

付 属 資 料

協議議事録 (M/M)
(Annex に評価報告書英文含む)

MINUTES OF MEETING
BETWEEN
THE JAPAN INTERNATIONAL COOPERATION AGENCY
AND
THE MINISTRY OF HEALTH OF THE GOVERNMENT OF
THE LAO PEOPLE'S DEMOCRATIC REPUBLIC
ON JAPANESE TECHNICAL COOPERATION
FOR THE PROJECT
FOR STRENGTHENING MEDICAL LOGISTICS

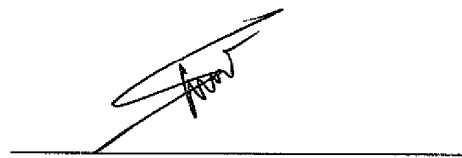
The Japanese Terminal Evaluation Team headed by Koichi TAKEI, the Deputy Resident Representative of Laos Office of the Japan International Cooperation Agency (hereinafter referred to as "JICA") and the Lao Terminal Evaluation Team nominated by the Ministry of Health (hereinafter referred to as "the MOH"), organized the Joint Terminal Evaluation Team (hereinafter referred to as "the Team") of the Project for Strengthening Medical Logistics (hereinafter referred to as "the Project"). The Team had a series of discussions with the authorities concerned for the purpose of clarifying the achievement and lessons learnt of the Project.

As a result of the discussions, the JICA and the MOH agreed upon the matters referred to in the document attached hereto.

Vientiane City, November 29, 2007



Mr. Koichi TAKEI
Deputy Resident Representative
Laos Office
Japan International Cooperation Agency



Prof. Dr. Somphone PHOUNSAVATH
Director of Curative Department
Ministry of Health
Lao People's Democratic Republic

40

THE ATTACHED DOCUMENT

I. INTRODUCTION

The Team conducted terminal evaluation from November 2 to November 29, 2007 in order to evaluate the achievements of the Project in terms of relevance, effectiveness, efficiency, impact and sustainability. Through discussion, interviews, questionnaire survey and field survey, the Team concluded the evaluation results on the Joint Terminal Evaluation Report (see the Annex 1).

II. CONCLUSIONS

The Team concluded that the Project Purpose would be achieved by the end of the cooperation period. The data relating to the five indicators of the Project Purpose supports that the mechanism for managing and utilizing medicines, medical products and equipment has steadily been established at the central and provincial levels.

In terms of the medical equipment maintenance, the adoption of the following activities greatly contributed towards achieving the Project Purpose. Firstly, the importance of the medical equipment maintenance was recognized by the managers, technical staff, and users (medical doctors and nurses) through the instructions by the MES. Secondly, the users have gradually come to conduct the daily maintenance as their routine works. The managers recognized the medical equipment maintenance as necessary for providing high-quality healthcare services for the people. Thirdly, it became easier for the MES to monitor the working condition of the medical equipment at the hospitals through the database of the medical equipment.

With reference to the inventory control, the adoption of the following activities greatly contributed towards achieving the Project Purpose. Firstly, the newly-established central warehouse, named as the Logistics Center, has been functioning as a center of the logistics system in the country. The monthly reports to the Logistics Center have come to be firmly submitted by the four provincial warehouses. Secondly, the arrangements inside the warehouses have been improved, so the stocks are classified and well-sorted with the reference number corresponding to the information in the newly-established database. As a result, the staff became able to find a certain medicine or medical product within several minutes. Thirdly, the staff became easily able to monitor the expiration



date of medicines and medical products through the database. Fourthly, medicines can be stored in appropriate condition because specific areas of warehouses are equipped with air-conditioning and the temperature is properly controlled by the trained staff.

III. RECOMMENDATIONS

Based upon the findings of the terminal evaluation, the Team made the following recommendations.

(1) Sharing the project outcomes within related organizations

The outcomes, experiences and lessons learnt of project activities should be shared among each Department of the MOH, each Provincial Health Office, concerning donors and organizations.

(2) Developing the guidelines for the logistics system in order to conduct the logistics management under the National Medicines Policy

The MOH should develop and finalize the guidelines as the principle for the logistics system with technical support of the Project.

(3) Reporting the working condition of medical equipment

All of the hospitals should submit the report to the MES every six months, so that the MES can monitor and manage the working condition of medical equipment through inputting the information to the database. The technical support needs to be continued until the end of the Project.

(4) Strengthening the role and performance of the MEM Committee

The MOH should facilitate the MEM Committee to function as the focal point of the medical equipment management in the Lao PDR.

(5) Decommissioning medical equipment

The MOH should continuously promote the hospitals to decommission medical equipment.



- (6) Establishing the financial system for continuing the medical equipment maintenance as well as the inventory control

The MOH should secure the finances for followings:

- Transportation fee from the Logistics Center and warehouses to the destinations;
- Training cost at the central, provincial, and district levels;
- Cost of outreach activities at the central and provincial hospitals by the MES; and
- Cost of outreach activities at the provincial warehouses by the Logistics Center.

- (7) Considering the soft component in case of providing medical equipment for hospitals

Donors should consider the soft component in case of providing medical equipment for hospitals.

IV. LESSONS LEARNT

The Team clarified the lessons learnt from the Project as below.

- (1) Make the textbook for medical equipment maintenance in the local language

In the field of medical equipment maintenance, the Project has provided the Laotian textbooks for managers and technical staff in the in-country training courses. It was the first attempt in the Lao PDR to make Laotian textbooks for medical equipment maintenance. Most of the participants in the training courses highly appreciated these Laotian textbooks and these textbooks have been used widely in the Lao PDR.

- (2) Incorporate the new concepts into the routine works both at hospitals and warehouses

The Project brought the new concepts which promoted the changes in the consciousness of their routine works and made their routine works more effective and efficient. In the field of medical equipment maintenance, the daily maintenance by users at hospitals has steadily become parts of their routine works. Also, in the field of inventory control, the staff of warehouses was able to improve their routine works along with the code of conduct set up by the Project, i.e., “5S: *Seiri* (Distinguishing); *Seiton* (Sorting); *Seisou*



(Cleaning); *Seiketsu* (Maintaining); and *Shitsuke* (Disciplining)” .

- (3) Involve the managers and users at hospitals in the activities of the medical equipment maintenance

In the field of medical equipment maintenance, although most of users and managers at hospitals did not know the concept of medical equipment maintenance before launching the Project, they were able to understand the importance of medical equipment maintenance in order to extend the life of medical equipment through the Project. As a result of the changes in their awareness, the hospitals intended to secure the enough budget and improve the system for medical equipment maintenance.

- (4) Provide the soft component in case of provisions of medical equipment for hospitals

Although the Project has supported the hospitals in the Lao PDR on medical equipment maintenance, some of the hospitals still have unavailable medical equipment because they do not know how to utilize, maintain and manage them. In order to improve the circumstances, donors that will provide medical equipment for hospitals should consider soft component, i.e. whether there is the agency handling the medical equipment near the hospital, whether the hospital has the capacity to maintain the medical equipment, donors should prepare the manual for the medical equipment in the local language, donors should provide enough guarantee on the medical equipment and so on.



Annex 1 The Joint Terminal Evaluation Report



Annex 1

THE JOINT TERMINAL EVALUATION REPORT
ON
THE PROJECT FOR STRENGTHENING MEDICAL LOGISTICS
IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Vientiane City, November 29, 2007

 i 

CONTENTS

APPENDIX

ABBREVIATIONS

1. INTRODUCTION

1.1 Background of the Project.....	1
1.2 Project Summary.....	1
1.3 Objectives of the Evaluation.....	2
1.4 Schedule of the Evaluation.....	2
1.5 Members of the Evaluation Team.....	2
1.6 Persons interviewed by the Japanese team.....	3

2. EVALUATION STUDY METHOD

2.1 Evaluation Design.....	3
2.2 Methodology of the Evaluation.....	5

3. EVALUATION RESULTS

3.1 Project Achievement.....	8
3.1.1 Overall Goal.....	8
3.1.2 Project Purpose	9
3.1.3 Outputs	10
3.2 Inputs	13
3.3 Implementation Process	16
3.4 Five Evaluation Criteria	18
3.4.1 Relevance	18
3.4.2 Effectiveness	21
3.4.3 Efficiency	27
3.4.4 Impact	30
3.4.5 Sustainability	33
3.5 Conclusions	36

4. RECOMMENDATIONS AND LESSONS LEARNT

4.1 Recommendations	37
4.2 Lessons Learnt	38



APPENDIX

Appendix 1: Schedule of the Evaluation

Appendix 2: Persons interviewed by the Japanese team

Appendix 3: Project Design Matrix (PDM)

Appendix 4: Plan of Operations (PO)

Appendix 5: Evaluation Grid

- a. Achievements
- b. Result of Inputs
- c. Implementation Process
- d. Five Evaluation Criteria

Appendix 6: Record of Implementation of Input

- a. List of Experts Dispatched from Japan
- b. List of Counterpart Personnel Trained in Japan and Thailand
- c. List of Machinery and Equipment Provided by Japanese Side
- d. List of Personnel Assigned



iii



ABBREVIATIONS

ASEAN	Association of South East Asian Nations
GPO	Government Pharmaceutical Organization
JCC	Joint Coordinating Committee
JICA	Japan International Cooperation Agency
LUX	Luxembourg Agency for Development Cooperation
MEM	Medical Equipment Management
MES	Medical Equipment Supply Center
M/M	Minutes of Meeting
MOH	Ministry of Health
MPSC	Medical Product Supply Center
ODA	Official Development Assistance
OJT	On-the-Job Training
PCM	Project Cycle Management
PDM	Project Design Matrix
PHO	Provincial Health Office
PO	Plan of Operations
R/D	Record of Discussions
SARS	Severe Acute Respiratory Syndrome
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WHO	World Health Organization



iv



1. INTRODUCTION

1.1 Background of the Project

In Lao PDR there were few technicians who can maintain and repair medical equipments. Moreover, the budget for maintaining and repairing them was not enough, therefore there were a lot of broken medical equipments in Lao PDR. Under the circumstances, MOH established Medical Equipment Service Center (MES) with roles of maintaining and repairing medical equipments as a Medical Product Supply Center (MPSC)-affiliated organization in 1998. Since then, MES has given technical support to technical staff. However, in order to solve the above-mentioned problems drastically, there was still necessity not only to teach technical staff but also to establish the framework for Medical Equipment Maintenance system in Lao PDR.

In addition to the problems concerning Medical Equipment Maintenance, because the system of Inventory Control also was limited in function, most of medicines and medical products provided by various projects and donors were stuck in the Central Warehouse for a long time. In case of necessity, they would not be distributed to hospitals and medical institutions properly at present.

Under the circumstances, in May 2005, MOH and JICA started the project with the objective that "The mechanism is established at the central and provincial levels for managing and utilizing medicines, medical products and equipments efficiently and properly" for 3 years duration until April 2008.

1.2 Project Summary

Overall Goal: Medicines, medical products and equipment come to be managed and utilized efficiently and properly.

Project Purpose: The mechanism is established at the central and provincial levels for managing and utilizing medicines, medical products and equipment efficiently and properly.

Outputs: (1) The system is established for supporting central and provincial levels through MES and Logistics Center.

(2) The capacity of management, maintenance and repair for technical staff is improved at MES, central and provincial hospitals.



(3) The management capacity for central and provincial hospital managers is improved at MES, central and provincial hospitals.

(4) The capacity of storage, handling and inventory control for staff in charge of inventory control of medicines and medical products is enhanced at the Logistics Center and warehouses in 4 target provinces.

1.3 Objectives of the Evaluation

The evaluation activities were performed with the following objectives:

- (1) To evaluate the outcomes and changes achieved by the Project in “Medical Equipment Maintenance” and “Inventory Control” sectors cooperatively with Lao side;
- (2) To confirm the system for supporting central and provincial levels through MES and Logistics Center established by the Project in perspective of both the process of being strengthened and the sustainability;
- (3) To share experiences and lessons learned from the Project among the people concerned;
- (4) To confirm policies and activities that should be implemented in the remaining term; and
- (5) To clarify the activities that are continuously implemented by the organizations concerned in Lao PDR after the Project.

1.4 Schedule of the Evaluation

The schedule of the terminal evaluation study is attached as Appendix 1.

1.5 Members of the Evaluation Team

(1) The Lao team

(a) Mr. Vongdala CHANTHABABHA

Technical Staff

Administration Unit, Cabinet, MOH

(b) Ms. Daoheuang SIHAPHONH

Technical Staff

Department of Planning and Budget, MOH

(c) Mr. Nengyang CHAIVANGMANH

Technical Staff

Department of Inspection



(2) The Japanese team

- (a) Mr. Koichi Takei (Leader)
Deputy Representative
Laos Office, JICA
- (b) Dr. Yoichi Horikoshi
Adviser to Ministry of Health
Health and medical cooperation and planning
- (c) Mr. Kazuyuki Kakuda
Program Officer
Laos Office, JICA
- (d) Ms. Kaori Osone
Assistant Resident Representative
Laos Office, JICA
- (e) Mr. Takaaki Hirakawa
Consultant on Participatory Planning/Evaluation
INTEM Consulting, Inc.

1.6 Persons interviewed by the Japanese team

The list of persons interviewed by the Japanese team is attached as Appendix 2.

2. EVALUATION STUDY METHOD

2.1 Evaluation Design

PDM is utilized by the evaluators in order to design the methodology of the evaluation study and develop evaluation questions. As shown in Figure 1, the narrative summary of the PDM is utilized for preparing the evaluation questions based on the five evaluation criteria, i.e., Relevance, Effectiveness, Efficiency, Impact, and Sustainability. After setting up the evaluation questions, the methodology of the evaluation study is designed according to the format of the evaluation grid consisting of “data needed”, “data sources”, and “data collection methods” as shown in Figure 2.

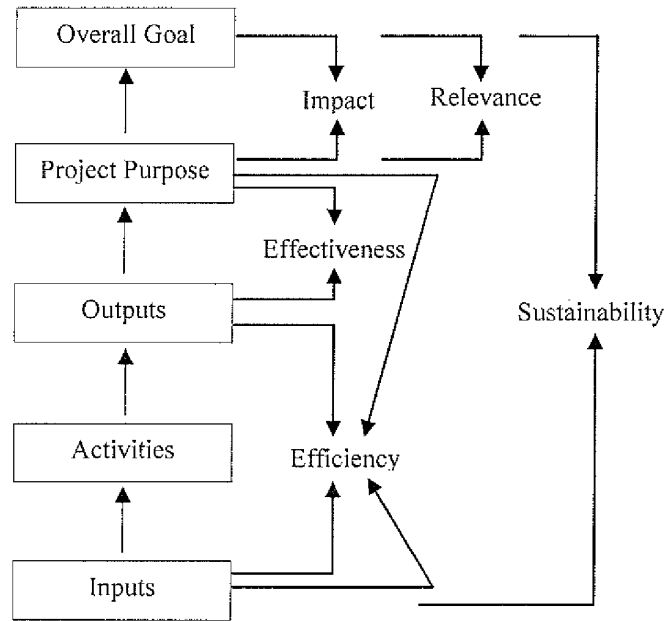


Figure 1 The Relationship between the Five Evaluation Criteria and the PDM

Five evaluation criteria are explained as shown below.

(1) Relevance:

A criterion for considering the validity and necessity of a project regarding whether the expected effects of a project (or project purpose and overall goal) meet with the needs of target beneficiaries; whether a project intervention is appropriate as a solution for problems concerned; whether the contents of a project is consistent with policies; whether project strategies and approaches are relevant, and whether a project is justified to be implemented with public funds of ODA.

(2) Effectiveness:

A criterion for considering whether the implementation of project has benefited (or will benefit) the intended beneficiaries or the target society.

(3) Efficiency:

A criterion for considering how economic resource/inputs are converted to results. The main focus is on the relationship between project cost and effects.

(4) Impact:

A criterion for considering the effects of the project with an eye on the longer term effects including direct or indirect, positive or negative, intended or unintended.

(5) Sustainability:

A criterion for considering whether produced effects continue after the termination of the assistance.

Criteria	Evaluation Questions		Data needed	Data source	Data collection methods
	Main questions	Sub questions			
Relevance	Specify what is to be investigated	Break down the main questions into detailed sub questions.	Specify what type of data and information is to be collected.	Specify from where the data and information is to be collected	Identify how the data and information is to be collected
Effectiveness					
Efficiency					
Impact					
Sustainability					

Figure 2 The Evaluation Grid Format

2.2 Methodology of the Evaluation

(1) Evaluation Questions

Evaluation questions are prepared along with five evaluation criteria as mentioned below.

(a) Relevance

Consistency with the Development Strategies in Lao PDR

- Is the direction of the Project consistent with the content of the Health Strategy in Lao PDR?
- Does the direction of the Project correspond with the Medical Equipment Management (MEM) Policy?
- Is the direction of the Project consistent with the principle of the inventory control by the MOH?

Consistency with Japan's foreign aid policy

- Is the Project consistent with Japan's Country Assistance Program for Lao PDR?
- Is the Project consistent with JICA's plan for country-specific program implementation?

Needs of the target group

- Were the needs of the target group fulfilled?

Appropriateness of the project activities in the health sector

- What kind of the synergy effects took place through the donor coordination?

(b) Effectiveness

Achievement of the Project Purpose

- Was the mechanism established for managing and utilizing medicines, medical products and equipment (at the central and provincial levels)?

Relationship between the Outputs and the Project Purpose

- Was the system established for supporting central and provincial levels through the MES and the Logistics Center? (Output 1)
- Was the capacity of maintenance and repair for technical staff improved at the MES, central and provincial hospitals? (Output 2)
- Was the management capacity for central and provincial hospital managers improved? (Output 3)
- Was the capacity for the staff in charge of inventory control enhanced at the Logistics Center and warehouses in four target provinces? (Output 4)

Important Assumptions from the Outputs to the Project Purpose

- Does the staff involved in the Project continue working?

(c) Efficiency

Relationship between the Inputs and the Activities

- Were the number of Japanese experts dispatched, their fields of expertise, and the timing of the dispatch appropriate?
- Were the types, quantity, utilization, and maintenance of provided equipment appropriate?
- Were the number of accepted trainees, the fields, the training contents, training period, and the timing of the trainee acceptance appropriate in the training courses in Japan and Thailand?
- Are there any problems in terms of the quality, scale, and convenience of the Logistics Center?

Inhibiting factors for the achievement of the Outputs

- Were technical staff for medical equipment maintenance and staff in charge of inventory control appropriately allocated? (Important Assumption)
- Were there any other inhibiting factors for the achievement of the Outputs?

(d) Impact

Prospects for the achievement of the Overall Goal

- Are there prospects that medicines, medical products and equipment will be managed and utilized efficiently and properly?



Inhibiting and promoting factors for the Overall Goal

- Are there any other factors inhibiting or promoting the achievement of the Overall Goal?

Positive and negative impacts beside the Overall Goal

- Are there any prospects that the effect of the Project will contribute to the improvement of the health status of the poor in the rural and remote areas?
- When used medicines and medical products are discarded, are any efforts proceeding in consideration of the environmental aspects?

(e) Sustainability

Alignment with the Policy in the Lao PDR

- Will the policy aid continue also after the cooperation is finished?

Organizational sustainability

- Is it possible to continue the project activities in sustainable way even after the termination of the Project?
- Is the collaboration mechanism between the areas of “medical equipment maintenance” and “inventory control” sufficiently developed?
- Are there prospects that human resources will continuously be assigned from now on?
- Do the MES and Logistics Center smoothly communicate with the people concerned in the Project?

Financial sustainability

- Is the financial situation good in the MPSC?
- Are any efforts for securing financial resources proceeding smoothly?

(2) Data Collection Methods

The data collection methods and main data sources are specified as shown in the evaluation grid. The specific methods and sources are described below.

<Collection Methods>

- (a) Literature review
- (b) Questionnaire survey
- (c) Key informant interview

<Data Sources: Respondents to the Study>

- (a) Managers in the central and provincial hospitals (hereinafter referred to as “managers”)
- (b) Technical staff for maintenance of medical equipment in MES and the central and provincial hospitals (hereinafter referred to as “technical staff”)
- (c) Staff in charge of the inventory control of medical products at the Logistics Center

and warehouses in 4 target provinces (hereinafter referred to as “staff in charge of inventory control”)

- (d) Superiors of the staff in charge of the inventory control
- (e) MES staff
- (f) Japanese experts
- (g) Donor agency (World Health Organization: WHO)
- (h) Director of the Medical Products Supply Center (MPSC), Ministry of Health

3. EVALUATION RESULTS

3.1 Project Achievement

3.1.1 Overall Goal

Overall Goal:

Medicines, medical products and equipment come to be managed and utilized efficiently and properly.

Indicators:

- (1) Working ratio of medical equipment in central and provincial hospitals increases.
- (2) The ratio of dead stock¹ declines at the Logistics Center and warehouses in 4 target provinces.

In order to measure the accomplishment of the Overall Goal, two indicators were prepared as described above. (See the Achievement Grid in Appendix 5a for more detail). The indicator (1) will be achieved in the near future. The average yearly working ratios of medical equipment at the central hospitals are 98.0% at Mahosot hospital, 73.0% at Friendship hospital, 95.5% at Setthatirath hospital, and 75.0% at Mother and Child hospital. Most importantly, the average yearly working ratios generally tend to increase at the central and provincial hospitals. Also, the working ratios of most hospitals exceed more than 80%.

The indicator (2) will also be achieved within several years. The average yearly ratios of dead stock have declined or maintained at the Logistics Center and warehouses in 4 target provinces. In particular, the average yearly ratio of dead stock at the Logistics Center has been declined drastically.

¹ The ratio of dead stock is defined as the ratio of the number of the pallets stored more than five years to the total number of the pallets in the warehouse.

3.1.2 Project Purpose

Project Purpose:

The mechanism is established at the central and provincial levels for managing and utilizing medicines, medical products and equipment efficiently and properly.

Indicators:

- (1) The number of repair of medical equipment increases at the central and provincial hospitals.
- (2) The number of dead stock declines at the Logistics Center and warehouses in 4 target provinces.
- (3) The stock period declines at the Logistics Center and warehouses in 4 target provinces.
- (4) The number of days exceeding the maximum standard temperature becomes less than 30 days per year at the Logistics Center and warehouses in 4 target provinces.
- (5) The picking time is shortened at the Logistics Center and warehouses in 4 target provinces.

In order to measure the achievement of the Project Purpose, five indicators were set up as mentioned above. The actual data appears on the Achievement Grid (See Appendix 5a for more detail). The indicator (1) was achieved. The number of repair of medical equipment was increased at the beginning of the Project because the technical staff of the hospitals became able to repair broken medical equipment. However, the number of repair of medical equipment has decreased at the central and provincial hospitals from 2006 to 2007 because of the adoption of the daily maintenance. It could be said that this is the effect of the Project. As the technical staff and the MES gave the instructions to users on how to utilize and maintain medical equipment properly, the number of problems on medical equipment has recently been reducing.

The indicator (2) was achieved. The number of dead stock has steadily declined at the Logistics Center and warehouses in four target provinces. In particular, the number of dead stock at the Logistics Center has dramatically been reduced.

The indicator (3) was achieved. The longest average stock periods at the Logistics Center and warehouses in four target provinces have been improved from 12 months in 2006 to six months in 2007.

The indicator (4) was also achieved. The temperature is maintained less than the maximum standard temperature (25°C) after installing the air-conditioner inside the Logistics Center and three provincial warehouses. However, the number of days exceeding the maximum standard temperature was 75 days in 2007 (as of 29th

November) at the warehouse in Savannakhet. However, the temperatures only exceeded for a few hours within one day in the hottest seasons, mainly in April and May. Also, the staff became able to adjust the controller to lower the temperature below 25°C after getting the instructions through the Logistics Center.

The indicator (5) was achieved. The problem was that it took for an hour or several hours (unable to find in some case) to find the target medicines or medical products inside the warehouses. At present, however, the staff working for the Logistics Center and four warehouses became able to confirm target objects whether or not they were inside the warehouses before looking for the objects as well as to find the target objects immediately because the layouts inside the Logistics Center and four warehouses was well-organized with the reference numbers of all medicines and medical products corresponding to the information in the database.

3.1.3 Outputs

Output 1

Output 1:

The system is established for supporting central and provincial levels through MES and Logistics Center.

Indicator:

- (1) Outreach activities are carried out once a year at the central and provincial levels.
- (2) A regular meeting is held once a year.
- (3) The number of references from the central and provincial hospitals to MES increases.

Institutionally, the MES and the Logistics Center are integrated into the MPSC which is a coordinating body of the two units. Importantly, the MPSC allocates the budget for the MES and the Logistics Center. The MPSC supervises and coordinates all the activities of the MES and the Logistics Center, such as outreach activities and regular meetings.

There are three indicators in order to measure the achievement of the Output 1 (See the Achievement Grid in Appendix 5a for more detail). The indicator (1) was achieved. Outreach activities are favorably carried out by the MES at the central and provincial hospitals, as well as by the Logistics Center at the warehouses in four target provinces. Particularly, the MES spontaneously conducted outreach activities five times in 2006 and seven times in 2007 (as of 29th November).

The indicator (2) was also achieved. Regular meetings were held for the central and provincial hospitals in the area of the medical equipment maintenance. In the area of the inventory control, on the other hand, regular meetings were held once a year with the representatives of each Department of the MOH, the Logistics Center, and warehouses in 4 target provinces all together.

The indicator (3) was achieved. The number of references from the central and provincial hospitals to the MES tends to be increased, especially from the central hospitals (the number of references has changed to 25 times in 2007 from zero in 2006).

Output 2

Output 2: The capacity of management, maintenance, and repair for technical staff is improved at MES, central and provincial hospitals.
Indicator: (1) The number of participants (technical staff) increases in the technical training courses. (2) Trainers take the technical training courses once a year. (3) More than 5 types of training materials are utilized in the training courses.

Three indicators were set up for measuring the accomplishment of the Output 2 (See the Achievement Grid in Appendix 5a for more detail). In the first place, the indicator (1) was accomplished. The number of technical staff is planned to increase from 24 participants in 2006 to 38 in 2007 (under the plan). Also, the indicator (2) was achieved. The trainers have taken the technical training courses once a year in Japan (2005) and Thailand (2006 and 2007).

The indicator (3) was achieved. More than five (5) types of training materials were prepared by the Project and have been utilized in the in-country training courses.

Output 3

Output 3: The management capacity for central and provincial hospital managers is improved.
Indicators: (1) The number of participants (managers) increases in the management training courses. (2) The expenditures for maintenance of medical equipment increase at the central (4) and provincial (16) hospitals.

In order to measure the achievement of the Output 3, two indicators were set up as mentioned above (See the Achievement Grid in Appendix 5a for more detail). Firstly, the indicator (1) was achieved. The total number of hospital managers (directors or deputy directors) was increased in the management training courses from 21 participants in 2005 to 24 in 2006 (the training course in 2007 is under the planning).

Regarding the indicator (2), the hospitals in the country have strived to secure the budget for the medical equipment maintenance to a certain degree. Although the budget of the central and provincial hospitals is shown in the Achievement Grid, parts of the hospital budget are allocated for the medical equipment maintenance. The specific amounts of the budget for the medical equipment maintenance at each hospital are not clarified at this moment. Through the Project, however, the hospital managers recognized that it is important for the hospitals to maintain medical equipment in order to extend the life of medical equipment. Also, they were able to understand the importance of the preventive maintenance because of the limitation of the budget in comparison with the procurement of new medical equipment and the repair of existing equipment. As a result of the changes in their awareness, the budgetary allocation for the medical equipment maintenance came to be secured even if it is small amounts of the budget.

Output 4

Output 4:

The capacity of storage, handling, and inventory control for staff in charge of inventory control of medicines and medical products is enhanced at the Logistics Center and warehouses in 4 target provinces.

Indicators:

- (1) The number of participants increases in the inventory training courses.
- (2) The Logistics Center and warehouses in 4 target provinces prepare the quarterly report of inventory control.

In order to measure the accomplishment of the Output 4, two indicators were prepared as described above. (See the Achievement Grid in Appendix 5a for more detail). It could be said that the indicator (1) was achieved. The staff working for the Logistics Center and the warehouses in the four target provinces constantly participated in the inventory training courses (six participants in 2005, 12 participants in 2006, and 11 participants in 2007).



The indicator (2) was accomplished. The Logistics Center and warehouses in four target provinces have prepared the quarterly report of inventory control. Significantly, after the adoption of the database at four provincial warehouses (Savannakhet: October 2006; Other three provinces: June-July 2007), the four provincial warehouses have submitted the monthly reports to the Logistics Center. Each item described in the monthly report is as follows: Number of receiving and distribution; Number of remaining stocks; Expiration date; and Temperature record.

3.2 Inputs

(1) Japanese side

(a) Personnel assignment

Japanese experts and Thai experts were dispatched as follows (See the assign chart of the Japanese experts in Appendix 6a for more detail):

- Long-term expert (Project coordinator / Project management: 1 person × 3 years)
- Short-term experts
 - 2005: Inventory Control System (2.3 months)
Information Management System (1.8 months)
Establishment of Logistics Center (1 month)
Training Programming for Medical Equipment Maintenance (5 months)
 - 2006: Medical Equipment Maintenance (6.4 months)
Inventory Control System (3 months)
Training Programming for Medical Equipment Maintenance (5.6 months)
 - 2007: Training Programming for Inventory Control & Logistics (5.8 months)
Training Programming for Medical Equipment Maintenance (5.3 months)
- Short-term experts from the third country (Thailand)
 - 2005: Medical Equipment Management (5 days: Ministry of Public Health (MoPH))
 - 2006: Inventory Control & Logistics (2 days: Government Pharmaceutical Organization (GPO))

(b) Training courses

The training courses have been conducted in Japan, Thailand, and Thailand as follows (See the list of the training courses in Japan and Thailand in Appendix 6b for more detail):

- In Japan
 - 2005: Medical Equipment Maintenance (1.5 months: 6 persons)
 - 2006: Inventory Control & Logistics (2 weeks: 2 persons)



- In the Lao PDR
 - 2005: Medical Equipment Maintenance (2 weeks × 2 times: 20 persons)
 - 2006: Hospital Manager (2 days × 3 times: 24 persons)
 - Medical Equipment Maintenance (1 week × 4 times: 82 persons)
 - * Technician: 21 persons
 - * Nurse & doctor of provincial hospitals 51 persons
 - * Nurse & doctor of district hospitals 10 persons
 - 2007: Hospital Manager (2 days: 24 persons plan)
 - Medical Equipment Maintenance (1 week × 2 times: 34 persons plan)
- In the third country (Thailand)
 - 2005: Hospital Manager (5 days: 22 persons)
 - * Hospital Manager 21 persons
 - * MPSC 1 person
 - Inventory Control & Logistics (3 days: 8 persons)
 - 2006: Medical Equipment Maintenance (5 days: 10 persons)
 - Inventory Control & Logistics (3 days: 8 persons)
 - 2007: Study Tour on Inventory Control & Logistics (3 days: 3 persons)
 - Medical Equipment Calibration (6 days: 6 persons)

(c) Facility construction

The Logistics Center (2,480 m²) was constructed with total amounts of US\$398,500.

(d) Equipment provision

In general, the equipment is appropriately maintained and utilized by the Project (See the list of the operation and maintenance of the equipment in Appendix 6c for more detail). The specific items of the equipment are as follows:

In 2005 (US\$68,618)

- Copy Machine
- Computer set
- Forklift
- LCD Projector

In 2006 (US\$12,260)

- Data Logger
- Tool kits
- Hand Palette Truck

In 2007 (US\$45,525)

- Tool kits
- Battery Powered Lift Stacker
- Calibration Tools

(e) Operational expenses

The operational expenses were mainly disbursed for the project activities, such as official trips, in-country and third country trainings, etc.

2005: US\$43,600

2006: US\$59,288

2007: US\$73,317 (Under the plan)

(2) Lao side

(a) Personnel assignment

The counterparts of the Project have been assigned as follows:

- Project Director
- Project Manager
- Staff of the MES
- Staff of the Logistics Center
- Trainers from central hospitals

(b) Provision of the project office and facilities

The office spaces have been provided for Japanese experts at the MES and the Logistics Center of the MPSC.

(c) Others

The following expenses have been disbursed by the Lao side.

- Local cost
- Site and fences of the Logistics Center
- Running costs for electricity, water, etc.



3.3 Implementation Process

In general, the project activities have favorably been conducted according to the Plan of Operations (PO: See Appendix 4 for more detail). Although there were several adjustments during the cooperation period because of the delay of the construction of the Logistics Center, the Project has flexibly adapted to the modifications.

Regarding the regular meetings in the area of the medical equipment maintenance, the MOH judged that it was not appropriate to have the regular meetings with the central and provincial hospitals all together because the disparities among hospitals were quite large. Thus, the regular meeting in 2006 was separated into the meetings for the central hospitals, provincial hospitals in the northern region, and provincial hospitals in the southern region. The regular meeting is planned to be held this year with related Departments of the MOH, central and provincial hospitals all together.

(1) Incorporate the new concepts into the routine works both at hospitals and warehouses

New concepts were introduced into the routine works of the staff at the MES and the Logistics Center, the managers and technical staff at the hospitals, and the staff in charge of inventory control in four target provinces, such as adoption of the database, daily maintenance of medical equipment, etc. The challenge of the project activities was to promote the changes in the consciousness of their routine works. However, as the project activities made their routine works more effective and efficient, they were able to accept the activities more easily than as expected.

As a problem in the area of the medical equipment maintenance, the users, such as medical doctors and nurses, considered the medical equipment maintenance as additional works at the beginning of the Project. After taking the trainings for the users by the MES staff, however, they were able to recognize the importance of the preventive maintenance of the medical equipment. As it is now, the users feel the necessity for continuing the daily maintenance of medical equipment so as to keep the equipment in a good condition and a longer period.

(2) Monitoring system

The MPSC director takes a leading role of the monitoring activities in cooperation with the MES chief in the area of the medical equipment maintenance, the chief of the Logistics Center in the area of the inventory control, and the project coordinator every



six months according to the format of the Monitoring Report.

<Medical Equipment Maintenance>

The procedures of the medical equipment maintenance were systemized through the project activities. In the first place, the daily maintenance became to be conducted with several checking items everyday as the routine works of users. The hospital launched the daily maintenance of the medical equipment. As a result, it became easier to find where they have to adjust and fix along with the monitoring sheet which has several check points, such as (1) Cleanness (before use), (2) General inspection, (3) Accessory check, (4) Functional check, (5) Operational check, (6) Cleanness (after use), and (7) Temperature check. Secondly, the hospital became able to get supports through the communication channel with the MES if it is necessary to repair medical equipment and change spare parts of medical equipment. Thirdly, the relationship among managers, technicians, and users is well-organized through the project activities. In particularly, the role of users was emphasized so as to conduct the daily maintenance according to their new job description. Fourthly, in collaboration with LUX project, each medical equipment was registered with the registration number at the hospital in order to enter the information and condition of the equipment into the database. It became easier for the MES to monitor the working ratio of the medical equipment at the hospitals through the database of the medical equipment. Fifthly, the chiefs of each section and the chief nurses became to have the responsibilities for the equipment operated at the section.

All of the hospitals should submit the report to the MES every six months, so that the MES can monitor and manage the working condition of medical equipment through inputting the information to the database. The technical support needs to be continued until the end of the Project.

<Inventory Control>

The staff at the Logistics Center is easily able to monitor medicines and medical products through the database. For instance, they can check that how many days medical products are stocked, when medical products were distributed, etc.

The database has various types of information, such as the name of stocks, the temperature record, the date of receiving and distributing, etc. Thus, it is easier for the staff at the warehouse to compile all the data and information into the monthly report submitted to the Logistics Center.



(3) Collaboration with donor agencies

<Medical Equipment Maintenance>

In the field of medical equipment maintenance, LUX was responsible for the policy formulation with implementing the pilot projects along with the policy concept. Also, the Project regularly had meetings with the members of the LUX project in order to discuss the establishment of the database and the unification of the prescribed form on the database.

<Inventory Control>

In the field of the inventory control, the Project has exchanged opinions on warehouse management and utilization of database with the UNFPA and the WHO which are users of the Logistics Center. In particular, when the WHO provided the personal protective equipment, such as gloves, mask and face protection, gown, etc., for SARS and avian flu for the MOH in the past, they stored the protective equipment at the old central warehouse in Vientiane (Logistics Center at present).

3.4 Five Evaluation Criteria

3.4.1 Relevance

For the following reasons, the Project is judged to be of high relevance.

(1) Consistency with the Development Strategies in Lao PDR

- Health Strategy 2020

The direction of the Project is in line with the Health Strategy 2020 by the MOH in the Lao PDR. The “Health Strategy up to the Year 2020” by the Ministry of Health (MOH) puts emphasis on six priority programs up to the year 2020. In particular, the following four priority programs are consistent with the directions of the Project: (1) Curative and Rehabilitation Strategies; (2) Consumer Protection Strategies; (3) Human Resource Development for Health Strategies; and (4) Health Administration Strategies.

- Medical Equipment Management (MEM) Policy

The National Policy on Medical Equipment Management (MEM) aims to make the best use of medical equipment and, thus, generate the most impact in the delivery of quality healthcare services in hospitals and other health facilities throughout the Lao PDR. Also, the development of a comprehensive equipment management system is required to

pursue the objectives of maximizing the use and impact of medical equipment based on needs, capacities, and resources. In this way, the goal of the MEM Policy is set up “to improve the utilization and management of medical equipment in all health facilities throughout the country.” Therefore, it could be said that the direction of the Project corresponds with the MEM Policy.

- Revised National Medicine Policy

With reference to the strategic directions of the inventory control by the Ministry of Health (MOH), the “Revised National Medicine Policy” published by the Food and Drug Department, MOH, is related to parts of the inventory control. One of chapters in the National Medicine Policy is the “Medicine Supply: Procurement, Distribution, and Storage” described as follows: For the public sector, the government will endeavor to provide adequate storage facilities, basic equipment and sufficient number of staff for medicine supply management at all levels of the healthcare system. Also, the MOH will provide training of staff working for medicine supply management (staff working for the warehouses) at all levels and sectors to improve the services provided by them. Thus, the concept of the Project is consistent with the Revised National Medicine Policy.

(2) Consistency with Japan’s foreign aid policy

- Japan’s Country Assistance Program for Lao PDR

“Japan’s Country Assistance Program for Lao PDR” by the Ministry of Foreign Affairs of Japan places “improving healthcare services” as one of six priority areas, and human resources development related to the health and medical care field (assistance for better maintenance and management of medical equipment) is described in the assistance policy by the priority areas. In addition to cooperation to provide assistance for better maintenance and management of medical equipment, Japan will hereafter provide cooperation with a view to raising the management capacity of the health and medical care system. Therefore, the project concept is consistent with the content of the Country Assistance Program for Lao PDR.

- JICA’s country implementation plan of the Lao PDR

There are two healthcare-related programs in the JICA’s country implementation plan of the Lao PDR along with the priority area, “improving healthcare services”, as mentioned above, and this Project is positioned in the Program on Capacity Development for Human Resources in the Health Sector. Also, the Program aims at improving healthcare standards of the Lao PDR through the system development for



human resources in the health sector. Thus, the direction of the Project is consistent with this Program of the JICA's country implementation plan.

(3) Needs of the target group

<Medical Equipment Maintenance>

When the hospitals received medical equipment through the government and donor agencies, they did not know how to maintain and repair medical equipment because of a lack of knowledge on medical equipment maintenance and difficulties for the hospitals to obtain the spare parts in the Lao PDR. Also, the users (medical doctors and nurses) utilized the equipment without conducting the preventive maintenance because they did not know the importance of the medical equipment maintenance. Thus, it was highly necessary for technical staff to upgrade their skills and knowledge through the trainings. The managers (directors or deputy directors) of the hospital could also recognize the importance of medical equipment maintenance through the trainings. The technical staff trained the users of medical equipment on how to utilize and maintain the equipment correctly in collaboration with the managers of the hospitals and the MES. Consequently, the users of medical equipment at the hospital became able to conduct daily maintenance by themselves. Regarding the spare parts of the equipment, the hospitals became able to consult with the MES on procurement and types of the spare parts.

<Inventory Control>

Before starting the Project, it was quite hard to find target objects from the warehouses. Also, the inside of the old warehouse was very hot in the hot seasons, and the temperature was not controlled. In this way, it was extremely necessary to construct (or renovate) the warehouses and to improve the skills and knowledge of the staff working for the warehouses. After the construction (or renovation) of new warehouses, the arrangement inside the warehouses was significantly improved by utilizing spaces effectively. As it is now, the warehouses became able to receive and store large amounts of stocks inside the warehouses. In addition, although the staff had a limited capacity at the beginning of the Project, they were able to improve their skills and knowledge on the warehouse management through the training courses. Consequently, the staff became able to find the stocks within a few minutes through the database.



(4) Synergy effects through the donor coordination in the health sector

<Medical Equipment Maintenance>

In the field of medical equipment maintenance, as the LUX supported to draw up the policy of medical equipment, the Project was able to promote the training courses for technical staff and managers working for the hospitals effectively and practically along with the policy.

<Inventory Control>

With reference to the inventory control at the Logistics Center, the stock management and utilization of the database were gradually improved through the exchange of opinions with the users, such as WHO and UNFPA. Also, WHO considers to transfer Tamiflu stored at the WHO's own storage to the Logistics Center. The UNFPA and UNICEF have also stored medical products as users of the Logistics Center and warehouses. Moreover, ASEAN stores the personal protective equipment, such as gloves, mask, face protection, gown, etc., for the measures of Global Infection at their warehouses in Singapore and Thailand. They have a plan to transfer them to each country. In that case, the Logistics Center established by the Project would be able to be utilized for storing and controlling the equipment effectively.

3.4.2 Effectiveness

For the following reasons, the effectiveness of the Project is judged to be high to a certain degree.

(1) Achievement of the Project Purpose

<Medical Equipment Maintenance>

It could be said that the mechanism has gradually been established at the central and provincial levels for managing and utilizing medical equipment efficiently and properly. There are several reasons to support the conclusions. Firstly, the daily maintenance system for medical equipment has steadily become parts of the routine works. Secondly, the hospitals intended to secure the budget for the medical equipment maintenance even if it was small amounts of the budget.

The evaluation study team conducted the questionnaire survey with the assistance of the local consultant. Please refer to the following data on the medical equipment maintenance for more detail as shown in Table 1.



Table 1 The improvement of the medical equipment maintenance

	Mangers		Technical staff	
	Central hospital (4)	Provincial hospital (15)	Central hospital (4)	Provincial hospital (15)
(1) Operating environment of medical equipment is improved.	3.50 (70.0%)	3.87 (77.4%)	4.25 (85.0%)	3.93 (78.6%)
(2) Daily maintenance is conducted by users	3.50 (70.0%)	3.80 (76.0%)	3.75 (75.0%)	4.13 (82.6%)
(3) Operating errors by users are reduced compared to before.	3.75 (75.0%)	4.00 (80.0%)	4.25 (85.0%)	4.07 (81.4%)
(4) Repair skills of technical staff are improved.	3.00 (60.0%)	3.67 (73.4%)	4.50 (90.0%)	4.13 (82.6%)

Note 1): On a scale from "1" to "5" with "5" representing the highest possible rating, the average of the ratings is fulfilled in each item.

Note 2): The number of the respondents is in parentheses.

<Inventory Control>

The mechanism has steadily been established at the central and provincial levels for managing and utilizing medicines and medical products efficiently and properly. The reasons are explained in the followings. In the first place, the layouts inside the warehouses have been improved, so the stocks are classified and well-sorted inside the warehouses right now. Secondly, it became much easier for the staff to manage the stocks inside the warehouses through the adoption of the database. Thirdly, the temperature is properly controlled with air-conditioners in specific areas of the warehouses. As a good example, the staff working for the warehouse in Oudomxai province separates medicines into two categories: (a) Medicines necessary for the cool temperature; and (b) Medicines storable at the room temperature. The staff sorts and puts only medicines necessary for the cool temperature in the air-conditioner room in consideration of the temperature control. As a result, the staff became able to find a certain medicine within several minutes through the database. Also, the process of receiving and distributing medical products became much smoother than before. Thanks to those changes as mentioned above, the indicators (2) - (5) in the Project Purpose have been improved in an appropriate manner.

According to the questionnaire survey in the same way as explained above, the following data on the warehouse management was extracted from the results of the questionnaire survey. Please refer to Table 2 for more detail.

Table 2 The improvement of the warehouse management

	Staff		Chiefs	
	Logistics Center (3)	Provincial warehouse (10)	Logistics Center (1)	Provincial warehouse (4)
(1) The picking time is reduced.	5.00 (100%)	4.90 (98.0%)	4.00 (80.0%)	4.50 (90.0%)
(2) The number of the dead stock is reduced.	5.00 (100%)	4.80 (96.0%)	3.00 (60.0%)	4.25 (85.0%)
(3) The maximum standard temperature is well-controlled.	5.00 (100%)	4.40 (88.0%)	4.00 (80.0%)	4.50 (90.0%)
(4) The expiration date is checked on a regular basis.	5.00 (100%)	4.50 (90.0%)	4.00 (80.0%)	4.50 (90.0%)

Note 1): On a scale from “1” to “5” with “5” representing the highest possible rating, the average of the ratings is fulfilled in each item.

Note 2): The number of the respondents is in parentheses.

Note 3): Chief of the Logistics Center: Director of the MPSC; Chiefs of the provincial warehouses: Chiefs of Food and Drug Department in the PHO

(2) Relationship between the Outputs and the Project Purpose

- Supporting system through the MES and the Logistics Center (Output 1)

By establishing the supporting mechanism through the MES and the Logistics Center, the high-quality healthcare services will eventually be provided for the patients even in rural and remote areas.

<Medical Equipment Maintenance>

Regarding three indicators of the Output 1 as explained in the Project Performance, outreach activities and regular meetings were favorably promoted based on the discussions with the Lao side. In terms of the indicator (3), the number of references from the central and provincial hospitals to the MES tends to be increased, so it could be said that the communication channel has gradually been established between the MES and hospitals in the Lao PDR.

During the training for the technical staff, the Project requested them to utilize and send the “request and report form” to the MES. This is because the request and report form is very important for the MES from the following perspectives: (1) Evidence of broken medical equipment; (2) Data addition into the database; (3) Sharing of the information within the MES staff; and (4) Forgetting in case of the absence of the persons in charge at the office. Thus, if medical equipment is broken, the hospital is supposed to report to the MES by the request and report form. After sending the report, the MES is to give the comments on the form to the hospital through the FAX.

<Inventory Control>

In the field of the inventory control, on the other hand, the Logistics Center tried to establish the network with the warehouses in the four target provinces because they were much closer to the people living in rural and remote areas to get access to the medicines and medical products at the warehouses in comparison with the distance to the Logistics Center in Vientiane.

When the warehouses in four target provinces have problems on the database, they get in contact with the Center by phone or fax. Mostly, the problems have been solved in consultation with the Logistics Center. Also, the Logistics Center has provided the staff working for the warehouses with the instructions on the database management, registration of each item, arrangement of stocks, temperature control, etc.

• Capacity of the technical staff for the maintenance and repair (Output 2)

According to the indicators of the Output 2 as explained in the Project Performance, the technical staff and the trainers have steadily taken the training courses. Particularly, the MES staff became capable enough to be assigned as trainers to teach the technical staff working for provincial hospitals. Also, more than five (5) types of training materials were prepared by the Project. In terms of the overall evaluation of the textbooks, the evaluation study team conducted the questionnaire survey in the same way as mentioned above. The following data on the textbooks for the technical staff was extracted from the results of the questionnaire survey. It could be judged that the technical staff highly appreciates the contents of the textbooks.

Table 3 Evaluation of the textbooks for the technical staff

	Technical staff	
	Central hospital (4)	Provincial hospital (15)
(1) Level of explanation	4.00 (80.0%)	4.20 (84.0%)
(2) Volume of explanation	4.00 (80.0%)	4.07 (81.4%)
(3) Degree of interests	4.50 (90.0%)	4.53 (90.6%)
(4) Overall evaluation of the textbooks	4.50 (90.0%)	4.33 (86.6%)

Note 1): On a scale from "1" to "5" with "5" representing the highest possible rating, the average of the ratings is fulfilled in each item.

Note 2): The number of the respondents is in parentheses.

• Management capacity for the hospital managers (Output 3)

Regarding the indicator (1) as mentioned above, the hospital managers have steadily taken the training courses. In the indicator (2), the evaluation study team recognized that

20

the hospital managers (directors or deputy directors) intended to secure the budget for the medical equipment maintenance because they understood the importance of the preventive maintenance through the training courses.

With reference to the overall evaluation of the textbooks for the managers, the following data on the textbooks was extracted from the results of the questionnaire survey conducted by the evaluation study team with the assistance of the local consultant.

It could be said that the managers have interests in the management skills on the medical equipment maintenance through the textbooks. However, the managers at the central hospitals rated the level of explanations in the textbooks more severely from the perspectives of the management side (the average rating point is “3.33 (66.7%)”). As they might not be satisfied with the explanations of the textbooks, it would be necessary to improve the level of explanations.

Table 4 Evaluation of the textbooks for the managers

	Mangers	
	Central hospital (3)	Provincial hospital (15)
(1) Level of explanation	3.33 (66.7%)	4.40 (88.0%)
(2) Volume of explanation	4.00 (80.0%)	4.40 (88.0%)
(3) Degree of interests	4.00 (80.0%)	4.53 (90.6%)
(4) Overall evaluation of the textbooks	4.00 (80.0%)	4.27 (85.4%)

Note 1): On a scale from “1” to “5” with “5” representing the highest possible rating, the average of the ratings is fulfilled in each item.

Note 2): The number of the respondents is in parentheses.

- Capacity for the staff in charge of inventory control (Output 4)

According to the indicator (1) of the Output 4, the staff working for the Logistics Center and the warehouses in the four target provinces constantly participated in the inventory training courses (six participants in 2005, 10 participants in 2006, and 11 participants in 2007). In the indicator (2), although the Logistics Center and the warehouses in four target provinces prepared the quarterly reports of the inventory control, the monthly reports were to be prepared after the adoption of the database at four provincial warehouses. Since then, the four provincial warehouses became able to submit the monthly reports to the Logistics Center.

The staff of warehouses was able to improve their routine activities along with the code of conduct set up by the Project, i.e., “5S: *Seiri* (Distinguishing); *Seiton* (Sorting);



Seisou (Cleaning); *Seiketsu* (Maintaining); and *Shitsuke* (Disciplining).”

The capacity of the staff for the warehouse management has gradually been enhanced through the project activities as follows: (1) To monitor the expiration date of medicines and medical products through the database; (2) To access to the medicines and medical products with their reference numbers inside the warehouse; (3) To check the number of medicines and medical products inside the warehouse; and (4) To grasp the number of medicines and medical products for the receiving and distribution in each month. As a result, it has become much easier to find medicines and medical products by checking the reference number of the medicines and medical products under the warehouse management system, i.e., the introduction of the database, the proper arrangement of the medicines and medical products, and the temperature control inside the warehouse. Every stock locates at easy place to find for the staff of the warehouses right now.

(3) Important Assumptions from the Outputs to the Project Purpose

The Important Assumptions from the Outputs to the Project Purpose are fulfilled from the following reasons.

- Continuation of the work by the trained trainers

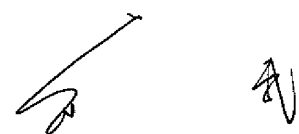
The trained trainers have continued working for the MES and the central hospitals since the beginning of the Project, except one trainer working for Mahosot hospital (See Table A in Appendix 6d for more detail).

- Continuation of the work by the technical staff for medical equipment maintenance

The technical staff for the medical equipment maintenance has continued working for the MES as well as the central and provincial hospitals since the beginning of the Project (See Table B and C in Appendix 6d for more detail).

- Continuation of the work by the staff in charge of inventory control

The staff in charge of the inventory control has continued working for the Logistics Center and the warehouses in four target provinces since the beginning of the Project (See Table D in Appendix 6d for more detail).



3.4.3 Efficiency

The Inputs of the Project were efficiently transferred to the Activities and the Outputs.

(1) Relationship between the Inputs and the Activities

- Assignment of the Japanese experts

Overall, Japanese experts were appropriately assigned in the Project along with the assign chart of the Japanese experts (See the Appendix 6a for more detail). In particular, only one long-term expert has managed and coordinated the entire project activities in charge of the “Project Management/Coordinator.” Even though only one long-term expert has been assigned for this Project, it could be said that the activities have favorably been promoted. From the perspective of the personnel expense, i.e., the Input of the Project, the adoption of the one long-term expert was quite remarkable and characteristic of this Project. In addition, all the short-term experts were repeatedly dispatched in each field along with the plan drawn up at the beginning of the Project. Speaking of the dispatch of the same experts in a short period, it could be said that the way of the assignment was significantly efficient because they have already grasped the contents, situations, and counterparts of the Project since their first visits.

- Utilization and maintenance of provided equipment

In general, the equipment is appropriately maintained and utilized by the Project (See the list of the operation and maintenance of the equipment in Appendix 6c for more detail).

- Training courses in Japan and Thailand

Training courses in Japan and Thailand were very useful for the participants because they were able to learn the concepts and advanced skills of the medical equipment maintenance and the inventory control. As most participants were the trainers for the technical staff and the staff in charge of the inventory control in the country, the training courses were so meaningful for not only the participants but also the above staff so as to establish the mechanism for disseminating the concepts and replicable skills obtained by the participants to them.

<Medical Equipment Maintenance>



The significance of the training courses in Japan was that the participants obtained advanced knowledge and skills through the study tours to several actual manufacturers whose medical equipment was also utilized in the Lao PDR. The participants were

directly able to observe and learn how to conduct the preventive maintenance through the X-ray machine, autoclave, aspirator, etc. Additionally, the participants were able to make good relationships with the Japanese manufacturers in order to get the information on medical equipment and the spare parts through the study tours. Moreover, the participants were able to improve how to teach the technical staff working for the hospitals in the country by learning advanced knowledge and skills on the medical equipment maintenance in Japan.

The hospital managers highly evaluated the training course in Thailand. The participants of the training were able to learn the different style of the medical equipment management in Thailand. Also, there are various types of medical equipment manuals in Thai language which the Lao people are able to understand. After coming back to the Lao PDR from the training course in Thailand, the managers discussed how they were able to apply what they had learned in Thailand to their actual operations at their hospitals. In fact, if it is replicable to their hospitals with some minor adjustments, they intend to apply the experiences and lessons learned in Thailand to their hospitals. However, since highly advanced medical equipment, skillful staff, and advanced management system are adopted in Thailand compared with the situations in the Lao PDR, the managers might partially be able to apply what they have learned in Thailand to the medical equipment management of their hospitals.

<Inventory Control>

During the training course in Japan, participants were able to learn the concepts of the logistics system in the advanced country. They were impressed how medicines were arranged in a good quality at the warehouse and distributed to the destinations in a good condition. Thanks to the training course, they gained the image of the logistics system, i.e., taking in and out the stocks quite rapidly. In this way, they were able to learn how to organize the logistics system. Although they were not completely able to replicate the logistics system in Japan to the one in the Lao PDR, the participants intended to utilize the concepts of the logistics system in Japan. In particular, when the director of the MPSC, one of the participants, gives the presentation of the logistics system to the MOH and PHO through the workshop, what they have learned in Japan is efficiently fed back to not only the staff in charge of the inventory control but also the people concerned.



The warehouse management in Thailand is quite systematic. For instance, the job descriptions of the staff at the warehouses clarify their obligations with a focus on specific commitments. Also, the inside of the warehouse is very clean, and the temperature is well controlled. Further, short shelf-life medicines are put at the fore and new ones are put at the rear on the shelf. In this way, the staff of the warehouses was able to learn various matters to apply to their warehouses.

In addition, the staff working for the Logistics Center had good opportunities to learn the inventory control in Thailand, and they became trainers to give instructions and trainings to the staff working for the warehouses in four target provinces.

- The Logistics Center

The Logistics Center is a focal point of warehouses in the country. Importantly, it could be said that the construction of the Logistics Center as the Input of the Project is considerably meaningful so as to show the model of the logistics system to the other warehouses. Also, the Center becomes more convenient than before. This is because the layout of the Center is well-organized. For instance, the stock cards are attached to the racks and shelves with the reference number corresponding to the number registered in the database. Moreover, the Center became able to take in and out the stocks rapidly and control the temperature in specific areas properly.

As a positive effect of the Logistics Center, since the MOH recognizes the importance of the Logistics Center in the country, the MOH tries to allocate the budget for the operations of the Logistics Center.

With reference to the process of the construction of the Logistics Center, there were several problems. It was not planned to assign a short-term expert in charge of the establishment of the Logistics Center, the preparation of the tender documents, and the construction management at the beginning of the Project. Although the dispatch of the expert in charge was decided after the commencement of the Project, the sufficient period was not secured for the construction of the Logistics Center because of the unplanned budget of the Project. Also, since the preparation survey on the construction of the Logistics Center was not sufficient, only a half of the actual budget was estimated for the construction. According to the insufficient budget, the scale of the Logistics Center was downscaled, and the construction standard was changed from the Japanese standard to the local standard. Moreover, the Lao side was not able to prepare the



budget for the relocation to the Logistics Center from the old central warehouse after the completion of the Logistics Center. The delay in securing the budget prolonged the process of the relocation (Completion of the Logistics Center in October 2006; Relocation to the Logistics Center in February 2007). In spite of the harsh budgetary constraints, the Project achieved a certain result by constructing the Logistics Center.

(2) Important Assumption for the achievement of the Outputs

- Allocation of the technical staff for the medical equipment maintenance and the staff in charge of the inventory control

Overall, the personnel assignment has been promoted favorably. It is necessary for the Lao side to continuously strive for the allocation of the technical staff and the staff in charge of the inventory control, specifically the assignment of the permanent staff in these areas, for the achievement of the Output. As shown in the Table B, C, and D of Appendix 6d, it would be considered that the technical staff for the medical equipment maintenance and the staff in charge of the inventory control are continuously assigned from now on.

3.4.4 Impact

The following impact is recognizable from the implementation of the Project.

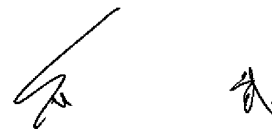
(1) Prospects for the achievement of the Overall Goal

- Achievement of the Overall Goal

In order to measure the achievement of the Overall Goal, two indicators were set up at the beginning of the Project. In the indicator (1), the average yearly working ratios of medical equipment at the central and provincial hospitals have generally attained to 80% and higher at this moment. Importantly, the average yearly working ratios tend to be increased at the hospitals (See the Achievement Grid in Appendix 5a for more detail).

In terms of the indicator (2), the average yearly ratios of dead stock have declined at the Logistics Center and the warehouses in target provinces. In particular, the average yearly ratio of dead stock at the Logistics Center has been declined remarkably (34 % in 2006 to 0 % in 2007).

Thus, it could be said that there are prospects that the Overall Goal will be maintained if the Lao side makes further efforts to continue the routine procedures, including



decommissioning of medical equipment, established by the Project.

- Decommissioning of medical equipment

In terms of decommissioning of medical equipment, the decommissioning procedure is presented in the policy guideline of the MEM Policy as follows:

- (a) Request for decommissioning of medical equipment prepared by the section using the equipment;
- (b) Technical evaluation by the maintenance unit of the hospital attached to the request;
- (c) Submission to the Medical Equipment Management Committee (MEM Committee) for the evaluation of the request;
- (d) Recommendations on the action to be taken prepared by the MEM Committee;
- (e) Decommissioning of the medical equipment and verification of its usable spare parts and accessories by the maintenance (technical) staff of the hospital with the approval of the hospital director; and
- (f) Maintenance of the record of the decommissioned equipment with the report explaining how the equipment was disposed.

Regarding decommissioning of medical equipment, the MES gives advice on the repair or decommission to the hospitals from the perspectives of the followings: (1) How many times the equipment has been repaired; (2) How many years the equipment has been utilized; and (3) How much it costs for the repair of the equipment. In reality, it is difficult to repair the equipment because the spare parts are not easily obtained in the Lao PDR.

Concretely, the decommissioning of 100 pieces of medical equipment was carried out at Mahosot hospital on a trial basis. If the approach is appropriate, the MPSC tries to decommission the medical equipment at other hospitals. Also, the MPSC has studied how to decommission the medical equipment in cooperation with the Ministry of Finance.

(2) Positive impacts beside the Overall Goal

- Discard of expired medicines and medical products

At the beginning of the Project, even if the expiration date of medicines and medical products exceeded, the staff working for the central warehouse (the Logistics Center at present) was not able to discard them. However, they are easily able to check the

expiration date of the medicines and medical products through the database right now. In case medical products stored by donors exceed the expiration date, the Center has become able to request the donors to cope with the medical products by showing the evidence prepared by the database to them.

- Report to the Provincial Health Office (PHO)

The introduction of the database and the arrangement of the stocks inside the warehouse improved the reporting system. The warehouse became able to prepare the reports to the PHO more easily and efficiently through the database. It could be said that it is a positive impact of the Project.

- Operational Guide of Medical Equipment in Local Language

In order to prepare the operational guide of medical equipment (the procedure of how to utilize the medical equipment) in Lao language at the provincial hospital in Savannakhet, the technical staff discussed with the responsible users of the medical equipment who had the knowledge on how to use the equipment. The hospital staff became able to share the directions for use of each medical equipment in Lao language.

- Enthusiasm to Disseminate the Knowledge and Skills to the District Level

The staff of the warehouse in Oudomxai province has the enthusiasm to provide trainings for the staff working for other provincial and district warehouses as the center of the regional warehouse.

The staff working for the warehouse in Champasak province is willing to disseminate the knowledge and skills obtained through the Project to the staff working for the warehouses at the district level. The staff from the districts had instructions on the inventory control at this warehouse, and there are prospects that they will be able to conduct what they have learned at the warehouse.

(3) Inhibiting factors for the achievement of the Overall Goal

It might be necessary to take measures for the improvement of the communication between the hospital and the technical staff of the PHO. In case of the hospital in Oudomxai province, although the users are supposed to report the problems on medical equipment to the technical staff through the formal channel, the users directly report the problems to the director/deputy director at the hospital because it is often difficult to communicate with the technical staff assigned for the PHO who has a lot of

maintenance and repair works within the province.

In the area of the inventory control, although the provincial government is supposed to transport the medicines and medical products to the district level, it is sometimes unable to allocate the sufficient budget for the transportation to the district level.

3.4.5 Sustainability

The prospects of the project sustainability will be good if human and financial resources are properly secured by the MPSC under the MOH.

(1) Alignment with the Policy in the Lao PDR

According to the MEM Policy and the Revised National Medicine Policy as mentioned in 3.3.1, the project activities on the medical equipment maintenance and the inventory control would be supported by those governmental policies in the Lao PDR even after the termination of the Project.

(2) Organizational sustainability

- Continuation of the project activities in sustainable way

The most crucial point is that the project activities are incorporated into the routine works at the hospitals and warehouses, so they would be able to continue the activities as their routine works.

Although the Project has two components, i.e., the medical equipment maintenance and the inventory control, the improvement of both components greatly contributes toward providing high-quality healthcare services for the people through the medicines, medical products and equipment in cooperation with both components toward the same objective.

<Medical Equipment Maintenance>

The managers and the technical staff would like to continue the maintenance activities because they recognize that the medical equipment greatly contributes toward saving the patient's life as well as supporting the medical services provided by the medical doctors and nurses.

The process of the repair of medical equipment was clarified through the project activities as follows: (1) To collect the comments of users on the problems of medical

equipment; (2) To check the equipment by technical staff; (3) To discuss with the director of the hospital if it is not able to be repaired by the technical staff; and (4) To report to the MES about the broken equipment by using the request and report form prepared by the Project.

As the users recognized the importance of medical equipment maintenance through the instructions of the preventive maintenance repeatedly conducted by the MES and technical staff, their attitudes towards the maintenance have gradually been changed so as to be able to maintain medical equipment by their own hands according to the checklist of the daily maintenance.

<Inventory Control>

The staff working for the warehouses intends to improve the conditions of the warehouses more appropriately according to the code of conduct set up by the Project, i.e., "5S". Also, the staff of the warehouse considers that they would like to make efforts in order to improve the warehouse management. This is because the improvement contributes toward providing high-quality healthcare services and medicines for the patients. Furthermore, the project activities are incorporated into the routine works at the warehouse, so they might be able to control and keep medicines and medical products in a good condition as their routine works.

- Assignment of human resources

According to the trend of the personnel allocation within several years as shown in the Table B, C, and D of Appendix 6d, there are prospects that the technical staff for the medical equipment maintenance and the staff in charge of the inventory control will be assigned from now on. However, the Lao side should continuously strive to assign the permanent staff for these areas from the perspective of the sustainability of the project activities.

(3) Financial sustainability

- Financial situation of the MPSC

As shown in the Table 5, it is recognized that the MPSC makes efforts to secure the budget for their routine activities. The total revenues have been decreased since the fiscal year of 2006. However, most revenues were disbursed for the construction expenses to prepare fences, electricity, water supply, etc. for the Logistics Center. In consideration of the operating expenses without the construction expenses, the specific



budget tends to be increased. Therefore, the MPSC intends to continue the project activities from the perspective of the operating expenses.

Table 5 Budget of the MPSC from FY 2005 to FY 2008

Unit: Kip

Items	2005		2006		2007		2008
	Plan	Realization	Plan	Realization	Plan	Realization	Plan
Revenues							
Government	282,300,000	282,300,000	1,106,314,000	1,106,314,000	470,937,000	470,937,000	283,176,000
Expenditures							
Operating expenses							
Salary	130,000,000	130,000,000	141,590,000	141,590,000	130,737,000	130,737,000	187,900,000
Water	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,500,000
Electricity	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	20,000,000
Telephone	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	8,000,000
Facility maintenance	14,000,000	14,000,000	15,000,000	15,000,000	15,000,000	15,000,000	12,000,000
Equipment maintenance	2,000,000	2,000,000	4,000,000	4,000,000	4,000,000	4,000,000	10,000,000
Others	37,300,000	37,300,000	40,724,000	40,724,000	37,200,000	37,200,000	41,776,000
Sub Total (Operating expenses)	207,300,000	207,300,000	225,314,000	225,314,000	210,937,000	210,937,000	283,176,000
Capital expenses							
Consturction	75,000,000	75,000,000	881,000,000	881,000,000	260,000,000	260,000,000	-
Total	282,300,000	282,300,000	1,106,314,000	1,106,314,000	470,937,000	470,937,000	283,176,000

Source: Budgetary Sheet prepared by the MPSC

Note: The Fiscal Year for the Lao government has started from 1st October to 30th September.

(FY 2005: October 2004 – September 2005)

- Efforts for securing financial resources

<Medical Equipment Maintenance>

Through the Project, hospital managers recognized that it is important for the hospitals to maintain medical equipment in order to extend the life of medical equipment. Also, they were able to understand the importance of the preventive maintenance because of the limitation of the budget in comparison with the procurement of new medical equipment and the repair of existing equipment. As a result of their changes in awareness, the budgetary allocation for the medical equipment maintenance came to be secured even if it is small amounts of the budget.

The hospitals charge patients for the medical services provided by the hospitals, such as hospital fees, bed fees, X-ray examination, drugs, etc. Parts of those user fees came to be allocated for the medical equipment maintenance by the discretion of the hospitals. However, the amounts of revenues from the MOH are still not sufficient for the medical equipment maintenance.

As a positive impact of the Project, the technical staff was temporally contracted at the provincial hospital in Sayaboury at the beginning of the Project, but the technical staff became the permanent staff during the cooperation period of the Project.

Since the budget for the medical equipment maintenance was not allocated at the hospitals until recently, it was the enormous progress to be able to secure the budget for the medical equipment maintenance at this moment.

<Inventory Control>

The staff working for the Logistics Center had the opportunities to train the people of the private companies on how to keep the temperature and manage the stocks inside the warehouse. In addition, since the stock management at the Logistics Center was highly appreciated, a private company requested to keep the containers and materials inside the Logistics Center. These services might be a source of revenues for the Logistics Center.

3.5 Conclusions

The Team concluded that the Project Purpose would be achieved by the end of the cooperation period. The data relating to the five indicators of the Project Purpose supports that the mechanism for managing and utilizing medicines, medical products and equipment has steadily been established at the central and provincial levels.

In terms of the medical equipment maintenance, the adoption of the following activities greatly contributed towards achieving the Project Purpose. Firstly, the importance of the medical equipment maintenance was recognized by the managers, technical staff, and users (medical doctors and nurses) through the instructions by the MES. Secondly, the users have gradually come to conduct the daily maintenance as their routine works. The managers recognized the medical equipment maintenance as necessary for providing high-quality healthcare services for the people. Thirdly, it became easier for the MES to monitor the working condition of the medical equipment at the hospitals through the database of the medical equipment.

With reference to the inventory control, the adoption of the following activities greatly contributed towards achieving the Project Purpose. Firstly, the newly-established central warehouse, named as the Logistics Center, has been functioning as a center of the logistics system in the country. The monthly reports to the Logistics Center have come to be firmly submitted by the four provincial warehouses. Secondly, the arrangements



inside the warehouses have been improved, so the stocks are classified and well-sorted with the reference number corresponding to the information in the newly-established database. As a result, the staff became able to find a certain medicine or medical product within several minutes. Thirdly, the staff became easily able to monitor the expiration date of medicines and medical products through the database. Fourthly, medicines can be stored in appropriate condition because specific areas of warehouses are equipped with air-conditioning and the temperature is properly controlled by the trained staff.

4. RECOMMENDATIONS AND LESSONS LEARNT

4.1 Recommendations

Based upon the findings of the terminal evaluation, the Team made the following Recommendations.

(1) Sharing the project outcomes within related organizations

The outcomes, experiences and lessons learnt of project activities should be shared among each Department of the MOH, each Provincial Health Office, concerning donors and organizations.

(2) Developing the guidelines for the logistics system in order to conduct the logistics management under the National Medicines Policy

The MOH should develop and finalize the guidelines as the principle for the logistics system with technical support of the Project.

(3) Reporting the working condition of medical equipment

All of the hospitals should submit the report to the MES every six months, so that the MES can monitor and manage the working condition of medical equipment through inputting the information to the database. The technical support needs to be continued until the end of the Project.

(4) Strengthening the role and performance of the MEM Committee

The MOH should facilitate the MEM Committee to function as the focal point of the medical equipment management in the Lao PDR.



(5) Decommissioning medical equipment

The MOH should continuously promote the hospitals to decommission medical equipment.

(6) Establishing the financial system for continuing the medical equipment maintenance as well as the inventory control

The MOH should secure the finances for followings:

- Transportation fee from the Logistics Center and warehouses to the destinations;
- Training cost at the central, provincial, and district levels;
- Cost of outreach activities at the central and provincial hospitals by the MES; and
- Cost of outreach activities at the provincial warehouses by the Logistics Center.

(7) Considering the soft component in case of providing medical equipment for hospitals

Donors should consider the soft component in case of providing medical equipment for hospitals.

4.2 Lessons Learnt


The Team clarified the lessons learnt from the Project as below.

(1) Make the textbook for medical equipment maintenance in the local language

In the field of medical equipment maintenance, the Project has provided the Laotian textbooks for managers and technical staff in the in-country training courses. It was the first attempt in the Lao PDR to make Laotian textbooks for medical equipment maintenance. Most of the participants in the training courses highly appreciated these Laotian textbooks and these textbooks have been used widely in the Lao PDR.

(2) Incorporate the new concepts into the routine works both at hospitals and warehouses

The Project brought the new concepts which promoted the changes in the consciousness of their routine works and made their routine works more effective and efficient. In the field of medical equipment maintenance, the daily maintenance by users at hospitals has steadily become parts of their routine works. Also, in the field of inventory control, the



staff of warehouses was able to improve their routine works along with the code of conduct set up by the Project, i.e., “5S” .

(3) Involve the managers and users at hospitals in the activities of the medical equipment maintenance

In the field of medical equipment maintenance, although most of users and managers at hospitals did not know the concept of medical equipment maintenance before launching the Project, they were able to understand the importance of medical equipment maintenance in order to extend the life of medical equipment through the Project. As a result of the changes in their awareness, the hospitals intended to secure the enough budget and improve the system for medical equipment maintenance.

(4) Provide the soft component in case of provisions of medical equipment for hospitals

Although the Project has supported the hospitals in the Lao PDR on medical equipment maintenance, some of the hospitals still have unavailable medical equipment because they do not know how to utilize, maintain and manage them. In order to improve the circumstances, donors that will provide medical equipment for hospitals should consider soft component, i.e. whether there is the agency handling the medical equipment near the hospital, whether the hospital has the capacity to maintain the medical equipment, donors should prepare the manual for the medical equipment in the local language, donors should provide enough guarantee on the medical equipment and so on.

Handwritten signature and a small mark consisting of a vertical line with a horizontal tick at the top.