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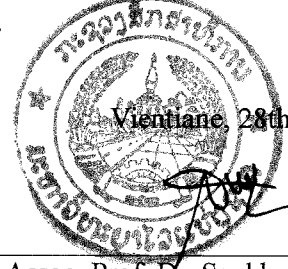
MINUTES OF MEETING

BETWEEN

JAPAN INTERNATIONAL COOPERATION AGENCY

AND

AUTHORITIES CONCERNED

OF

THE GOVERNMENT OF LAO PEOPLE'S DEMOCRATIC REPUBLIC

ON

JAPANESE TECHNICAL COOPERATION

ON

THE PROJECT FOR

THE UPGRADING IT EDUCATION

IN

THE NATIONAL UNIVERSITY OF LAOS

The Japanese Evaluation Team (hereinafter referred to as "the Japanese Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Shuichi IKEDA, visited the Lao People's Democratic Republic from 9 November to 29 November 2005.

During its stay in the Lao People's Democratic Republic, Japanese Team had a series of discussions with the Lao authorities concerned, and jointly evaluated the present achievements of the Upgrading of IT Education Project in the National University of Laos (hereinafter referred to as "the Project") and exchanged views on the project activities to fulfill the Record of Discussions signed on 4th March 2003.

As a result of discussions, both sides agreed to report to their respective Governments the matters referred to in the document attached hereto.

Vientiane, 28th November 2005

Mr. Shuichi IKEDA
Team Leader, Japanese Terminal Evaluation
Team for IT Bridge project
Deputy Resident Representative,
JICA Laos Office
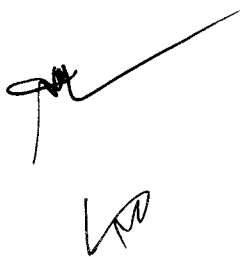
Assoc. Prof. Dr. Saykhong SAYNASINE
Project Director
Vice President
National University of Laos

ATTACHED DOCUMENT

JOINT TERMINAL EVALUATION REPORT
ON
THE PROJECT
FOR
THE UPGRADING IT EDUCATION
(INFORMATION TECHNOLOGY BRIDGING COURSE)
IN
THE NATIONAL UNIVERSITY OF LAOS

IN
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

November 28, 2005

LIST OF ABBREVIATION AND ACRONYMS USED

C/P	Counterpart Personnel
CU	Chulalongkorn University
ETL	Enterprise of Telecommunication Lao
FE	Faculty of Engineering
FEA	Faculty of Engineering and Architecture (* former name of FE)
HUT	Hanoi University of Technology
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
KMITL	King Mongkut's Institute of Technology Ladkrabang
LTC	Lao Telecommunication Company
M/M	Minutes of Meetings
M/M	Man Month
MU	Meiji University
NUOL	National University of Laos
OJT	On-the-Job Training
PDM	Project Design Matrix
PO	Plan of Operation
R/D	Record of Discussions
SEDP	Social Economic Development Plan
SOE	State Own Enterprises
TCE	The Third Country Expert
TU	Tokai University

In this Evaluation report, these specific abbreviations will be repeatedly used.

the Project	The implementation of the tripartite cooperation program for the upgrading IT education project (Information Technology bridging course)
the Team	The Terminal Evaluation Team
the Team	The Output team
the Course	The IT bridging course
the Output # / the Output team	The Counterparts' team set up for each output defined in PDM (Output 1-Output 7)

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INTRODUCTION

1-1 Purpose of Evaluation

The purposes of the Joint Final Evaluation on the Project are

(1) to verify the achievements of the Project compared to those planned (achievements of inputs, outputs and the Project purpose);

(2) to evaluate the Project based on the five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact and Sustainability); and

(3) to make recommendations for the actions to be taken in the future.

1-2 Schedule of the Team

The meetings of the Joint Evaluation Committee (hereafter referred to as "the Committee").were held from November 9 to 28, 2005. In the evaluation process, the Committee members interviewed and discussed with the governmental authorities and institutions relevant to the execution of the Project, including the National University of Laos (hereinafter referred to as "NUOL"), the Ministry of Education, and the King Mongkut's Institute of Technology Ladkrabang (hereinafter referred to as "KMITL"). The detailed schedule and Lists of Personnel Visited by the Evaluation Team is attached as "ANNEX 1-1"and "ANNEX 1-2".

1-3 Evaluators

The evaluation and the recommendations on the Project were done by the following members, which forms the Joint Evaluation Committee

1-3-1 Laotian Side

Assoc. Prof. Dr. Saykhong SAYNASINE	Project Director	Vice-President, National University of Laos
Assoc. Prof. Mr. Khampoui SOUTHISOMBATH	Project Manager	Vice Dean for Academic Affairs, Faculty of Engineering, National University of Laos

1-3-2 Japanese Side
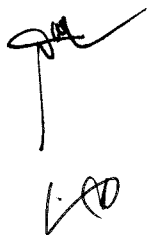
Mr. Shuichi IKEDA	Team Leader	Deputy Resident Representative, JICA Laos Office
Mr. Hiroyuki TOMITA	Cooperation Planning	Assistant Resident Representative, JICA Laos Office
Mr. Hiroaki ADACHI	Evaluation Planning	Program Officer, JICA Laos Office
Ms. Mizuno SOEKAWA	Project Effect Analysis	IC Net Co., Ltd

1-4 Methodology of Evaluation

Generally, the Project is recommended to be evaluated based on the Project Design Matrix (hereinafter referred to as "PDM") of this Project. The PDM (ANNEX 1-3) is a summary table describing the outline of the Project, which revised by the project team in September 2005. At this terminal evaluation, however, PDM had to be revised in accordance with the reality. One reason is because the original PDM was not sufficiently described with each image of the project purpose and outputs with specific verifiable indicators (Vagueness). Another reason is that qualitative indicators to measure the quality of outputs are not enough set (Unbalance of qualitative and quantitative viewpoint). The other reason is that some outputs needs to be rearranged because they were set in irrelevant level (logical inadequacy). Accordingly, the evaluation team developed the PDM for the terminal evaluation (PDMe) in order to conduct the evaluation smoothly. The detail shows in the ANNEX 1-4, "PDMe". In this PDMe, the evaluation team again confirmed that the only goal for NUOL_FE during this project to be attained is the situation which NUOL_FE becomes able to operate the IT bridging course by itself. Also, it is confirmed that this project covers only the IT bridging course (2- year twilight course), then, the IT regular course (5-years course started in 2005) is not directly in the scope of this project in terms of PDM.

1-4-1 Evaluation Procedure

The Joint Evaluation Team developed the evaluation grid (ANNEX 1-5) which identified the specific evaluation points and the data collection methods. For the data and information collection, the Committee applied various methods such as reviewing several reports submitted by the project, conducting the questionnaire survey to the current students, the graduates. As well as the observation of the course and laboratory, interviews were also applied for the Lao side counterparts, namely the project director, the project manager, project coordinators, and teaching staff. Additionally, a simple needs-survey of Industrial Business sector in Lao was conducted for confirming the project relevance which is aiming to satisfy the IT human resources needs of Lao PDR in the future. The Team analyzed and evaluated the Project the achievement level of the Project, the implementation process from the viewpoint of PDM (Project Evaluation Matrix). Based on which facts, five evaluation criteria such as Relevance, Effectiveness, Efficiency, Impact and Sustainability were analyzed. Finally, the Team made the recommendations and drew the lessons learned from the results.

1-4-2 Points for the evaluation

Achievement level and Implementation Process of the Project

The achievement level in terms of Inputs, Activities, Outputs, and Project Purpose was assessed in comparison with the PDMe which was set for this terminal evaluation based on the PDM revised in September 2005.   The implementation process of the Project was also confirmed from the various viewpoints.

Evaluation Criteria

The following five evaluation criteria are applied to the project evaluation.

(1) <u>Relevance</u>:   Relevance of the Project is considered from a viewpoint of the validity of the Project Purpose and Overall Goal in connection with the development policy of the Government of Lao PDR and the needs of beneficiaries of the Project.

(2) <u>Effectiveness</u>:   Effectiveness is found from a point of whether the Project has actually benefited the target group and whether the project is effective.   It also assesses whether the Project Purpose is being achieved as expected and whether that is in the result of the project's Outputs.

(3) <u>Efficiency</u>:   Efficiency verifies whether the project was efficient in terms of effective use of resources. The relationship between Inputs and Outputs is reviewed.   In essence, Efficiency examines whether the input cost is appropriate for the degree of achievement on the Outputs and the Project Purpose and whether other means would have been more efficient than the current project.

(4) <u>Impact</u>:   Impact examines the indirect effects and extended effects by the project in the long run.   The analysis also includes the positive and negative impacts that were not expected when the project was planned.

(5) <u>Sustainability</u>:   Sustainability of the Project was focused on institutional, financial and technical aspects by examining the current extent to what the achievement of the Project is sustained or expanded.

1-4-3 Sources of information used for Evaluation

The sources of information used for this evaluation are as follows:

- The Record of Discussions of the IT Upgrading Program signed on 4th March 2003
- The Ex-ante evaluation report of the IT Upgrading Program (Summary)
- The PDM version 1 revised from the original version
- The records of inputs and outputs from the Japanese and Laotian sides and activities of the Project including;

> ➢ Minutes of JCC meetings/ Minutes of IT committee/ Leaflet of the IT bridging course/ Leaflet of the FE, and other project records

- The Questionnaires distributed to the current students of the IT bridging course
- The Course Evaluation for the Graduates in June-July, 2005
- Interviews with some current students and graduates
- Concise Survey of the Demand of Lao PDR on Electronic Communication Engineer, Electrical Engineers and Computer Engineers, JICA Expert Office in NUOL, 1999
- The Survey Report – IT Personnel Needs Survey in Vientiane Municipality, JICA Expert Office in NUOL, 2004
- The Alumni Survey for the IT Bridging curse Curriculum Evaluation, conducted by the Project, 2005
- The Survey Report – IT schools in Vientiane, conducted by JICA Expert Office in NUOL, 2004
- The Final Report of Tokai University, September, 2005
- Interview with Japanese long-term and short-term experts, former JICA officials in charge of the project, the tripartite experts (KMITL), and the Laotian authorities/counterparts concerned (Project Director, Project Manager, Project coordinators, Each counterparts, Lecturers, and IT committee member)

For references, following reports are utilized;
- The Country Assistance Evaluation of Laos, MOFA, 2004
- The Approaches for Systematic Planning of Development Projects- higher education, JICA, 2004
- The Survey Report for Business center in Japan-Lao Center, JICA Laos, 2005
- The Approaches for Systematic Planning of Development Projects- Higher Education, JICA, 2004
- The Approaches for Systematic Planning of Development Projects- Information and Communication Technology, J ICA, 2004

2. BACKGROUND AND SUMMARY OF THE PROJECT

2-1 Background

In the year 1999, National University f Laos (hereafter NUOL), Japan International Cooperation Agency (hereafter JICA), and King Mongkut's Institute of Technology (hereafter KMITL) Thailand had decided together to implement the tripartite cooperation program on upgrading twelve (12) staff members of the Faculty of Engineering to obtain the Bachelor's degrees in either computer engineering or electronic engineering from KMITL. After consecutive two years of operation, such a project had reached its goal beautifully and with a highly recognized success multilateral cooperative project done in the south-south cooperation. Such a program has not only strengthened the department of electronic engineering, but also has driven the faculty of engineering to draw a plan of more prospective project.

In October 2001, the faculty of engineering, NUOL and Faculty of Engineering, KMITL agreed to request the assistance from JICA for a new cooperation framework; IT Bridging Course. The new cooperation framework has enable the faculty of engineering to set up and run IT Bridging course, Bachelor degree in Information Technology (B.IT.). The target groups of this project are those who hold higher diploma certificate or bachelor degree in Engineering, Sciences, Mathematics or any related fields. To produce two groups of IT students, the period of the project is set to three years (terminate in March 2006). The number of participants of the whole project is about sixty (60). The first group is planned for those who are NUOL and government sectors. The second group will be more opened that those who are from private sectors are included. Throughout the implementation, lectures are from Japan, NUOL and KMITL. After the completion of the pilot two groups, the program will be continuously conducted the faculty of engineering.

2-2 Summary of the Project

The master plan was prepared in the Minutes of Meetings (M/M) signed on March 4th 2003 and was revised by the M/M signed on February 22nd, 2005. The summary of the Project is shown below.

(1) Objective of the Project

1. Overall Goal

Faculty of Engineering, NUOL, will be able to produce Information Technology (IT) human resources effectively to fill the demands of governmental / industrial sectors.

2. Project Purpose

Faculty of Engineering, NUOL, is capable to run a Bachelor degree course in Information Technology field.

(2) Output of the Project

1. A Bachelor degree course in IT field is prepared and developed to meet the needs of society.
2. Management of facilities, tools and equipment in the Department of Electronics is improved.
3. Facilities, tools and equipment for IT program are sufficiently provided.
4. A number of teaching staff in IT field is to be assigned and trained for the course.
5. A system is established to enable the staff of WRIC to provide necessary information on water resources management to decision-makers, planners and researchers by utilizing the water resources information system.
6. A number of bachelor degree graduates in the IT field are produced for FE, is government and private organization.
7. Research capability of FE teaching staff in IT and IT related fields is strengthened.

(3) Activities of the Project (Refer to the PDM: ANNEX 1-3 for details)

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3. ACHIEVEMENT OF THE PROJECT

3-1. Actual Input

Inputs from the Japanese side - as of November, 2005

(1) Long-term experts (ANNEX 2-1)

   One (1) long-term expert was dispatched to serve as Chief Engineering Technical Advisor and Coordinator (total 32 MM [man month], and it will amount to 36MM by the end of the project).

(2) Short-term experts (Japanese) (ANNEX 2-1)

   A total of fourteen (14) short-term experts have been dispatched (total 27.37MM, and it will be amount to33.87 MM by the end of the Project.)

(3) Tripartite experts (KMITL) (ANNEX 2-2)

   Short-term experts have been dispatched as Lecturers and Project Coordinators (total 134.8MM, and it will amount to 156 MM by the end of the Project.), which are input from Japanese side

(4) Counterpart trainings in Japan and the Third Country (ANNEX 2-3)

   Five (5) counterparts were accepted for training in Japan in September, 2004 (total 1.5 MM), and thirty-two (32) in Thailand in December 2003 and forty-five (45) in December 2004

(5) Provision of Machinery and Equipment

   Machinery and equipment amounting Japanese JPY 22,202,000 was provided as of March 2005, and there will not be any more disbursed by the end of the Project.

(6) Operation expenses of the project (ANNEX 2-4)

   USD 438,377 (approximately JPY 52,105,480) was provided as of November, 2005

   (The exchange rate: USD 1 = JPY 118.86, as of November, 2005).   It will be amount to JPY 55,883,000 by the end of the Project.

Inputs from the Laos side

(1) Counterpart personnel assigned for the Project (ANNEX 2-5)

   By November 2005, a total of twenty-seven (27) personnel members including the

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following have been assigned.   It should be noted that some personnel serve several posts concurrently.

- 1 Project Director[1]
- 1 Project Manager[2]
- 4 Project Coordinators
- 7 Heads of Output teams
- 12 IT committee members
- and 12 Teaching staffs (lecturer)

(2) Provision of facilities and equipment

The following were provided by the Laotian side.

- Necessary security for all laboratories and equipment.
- Office space for the Experts
- Computer rooms and classroom

(3) Project Implementation Cost (ANNEX 2-6)

Total of 124,075,000 LAK (approximately JPY 1,475,251.75) were provided as the entire revenue of the IT bridging course including tuition fee and registration fee. (The exchange rate: 1 Lao Kip = 0.01189 Japanese Yen as of November, 2005)

Inputs from the Thai side
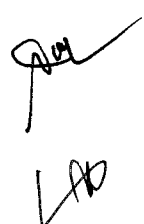
(1) Short-term experts are dispatched from KMITL, before mentioned in (3) as Inputs from the Japanese side

(2) Acceptance of participants on study/research trip to Thailand

Twice as a total study trips were accepted by Thai side in December 2003 and November 2004 as mentioned in (5) as Inputs from the Japanese side

3-2. Accomplishment of Activities

Overall, the activities of the Project have been carried out in a timely manner. Although the delay of the activities affected the project progress to some extent, most of the activities are likely to be completed by November 2005.   The degree of accomplishment in each activity at the time of the terminal evaluation is summarized in ANNEX 3-1.   It is includes the plan in the rest half year by March 2006.

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[1] During the period, the member was changed once.
[2] Ibid

3-3. Achievement of Outputs

The achievement level of each Output is shown below. Seven output teams appointed by the Project are in charge of each output.

Output 1:	Achieved	A Bachelor degree course in IT field is prepared and developed to meet the needs of society.
Indicators:		1. A curriculum of IT field is prepared, recommended by the authority, and implemented.
		2. Social needs for IT human resources are investigated and analyzed periodically, on which the curriculum are revised.
		3. Most of current students and graduates highly appreciate the curriculum developed in the course. (PDMe Indicator)

Note: Output 1 covers only the IT bridging course (2-year twilight course). Thus the regular IT course (5-year course started in 2005) is out of scope of this project.

The overall achievement level of output 1 is good. Since the curriculum (Annex 3-2) of IT field was developed and approved by Ministry of Education (MOE), the course was implemented and started in 2003 (Indicator 1). The Course already produced 26 graduates (group A) with a Bachelor's degree in January 2005 and 36 students (group B) will graduate in January 2006. The group C students who enrolled in 2005 and are learning according to a new curriculum revised in 2005 have not graduated yet. The original curriculum (two years) was fully implemented at the beginning of the Project, and then the revised curriculum (three years) was starting in academic year 2004-2005. With regard to the social needs (Indicator 2), the curriculum reflects them well since it was reconsidered and revised in 2004 during the 2nd year through collaboration of a Japanese short-term expert and the Output 1 team, although the curriculum was already proceeding on schedule for groups A and B. To help revise the curriculum, several surveys on needs such as IT school survey and Industrial survey were conducted in 2004-2005. Such effort shows that the project is dedicated to meeting real demands of IT human resources in Lao PDR.

As of the terminal evaluation, eighty-six (86) % of current students (Group B) and ninety-two (92) % of the graduates (Group A) [3] are satisfied with the curriculum that enables the students to apply their knowledge and skills acquired in the Course at work, and more than 90 % appreciated the subjects, the length, and the activities of the Course (Indicator 3)[4].

To make sure that the curriculum reflects the actual situation of the Laotian society, the Project needs to regularly revise the curriculum. The function of the Output 1 will be

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[3] For Group A it is referred from "The Course Evaluation for the Graduates" conducted by the Project July 2005

[4] For more detail, refer to the record of the summary of a questionnaire survey (Annex 3-7).

maintained even after the project period because, according to the University regulations, any curriculum has to be checked and revised every other year if it is needed.   Thus, the Output 1 team is still active in monitoring whether the curriculum works.   In sum, a Bachelor's degree course in IT field is prepared and developed to meet the needs of society as planned.

Output 2:	Almost achieved	Management capability of facilities, tools and equipment in the Department of Electronics is improved.
Indicators:		1. To prevent problems of the facilities and equipment, the management system is utilized. (PDMe Indicator) 2. Two supervisors appointed in FE are trained for the purpose of the management of the facilities and equipment input in the project 3. A framework for management of facilities and equipment (rules, inventory lists, monitoring reports, etc) is prepared and utilized (PDMe Indicator)

Note: Output 2 targets all facilities and equipment in laboratories provided through this project

Output 2 has been almost achieved in view of 3 Indicators.   With regard to prevention of problems (Indicator 1), though there is no benchmark data to be compared, since the start of the project, not many critical technical problems or missing cases. Some machinery is yet currently out of order as follows.   These are not scheduled to be repaired, partly because the replacement of new parts obtained from Japan is difficult and expensive. Overall, however, only minor repairs covered by a small fee or guarantee by the manufacturers have been reported.

Facilities and Equipment in Out of order as of November 2005

Date Received	Equipment Type	Maker and Model	Unit Price (US$)
31 March 2003	Printer-InkJet	EPSON Stylus C82	195.00
31 March 2003	Printer-InkJet	EPSON Stylus C82	195.00
31 March 2003	Access Point	Cisco Aironet 350 AIR-AP352EC	835.00
31 March 2003	Hub	3COM Hub 8 Port	130.00
31 March 2003	Hub	3COM Hub 8 Port	130.00
6 October 2003	Printer-InkJet	EPSON Stylus C82	195.00
6 October 2003	Printer-InkJet	EPSON Stylus C82	195.00
31 March 2004	Memory-Flash Drive	Apacer Handy Steno	373.00

From the regular report monitored by the Output 2 team

For management of the facilities, five supervisors from FE_NUOL have so far been appointed as the Output 2 members and trained on how to manage and operate the equipment (Indicator 2).   In the training sessions, supervisors acquire the basic skills for daily maintenance.   Utilizing these skills, supervisors take an important role of dealing with the

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troubleshooting for not only the Course but also the entire FE as well. A framework for management of facilities and equipment has been developed and implemented by the team (Indicator 3). This framework includes setting a regulation for use of the lab, monitoring rules, introducing a procedure with formats for renting equipment out, and numbering of inventory.

Check sheet / format for Managing the Equipments and Facilities prepared by the Team

#	Name
1	Account & Password list for the server
2	Computer Password list
3	IP configure list
4	Maintenance form
5	Borrowing record book
6	Software list
7	Equipment list

From the Interview with the Output 3 team by the Evaluation team

Checking and monitoring of utility and conditions of the facilities based on the inventory list is routine in the Team, and regularly (monthly) reported to the IT committee. It is important for the Project to recognize the budget for procuring new machinery would hardly be allocated by FE_NUOL in the future. Thus, the Team should pays more attention to administration of the equipment' condition to sustain them as long as possible. In this regard, only basic care and maintenance are enough for keeping the machinery in good shape since the facilities and equipment procured to the Course are neither high-tech nor the latest models. From the observation of the lab and equipment, the status of operation and maintenance of the equipment seems to be good as shown in pictures as of the terminal evaluation. (Annex 3-3)

In sum, management capability of facilities, tools and equipment in the Department of Electronics has been improved due to the effort of the Team members so far. To ensure the skills of facilities management more, there are some issues. One of them is that the operation and maintenance framework is still to be improved. Since these Operation and Management skills often tend to be personal in general, they should be made a common property among the entire Project member. It is thus recommended to share the administration skills and knowledge broadly among the entire Project through such tools as 1) a manual on how to administer facilities and equipment so that anyone can easily understand the procedure even after a personnel shuffle, and 2) a continuous in-house training on operation and maintenance for FE staff by the Team. These continuous management

activities for keeping the facilities and equipment must contribute for sustainability of this Course.. The second is the financial issue for operation and maintenance of the equipment. Such a case of lack of fee is highly likely, depending on the allocation of budget from FE. Therefore, to keep the facility in good shape for the Course utilization, the Project, first of all, should realize it is not likely to obtain ample funds for newly purchasing or maintaining equipment after the Project termination. Then, it is strongly recommended for the Project work out substitute plans to assure an operation and maintenance fee for the equipment by using its own facilities in the remaining period of the Project. This assurance of the condition of facilities and equipment is essential for keeping the quality of the Course.

Output 3:	Achieved	Facilities, tools and equipment for IT program are properly procured
Indicators:	1. A register of the equipment procured is properly prepared 2. Am inventory of the equipment procured is properly prepared	

As for this Output 3, the progress of procurement has been monitored by the Team and registered in detail. To improve procurement, the Team has compared several estimates by manufacturers, and proposed the best choice to the IT committee. The Team carefully keeps records of the price, quantity, and the place to be set in an inventory list. Timely monitoring of the equipment's condition is needed to respond promptly to repair needs, the Output 3 Team works closely with the Output 2 team.

Output 3 is achieved well for the procurement to the Project. If the Course has new facilities after the Project termination, this function of promoting proper procurement will still be needed. Thus it is essential to check whether the actual disbursement is within the original projection in total. Such strict financial management is essential under the constraints of a small budget.

Output 4:	Almost Achieved	A number of teaching staff in IT field is to be assigned and trained for the course.
Indicators:	1. Approximately 10 regular teaching staffs are trained for instructional quality improvement. 2. Approximately 5 new teaching staffs are trained before the beginning of their teaching profession. 3. Approximately 10 teaching staffs are trained for a modified curriculum and project supervision. 4. Training framework for the new and current teaching staffs is prepared. (PDMe Indicator)	

Output 4 is almost achieved. To date, one training session for teaching staff

members have been provided by the Project for ten (10) existed teachers in August 2004. Though basically training session to teachers is supposed to be conducted in every year before starting a semester, it is not yet fulfilled to the expected number partly because of delayed recruiting of five (5) new teachers. Invited lectures teaching how to teach provided their own hand-out, and no official training manual, materials and tools have been provided by the Output 4 team since it might violate the copyright. In this training, practical skills how to grade and elaborate any given material in class are included. The participants in the training session are selected by the Output 4 team. Since the number of participants has to be fewer than that of the entire lecturers of classes in the IT bridging course, some cannot take the training sessions. Untrained staff members can manage the class if necessary, but the quality of teaching varies. Two-day teachers training provided by FE for new staff members has also been utilized for the lecturers in this course. But the training conducted by the Project is more detailed for the IT course. Accordingly, most of the IT course lecturers who participated in the training sessions appreciated it, saying that it definitely helped improve their teaching capability.

With regard to Indicator 4, the Team is confident with technically providing the training because they established the framework of teachers training, reported the Team. However, there are still financial barriers to continuing this training for teaching staff members. To have the training for a week, the Project has to bear per diem and the necessary documentation fee for each participant[5]. To ensure the teaching quality in this IT course even after the Project termination, it is very important to make a substitute plan of the continuous capacity development for teaching staff such as utilizing several OJT schemes which would cost less than the training session. Some teachers pointed out that working as Teaching Assistance (TA) greatly contributes to acquiring teaching methods from diverse teachers[6], which might also be an option. Teachers' meeting is another idea to share colleague's teaching style. Since a substitute plan is a priority, it is desirable to elaborate it before March 2006. If the activities to improve teachers' capability cannot be continued by the Project, the quality in teaching in the Course would be diminished.

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[5] The amount is approximately 1-1.5 USD per participant a day, reported the Project.
[6] From the interviews with lecturers

Output 5:	Almost Achieved	Teaching manuals/textbooks and glossary for IT subjects written in Lao Language are to be prepared and developed by the teaching staff of FE
Indicators:		1. Ten (10) textbooks are prepared and developed. 2. Teaching manuals are developed for twenty (20) given subjects 3. A One (1) glossary of IT technical terms is prepared. 4. Teaching manuals and textbooks of additional five (5) subjects are developed. 5. Most of the current students, the graduates and the teaching staff appreciate materials (15 textbooks and 1grossary)developed in the IT course.(PDMe Indicator) 6. Those materials developed in the IT course are periodically revised by the FE teaching staff. (PDMe Indicator)

Note that Output 4 originally covered only indicators 1, 2, and 3.

Generally, the materials in Lao are not sufficiently provided, so developing all materials in Lao for the IT course is essential to assure the quality of the course. Based on the original material of teaching manuals produced by Japanese and Thai experts, each Lao lecturer appointed in charge of each subject translates the material into Lao. Then, it is printed out after editing and correction by the Head of the Output 5 team. More than thirty-five copies of all manuals and textbooks are stocked in the library for students use. As for producing a glossary, the Team has often called for concerned knowledgeable persons from industrial sectors to the IT fields and Lao language specialists in a round table for discussing and standardizing the idea of technical words in English and Lao. This cooperation works well and has succeeded in producing the first IT glossary ever in Lao.

So far, one technical glossary, eleven (11) of twenty (20) teaching materials and four (4) of ten (10) textbooks were produced in Lao by the Project. The rest are yet to be completed. As for the Indicator 4, developing materials for 5 newly additional subjects, has not yet started because it was newly set at the revision of PDM in September 2005.

Achievement Status as of November 2005

	Plan	Actual	Rate
Teaching materials	20	11	55%
Textbooks	10	4	40%
A technical glossary	1	1	100%

From the Interview with the Output 5 team by the Evaluation team

The reasons that the task was long delayed are as follows: 1) there are language barriers between English and Lao. It is sometimes difficult for the Lao staff members to fully understand what the Japanese experts wanted to explain in English, which is a second

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language for both, in comparison to materials in Thai. 2) The author (translator) has little time to concentrate on translating textbooks and teaching manual because most of them are lecturers who teach several classes as well as the project members in charge of each output in PDM. In the remaining period, the Project needs to ensure that all materials are completed in Lao including the 5 new subjects. Though the Output 5 team now tries to push each author to complete all the manuals and textbooks by March 2006, whether such goal can be achieved is highly questionable.

On the other hand, as for Indicator 5, most students in group C who use the textbooks and glossary developed by the Project highly appreciated them compared to group B which could not use them much within their classes. As shown in the bar chart as follows, eighty-two (82)% of group C think that the materials and textbooks are "very effective" for their study, while the only twenty-six (26)% of group B think so.[7]

As for Indicator 6, the Output 5 team realizes the necessity of the importance regular revision in its task even after the Project ended. To ensure matching to the up-date technology, it is important to plan a measure to support the activity of revising these materials developed.

Output 6:	Almost achieved	the Operation and Administration system of the Course is properly implemented
Indicators:		1. An organization or system is established for management and administration of the course 2. Study-tour, commencement, Seminar are at least once executed during the project 3. The operation and administration of the course are highly appreciated by the students and graduates (PDMe Indicator)

Regarding Indicator 1, the functional framework of the Course as shown in Annex 3-4 was established form the beginning of the Project.   As for Indicator 2, so far a study tour in Japan and two in Thailand have been conducted for group A and B, and will have the opportunity to go to Japan in January 2006.   A commencement, several seminars and workshops were conducted during the Project by the Team.   From the group B period, the Team independently managed the process of inviting the foreign experts.   For more detail, refer to the Annex 3-5.   As for Indicator 3, more than ninety (90) % of the current students in both group B and C are satisfied expressing as "effective" and "Very effective" with the administration and operation system.

Although it was reported that there are some minor problems in registration, payment

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[7] Refer to Annex 3-7 for more detail result of the survey from the current students

fee, and communication between students and the administrative office, they are basically satisfied with the administration including several related activities. As shown in the followings, the Project regularly conducts the evaluation from students on each subject, asking about the teaching quality and subject contents.

Summary of all Evaluation conducted during the Project

Category	Survey Title	Purpose(s)	Target group	Survey Time	Frequency
Internal project monitoring/ assessment	Teaching Performance Evaluation	To evaluate the teaching performance of lecturers who taught in the IT project	All students of each subject.	At the end of each subject	60
Internal project monitoring/ assessment	Seminar and Workshop Evaluation	To evaluate the benefit of each seminar, the environment of seminar or workshop and also the performance of the invited speaker.	All participants of each seminar or workshop.	At the end of each seminar or workshop	33
Internal project monitoring/ assessment	Study Trip Evaluation	To evaluate the benefit of the study trip, the visiting places, the training during study trip and the host university.	All participants of each study trip.	Dec 2003, Dec 2004, Oct 2004	3
Need/Impact assessment & internal project assessment	Curriculum Evaluation	To confirm what kind of subjects are most needed for reflecting the actual needs for IT personnel prior to revising the Curriculum,	Several *	April - May 2005	1
Need/Impact assessment	IT School Survey in VTE	Ibid	IT School in Vientiane	November-December 2004	1

From the document produced by the Third Country Experts

For the Team member, the administrative skills and knowledge are transferred by the third country experts through daily work by OJT, so that only the Lao staff members could manage the Course independently. Thus the Team is now technically confident about its operation and management in some parts, while the Team still has to depend on the third-country experts. To ensure the achievement of this Output 6, the Project may consider that the administrative skills and knowledge should be stocked not only in the Output 6 team but in the entire Project. Thus, it is required for the third-country experts to clarify what they are routinely doing for the Course management, and to transfer them properly to the entire project members, specifically the project coordinators who are supposed to administer the whole project after March 2006. Public relations (PR) are also an important function of administration of the Course, though it is not stated in PDM. Thus, in addition to the existing brochure, such tools as the Monthly Report would be utilized for PR of the IT bridging course. They are to be delivered to the relevant ministries, major industrial sector,

and donors.

Output 7:	Not yet fully achieved	Research capability of FE teaching staff in IT and IT related fields is strengthened.
Indicators:		1. Approximately three simple research works (i.e., designing of study, collecting of data, and analyzing from the data) are conducted. 2. Research groups (3-4 groups) are set up and lab space will be allocated accordingly. 3. Research promotion and motivation activity (such as robot contest) are held at least once a year

Output 7, strengthening the research capability of FE teaching staff in IT fields, has not yet been fully achieved. This is simply because starting of this trial has been delayed due to the staff's capacity of doing research had not been satisfactory until year 2005. In the 1st and 2nd years of the Project, several teaching staff members were absent for their obtaining degrees in Thailand and Japan. Accordingly, the number of classes per a teaching staff member was too many, and there was no excess capacity in the Project members to conduct research. Also, the environment for promoting research, such as setting up laboratories and choosing research topics, had not been done for the years. In 2005, the research groups which hold several topics for each were set as follows (Indicator 1).

Four laboratories established by the Project

Research Topic	Advisor	NUOL teaching staff (C/P)
1) Research on the Base of Embedded Technology	Prof. Shigeyuki. Ohara (Tokai Uni.)	Mr.Xaysamone Dittaphong, Mr.Khamphang Thoummakesone, Kanthanon
2) Developing a web-based training course for information technology	Prof. Hisao Tamaki (Meiji Uni)	Mr.Phimmasone Sisaat
3) Research of the joining technology of the IT equipment device	Prof. Tadashi Ariga (Tokai Uni.)	Mr. Keokanlaya Sihalath, Mr. Phonexay Khammavono, Mr. Thongvanh Vilayphonh, Mr. Phankhy Panekeo
4) Short-range wireless data communications for IT infrastructure	Prof. Tetsushi Ikegami (Meiji Uni)	Ms.Douangsamone Phetsomphou, Mr.Phonepasuert Satahack

From the final report of Tokai University

Since the research has just started, no article appeared on international or domestic journals. However, as the achievement of these research projects, at least three (3) of these topics are supposed to be published by the end of March 2006 (Indicator 2). Nevertheless,

for sustaining the research projects in labs, it is still needed to mend the lack of financial support for advanced equipment, lack of technical expertise in IT, and of human resources who are proficient in research methods.

Regarding the Indicator 3, conducting research promotion activities, a Robot contest is representative of this output. Although this is not financially supported by the Project, it gives great influence on the study in the Course, in applying its technology and motivating students to acquire new technology. Prior to the contest, Japanese short-term experts are to travel to the provinces to have a preparation workshop, providing information and ideas on new technology to the rural area.

A few more works are required for the Project to fulfill the Output 7 during the remaining four months. By March 2006, the foundation for sustaining the research in lab should be firmly established. This means that the NUOL staff members have to acquire the research methods and experiences as much as possible from the experts before the Project termination. The members have to cope with the loads of research activities besides teaching regular class and other Outputs activities. Thus, the Team identified some points that need to be carried out:

- Ensure that the research project members are able to take time for research and/or experiments, and secure the number of research members in lab and make sure they are not replaced so often.
- Make sure that research members can communicate with Japanese and Thai professors closely during their absence from Lao via e-mail and JICA-NET[8].
- Stock research methods and skills taught by the experts in each lab
- Work out the idea to assure financial support to research from outside resources, such as Cooperative research with major State-owned enterprises with Lao brewery, ETL, or LTC.

3-4 Achievement of Project Purpose
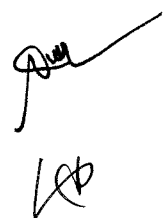
Project Purpose	Almost achieved	Faculty of Engineering, NUOL, is capable to run a Bachelor degree course in Information Technology field
Indicators:		1. NUOL_FE is able to run a Bachelor degree program in IT by itself by the end of year 2005 2. At least 80% of admitted student is graduated every year

The Project Purpose, "Faculty of Engineering, NUOL, is capable of running a

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[8] the record of effective use of JICA-Net during the Project appears in Annex 3-6

Bachelor's degree course in the Information Technology field" is likely to be achieved, but not completely. For the Indicator 1, three aspects should be considered; teaching skills, research skills, and administrative capability. Regarding the teaching capability of Lao lecturers in the Course, the Project has started the Group C which is taught by the all Laotian teaching staff without supporting from any foreign experts in 2005. Although the quality level of some classes are vary, so far the Laotian lecturers have become almost independent with regard to "Teaching" except for five (5) new subjects added from the curriculum revised in 2005. Transfer of teaching skills to counterparts has been conducted in various ways, e.g., teachers' training sessions, teaching assistant in the classroom, as co-advisor in Project I&II, and as a researcher in a research group. Regarding the level of advising to the Project I and II in the final year (almost equivalent to Thesis), it is still difficult for a Laotian staff member by himself to lead the students. It is because during group A and B Japanese or Thai experts were guiding them as main advisors, where Laotian staff members rather served as supporting the experts in the aspect of administration rather collaborating as co-advisors. Concerning the capability of research and development, it is hard to evaluate it because four laboratories have just been established in 2005 and started simple research activities scheduled to publish by the end of March in 2006. Turning to administration and management aspects of the Course, the Project has successfully formed the basic framework, which requires that the Course is run by all Laotian staff members including the IT committee, project coordinators, and seven (7) output teams. (Annex 3-4) Each player has its job description or Plan of Operation (PO) decided by the Project strictly following the PDM. Setting the project coordinators as administrative staff is a good first step for establishing the secretariat office of this IT course. Four Project coordinators were appointed. However, only one staff member works as a full-time official, and the other three concurrently hold regular posts such as lecturers. Regarding skills in detailed administrative procedures and rules, Laotian staff members have to depend greatly on the Thai experts who actually established and implemented the whole management base of the Course. However, the head of the project coordinators has gradually acquired such skills from the Thai experts as how to put together records and reports, send official letters, obtain authorities' signatures, and prepare meetings.

For the Indicator 2, quantitative means of verifications, the passing rate of Group A reached almost eighty (80) %. Group B is also supposed to produce 36 of 41 students who complete the Course at the end of January 2006 with the passing rate of more than eighty (80) % as follows.
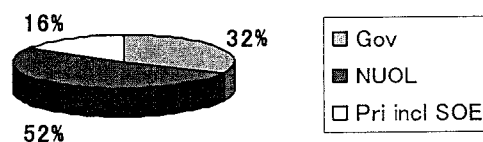
	Entrants	Graduates	Passing Rate
Group A	31	26	83.8%
Group B	38	36 (prospects as of Nov. 2005)	94.8%
Group C	40	NA	NA

From the Project record and JCC documents

Group-A classed by their job nature (enrolment base)

Government staff	10	32%
NUOL staff	16	52%
State Own Enterprise	5	16%

16% 32%
52%

☐ Gov
▦ NUOL
☐ Pri incl SOE

Group-B classed by their job nature (enrolment base)

Government staff	16	42%
NUOL staff	9	24%
Private company staff	13	34%

34% 42%
24%

☐ Government
▦ NUOL
☐ Private
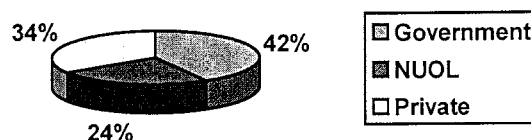
Group-C classed by their job nature (enrolment base)

Government staff	11	27.5%
NUOL staff	0	0%
Private company staff	29	72.5%

28%
0%
72%

☐ Government
▦ NUOL
☐ Private
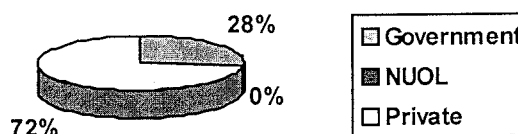
In sum, the Project has achieved its Project Purpose to a certain extent in the aspects of 1) the fact that NUOL_FE is able to run a Bachelor's degree course and 2) producing the graduate with 80% passing rates. However, the Project still has room for improvement in the aspects of 1) guiding students in the Project I and II, 2) setting the solid foundation for proceeding research activities in four research groups, and 3) strengthening the administrative system of the Course.

4. EVALUATION

4-1 Relevance

Overall, the relevance of the Project is very high in the aspect of social needs, while it is weak in the Project planning. The details are as follows.

Relevance of the Project for the Lao government's policy

Since the first time that the importance of education in IT fields was recognized at the Party National Convention in March 2001, utilization of IT has actively been promoted as a means of industrialization and modernization in Lao PDR. In this regard, the Lao government's policy on developing human resources contributing to a market economy was stipulated in the Fifth Five-Year National Social Economic Development Plan (NSEDP 2001-2005).[1] However, in Lao PDR use of IT is still limited partly due to lack of engineers and technicians in the field. Several surveys show that the very unsatisfactory state of computer literacy even among the staff now using the available equipment[2]. In order to remedy such a serious disparity between other ASEAN countries and the country as well as to meet the international standards in modern IT systems for governmental and industrial sectors, Lao PDR urgently needs to develop human resources capable of applying IT skills and knowledge. This project aims to contribute to the economic development of Lao PDR by fulfilling the needs of human resources in its governmental and industrial sectors through running the Bachelor's degree course in the IT field. This is in line with the fifth NSEDP mentioned above, specifically the 2nd goal to "Secure the sustainable economic development", and the 8th goal to "Promote the human resources development". It was also clearly defined in the NSEDP that the development of human resources in the IT field is indispensable for expanding the industrial and service sectors.

Thus, it is confirmed that the Project is in line with the specific needs of the governmental and industrial sectors regarding IT Personnel of the Lao PDR. The Overall Goal and the Purpose of this Upgrading IT Education Project are therefore consistent with the Lao government policy and industrial needs.

Relevance of the Project for Japanese policy

This project is totally in line with the Japanese ODA policy in developing human resources. The Ministry of Foreign Affairs of Japan stated that human resource development

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[1] NSEDP is composed of sector development strategies and each sector strategy has sector goals.
[2] JICA, "IT Project on Development of Information Technology Education at FEA, NUOL", 2001

is the first priority in assistance policy to the Lao PDR. The Japan International Cooperation Agency (JICA) also clearly emphasized 1) Capacity Enhancement of the Administration, and 2) Promotion of the Private Sector in the five mid-term prioritized issues[5] Specifically, "Improvement of Education and Vocational Training" is pursued in another priority area, namely 3) Development of an Equitable and Health Society. In addition, "Improvement of Curriculum" and "Improvement of Teaching skills and quality" should be pursued as Development Objective of its strategic approaches toward development of higher education[6]. Similarly, as for approaches in the field of information technology, it is defined as essential to ensure at least a certain number of people who are competent at least to a certain technical level, to satisfy needs in terms of both quantity and quality[7]. In this point, the Project matches this "Human resource development in IT" approach as its project purpose indicates. Therefore, the Project is highly consistent with the Japanese policy on international development assistance.

Relevance of the Project for Society's Needs

It is revealed that several governments' offices and major enterprises in the industrial sector of Lao PDR have high expectations for IT human resources produced by the Project as prospective IT officers[8]. It is because the Course is the only educational institution providing up-to-date information technology as well as system administrative skills that are essential in the industrial sector. "Concise Survey of the Demand of Lao PDR on Electronic Communication Engineer, Electrical Engineers and Computer Engineers" conducted by JICA Expert Office in 1999 clearly confirmed that there is a quite big demand for IT personnel but a very limited supply. In particular, it was proved there are the prominent needs for such system administration skills as Network, Database, and Internet/Web for both the governmental offices and private enterprises in "IT survey in Vientiane municipality "conducted by JICA Expert Office in 2004 as shown in the following chart..

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[5] JICA,"Purposes and Priority Areas of JICA's Cooperatin to the Lao", 2005, and MOFA, "Country Assistance Evaluation of Laos", 2004
[6] JICA, "the Approaches for Systematic Planning of Development Projects- higher education" , 2004
[7] JICA, "Ibid - Information and Communication Technology" , 2004
[8] According to the Interviews by the Joint Evaluation Team in November 2005

	Field	Existing	Need	Total		Field	Existing	Need	Total
a	User/PC operator	34	88	122	h	Instructor/trainer	8	47	55
b	Database	33	68	101	i	Software engineering	4	38	42
c	Internet/web	18	58	76	j	Programmer C++	4	36	40
d	Network	20	51	71	k	Programmer Java	15	18	33
e	MIS Manager	39	28	67	l	Multimedia	2	27	29
f	System analyst	12	48	60	m	Sale	3	19	22
g	User support	13	42	55	n	Programmer C	4	13	17
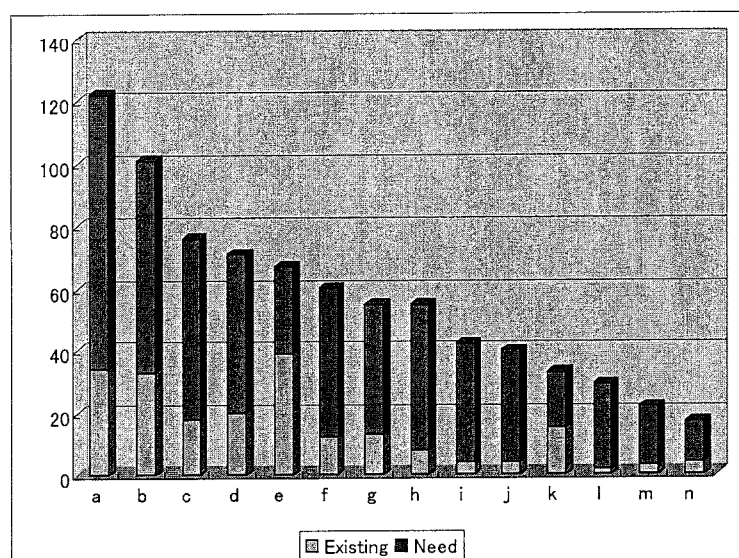
In the Project, the Course curriculum faithfully reflects the result of these several needs-surveys and was revised in 2004-2005. This overall trend was validated in several interviews conducted by the Team for this terminal evaluation. They pointed out in the new curriculum of the Course[9] that the subjects such as "Network Technology and Internet", "Security in IT System", and "Programming" are specifically useful for the actual work. This indicates that the Project is confirmed to be in properly accordance with the specific needs of the governmental and industrial sectors regarding IT personnel.

Relevance of the Project strategy

From the view of setting PDM, Project Purpose, and Target, the Project is relevant in its strategy to some extent.

[PDM]

The original PDM[10] was drafted jointly JICA-NUOL. However, it seems not to be

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[9] Ibid
[10] It is reported that the Project revised it for better applying to the Course, FE NUOL shortly after the Project
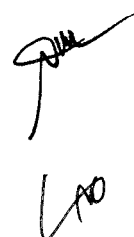
well understood among the project members what the logic of the PDM is and how to express their plan, and then, elaborated by mainly the experts. It might be said that it was more initiated by foreign experts than by the ownership of NUOL because the request for establishing the IT bachelor's degree course was somehow urgently needed to be decided in a top-down fashion before the Project initiated. In revision of PDM in 2005, however, it was shared and discussed among the entire committee members, and the Japanese experts, and then approved at the Joint Coordinating Committee (JCC).

[Project Purpose]

The Project purpose and outputs with each indicator seem to have some confusion in the PDM probably because of the vagueness, and weakness in logic and in expression of the PDM.

Firstly, under the limitation of inputs and the period of three years, it seemed overly ambitious to set the Project Propose of aiming "to be able to run the Bachelor's degree course in IT by FE itself". If FE really hoped to independently operate the Course in three (3) years, the outputs might have emphasized the aspect of improving the administrative framework as well as strengthening the technical academic aspects. It is in general an important factor to consider administrative aspects as well as substantial technical aspects in the case of setting up the higher educational institution. Nevertheless in this Project, improving the administration ability with a firm foundation was not clearly pursued in PDM and such activities as the entire administrative issues were put under one of the Outputs of the PDM. The whole administrative issues such as students' registration, monitoring learning and teaching progress and quality, and conducting activities in the Course are just one task of seven outputs. Probably because of this, in this terminal evaluation it was found that not a little number of the Project members think the project purpose is just to produce sixty (60) Bachelor's degree holders. For all that, this Project was so unique that was rather aiming to meet the urgent demands of the IT personnel in NUOL, the governmental offices, and private sectors in the context of the emerging IT industrialization. Thus, the project is well-founded to set the first priority on producing the maximum number of IT Bachelor's degree holders as possible by concentrating its limited inputs and period. In this regard, the Project was setting the indicator of the 6th Output with the expression of "producing approximately fifty graduates in IT field are produced by FE" In such a case, it is still regrettable that the Project should have more specifically considered in setting the PDM and the Project Purpose, and should share them among the entire project members.

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started.

Secondly, the Project did not often specify the qualitative aspects of the outputs in the PDM. In this case, the Project is not able to properly judge its achievement level because the output might be low quality even if it is fulfilled in quantity. Though this might be attributed to lack of clarity and weak logic of the PDM, the Project team should have paid more attention to sharing the actual Project purpose, namely to be independent in both substantial and administrative aspects among the counterparts.

Finally, from the project purpose in the original PDM, some might point out that it was hard to tell whether the Project aimed at establishing the IT bridging course or including the support for the regular IT course of five years. It is the fact that concerned members of the Project were aware of that the regular IT course (1+4 years) could be within the scope of the Project at the ex-ante evaluation of the Project. Nevertheless, the concerned members found that it would not promote any independent effort of the Lao counterparts to start preparing the regular IT course if the Project goes far as to include supporting of it as well as the IT bridging course. Considering this, the Project finally decided not to mention about the regular IT course in the PDM, and rather to focus on the IT bridging course. As a result, yet, during the Project period, the new activities for setting a new curriculum for the regular IT course were actually conducted by the short-term experts. However, this support for a regular IT course was quite reasonable for the Project in order to keep consistency in both curriculums.

[Target beneficiaries]

The selection of target beneficiaries in this Project, namely higher diploma holders in the relevant area, was appropriate. Currently, the number of higher diploma holders is constantly increasing, which indicates that the needs for a Bachelor's degree is still high and the Project producing Bachelor's degree holders in an efficient way matches such social needs. As for setting the target of the Faculty of Engineering and Architecture (FEA, currently FE), it is appropriate because it is the faculty that uses computer all the time for IT purposes, and also an institution that most current IT related personnel have graduated from since the formulation of NUOL in 1995. Thus, FE (FEA) should be a target beneficiary of this project. Direct beneficiaries of the Project, group A and B, mainly consist of NUOL teaching staff as well as the government officials. Thus, the Project can quickly produce prospective teachers in the IT fields in NUOL who can guide the students by transferring their knowledge acquired in the Course. As a result, twelve (12) NUOL staff members of Group A now play an important role of teaching various areas of IT in NUOL. Nine (9) persons from NUOL faculties joined in Group B and are also expected to be again back to teaching in NUOL after graduation.

Therefore, it is highly relevant to set higher diploma holders and FE as the main targets for producing the Bachelor's degree holders in the most efficient ways.

Relevance of the Project for the approach

The approaches of this project are unique and include the followings: 1) tripartite corporation, 2) contracting out to the Japanese university the technical and substantial support, 3) distance-learning through JICA-NET, and 4) under JICA Laos Office's supervision. Utilizing the third country expert greatly helps achieve the Project Purpose. Selecting Thailand as a third country was the best choice for Lao PDR due to its similarity in culture and language as well as its being a neighboring country of Lao PDR which contributes to efficiency. Appointing KMITL from several candidate universities in Thailand also helps develop the Course because KMITL had substantial knowledge and skills on administration and management of an academic course from its experience in establishing a Master's degree course in Thailand. As for contracting out to a Japanese university (Tokai University, hereafter TU), it is also appropriate since such a package deal enables efficient arrangement of dispatching several short-term experts to Lao PDR.   it is convenient to communicate with a specific office of the University for preparing to invite more than ten (10) experts at once.   In addition, even when they are in Japan, it made possible close communication and discussion on the Project among the professors in TU simply because they are colleagues in the same campus. Appointing one university in charge of technical advisors to the Project had also a positive impact of initiating cooperation between the two universities such as concluding the Academic and Cultural Exchange Activities between TU and NUOL in 2003.

Relevance of project planning

Given any project's time constraints, a project purpose should be set very carefully. However, this Project was weak in its setting of the original plan. The original curriculum for IT human resources of the IT bridging course did not reflect Lao PDR's real needs for IT human resources. There was certainly no sample of the curriculum in the relevant areas in Lao PDR at the time of establishing this Course. Thus, the original curriculum committee[11] had to take samples from Thailand or Japan that already had many courses at the university level, and then the draft of the curriculum was approved by concerned authorities of Lao PDR. As a result, the curriculum had to be revised in 2004 to strengthen system administration subjects, after the Project realized the actual needs for IT human resources in Lao PDR from the result of a needs survey in the industrial sector. This curriculum revision had a

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[11] The committee was reported to consist of a Japanese expert, KIMITL experts, and NUOL staff.

significant impact on the achievement of project purpose since it will not be confirmed until 2007 whether or not the current curriculum works. Therefore, careful attention and analysis are needed on how the preconditions the Project at the planning stage.

4-2 Effectiveness

It is fair to say that the Effectiveness of the Project was fine from the four perspectives; 1) probability of achieving the project purpose, 2) contribution of the outputs to the project purpose, 3) influence of the important assumptions, and 4) hampering and promoting factors. The details are as follows.

Probability of achieving the project purpose

Based on the achievement of the Outputs and the Project Purpose in the PDM, the Project is likely to fulfill its purpose. The curriculum was already developed and implemented as IT bridging course, producing the sixty-one (61) Bachelor's degree holders (including a prospect of group B who is scheduled to graduate in January 2006) with the passing rate of eighty (80) %. Regarding the 2nd indicators of the two for the Project Purpose, passing rates are successfully fulfilled in the group A and B. However, as for the 1st indicator, support from the outside is still needed. The support is needed for the Course to keep its quality, specifically in the capability of the Lao counterparts for 1) teaching and advising Group C students, 2) setting the solid foundation for proceeding research activities, and 3) strengthening the administrative system of the Course.

Contribution of the outputs to the project purpose

The achievement of Outputs almost contributes to fulfilling the Project Purpose[12]. This means that the project design is appropriate, and all seven Outputs of the Project are relevant to achieving the establishment of the Course. However, the Project did not specify the qualitative aspects of the outputs in the PDM as explained in the previous section on relevance[13]. When the qualitative aspects are taken into consideration, the Project needs more work to achieve the expected results. At this point, the overall effectiveness of the project is not likely to be as high as originally expected in ex-ante evaluation which has the qualitative indicators for the Project purpose[14]. Similarly, as stated in the section on relevance of project planning, the Project, due to its limited resources, may have concentrated on producing Bachelor's degree holders by providing the classes by Thailand and Japanese

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[12] Based on interviews with the counterparts and the Japanese experts.
[13] This means that the PDM did not mention the level of quality to be satisfied
[14] "Graduates will be highly appreciated for their skills and knowledge at work"

experts. Thus, the entire administrative activities were mainly conducted by the third country experts, and partly set as just one Output in the PDM. This might have caused weakened the management foundation of the Course, and hampered the achievement of the Project Purpose aiming at being capable of running the IT Bachelor's degree course.

Influence of the important assumption

An Important Assumption that "Academic staff members remain in the FE and NUOL" affected the progress of the project activities. Three (3) candidates for lecturers in the FE who had a Master's degree did not come back to Lao PDR in 2003 at the beginning of the Project, but continued their doctoral course supported by SEED-NET. Some might point out the important assumption was not fulfilled and it was a major loss to the Project that three (3) of the eight (8) prospective teaching staff members who were expected to join the Project did not so do. Other replacements and promotions in the faculty also occurred during the project period. Due to lack of human resources who would have taken the lead in the Project as teaching staff members, the incumbent teachers had so many classes to work on that they were unable to conduct research activities. Accordingly, the research and studies in four (4) labs has just started in 2005 after the number of teaching staff members was back to the expected level. This means an Important Assumption[15] described in the PDM was not fulfilled. Though by 2006 most of the staff members abroad will gradually come back and join the Course, their absence hampered the Project progress and lowered the effectiveness of the Project.

However, it is a prior investment for the Course to be sustainable since these human resources with higher degree must contribute to assure the quality of the Course in the future. In this regard, it is fair to say that this important assumption might have caused the Project of a short period, yet, contributed positively to the Project in a long term.

Hampering and Promoting factors

As stated in Section 4-1 on relevance, the factors that hampered the achievement of the Project Purpose were the following; 1) setting the original PDM without well considering the clarity and logic; and 2) not reflecting the actual needs for IT human resources in the original curriculum. Meanwhile, positive aspects of the Project were as follows: 1) several dedicated staff members of the Project managed to perform many tasks concurrently, 2) all the Output teams strictly followed the PO and did their best to meet their output goals by the end

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[15] This assumption is "academic staff remains in the FE and NUOL." The other important assumption that "the project is approved by the concerned authorities in Laos, Japan and Thailand" was fortunately fulfilled during the Project duration.

of the Project, and 3) the entire Project progress was shared at regular meetings and all the activities were discussed among the counterparts. In addition to the good working relationships among the Project members, it should be noted that the efficient resource allocation of the inputs (see the next section on Efficiency for detail) contributed to the achievement of the Project. Moreover, the continuous effort of the Japanese long-term expert to keep close relationships with the senior officials of FE as well as the Project members was essential for achieving the Project purpose. Due to close communications with the Dean and the Vice Dean of FE, the Project was broadly recognized within the Faculty and gained its understanding and cooperation for the activities.

4-3 Efficiency

Conversion of the inputs to the outputs of the Project was very efficient from the following aspects: 1) human resources, 2) facilities and equipment, and 3) acceptance to training in Japanese and a third country. It is also fair to say that the Project was highly efficient in cooperation with other concerned activities.

Human resources input

The Outputs were reasonable for the amount of human resources input, namely Japanese short-term experts, long term experts, the third-country experts, and Lao counterparts. It should be noted that the Japanese short-term experts were to stay in Lao PDR only during the vacations in the academic calendar of Japan, which required a tight schedule for both students and the Project including the experts themselves, but very efficient for the Project. Accordingly, the experts were supposed to have a seminar and class worth three credits only during two or three weeks in March and August. Regarding the allocation of Lao counterparts, the number of the Project members was inadequate for accomplishing activities of the PDM to begin with, but was increased to a sufficient level following the original plan. As for the third-country experts, they had no problem in their inputs. Furthermore, their staying in Lao PDR at the maximum of ten (10) M/M a year greatly contributed to operating the Course and transferring their skills to the counterparts. However, as for the Output 1 aiming at curriculum development, a Japanese expert engaged in developing the new curriculum of the IT department (so called "1+4 years" curriculum). This duty was not stated in either the original PDM or the revised one and was, strictly speaking, outside their responsibility. But it was indispensable for making consistent the curriculums of the IT bridging course and the IT department. Had the Department received no assistance from the Project, it would have failed to develop its curriculum and caused a critical delay in requesting an approval by the MOE. Thus, the input of Japanese short-term

experts for developing the curriculum of the IT department was imperative and reasonable.

Facilities and Equipment

With regard to the facilities and equipment, they were properly procured to the Project in quality, quantity, and timing, and well utilized. In an unscheduled but positive step, two Japanese universities (TU and MU) provided the total of hundred eighty-nine (189) second-hand computers to FE, greatly contributing to improvement of computer literacy and utilization of students. The Output 2 and 3 team and the Project coordinators monitored the progress of procurement and submitted a monthly report to the IT committee.

Acceptance to Japanese and the Third-Country training

As for the training sessions in Japan and the third-country, they were properly scheduled and conducted in 2003 and 2004 as study tours that was explained in "the achievement of Output 6". For this fiscal year, the 2nd tour to Japan is scheduled for January 2006 after the commencement. Thus, the counterparts were adequately accepted to training in Japan and the third country and utilize them well in the Course and at work.

Monitoring the project activities

The Project held various kinds of meetings among concerned personnel to share information and the Project's progress. These meetings were very effective in monitoring the activities. In addition, the Project closely followed the PO specifying all the output goals, milestones, check-points, and deadlines of each activity. Although some outputs were not yet completed on schedule as mentioned before in the achievement section, the Project members did their best to follow the PO and monitor their own activities and progress. Also, the Joint Coordinating Committee (JCC) held twice a year to check and monitor the progress of each activity and discuss any problems occurred in the Project.

Cooperation with other parties and activities

Serving simultaneously as a technical advisor for FE, the Japanese long-term expert successfully demonstrated synergy effects to the Project by publicizing the Project to the entire FE and asking for cooperation with the IT course through such means as staff enrolment in the Course. 1) The Robot Contest and 2) AUN/SEED-Net were also examples of synergy. Firstly, the Robot Contest has been regularly conducted by the JICA Expert office at NUOL in cooperation with major companies of Lao PDR to encourage students to

acquire new technology and as a means to meet the Project's objectives.[16]   By participating in the contest, the staff members and students in the IT course improved their skills and knowledge on new technology, and subsequently applied them to their Project and research. SEED-NET, standing for ASEAN University Network / Southeast Asia Engineering Education Development Network, is the scheme established in April 2001 as an autonomous sub-network of AUN.   Its main purpose is to reinforce production of master's and doctor's degree holders in engineering fields within the Member Institutions in order to create sustainable capability of human resource development.   Specifically, within its member countries, Lao PDR is one of the most benefited countries, producing sixteen (16) Master's degrees in engineering from FE, NUOL, and twenty-six (26) more are now being dispatched to acquire post master degrees.   This scheme is efficiently incorporated in the IT bridging course project, and both are complementary to each other in order to develop the IT human resources in Lao PDR.   Because of the network, the Project could find broad options in the case of inviting experts for the course.   For instance currently the Project tries to cooperate with the experts from Hanoi University of Technology (HUT) and Chulalongkorn University (CU) except for KMITL in the Research.   Meanwhile, due to the participation of the SEED-Net from the IT project, it has occurred that the Project has faced a tentative shortage of the staff.   It is true SEED-Net gives such an unexpected minus factor on the Project, yet, the staff members have a chance to join the Master's and Doctor's degree courses abroad to acquire advanced knowledge on IT that they are expected to utilize in teaching and research activities soon after they return to Lao PDR.

Other promoting factors for realization of the efficiency

In sum, most of the inputs were delivered timely, and the amount and quality of inputs were appropriate for the Project.   Besides, several unique features of this Project were a great help to its efficiency.   The Project was much more efficient in financial terms than the average Japanese technical cooperation scheme.   In general, the total cost for a 5-year technical cooperation project is estimated as about four (4) million USD (approximately 500,000, 000 JPY, depending on the exchange rate), indicating that about from zero point eight (0.8) to one (1) million USD is normally used for the implementation of a project. Meanwhile, the Project used only an estimated zero point five (0.5) million USD per year. The factors contributing to this efficient Project implementation are the following;

■   Dispatching only one (1) Japanese long-term expert

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[16] As of November 2005, the contests have been held nationwide four times since 2002, and highly appreciated by the concerned parties in Lao PDR including the related Ministries.

- Tripartite cooperation in utilizing of the third country experts
- "Contracting out" scheme regarding the specific technical expertise for Japanese universities (TU & MU)
- JICA-NET as distance learning tools for compensating for the absence of Japanese short-term experts (Annex 3-6)
- Supervision under the regional JICA office to assure the mobility to the Project.

Such efficiency is brought about not only by the combination of the schemes above, but also by 1) appropriate selection of experts and 2) project formulation in a good circumstance following the former project. As for the selection of the Japanese short-term experts, Tokai University (TU) was the best partner for this cooperation because the university has had a long experience in supporting KMITL since 1965, and dispatched its academic staff members to NUOL to apply their skills and experience of the support from 2000. Given this historical relationship between TU and KMITL as well as NUOL, the university had a tremendous advantage over other inexperienced institutions in this technical cooperation. KMITL was also the best candidate as a third country expert because KMITL was already close to NUOL as well as TU in the former JICA-backed project, the so-called "Diploma program" in FE between 1999 and 2001. In addition, the main expert from KMITL had relevant experiences in establishing a Master's degree course in Thailand. That was why the Japanese long-term expert personally asked to him to join the Project in setting up this IT Course. Furthermore, project formulation was adequately in line with the direction of the former project, i.e., aiming at producing Bachelor's degree holders in FE through dispatching twelve (12) staff members to KMITL. As the successor to the former project, the Project was upgraded to establish the Bachelor's degree course by FE itself.

4-4 Impact

Judged from the probability of achieving the overall goal, and other factors, it is fair to say that the Project gives a positive impact on Lao society. Negative impacts caused by the Project were not observed at the time of the terminal evaluation. The realization of the Project Purpose is certainly expected to lead to fulfillment of the Overall Goal[17] by 2010 as stated in the PDM. However, such outcome will happen only if the quality of the IT bridging course is successfully sustained with the curriculum reflecting the social needs for IT human resources.

Above all, the impact on the IT department that has a five-year regular course should

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[17] Overall Goal: FE will be able to produce IT human resources effectively to fill the demands of governmental / industrial sectors

be emphasized. The graduates or the lecturers who acquired skills and knowledge in the IT course are expected to serve as teachers of the IT department in the future. They are the only Bachelor's holders in IT produced by a domestic university and valuable to NUOL. Even if not in the IT department, the graduates of the Course could utilize their IT skills and knowledge in other faculties because all departments and faculties utilize IT and need IT personnel.

In the concrete, so far the Project produced twenty-six (26) graduates from Group A who are back to their office by now, consisting of thirteen (13) NUOL staffs, seven (7) Governmental officials, and four (4) State own enterprises (SOE). Similarly, in Group B, nine (9) NUOL staffs, sixteen (16) governmental officials, and thirteen (13) personnel from private companies are supposed to utilize IT skills at their offices[18]. Thus, twenty-two (22) staff members have been produced to NUOL with IT skills produced by the Course. Turning the viewpoint to the outside NUOL, approximately sixty (60) organizations both governmental and private (including SOE) can be considered as major organizations in Vientiane related to IT and with high necessity of IT personnel, according to the number of target in IT personnel needs survey[19]. With the IT personnel produced by the Project, almost sixty-six (66) %[20] of major organizations needed for IT personnel in Vientiane can be fulfilled their demands. Although it is obviously too hasty to reach the conclusion with such a simple comparison based on insufficient data, it helps to grasp the brief extent of impact by the Project. In addition, it was observed at the time of this terminal evaluation that some graduates have already applied their skills and knowledge to their work which are highly appreciated by their boss and colleagues. Some are promoted to a Head or Chief of the IT section, who is in-charge the entire issues related to IT in their organizations (Annex 3-8).

Regarding the administrative system, the Project gives another impact on the FE that follows the recruiting system of students employed by the Project. To make the new entrants' quality relatively consistent, the group B of the Project has tried to adopt a mixture of examinations and interviews and held pre-sessions of English and Mathematics that should enable students to at least keep up with the Course. This combination of examinations and pre-sessions[21] worked well in keeping the students' quality to a certain level. Another positive impact on the industrial sector is that the students can apply IT skills and knowledge

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[18] According to the questionnaires survey of current students (Annex 3-7) and the summary of the Alumni survey for the curriculum evaluation.

[19] JICA Expert office, the Survey Report, "IT personnel Needs Survey in Vientiane Municipality", 2004

[20] $((11+16+13)/60)$

[21] For example, for group C, applications sent to the Course were more than 110, and then 60 passed the examinations and interviews. After such a procedure, 6 weeks of pre-session is conducted for the candidates to select the final entrants of 40.

at work immediately, since they join the Course while having regular work.

4-5 Sustainability

Compared to other four criteria of evaluation, the sustainability of the Project seems to be lower. It is because the IT bridging course is not so firmly secured either in the technical aspects of education and research, or the functional aspects of administration. It is no doubt that the IT bridging course itself will be continued after the Project terminates since the functional and organizational framework already exists. Meanwhile, the quality of the Course that the Project has pursued to keep during this three years might not be assured. Seeing of the current situation of the Course, it has not a solid technical and administrative foundation yet. This might lead into the low quality of the Course in the near future. Specifically, if the Course will not be able to provide such as a curriculum revision, a study tour, a teachers' training, and equipment in a good condition any more, it might hard for the Course to sustain its quality as is now. Low quality of the Course will cause to lose its high reputation from the Lao society, and then, the number of applicants will decrease. Accordingly, the suitability of the Course itself will be not secured.
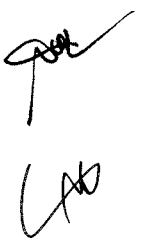
However, it is fair to say that it was too hard for the Project to firmly establish these aspects in three years because the Project holds the nature of technical cooperation in the higher education explained later. Thus, the Team finally decided the sustainability of the Project is not considerably low and also will be assured if the Project starts dealing with those issues from now on for the Course. The entire Project members should work out another plan in substitution for these activities by March 2006 because this is the top priority for the sustainability of the Course.

Institutional Aspects

Institutional sustainability is likely to be sustained. The fifth NSEDP clearly defined that the development of human resources in the IT field is indispensable for expanding the industrial and service sectors. Such high expectations on producing capable IT personnel will continue, reported the Sixth SEDP draft for 2006-2010. MOE and NUOL will also keep the IT bridging course[22], for which FE has already recruited the group D (the 4th batch) by itself. This means the course will be operated at least until their graduation in 2008.

The organizational framework established by the Project is likely to be sustained. Although some Outputs team might be integrated and the personnel in-charge be replaced,

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[22] According to the interview with DG of MOE and Vice dean of NUOL

each function is essential to operating the IT course. There is a consensus that the management of the Course is not yet perfect, but it has been improved and the ownership of the Lao side has increased as well. The IT committee, the project director, and the project manager will constitute a decision making body by all the Lao counterparts. However, it may be questionable whether the project coordinators without any support from the third country experts could operate the Course. In some aspects they still have to depend on the experts, especially in some issues of daily administration, the assurance teaching and students, supervision of the information database regarding the Course, and among different faculties, though the counterparts have been trying to acquire administrative skills from the experts. Thus, in the remaining period, under the supervision of the experts, the counterparts, especially the Project coordinators, must acquire the entire skills and knowledge of administration. Meanwhile, that knowledge should be stored at the project office of the IT course.

Financial Aspects

Basically, the operation of the Course has been covered by itself since it's established. The revenue is all from the registration fee, a tuition fee, and a certificate fee of the students. Arrears of these payments are also supposed to charge on. During the 3 years, the total earnings from those fees and miscellaneous amounts for about twelve point four Million LAK (124,075,000 LAK), including the estimation for the rest period. The total operation cost of the Course[23] is projected to be maintained within this amount. However, soon after the Project is ended, the budget for procuring the equipments and operating and maintaining of the facilities will be terminated. Additionally, several activities will be discontinued, such as study-tours to Japan and Thailand, teachers' trainings, and material development. The prospect is bleak for budget allocation to the IT course from NUOL to compensate for them. This might lead the quality of the course to lower. More human resources probably posted than now for prospecting the staff members returning from their study abroad might be a help in keeping the quality of the Course; yet, still the financial situation around the Course gives no grounds for optimism.

To ensure financial sustainability of the Project, by the end of the project, it is strongly recommended for the counterparts to realize the actual situation that they will confront soon after the Project ends. Then, the Project should find its own way of generating funds for both in keeping quality 1) of teaching and researching and 2) of maintaining the facilities. For this, it might be an idea that the cooperation between FE and an industrial

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[23] It is estimated to 119, 989,400 LAK as of November 2005; see Chapter 3 for detail balance.

sector in conducting a group research cooperating with major State Own Enterprises (ETL, LTC, Lao brewery, etc) and in inviting the external Lao experts who work for International organizations or other foreign companies located in VTE as visiting lecturers to the Course.

Technical Aspects

Technically, the capability of teaching in the class, the Laotian lecturers are almost independent except for some subjects newly added in the curriculum. Meanwhile, the lecturers' ability for advising and guiding students in Project I and II is still inadequate. They need more experience in doing research by themselves. As for the research capacity, no studies have been done yet since laboratory activities have just started. Therefore, in the two aspects of advising and researching, it is too early to regard the Lao counterparts as independent.

To keep improving the Lecturer's technical ability in teaching, the idea to invite the guest lecturers from outside of NUOL, such as from the industrial sectors, might be an idea, which enable them to know how to actually utilize the academic knowledge to the work related to IT. There is already one case that a graduate from group A, who is now the head of the IT section in a SOE, is invited to the Course in order to transfer his skills and knowledge acquired the class and his actual job.

Other Aspects- Morale

There is a great matter of concern in addition to the three aspects above. It is the demoralization among the Project members. Recently several cases of the Lao lecturers sometimes coming late or skipping the class have been reported. Similarly, scores of the previous examinations in some subjects have not yet been noticed back to students even several months passed. Such situations did not occur often in the groups A and B, but they did in the group C. This might indicate that the morale of the lecturers is getting lower without any supervision by the foreign experts. Basically, a teaching staff member belonging to NUOL is paid only approximately thirty (30) $[24] a month plus additional salary for extra work in the night time. Even worse, the lecturers in charge of any activities in the Project concurrently are already overworked. Thus, it is quite difficult to keep the lecturers motivated unless other incentives work for them. During the Project, however, many counterparts are highly motivated because they find it valuable to work with and learn from the Thai and Japanese experts, according to the interview survey. If these are real, it seems

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[24] It is officially stipulated that a governmental official worked for 10 years with a Bachelor's degree receives 370500 LAK a month as of 2003, reported relevant information brought by JICA Expert office.

hard to compensate for such moral incentives of the lecturers after the Project terminates. This is an unexpected situation which should be urgently addressed by the Project. Otherwise, the course will have difficulty operating the new three (3) year curriculum. Therefore, before the Project duration is over, the Project must devise a plan to promote the lecturers' commitment to the Course and the other tasks.

To assure the sustainability

For all that, the Team admits the fact that it takes time to strengthen a capacity of function in higher education. It can be hardly judged only in three years whether the function would be assured or not. Specifically, these following factors should be considered in its evaluation; 1) the expected level of teaching staff in higher education is quite high compared to primary and secondary level, 2) yet, research ability and teaching skills cannot be developed in a few years, 3) also, environmental conditions, e.g., materials and laboratory, need to be fully prepared, and 4) the whole organizational involvement of FE and NUOL is essential to sustain the Course function. Taking this into consideration, the evaluation team found that the Project for upgrading the IT course with limited resources was not completely aiming at capacity development in such organizational and functional aspect which requires a long-term cooperation more than three years. Thus, the Team finally decided the sustainability of the Project is not considerably low compared to other technical cooperation in other sectors, and will be assured if the technical and administrative aspects are urgently dealt with by the Project before March 2006 in order to keep the quality of the Course.

5. CONCLUSION

5-1 Results of Evaluation

The evaluation team concludes that the Project is likely to be achieved its Project Purpose aiming at "FE is capable to run a Bachelor degree course in Information Technology field". Since the Project started in April 2003, a great deal of effort by the Lao side, particularly the Project members, was put into the Project in order to develop the Bachelor's degree course in the IT fields. Although it was the first attempt ever to produce IT bachelor's degree holders domestically, the Course has successfully produced more than sixty (60) Bachelor's degree holders in the IT field by the end of the Project. Even under tight limitations of inputs and the project duration, the level of achievement is quite high compared to other similar projects. It usually takes a long time to see the outputs of human resources development such as through education projects, but the achievement of this Project has been already appreciated by several concerned agencies. Therefore, responding the huge demands for IT personnel in Lao PDR, the IT bridging course is highly hoped to be kept after March 2006 regardless of Japanese support. Considering several factors above, it is not a reasonable decision to just terminate all support for the Project. A small but positive sign of developing IT human resources in the Lao PDR, which has gradually began to appear now, might be diminished soon after the termination of the Project support. It is true that the Project is not fully assured its sustainability at the time of this terminal evaluation. Thus, in order to assure the sustainability of the Course, and still it is strongly recommended for the Project to deal with the technical and administrative issues abovementioned before March 2006. Specifically, it is essential to conduct such points as follows; 1) Planning again detail schedule and tasks to be accomplished by March 2006, 2) Clarifying what the experts did or do routinely for the Course management, 3) Transferring the skills and experiences of the experts to the Project members, 4) Working out the strategy to cover the financial issues for keeping the quality of the Course, and 5) Preparing for the role to administer the Course by itself after April 2006.

It is also proposed for JICA to continue supporting in the aspects of improving the Lao counterpart's capabilities of 1) teaching and advising Group C students until their graduation in 2007, 2) supporting to set the solid foundation of proceeding research activities in four research groups, and 3) strengthening the administrative system of the Course, such as the function of regular revision of the curriculum and materials according to the up-to-data technological advancement.

5-2 Recommendations

Findings by the Team show that the Project has been successful in influencing IT personnel education in the Lao P.D.R., and is highly appreciated by most of the organizations concerned. In order to assure the Project's achievements during the past 2 and a half years up to the end of the Project, the Team has made recommendations that the following issues should be addressed by NUOL-FE and JICA. The Team also recognizes the need for the continuous support of NUOL-FE by Japan and Thailand after the termination of the Project (March 2006).

(1) Issues towards the end of the project period (by March, 2006)

There are a couple of matters which the Project needs to accomplish before the completion of the Project. Firstly, regarding "Output 4," the Project, together with FE, needs to assure the appointment of lecturers with appropriate skills and knowledge to teach additional subjects in Group C. Since the curriculum for Group C was modified to meet the needs within Lao society, and the number of subjects to be taught was increased, there is the need to assign additional lecturers for the new subjects. There is also another issue relating to "Output 4." Several samples collected by the Team during the mission indicate that the quality of education in Group C tended to fall short of the expectations of students. It is probably not only because of lecturers' skills and knowledge but also because of the manner in which they conduct their classes. A couple of interviewees reported that lecturers sometimes do not start the class on time. It is possible that the lecturers' manner in class could affect the quality of the course, and may damage the good reputation which the Project has earned. The Project and FE, therefore, need to take some measures to ensure that lecturers conduct class in a professional and appropriate manner.

Secondly, regarding "Output 5," the development of teaching manuals and textbooks should be concluded before the completion of the project. Development of these materials is planned to be completed by March 2006, but a substantial delay has been anticipated. It will be difficult to maintain the same level of "Input" from the Japanese and Thai side as FE has had during the Project once the Project has been completed. Manuals and textbooks, therefore, are the most important tools for FE to assure the quality of the IT Bridging Course. The Team has strongly recommended that FE should complete these materials before March 2006 while FE still has input from the Project.

The third issue for the Project to complete by March 2006 is related to "Output 6." It will be a challenge for the administration unit of the IT Bridging Course to improve the course's operation and administration because a Thai expert has mainly dealt with operation and administration until the middle of the year 2005. Operation and administration of the

course includes financial management, personnel management, admission of the students, advertisement of the course to organizations, and the conducting of a needs survey for curriculum revision. In order to assure sustainability of the accredited course by FE, the Project needs to transfer skills and knowledge for its operation and administration from Thai experts to Laotian personnel.

In summary, (1) assignment of lecturers to new subjects (Output 4), (2) the development of teaching manuals and textbooks, and (3) the transfer of skills and knowledge for the operation of course should be achieved before the completion of the Project.

(2) Issues after the completion of the project (after March, 2006)

The Team has also recognized the necessity of follow-up activities after the termination of the Project even though it is likely to have achieved its purpose by March 2006. The necessity for some follow-up activities is recognized so as to assure the sustainability of the Project's achievements. The follow-up activities have been classified into two categories: (i) activities for which FE is responsible, and (ii) activities which need support from the outside.

Activities for which FE is responsible

Some activities need to be conducted by FE to ensure that they are responsible for sustaining the project's achievements. Firstly, regarding "Output 4," the Team has recommended that FE should conduct continuous capacity development for its lecturers. As IT is one of the most progressive fields of technology, the capacity development of lecturers is always needed in order for FE to respond to the needs within Lao society. Several lecturers who have studied abroad through JICA's AUS/SEED-NET Project will return and join FE in 2006. FE will need to utilize these lecturers to teach the IT Bridging Course.

Secondly, the Team has recommended for FE to draw up a financial management plan for the IT Bridging Course in order to maintain the high quality of education. FE will have to manage the IT Bridging Course without the future financial support from ODA. It may not be easy to achieve financial sustainability immediately after the completion of this Project. According to the survey conducted during the terminal evaluation mission, the Team has recommended that FE should prepare itself for the financial sustainability of the IT Bridging Course because the course that has been supported by the Project has provided practical knowledge to students, and has responded to the demand from both public and private organizations. When students and their organizations are satisfied with the course's content and delivery, they will be prepared to bear the necessary increase in the tuition fees in order to assure the maintenance of the quality of education. The equipment needed for the

IT Bridging Course should be well maintained and also highly qualified lecturers need to be paid appropriately. These recurrent costs in conducting the course should be assured by FE. The Team therefore is quite concerned about fund-raising by FE for the course's implementation.

Activities which need support from the outside

There are some activities for which FE will need to receive outside support from Japan and Thailand. Since the Project has almost achieved its purpose, it may be possible to terminate the Project in March 2006. The Team, however, recognizes the need for the continuous support from JICA in order to maintain the achievements of the Project.

Firstly, the Team has recommended that JICA and the supporting universities in Japan and Thailand should continue their assistance in order to sustain the quality of education in Group C. Since the curriculum for Group C was developed to meet the demands within Lao society in 2004, there has been insufficient time for the Project and FE to fully complete their preparation for the implementation of the course (Group C). For example, lecturers needed for several subjects have not yet been trained, and the materials for these subjects have not yet been developed. Therefore, the Team has recommended an extension or a follow-up of the Project up to the time that Group C has completed its course work. An extension or a follow-up is needed in order to sustain the quality of the IT Bridging Course.

Secondly, capacity development for research activities conducted by four laboratories is needed to assure the sustainability of previous achievements. In order for FE to properly respond to social demands, lecturers should continuously improve their skills and knowledge as the IT industry and the related technical knowledge are also continuously progressing. Four laboratories were established by the Project in 2005 which have just recently started their research work. However it is difficult for them to conduct their research without the support from JICA. Therefore, it has been recommended for JICA to support these laboratories' research activities until their capability has been proven. However, it is not possible for JICA to extend its support indefinitely. The duration of the extension should therefore, be considered along with the duration of Group C's activities. Meanwhile, the Team has also requested that FE should make an effort to develop the research capacity of the four laboratories.

In summary, the Team has recognized necessity of JICA's follow-up support for the implementation of activities for Group C and the capacity development for research work by four laboratories after the completion of the Project.

5-3 Lessons Learned

This project has been thoroughly evaluated throughout its implementation period and this has mostly confirmed the Project's good reputation. As the Team observed, the Project has a number of factors which have assured its outstanding achievements and good reputation. The Team has suggested that JICA should utilize the experience of this Project for the future planning of projects in the higher education sector.

5-3-1 High Efficiency of the IT Bridging Project:

One of the successful aspects of this project has been the high efficiency of the "Input." Firstly, the "Third-country experts" from KMITL have contributed to increase efficiency of the input. Since there has been an effective long-lasting cooperation between Tokai University and KMITL, this Project has been able to depend on the quality of the third-country experts from KMITL. Secondly, the AUS/SEED-NET Project has also contributed to the efficient implementation of the Project. Details have been listed below:

Utilization of TU-KMITL cooperation

In general, "third country experts" cost less than Japanese experts. The utilization of Thai experts as the third-country experts seems to be cost-effective and efficient considering the similarity of the Thai and Lao languages. However, utilization of third-country experts should be carefully considered because (i) it is difficult to assure the quality of the third-country experts and (ii) it is also difficult to guarantee active support or participation of the third-country organizations as a whole. The productive and long-lasting relationship between Tokai University and KMITL has been useful in solving these problems. Because many Thai experts from KMITL are graduates from Tokai University, and Tokai University has supported KMITL for a considerable period of time, the Project is able to rely on this relationship between two universities for the selection of experts.

Utilization of the SEED-NET Project Framework

It may be difficult to evaluate the relationship between the IT Bridging Project and the SEED-NET Project since this relationship has not been stated in the PDM of both projects. It is certain however that these projects have both supported each other to ensure efficient implementation. While the IT Bridging Project could send FE lecturers to obtain masters or higher degrees through the SEED-NET, the IT Bridging Project contributes towards the SEED-NET's efficient implementation. Since the IT Bridging Project was not planned to directly strengthen the capacity of FE lecturers as a whole, JICA intended to utilize the SEED-NET to develop the capacity of lecturers.

5-3-2 Sustainability of the Project in the Higher Education Sector

  The Team found that projects in the higher education sector generally face more challenges in comparison to projects in other sectors in assuring sustainability due to the following reasons:

(1) Although it is necessary to promote the capacity of lecturers to assure sustainability of the project, the skills and knowledge that are required by lecturers are higher than those required by projects in other sectors.

(2) Universities have two roles, namely (i) educational organization and (ii) research organization. The role of (ii) research organization mainly depends on the individual capacity of each lecturer. It is not possible to achieve the capacity development of a lecturer in research within a short-period of time. Capacity development in research needs to be done through a lecturer's long-term scholarly work.

(3) One of measures by which one is able to judge the achievement of capacity development of a lecturer is through the attainment of a masters or doctorate degree. However, a degree may not assure the continued academic development of the holder.

(4) In order for a university to function as a research organization, it is necessary to ensure a research environment. Time for research by lecturers, the budget and necessary equipment is needed for research activities. These needs in general are a burden for universities in developing countries.

(5) There is also the need for the operational and administration capacities of a university to be improved. It is a challenge that projects need to achieve capacity development in both the (i) research capacity and (ii) the administrative capacity.

The IT Bridging Project is unique because it has not intended to improve capacity of FE itself although the Project has influenced the improvement of the research and administrative capacity of the faculty. However, it is difficult for JICA to involve itself in the support of the capacity development of the faculty itself within the framework of the IT Bridging Project.