing of the newly written textbooks. The total amount of the supporting cost was about 35 million yen.

(3) Cost for Improvement of Facilities

Works of partition of laboratories and research rooms and installation of air-conditioners were assisted by budgetary support of JICA.

(4) Technology Exchange Program

Under the technology exchange program, KMITL exchanged notes with Jomo Kenyatta University College of Agriculture and Technology, and some Japanese experts and Thai counterparts visited Kenya.

(5) Japanese Missions

Several Japanese missions have been dispatched for the consultation of the implementation of the Project.

2. Measures Taken by the Thai Side

2.1 Provision of Land, Buildings and Facilities

The Thai side has provided land, buildings and facilities necessary for the Project.

2.2 Allocation of Budget

The Thai side has allocated necessary budget to relevant departments and center and special DTEC budget for the Project as well.

2.3 Assignment of Counterparts and Other Personnel

The assigned counterparts in the four fields are as in Appendix 6. But some counterparts moved from KMITL during the cooperation period.

Secretaries were assigned for each long-term expert.

IV .OUTPUTS

Several remarkable outputs were obtained as a result of the Project activities which have been performed for the purpose of promoting and strengthening education and research in KMITL.

Main and common outputs in the four fields are as below:

1. Curriculum

Curricula were revised and improved within the Project period and the present curricula are as in Appendix 7.

2. Textbooks

Thai and English textbooks published are as in Appendix 8.

3. Equipment and Facilities

Many equipment and machinery were provided from the Japanese side as mentioned before. As a result, conditions for education and research were improved.

4. Technical Papers

With the cooperation of Japanese experts, Thai counterparts have written technical papers as shown in Appendix 9.

V .RESULT OF EVALUATION

1. Telecommunications

1.1 Attainment

The modern telecommunications facilities and systems consist of digital technology instead of analogue technology.

The objective of the Project in the field of telecommunications is to enhance and improve KMITL's education and research activities in order to coincide with current technical trends of telecommunications

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engineering and social and economic demand for telecommunications engineers in Thailand.

In order to attain this purpose, both the Japanese side and the Thai side have collaborated together and expanded equipment and materials needed for education and research activities since the beginning of the Project especially in the technology of digital switching, optical fiber communication and digital microwave.

The Japanese side has provided more than the level of resource committed in R/D in terms of the provision of equipment, the number of short-term experts and the number of counterpart training in Japan. Especially in the latter half of the Project period, the resource was mainly provided into the enhancement of research activities. On the Thai side, it arranged classrooms, laboratories and a workshop, installed computer local area network (LAN) system for the Department of Telecommunications Engineering and made effort to increase the department's research budget.

The curriculum was revised in line with the technical trend of current and future telecommunications technology. In addition to digital technology in the curriculum, new subjects were developed on such topics as digital signal processing, computer communication and integrated service digital network (ISDN).

The equipment and instruments provided under the Project have been effectively used for student experiments and staff research. New experiment was also added in the Telecommunication Laboratories by utilizing them.

Writing textbooks in Thai is one of the important purpose of the Project. Thirty-five (35) textbooks were prepared or revised including laboratory guidebooks, and within those twenty-eight (28) were written in the Thai language.

Research activities are becoming more and more active each year during the Project period, and within the subjects of staff research seven (7) topics have been advised and cooperated by the Japanese experts. As the results, the number of research papers presented has increased from six (6) papers in 1988/89 to thirty-three (33) papers in 1991/92 and twenty-nine (29) papers in 1992/93. KMITL now shares about 60% of number of research papers presented at the Electrical and Electronic Conference of Thailand (EECON). The increment of total number of papers, the

increment number of papers presented and accepted at the internationally outstanding institute of electrical and electronics technology such as Institute of Electrical and Electronics Engineering (IEEE) shows the improvement of level of research in the Department.

1.2 Impact

A survey to the companies where the KMITL graduates are working has shown that they are highly esteemed for their ability and potential by industry.

Moreover, applicants to the Faculty of Engineering of KMITL highly regard its national entrance examination results and admission proportion rank high among Thai universities, whose entrance examination is becoming more difficult each year. Especially, the number of students who select the Telecommunications Engineering Course has extremely increased since the academic year 1992/93. Based on the above, the both sides evaluate that the education in the Telecommunications Engineering Course of KMITL sufficiently meets social needs.

Since KMITL's staff plays an important role as lecturers in Third Country Training Program, which has been promoted jointly by JICA and the Thai Authorities concerned, and it has contributed to the training of telecommunications engineers in the country of Asian and Pacific area, KMITL is becoming internationally recognized for its achievements in the area and it is expected that KMITL will further develop its function from now on.

1.3 Sustainability

Counterparts have not resigned and successors to the present counterparts might be obtainable because of the recent increase in students applying to the Telecommunications Engineering Course. The professional level of the staff is also expected to rise as the number of staff with doctorate degree is expected to double in a few years.

The equipment and instruments have been operated and maintained properly and the necessary budget for their future maintenance could be also expected to be obtainable because the operating budget for the Department has been increased during the Project period based on the request from the Department. In addition, the Thai side will be able to expand the Project activities by its own expense because the Thai side has allocated the necessary budget to a considerable degree for the expansion of the Department's facilities such as in the installation of computer local area network (LAN) and the arrangement of

laboratories. The increase in research papers and the increment of papers accepted at international journals and conferences show the progress of research activities both in quantity and quality.

2. Broadcasting

2.1 Attainment

It is considered that transfer of technology in the field of broadcasting has been attained smoothly by the advice and guidance of Japanese experts. The provision of equipment, publishing of textbooks and training of counterparts have been carried out very well according to the master plan.

The curriculum of Department of Industrial Technology has been revised substantially where it includes subjects of the rapid progress in technology, such as High Definition TV, video test signal and digital technology.

Students of the Department of Industrial Technology have progressed in technical level due to the substantial curriculum and research facilities.

Research activities in Department of Industrial Technology have been improved by the advice of Japanese experts. The number and quality of the technical papers published by the Department have increased and developed.

2.2 Impact

One of the counterparts under the advice of Japanese experts has presented his research paper in the international conference held in Korea in 1992.

Students have made a receiving system with parabolic antenna by themselves, and succeeded in receiving of TV signal from satellites PALAPA and ASIASAT. This is utilized for the graduation thesis. Thus, improvement of the technical level in this Department is remarkable.

The employment rate of graduates from KMITL is 100 % and most of them are employed in the leading enterprises in Thailand. They are highly esteemed for their ability and potential by the industries. Also entrance examination results and admission proportion of students selecting KMITL have been kept in the first-class level. This shows that the demand of the students graduated from this Department is

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extremely strong in Thailand.

2.3 Sustainability

Electronic laboratory using the provided equipment has been introduced and carried out very well, and also textbooks written by counterparts are utilized in the class usefully.

Publishing of the advanced technical papers shows that knowledge and techniques of the lecturers and students in the Department have been improved greatly.

The number of the lecturers are increasing steadily under the effort of KMITL.

3. Data Communication

3.1 Attainment

Equipment provided by the Japanese side has been operated and maintained well by the Thai side.

The development of KMITL Management Information System (KMIS) which uses the equipment has been for the most part completed and is in operation. The equipment has been used in class as well.

In order to establish the campus network and the interuniversity network, a study on connectivity between the equipment and the networks was done.

As regards to the education in the Department of Computer Engineering, the curriculum was revised to meet the technology innovation. The part-time courses were also set up to meet the demand for larger number of engineers. Beside the current master of science program in Computer Science and Information Technology, the curriculum for the master of Computer Engineering was prepared to give another program in this discipline.

Objectives and curriculum were envisaged for the Faculty of Information Technology which was authorized in the Seventh National Development Plan.

3.2 Impact

The technology of online computer network was attained by KMITL staff and it is used for the university management to alleviate routine work. It has much possibility to open the door of new development for network which facilitates education and research.

KMITL is producing as many students as it could with the level which is matching the fast change of technology. Graduate course in this discipline is also strengthened.

3.3 Sustainability

The Thai side has attained the ability to maintain, operate and utilize the equipment. The Thai side also has enough knowledge to broaden the usage of the equipment.

It will be required for the Thai side to make best efforts and take appropriate measures to establish and develop the Faculty of Information Technology.

4. MECHANICAL ENGINEERING

4.1 Attainment

The objective in the field of mechanical engineering is to improve and to strengthen education and research activities in order to be able to contribute to the development of mechanical engineering in Thailand.

Curriculum for bachelor course students was reconsidered and improved. The most important subjects in mechanical engineering, such as mechanical engineering laboratory (experiments on mechanical engineering), mechanical drawing and machine design course, was modified and emphasized as major subject in the Department of Mechanical Engineering. The curriculum for master course student was also developed. These curricula have now been implemented to bachelor course and master course students. Education of the department has been strengthened through the improvement of curricula and utilization of many newly published textbooks and provided equipment in the Project.

All staff of the Department of Mechanical Engineering started their researches with advice and cooperation of Japanese experts. Their research activities have been extremely promoted. All of them have presented their research paper in the Mechanical Engineering Symposium in Thailand since 1990. Especially, in 1992, the number of papers which were presented by the staff of the Department of Mechanical Engineering was just 50% of all papers presented in the symposium. Furthermore, many papers have been presented in international conference and have been published in international technical journals and proceedings. Research cooperation between the Department and local companies has been made in the field of auto-technology, material engineering, tribology and

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mechatronics.

New technologies, such as CAD/CAM and mechatronics are also introduced to the education of mechanical laboratory, manufacturing process as well as the joint research in both Department of Mechanical Engineering and Department of Control Engineering. These Departments have contribute to the development of mechanical engineering in Thailand through the CNC Seminar held at KMITL in 1991 for technical colleges, the Mechanical Engineering Seminar held at KMITL in 1992 for university staff and engineers in the industries in Thailand.

4.2 Impact

Activities in education and research at the Department of Mechanical Engineering have been improved very much and have been highly evaluated. Applicants to the Department of Mechanical Engineering have increased and the students who entered to the Department have made good score. The graduates got good jobs and their work are highly evaluated.

Many staff of universities, which are developing a new mechanical engineering department, visit KMITL and discuss how to develop and promote the education and research activities of their departments. Also many Thai companies are interested in the Department of Mechanical Engineering and have made collaboration.

4.3 Sustainability

Maintenance and repair of the provided equipment are very important. The Department staff learned not only operation but also maintenance for the equipment. Local companies and agencies for maintenance and repair can be found for some big and accurate equipment such as CNC milling, electron scanning microscope, etc.

All staff have collaborated with Japanese counterparts who are professors in Japanese universities for their research, and then they can sustain and promote their research activities. The Department has made collaboration with many companies and that is very useful for promotion and leveling up of their research activities.

5. ADMINISTRATION

5.1 Organizational Sustainability

KMITL has become one of the top-level national universities, especially in the field of engineering.

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Graduates from KMITL are highly esteemed from the companies where they are employed. KMITL is also making an endeavor to increase their staff both in quality and in quantity.

It is expected that KMITL is able to continue to meet the social demand of producing engineers in great number, and also will contribute in research and development.

5.2 Budget Sustainability

The budget resource of KMITL administration comes from Ministry of University Affairs and from tuition fee paid by students. For research of the staff, they apply for the National Research Council of Thailand (NRCT) or the National Electronic and Computer Technology Center (NECTEC). Besides some joint research with companies is conducted.

The Japanese side suggested the Thai side to continue the effort to get the research budget.

VI . CONCLUSION

1. The Japanese side expressed high appreciation of the great efforts made by the Thai side for smooth transfer of technology through the Project, especially in terms of assignment of Thai counterparts, budgetary allocation and so on.
2. The Thai side also appreciated that the Japanese side had taken necessary measures for dispatching Japanese experts, accepting Thai counterparts in Japan and providing machinery and equipment.
3. Both sides were quite satisfied on the achievement of the Project in line with R/D and reaffirmed the implementation of the Project would provide significant contribution to the development of each field of Telecommunications, Broadcasting, Data Communication and Mechanical Engineering in the Kingdom of Thailand.

VII . OTHERS

1. The Japanese side strongly requested the Thai side to continue to try its best to meet the increasing needs for sustaining and strengthening activities in KMITL after the expiration of the Project.
2. The Thai side proposed the following future plans to strengthen and expand education and research activities in

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KMITL.

- (1) To develop the human resources in science and technology for the economic and social progress of Thailand and this region.
- (2) The technological field of cooperation is to cover at least the telecommunications and information technology as the core technology.
- (3) Both quality and quantity of graduates must be taken into account. The education and research are to be strengthened to meet the international standard and quality.
- (4) Key success of the cooperation such as ways and means to promote and support the academic staff is to be taken into account.

The Thai side added that an Individual Expert would be requested to assist in the formulation of the future cooperation.

The Japanese side responded to convey these future plans to the Japanese Authorities concerned for further consideration, and at the same time the Japanese side also advised the Thai side that various future plans were to be consulted with JICA Thailand office.

3. As for the establishment of the Faculty of Information Technology, the Thai side requested such cooperation which has been taken by JICA so far is needed for the efficient and effective attainment.
4. The Thai side expressed its interest in the After-care Cooperation in the future. The Japanese side stated that the After-care Cooperation Survey Team would be dispatched at the request of the Thai side after a few years of the date of the expiration of the Project.

