

# **FINAL REPORT**

## **TECHNICAL COOPERATION PROJECT ON DEVELOPING THE CAPACITY OF THE GOVERNMENT TO POST-EVALUATE EXTERNALLY FUNDED PROJECTS**

NOVEMBER 2005

PREPARED BY

JICA EXPERT AND PDMO COUNTERPART TEAM



This Report is one of the three reports produced under the technical cooperation project of Developing the Capacity of the Government to Post Evaluate Foreign Funded Projects, jointly implemented by JICA and PDMO.

This volume is the **Final Report** (main report). The others are (1) **Monitoring and Evaluation Guidelines** and (2) **Training and Seminar Materials**.

In addition to these reports, **CD-ROMs** containing the above reports and reference materials downloaded from internet are produced. Hardcopies of downloaded materials are sorted and filed as **M&E Library**.



# FINAL REPORT

## Table of Contents

EXECUTIVE SUMMARY	... S-1
I. THE PROJECT	
1. The Technical Cooperation Project	... I-1
2. Background of Project	... I-3
3. The Inputs	... I-4
4. Summary of Project Activities	... I-5
5. Terminal Evaluation	... I-9
II. MONITORING OF ON-GOING PROJECT	
1. Loan Portfolio Management Information System (LP-MIS)	...II-1
2. Loan Disbursement Index: Loan Performance Indicators	...II-5
3. Guidelines for Monitoring	...II-14
III. EX-POST EVALUATION BY PDMO	
1. PDMO's Functions in Development Project	...III-1
2. Ex-post Evaluation by PDMO	...III-3
3. Guidelines for Ex-post Evaluation	...III-44



## EXECUTIVE SUMMARY

### 1. Summary of Activities

The one-year technical cooperation project of Developing the Capacity of the Government to Post Evaluate Externally Funded Projects has been implemented jointly by JICA and PDMO from November 2004.

#### (1) Completed Tasks

##### Training Program

- (1) Training Program in Thailand for Ex-ante, Monitoring, and Ex-post Evaluation (September 2005, 63 participants)
- (2) Training Program in Japan (October 2005, 2 participants)
- (3) Other Training Opportunities
  - a) Seminar/Workshop on ODA Evaluation in Thailand, January 2005
  - b) Feedback Seminar of JBICPDMO Joint Evaluation, April 2005
  - c) JBIC Ex-post Monitoring Seminar, July 2005
  - d) Feedback Seminar on JBIC Evaluations, September 2005

##### On-the-job Training

- (1) Joint Evaluation with JBIC (1):

Bangkok Water Supply Projects, November 2004 - April 2005

The evaluation works were led by JBIC and JBIC consultant, and PDMO participated as a first exercise. Evaluation Summary and Evaluation Report were drafted by the JBIC consultant, and PDMO made contributions by providing comments on these reports. The ex-post monitoring indicators were developed by PDMO.
- (2) Joint Evaluation with JBIC (2):

Regional Development Program (Tourism), July 2005 - First half of 2006

The planning and designing of ex-post evaluation were done by PDMO. The PDM (at evaluation), and Evaluation Grid, and Evaluation Questions were developed by PDMO, this time.

##### Products

- (1) Monitoring and Evaluation Guidelines (1<sup>st</sup> Edition)
- (2) PDMO Action Plan for Monitoring and Evaluation Capacity Development
- (3) Loan Disbursement Index and Project Performance Indicators (Draft)

#### (4) Diagnosis of LP-MIS

##### **(2) Tasks Not Completed**

The project planned to achieve “The LP-MIS is functional and fully operated or is being modified to serve the current M&E trend of PDMO.”

This is however not realized due to the delay of modification of LP-MIS. The system engineers subcontracted by PDMO are currently working for LP-MIS modification. It is expected to complete the modification by March 2006.

## **2. Outcome of the Project**

### **(1) The Capacity of PDMO**

The knowledge on monitoring and evaluation of PDMO counterpart team has become to the level of delivering lectures to other organizations. In fact, PDMO provided seminars on Project Planning, Monitoring and Evaluation for staff of (1) Project Executing Agencies, and Industrial Planning Department in 2005, utilizing the acquired knowledge through the Project implementation. In addition, the PDMO has received visiting counterpart teams from Viet Nam Ministry of Planning and Investment and Lao Ministry of Finance for their training of monitoring and evaluation. The government officials from two countries came to learn Thai public debt management, especially for monitoring and evaluation system. PDMO also sent a lecturer to a seminar organized by JBIC in Tokyo for making presentation of PDMO’s monitoring and evaluation system. Though the number is rather limited, but the Project could produce high quality of personnel for monitoring and evaluation in PDMO in a short period of time.

### **(2) The Products**

The Project was successful to produce almost all planned products, such as guidelines, indicators, action plan etc (Action Plan as attached). It is, however, that there has been no opportunity for trying to use these products at actual condition. According to the Action Plan, PDMO has a plan to carry out two ex-post evaluations per year. Therefore, it is an important opportunity to use the produced outputs, in order to review and confirm the usefulness, and to make modifications, according to real needs.



### Schedule of Action Plan by PDMO and Project Implementing Agencies (PIA)

Action Plan	Responsible Agencies	Initial Stage	Enhancement Stage		Full Implementat'n Stage
		2005	2006	2007	2008-
<b>&lt; Monitoring and Information System &gt;</b>					
1. Modification of LP-MIS	PDMO	←→			
2. Setting performance indicators	PDMO	←→			
3. Opeation of new LP-MIS	PDMP/PIA		→		
			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Provison of planned and monitored data</div>		
<b>&lt; Ex-post Evaluation &gt;</b>					
1. Joint ex-post evaluation with JBIC	PDMO/JBIC	←→			
2. Ex-post evaluation by PDMO	PDMO/PIA		←→	←→	←→
3. Ex-post monitoring for evaluated projects	PDMO/PIA		<div style="border: 1px dashed gray; padding: 2px; width: 100%; text-align: center;">→</div>		
			<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;">Exercise/application to monitoring and evaluation</div>		
<b>&lt; Institutional and Human Resources Development (PDMO/PIA) &gt;</b>					
1. Training for monitoring and evaluation in PDMO	PDMO/JICA	←→			
2. Support to PDMO by JBIC	JBIC		<div style="border: 1px dashed gray; padding: 2px; width: 100%; text-align: center;">→</div>		
3. Training for evaluation through participation	PIA		<div style="border: 1px dashed gray; padding: 2px; width: 100%; text-align: center;">→</div>		
4. Review of Outcome	PDMO/JBIC		▽	▽	▽

### **3. Recommendations**

#### **(1) Continuation of Activities**

The declining trend of foreign funded projects is likely to continue in Thailand. The evaluation after the completion of project implementation may not be a real concern of PDMO. Nevertheless, it is so important to establish the culture of monitoring and evaluation in PDMO. Because, conducting ex-post evaluations and closely monitoring the projects are the best opportunity to learn the sectors and projects which the PDMO staff is handling. It is true that the shortage of staff at PDMO makes it difficult to devote time for monitoring and evaluation. Under these circumstances, monitoring and evaluation activities, especially for ex-post monitoring, may not be given a high priority. It is therefore so important to assign, preferably at least one fulltime senior staff, who is responsible entire ex-post evaluation activities in PDMO. Involvement of donor agency is also preferred in order to maintain external pressure for regular and continued exercises.

#### **(2) Doing On-the-project Training**

Monitoring and Evaluation is not requiring complicated theory. It is, in principle, the comparison of planned and actual. Though it is rather simple, but there are a lot of practical difficulties. The first difficulty in the real world is due to unavailability of record, data and information of the particular projects. Second difficulty may be the fact that PDMO's staffs are not sector specialists. The third one is that the project, even in the same sector, differs very much from one to another. In short, evaluation is theoretically simple but the subjected projects differ a lot from one to the other. Under these circumstances, studying in class room does not help so much. Only doing on-the-project (on-the-job) training in real world would help to improve the skill of monitoring and evaluation in short time.

#### **(3) Active Participation at Appraisal**

For the staff of PDMO, the first and last opportunity to learn a project effectively is the appraisal work by the donor lending agency. Two-week fulltime participation to the appraisal is the best opportunity to understand not only the project, but also the sector-specific issues and problems, as well as the project-specific matters. It also helps to keep the documents and information in

PDMO, otherwise not be able to obtain.

#### (4) Agreement from Executing Agency at Commencement

One of the most serious difficulties of PDMO's monitoring and evaluation at this moment is the isolation from the necessary data and information needed for monitoring and evaluation. Timely, accurate, and sufficient supply of data of project implementation progress and realization of project outcome is vital for quality monitoring and evaluation by PDMO. It is however that PDMO can not do by themselves, without the understanding and cooperation from the executing agencies. The new Public Debt Management Act, which legally gives authority to PDMO for monitoring and evaluation, would help to persuade the executing agencies at any moment. It is, however, recommended for PDMO to reach an agreement with the executing agencies in written document prior to commencement of project implementation, for the future supply data from executing agencies with detail data specifications.

#### (5) Giving Specific Role to PDMO within National Evaluation Framework

Although the specific role to be played by PDMO for monitoring and evaluation of development project, in relation with other central agencies such as the NESDB, Bureau of Budget, and others, is not very clear. This also relate to the feedback system of lessons learned by monitoring and evaluation. Regardless the main functions of PDMO, it is in a very suitable position to be a center for monitoring and evaluation of development projects. If agreed by the relevant authorities of the Government, the PDMO may be officially given the function of the national monitoring and evaluation center of development projects. Only by doing so, PDMO can consider the institutional development and resources allocation plans very seriously.



## I. THE PROJECT

### 1. The Technical Corporation Project

The Project on Developing the Capacity of the Government to Post Evaluate Externally Funded Projects started on November 2004 for one-year period, at the Public Debt Management Office (PDMO) of the Ministry of Finance, Thailand with technical cooperation from the Japan International Cooperation Agency (JICA).

The purpose of the project is to strengthen the capacity in monitoring and evaluation (M&E) and post evaluation of external funded project of PDMO, as defined in the project design document. The project is expected to contribute to the PDMO's one of the important functions in the future, that "public debt and externally funded projects are managed effectively and efficiently within fiscal sustainability framework, and it minimizes the cost of borrowing".

The project framework is shown in the project design matrix (PDM) as agreed between JICA and PDMO prior to commencement of the project. The PDM has not been revised, thus still remains valid.

As shown in the PDM, Project Outputs are:

- PDMO develops M&E methodology and loan disbursement index and project performance index,
- LP-MIS becomes fully operated and used as M&E tool, and
- PDMO staffs acquire the knowledge of M&E and post evaluation method.

### Figure I-1 Project Design Matrix

Project Title: Developing the Capacity of the Government to Post Evaluate the Externally Funded Project, Public Debt Management Office (PDMO), Ministry of Finance Thailand  
 Target Area: Monitoring and Evaluation of Externally Funded Project Target Group: Public Debt Management Office Staff (level 4 -7) Duration: JFY 2004- 2005 (1 Year)

Ve  
Date : 20/9

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Imports
<p><b>Overall Goal</b>                      -Public debt and externally funded projects are managed effectively and efficiency within fiscal sustainability framework and minimize the cost of borrowing.</p>	<p>-The External funded project disbursement rate is improved.                      -The reduction in cost of borrowing : the commitment fee or service charge is being paid less than before.</p>	<p>-PDMO Master Plan.                      -The Lender's monthly statement.</p>	<p>-Thailand has a outlook.                      -The Project Im achieves project</p>
<p><b>Project Purpose</b>                      -The capacity in Monitoring and Evaluation (M&amp;E) and Post Evaluation of external funded project of PDMO is strengthened</p>	<p>-The external funded project is being monitored and evaluated by JBIC /International standard.                      - PDMO improves M&amp;E methodology reflected by JBIC/International standard                      - Loan Portfolio Management Information System (LP-MIS) is functional and fully operated or is being modified to serve the current M&amp;E trend of PDMO.</p>	<p>-PDMO M&amp;E Plan                      - Project Loan Operation Bureau Monthly Report.</p>	<p>-PDMO's evalua drastically..                      -LP-MIS is being</p>
<p><b>Outputs</b>                      1. PDMO develops M&amp;E methodology and Loan disbursement index and project performance index.                      2. LP-MIS becomes fully operated and used as M&amp;E tool.                      3. PDMO staffs acquire the knowledge of M&amp;E and Post Evaluation Method</p>	<p>1.1 Project performance auditing benchmark is modified                      1.2 Guideline for project M&amp;E is formulated                      2. PDMO increases the usage of LP-MIS.                      3.1 Training participants in Thailand understand the methodology of Project Planning, Evaluation and Appraisal, and Implementation Management                      3.2 Training participants in Thailand understand the methodology of Project M&amp;E                      3.3 Training participants in Thailand understand the methodology of Project Post Evaluation                      3.4 Training participants in Japan and participants of joint evaluation program understand the project evaluation method in JBIC</p>	<p>- The external funded project M&amp;E quarterly monthly report.                      - The M&amp;E and post evaluation manual.                      - The loan disbursement index and project performance index.                      - LP-MIS operation plan.                      - Training and joint evaluation reports from participants</p>	<p>-Targeted C/Ps a their working fic</p>
<p><b>Activities</b>                      1.1 Assessment the need and existing tool for M&amp;E and post evaluate the external funded project.                      1.2 Developing PDMO M&amp;E master plan &amp; Loan Disbursement Index and project performance index.                      2.1 Diagnosis of the problem of LP-MIS and suggesting solution and alternative.                      3.1 Assessing the need for the training                      3.2 Implementing training program on project M&amp;E and Post Evaluation in Thailand                      3.3 Implementing training program on project M&amp;E and Post Evaluation in Japan                      3.4 Implementing the joint evaluation program with JBIC</p>	<p><b>Inputs</b>                      &lt; Japanese Government &gt;                      In kind and financial support                      - JICA Expert (12 man-months).                      - Training in Japan (1-2 man-months)</p>	<p>&lt; Thai Government &gt;                      In Kind Support                      -Program Coordinator ( 12 man -months).                      -Working space and Utilities for JICA Expert                      -Workshop room.</p>	<p>-JICA provides t support.                      -Availability of t and participants                      -Communication properly manage divisions.</p>
			<p>Pre-Conditions                      The Program is t approved by The government and memorandum.</p>

## **2. Background of Project**

It is now readily apparent in the world that good governance is a key to achieving sustainable socioeconomic development. States are being challenged as never before by the demands of the global economy, new information and technology, and calls for greater participation and democracy. Thailand is not an exception.

Governments and organizations all over the world are grappling with internal and external demands and pressures for improvements in public management. These demands come from a variety of sources including multilateral development institutions, donor governments, parliaments, the private sector, NGOs, citizens' groups and civil society, the media, and so forth. Whether it is calls for greater accountability and transparency, enhanced effectiveness of development programs in exchange for foreign aid, or real results of political promises made, governments and organizations must be increasingly responsive to demonstrate tangible results. In short, government performance has now become a global phenomenon.

The PDMO, as a responsible office for managing the public debt of Thailand has more specific problems related to results-based management of government system. During the 1997 Asian Financial Crisis, the performance of Thailand externally projects was deteriorating. Thai Government executed project disbursed slowly below target. As a result, the loan disbursement stalled and yielded a high commitment fee for unproductive causes. The World Bank dispatched the mission to conduct Portfolio performance audit in Thailand in late 1998. The study indicated that the cause of the project performance problem derived from internal and exogenous factors of the project implementation. The internal factor was the limited capacity of government in executing and monitoring the project as scheduled, while the exogenous factors are the financial crisis and other natural causes that hampered the project progress. The Study also showed that the government lacked the effective monitoring and evaluation on the portfolio. Based on these understandings, the World Bank with the financial assistance from ASEAM Trust Fund granted the Government of Thailand to carry out the Project for developing the Capacity of the Government to Monitor, Evaluate and Support Implementation of Externally-Funded Projects. The Project aims at providing series of training, developing Loan Portfolio

Management Information System (LP-MIS) and preparing guideline for project planning, evaluation and appraisal of public sector projects.

In addition to the loan portfolio management, Thai Government planned sometime ago, and eventually enacted Public Debt Management Act in 2005, which legally requires PDMO to report how the project is well performed or how the foreign loan efficiently and effectively utilized. Accordingly, it became an urgent matter for PDMO to improve its project monitoring and evaluation systems as soon as possible.

In response to the recognition above, the Government of Thailand requested the Government of Japan to carry out the Project in accordance with the Agreement on Technical Cooperation between the Government of Japan and the Government of Thailand. Then, the Government of Japan has decided to cooperate on the Project, and assigned Japan International Cooperation Agency (JICA) to implement the Project with Public Debt Management Office (PDMO), Ministry of Finance.

### **3. The Inputs**

#### **(1) Inputs from Japanese Side**

##### **1) JICA Expert**

Mr. Hachiro Ida, 12 MM (Nov.21, 2004 ~ Nov.21, 2005)

##### **2) Counterpart training in Japan**

Name of group training: Seminar on Evaluation of Japan's ODA Loan Projects

Period: 16 October, 2005 to 29 October, 2005 (2 weeks)

Training institute: JBIC

Trainee: Mr. Yuthapong Eamchang, Economist 6, Special Loan Program Division, Project Loan Operation Bureau, PDMO  
Ms. Anchana Wongsawang, Director, Consultant Database Center, Project Loan Operation Bureau, PDMO

##### **3) Cost shared by Japan**

Japanese share: 22,338,000 yen (8,240,000 Bhat) ( 100 %)



**(2) Inputs from Thai Side**

1) Program Coordinator

Ms. Arunwan Yomjinda	Director, Special Loan Program Division, Project Loan Operation Bureau, PDMO
----------------------	--

2) Counterpart

Ms. Sukuma Sarahong	Economist 5, Special Loan Program Division, Project Loan Operation Bureau, PDMO
---------------------	---

Mr. Premjit Eurbunyanun  
Economist 5, Special Loan Program Division, Project Loan Operation Bureau, PDMO

Mr. Preksarek Polprtch  
Economist 3, Special Loan Program Division, Project Loan Operation Bureau, PDMO

3) Working space and utilities for JICA Expert

Working space and utilities were provided to JICA Expert.

4) Workshop room

Meeting room at PDMO was used.

**4. Summary of Project Activities**

The major activities of the Project are listed hereunder:

**(3) Human resources development**

1) Monitoring and Evaluation Training Course

Training	Date	Attendants	Major Topics
Course 1	19 September , 2005	26	Project planning, evaluation, appraisal and implementation
Course 2	22 September, 2005	23	Project monitoring and evaluation
Course 3	28 September, 2005	14	Project post evaluation

2) On the Job Training - Joint Ex-post Evaluations with JBIC

(1) The first joint evaluation for the purpose of on-the-job training with JBIC was done for the Water Supply Projects in Bangkok implemented by the Metropolitan Waterworks Authority (MWA). The preparation of the joint evaluation started as early as April 2004, and main activities were from November 2004 to April 2005. The details (process, activities, and products) are given in Chapter IV. Through this exercise, PDMO could acquire the knowledge about general process of ex-post evaluation of JBIC. During the course of this joint evaluation, the JICA expert organized a short seminar of introductory project evaluation in January

and February 2005 to for PDMO's participating staff to joint evaluation. Monitoring indicators and Monitoring sheet for ex-post monitoring was developed by the PDMO with the assistance of JICA expert, based on the results of ex-post evaluation.

(2) The second joint evaluation was not planned in the original implementation plan, but PDMO and JBIC recognized this joint evaluation exercise is so useful to acquire the practical knowledge of ex-post evaluation. Therefore, it was decided to conduct second one for Regional Development Program (Tourism) implemented by the Tourism Authority of Thailand (TAT). The work started in July 2005. Due to unavailability of the appropriate consultant to be hired by JBIC, the work schedule delayed by two months than originally anticipated. Therefore, we could not complete this additional assignment within the technical cooperation period, but will continue to finish with feedback seminar which is scheduled in the first half of 2006.

### 3) Training Program in Japan

Two staffs from PDMO participated in training program in Japan. The program was Seminar on Evaluation of Japan's ODA Loan Projects sponsored by JICA and implemented by JBIC. The course was for two weeks in October 2005.

### 4) Other Training Opportunities

Listed hereunder is other training opportunities of counterpart staff of the team.

- Seminar/Workshop on ODA Evaluation in Thailand, January 17-21, 2005
- Feedback Seminar of Joint Evaluation (PDMO/JBIC), April 29, 2005
- JBIC Ex-post Monitoring Seminar, July 28, 2005
- Feedback Seminar on JBIC Evaluations, September 8, 2005

### (4) Production of materials

Through the implementation of the Project, the following materials are produced.

1) **PDMO Master Plan:** When conducted the joint evaluation with JBIC, PDMO prepared an action plan for future institutional and capacity development for monitoring and evaluation in PDMO. This could be carried out with an understanding the realities of ex-post evaluation. This was discussed at Feedback Seminar with JBIC, and the ideas are shared with the participants.

2) **Monitoring and Evaluation Guidelines:** The Guidelines is to present to mainly for PDMO staff information on various existing tools aimed at facilitating evaluation at the project design, implementation or monitoring, and project completion, and operation stages, including ex-post evaluation of completed projects. The handbook would not be the quality product, but to invite thoughts and comments for continuing effort to provide the best evaluation products possible. The Guidelines is a document designed to evolve and change as PDMO learns from its use.

3) **Project Performance Index as tools of M&E:** This is produced as a part of M&E Guidelines.

**(5) Implementation Schedule**

The implementation schedule comparable of planned and actual is attached in Figure I-2, next page.

**Figure I-2 Implementation Schedule (Planned and Actual)**

Activities		Month (Planned)											
		Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
<b>Part I</b>	<b>The project monitoring and evaluation (M&amp;E) and performance auditing of the externally funded portfolio</b>												
1	Collect and review the closed project and the ongoing project data	==	==	==									
2	Prepare a study of monitoring and evaluation of on going project and post evaluation of the closed project		==	==	==								
3	Development the project performance auditing benchmark for Thailand					==	==	==	==	==	==		
4	Joint meeting to Discuss the Project performance auditing benchmark									==			
5	Prepare Guidelines for monitoring and evaluation of development project									==	==	==	==
<b>Part II</b>	<b>Training Program in Thailand</b>												
1	Review the Work Plan and Assesment of the need of Training Program	==					==						
2	Prepare and draft the outline of training program		==					==					
3	Joint meeting to Discuss the Training			==				==					
4	Selecting PDMO's Praticipants for Training Program			==	==				==	==			
5	Kick off the training Program												
	Course 1 Project Planning, Evaluation, Appraisal, and Inpmententation Management					==					==		
	Course 2 Project Monitoring and Evaluation						==				==		
	Course 3 Project Post Evaluation							==			==		
6	Evaluate the training program							==			==		
<b>Part III</b>	<b>Training in Japan</b>												
1	Selecting PDMO candidate									==			
2	Implement Training in Japan										==	==	
3	Evaluate the Training											==	==
<b>Part IV</b>	<b>OJT on Evaluation Mission of JBIC in Thailand</b>												
1	Joint Meeting for preparation of Evaluation	==				==			==				
2	Selecting PDMO candidate	==											
3	Implementing the Evaluation	==	==										
4	Completing Evaluation Summary		==	==	==								
5	Completing Evaluation Report			==	==	==							
6	Feedback Seminar						==						
<b>Joint Meeting for the Project Outcome Report</b>											★		☆
1	Progress Report					☆	★			★			
2	Action Plan for strengthening the project management capacity			★									★☆
3	Project Performance Benchmark/Disbursement Index									★		☆	
4	Guideline for monitoring and evaluation of development project of PDMO												★☆
5	Project completion report for submitting to JICA												★☆

Planned: == ★  
Actual: == ☆

## 5. Terminal Evaluation

The terminal evaluation of this technical cooperation project is still in the process at the time of this reporting. It is, however that, the preliminary conclusions indicate that;

Thai government has emphasized good governance. The effective and efficient budget use has been rapidly recognized. Public Debt Management Act (effective in 2005) is positioned along this context. In line with this, project evaluation will also be important more and more for the results-based budgeting. To response it, PDMO recognizes importance of preparing better tools and capable human resources to properly manage monitoring and project evaluation. The Project is positioned in this vital context.

The Project was effectively and efficiently managed to carry out the activities. The Project produced various important outputs within just one year such as PDMO Action Plan, M&E guideline, project performance indicators, training programs both in Thailand and Japan, and joint evaluation with JBIC, however, LP-MIS can not completed within the Project period due to delay of finalizing TOR. As a result, the Project contributes to strengthen capacity of SPLD in M&E and post evaluation in certain extend. It may construct sound bases to improve loan disbursement rate in future through better monitoring and evaluation system.

The results of terminal evaluation are commonly shared with the project implementation team of PDMO counterparts and the JICA expert.



## II. MONITORING OF ON-GOING PROJECT

### 1. Loan Portfolio Management Information System (LP-MIS)

This section tries to make a preliminary assessment of LP-MIS, and to identify issues for consideration.

The LP-MIS is an essential tool for PDMO for monitoring the progress of on-going foreign funded project. As the Public Debt Management Act comes into operation, PDMO is obliged to report to the Parliament the progress of project/program which utilizes debt instruments. In order to meet this requirement, PDMO plans to enhance the contents and coverage of LP-MIS<sup>1</sup>.

#### A. Main Feature of LP-MIS

##### (1) Intended User Groups and Their Purpose

The intended user groups and their purposes in using LP-MIS are as follows;<sup>2</sup>

Intended User Group	Purpose
➤ PDMO	➤ To monitor and evaluate the progress of project implementation and loan utilization as part of their management of loan portfolio
➤ Project Implementing Agencies (PIAs)	➤ To report, as required by PDMO, the progress of their projects as well as problems and issues relevant to project implementation
➤ General Public	➤ Depend on their interest

##### (2) Outline of LP-MIS<sup>3</sup>

Design Feature	A web-based MIS that monitors and evaluates the progress of project implementation and loan utilization
Input Data	From the project implementing agencies the lending agencies
Outputs	Information on project and loan at appraisal

<sup>1</sup> The work subcontracted to system engineering consultants started in September 2005, and expected to be completed by March 2006.

<sup>2</sup> LP-MIS User Manual, OSU, PDMO, 200?

<sup>3</sup> [http://svpdmo.pdmo.mof.go.th/osu/about.php\\_3](http://svpdmo.pdmo.mof.go.th/osu/about.php_3)

	<p>Latest available data on project progress and loan utilization</p> <p>Evaluation of project and loan progress measured in terms of :</p> <ul style="list-style-type: none"> <li>- Project Progress Index (PPI)</li> <li>- Disbursement Progress Index (DPI)</li> <li>- Loan Adequacy Index (LAI)</li> <li>- Summary report on each loan (access is limited to only OSU staff)</li> </ul>
--	---

**(3) Frequency of data input**

Once a month

**(4) Input Information**

a) Project Information

- Project Title; Project Type; Development Focus;
- Expected Project Completion Date;
- Project Director; Contact Address
- Project Objectives; Project Scope; Project Cost Estimates (at Appraisal);
- Project Risks; Land Acquisition; Counterpart Budget; Project Environmental Issues
- Project Cost Estimate (current; by category)
- Loan Covenants

b) Loan Information

- Loan No.; Loan Title; Project; Loan Type; Lender
- Currency; Interest Rate; Commitment Charge Rate; Repayment Period; Grace Period; Service Charge Rate; Counterpart Budget
- Fact Finding Dates; Appraisal Dates; Board Approval Date; Loan Negotiations Dates; Cabinet Approval Date; Cabinet Loan Signing Approval Date; Loan Signing Date; Legal Opinion Date; Loan Effective Date
- Original Loan Closing Date; Current Loan Closing Date
- Original Loan Amount; Cancellation; Loan Allocation; Category; Allocated Amount; % Expenditures to be Financed
- Commitment Amount; Commit. Date; Commit. Amount (USD Eqv.); Commit. Amount (currency in contracts); Disbursement Amount;



Disb. Date; Disb. Amount (USD Eqv.); Disb Amount (actual amount in the paid currency)

c) Disbursement Projection

d) Contract Information

- Contract No.; Financed under Loan-key in the loan number; Work Component-cost category of the contract;
- Estimated Cost-the estimated contract value in USD;
- Contract Award-date of contract award; Begin-date when the contract is effective; Completion-date when the contract is required to be completed; Days-the contract implementation period in days;
- Contract Details-status of progress of the contract to be key in quarterly during the contract period.
- Milestones in the procurement process
- % Completion-if the procurement has been completed, key in the physical progress of the contract in % of the total contract works. For consulting service and training contracts, if there is no estimate of contract progress, estimate the contract progress from the percentage of time lapsed

## **B. Present Operations and Problems**

**(1)** The Data is not updated

The LP-MIS is not operated, and disbursement data is manually aggregated to produce monthly disbursement data. This is mainly because the PIAs are not providing necessary data to PDMO.

**(2)** Lack of information

The information source for project monitoring is not only the information provided for LP-MIS by PIAs, but also progress reports prepared by the PIAs and consultants. These reports contain not only project progress information, but other relevant information related to projects. It seems that PDMO is not receiving all progress reports prepared by relevant parties.

**(3)** Shortage of manpower

Project monitoring requires certain manpower. It is not only for collection of progress data and input them in LP-MIS, but also requires analytical works such as crosscheck with donors information, assessment of appropriateness and reliability of data provided by PIAs, and preparation of remedial measures if project is facing serious bottleneck.

## **C. Issues for Consideration**

### **(1) Area for Monitoring**

The following is a quotation from LP-MIS Manual. The understanding about limitation of PDMO was quite right. Even though LP-MIS targets narrow area of loan utilization, it can not be perfectly operated. This is purely because shortage of staff, and there is no full-time OSU staff. Therefore, in case that LP-MIS expands its coverage, full-time staff should be assigned to OSU.

“The coverage of project monitoring and evaluation (PME) task carried out by the lending agency and the project agency is broad encompassing not only loan utilization and project implementation progress, but also changes that may affect project goals and objectives, changes in key project assumptions or risks, project quality, status of other project inputs, compliance with covenants, and major problems and issues affecting project progress. Considering limited budget and personnel, PDMO would not be able to carry out the PME task with such a broad coverage. During the initial years of its PME operation, the PDMO should focus its PME task on expediting project implementation and loan utilization to minimize the commitment charges and the about of idle loan fund. Such matters as project quality and changes in conditions affecting project viability should be left to the project agency. However, PDMO should deal with these matters on a case by case basis focusing on large project with high risks. The PME system tracks the amount of inputs used and the progress of project implementation, and derives conclusions on the performance of project implementation and loan utilization. The PDMO will then take appropriate corrective actions to cause the PIA to improve project and loan performance.”

### **(2) Institutional Arrangement**

There was an expectation that PIAs would update information from PIA's end through internet-web. It is not certain such arrangement was agreed with PIA when LP-MIS was developed. Two matters need to be considered in this respect;

- a) If we depend on PIAs input, it is likely that completing monthly update would not be done in timely manner. PDMO may force PIAs to do on

time, and it will work to a certain extent. But time required is longer than PDMO does data input.

- b) Even though PIAs are very cooperative and do data input on time, the input data have to be checked by PDMO for correctness and consistency.

It is certainly workable that PDMO collect data from PIAs, and data input is done by PDMO, rather than PIAs direct data input to LP-MIS.

### **(3) Use of Computer System and PDMO's Internal Arrangement**

Modern IT technology provides a tool for data arrangement and information sharing in efficient manner. But it only works with data - accurate data. OSU has its limitation about checking data accuracy, because it is not involved in project monitoring itself. The data check has to be done by each officer-in-charge to the project. We should not expect that the problems of present system can be solved by the application of technology. If manual system is chaotic, electronic system will only compound the same problem. It does not intend to discourage the use of computer system. It would definitely contribute to improve efficiency of monitoring activities, if and only if the system is fully operated. It is, therefore, again returns to the issue: shortage of PDMO staff.

## **2. Loan Disbursement Index: Loan Performance Indicators<sup>4</sup>**

The purpose of this section is; 1) to discuss the appropriateness of present Loan Performance Indexes (PPI, DPI and LAI), and 2) to consider new Loan Performance Indexes<sup>5</sup>, if necessary and appropriate. As it is observed that present indexes are not well representing the loan performance, changes of indexes are proposed (to use only two indexes: DPI and DPI<sub>current</sub>). Further discussions on this issue are expected, in order to determine the direction of

---

<sup>4</sup> There is another set of indicators related to development projects. These are called as "**Project Performance Indicators or Outcome Indicators**". While Loan Performance Indicators measure mainly process efficiency, the Outcome indicators measure mainly the effects of projects to beneficiaries (or society/economy).

<sup>5</sup> This paper deals only financial (and physical) aspect of loan performance. There are other aspects in monitoring such as reforming organizational structure, skill transfer and training, and introduction of management information system, etc. These issues will be discussed separately.

future LP-MIS<sup>6</sup>.

### **A. Background<sup>7</sup>**

Project implementation consumes time and money as well as other resources. Therefore, the project monitoring and evaluation (PME) system tracks the amount of inputs used and the progress of project implementation, and derives conclusions on the performances of project implementation and the loan utilization. The PDMO will then take appropriate corrective actions to cause the PIA to improve project and loan performance. Essentially, the PME system will collect, analyze and interpret data to answer the following key questions:

- Is there a delay in project implementation?
- If the answer is yes, how serious is the delay and is it necessary to extend the loan closing date?
- Would the loan amount and the local budget be adequate to complete the project? Would there be any surplus loan fund and local budget?
- What actions that the PDMO should take to cause the PIA to improve project implementation and loan performance?

To answer the above questions, the PME system will collect the following basic data:

- Time lapsed since project commencement relative to the total project implementation period.
- The cumulative loan commitment<sup>8</sup> and disbursement relative to the total loan amount.
- The project implementation progress relative to the total amount works under the project.
- The amount of local budget allocation and cumulative disbursement relative to the total amount.

### **B. Present System<sup>9</sup>**

There are three indexes used in present LP-MIS to facilitate evaluation of project and loan performance; Project Progress Index (PPI), Disbursement Progress

---

<sup>6</sup> The decision should be incorporated into new LP-MIS of which modification and enhancement will be undertaken soon.

<sup>7</sup> This Section is an extract from the Chapter 4 of "LP-MIS Conceptual Framework and Design, OSU, PDMO, undated"

<sup>8</sup> 'Commitment' in this case means amount of loan proceeds committed for payment to contractors/suppliers according to the payment schedule in contract.

<sup>9</sup> Section 4.5 of "LP-MIS Conceptual Framework and Design, OSU, PDMO, undated"

Index (DPI), and Loan Adequacy Index (LAI).

Project Progress Index (PPI)

The PPI measures project progress against the time consumed. Therefore it is defined as;

$$\text{PPI} = \frac{\text{Project Progress in percent}}{\text{Time Lapsed in percent}}$$

Where, Project Progress is calculated in rather complicated manner; including both procurement progress (20% weight) and physical progress (80%). Summation of each contract’s progress weighted as against total project cost becomes “Project Progress”.

The interpretation of magnitude of PPI is explained as follows;

PPI	Interpretation <sup>10</sup>
1.0	Implementation is right on schedule
Greater than 1.0	Implementation is ahead of schedule
Less than 1.0	Implementation slips behind the schedule

Project progress is classified based on the magnitude of PPI into four performance categories;

Classification	Magnitude of PPI
Fully satisfactory	PPI > 1
Satisfactory	1 > PPI > 0.75
Average	0.75 > PPI > 0.5
Unsatisfactory	0.5 > PPI

Disbursement Progress Index (DPI)

The DPI, in present LP-MIS, measures the loan disbursement progress as against the time lapse. The DPI will compare the actual disbursement to the benchmark average disbursement<sup>11</sup>. It is calculated as follows;

$$\text{DPI} = \frac{\text{Actual disbursement of the monitored project (ACD)}}{\text{Benchmark average disbursement (AVD)}}$$

Two benchmark values of DPI are calculated;

$$\text{DPI}_{\text{min}} = \text{MND/AVD}$$

<sup>10</sup> PPI, according to its definition, cannot be interpreted as shown in the table. This issue is discussed in later section.

<sup>11</sup> In this definition, DPI is significantly affected by the values of AVD and MND, and validity of DPI depends on degree of disbursement pattern’s similarity between monitored project and benchmark projects

$$\text{DPI}_{\text{av}} = 0.5 \times (\text{DPI}_{\text{min}} + 1)$$

= Average disbursement between benchmark minimum disbursement and benchmark maximum disbursement

Where

$$\text{MND} = \text{Benchmark minimum disbursement}$$

Disbursement progress is classified based on the magnitude of DPI relative to  $\text{DPI}_{\text{min}}$  and  $\text{DPI}_{\text{av}}$ ;

<b>Classification</b>	<b>Magnitude of DPI</b>
Fully satisfactory	$\text{DPI} > 1$
Satisfactory	$1 > \text{DPI} > \text{DPI}_{\text{av}}$
Average	$\text{DPI}_{\text{av}} > \text{DPI} > \text{DPI}_{\text{min}}$
Unsatisfactory	$\text{DPI}_{\text{min}} > \text{DPI}$

#### Loan Adequacy Index (LAI)

The LAI is an indicator to serve as a rough indicator for gauging the loan adequacy. LAI is defined as;

$$\text{LAI} = \frac{\text{Amount of remaining project work, \% of the total work}}{\text{Remaining uncommitted loan amount, \% of total loan amount}}$$

In the Manual, level of loan adequacy is arbitrarily set as follows;

<b>LAI Value</b>	<b>Implication</b>
Greater than 1.5	The remaining loan amount may not be adequate to complete the project
Between 1 and 1.5	The remaining loan amount should be adequate to complete the project
Lower than 1	A loan surplus is likely

### **C. Discussion**

When these indicators were developed, they were intended to serve to answer two major questions; 1) Is there a delay?, and 2) Would loan and local budget be adequate? PDMO, depending on answers to these questions, is supposed to take actions to cause the PIA to improve project implementation and loan performance.

#### Project Progress Index (PPI)

Two matters are discussed hereunder; a) difficulty of making/calculating PPI, and b) appropriateness of benchmark against which the project under monitoring is assessed.

The definition of PPI is as follows;

$$\text{PPI} = \frac{\text{Project Progress in percent}}{\text{Time Lapsed in percent}}$$

Where, Project Progress is measured for each contract, based on two activities; procurement (20% weight) and physical progress (80%). Summation of each contract's progress weighted as against total project cost becomes "Project Progress".

a) Calculation of PPI - Is it easy?

The following is an example of calculation of project progress during procurement stage;

Event	Assigned Score for Achievement, %	Cumulative Achievement, %	Contract Progress, %	Contribution to Project Progress, % <sup>(1)</sup>
1. Preparation of Specifications and tender document	5	5	1.00	0.15
2. Approval of tender document by lending agency	5	10	2.00	0.30
3. Advertisement of contract	5	15	3.00	0.45
4. Pre-qualification of bidders	15	30	6.00	0.90
5. Approval of shortlist	5	35	7.00	1.05
6. Receiving proposals	5	40	8.00	1.20
7. Proposal evaluation	20	60	12.00	1.80
8. Approval of contract award	5	65	13.00	1.95
9. Contract negotiations	10	75	15.00	2.25
10. Draft contract submitted	5	80	16.00	2.40
11. Approval of draft contract	10	90	18.00	2.70
12. Contract signing	10	100	20.00	3.00

(1) Weight of contract is 15% of total project cost

The progress of contract implementation will be estimated as follows

Contract	Criteria for Progress Evaluation
Consulting service contract	Contract time lapsed
Equipment supply contract	Percent contract disbursement
Civil works contract	Physical progress

Training and fellowship	Training time lapsed
-------------------------	----------------------

It seems quite complicated to derive “project progress” from operational point view. The idea behind of making PPI, though complicated, is the project progress is measured not only by the physical progress or disbursement progress, but also by the progress of preparation, i.e. procurement progress. Whether making or using this kind of complex indicator contributes for reasonably better understanding of project progress, or not, is a matter of question.

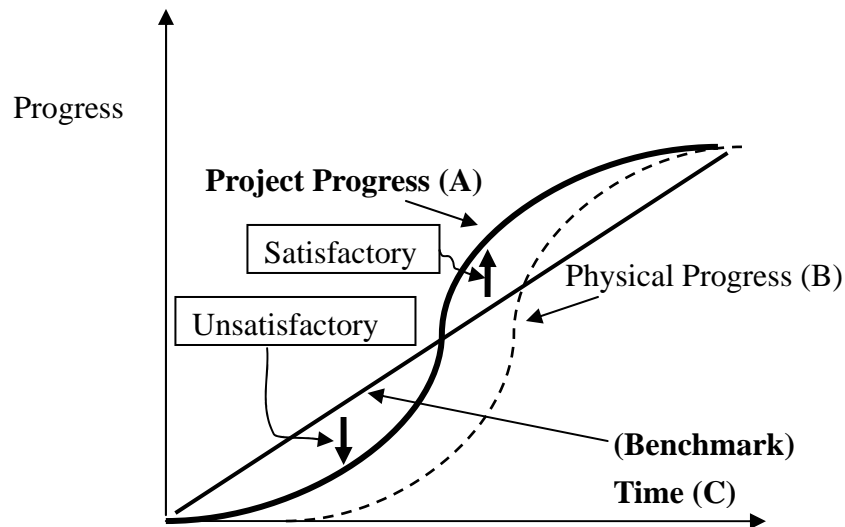
b) Benchmark - Is it appropriate to use time lapsed as benchmark?

Suppose a project is being implemented perfectly same schedule as it was planned, does calculation based on above definition of PPI give the answer as ‘1.0’? It is very likely that the PPI would NOT be ‘1.0’.

Even in the Manual, it is noted that “The value of PPI will vary during project implementation. During the initial two years, the PPI would be very low. ... Consequently, meaningful data on project implementation progress would be obtained in the latter part of year 2 and beyond. The PPI would increase and approach 1 as the project is nearing completion. It is also likely that the value of PPI could sometimes exceed 1 during the advanced stages of project implementation.” This note indicates that a project with PPI=0.6 at early stage may be better in terms project progress than the project with PPI=0.8 approaching end of project. Therefore, present PPI cannot be used for assessment of progress in straightforward manner, but real interpretation and classification of PPI requires adjustment when we evaluate the performance.

This is because the ‘Project Progress in percent’ is compared with time lapsed, while it does not really take the schedule (time factor) into account. Therefore, PPI does not give the answer to the very simple question “It there a delay in project implementation?” This is simply because it does not compare with original plan of schedule, but merely with time lapsed.





### c) Suggestion

The conclusion is rather simple that the PPI is better measured by using “Original Schedule of the Project” as a benchmark. How to define the index is discussed together with DPI.

### Disbursement Progress Index (DPI)

The present definition of DPI is;

$$\text{DPI} = \frac{\text{Actual disbursement of the monitored project (ACD)}}{\text{Benchmark average disbursement (AVD)}}$$

It can not be understood from the Report<sup>12</sup> that; 1) how the benchmark average disbursement (AVD) was made, and what is the benchmark? 2) how many types of benchmark were prepared, and for what sectors?

In any case, by its definition, it is very clear that DPI is very much dependent on the shape of benchmark average disbursement (AVD). It is not guaranteed to provide right indication of disbursement progress by comparing with average disbursement pattern. A disbursement pattern of the project under monitoring may be similar to other projects in the same sector, but not the same. In either case of PPI or DPI, because they use generalized materials as benchmarks (PPI as against time lapsed; DPI as against average disbursement pattern), it makes difficult to answer the question “Is there a delay?”

<sup>12</sup> LP-MIS Conceptual Framework and Design, OSU, PDMO, undated

Index	Progress Measured by	Benchmark (compared with)
PPI	Combination of procurement process progress and contract implementation progress	Time lapsed
DPI	Amount of disbursement	Average Disbursement Pattern

To modify the indexes to provide answer to the question “Is there a delay?” directly, it should take the following factors into account;

- It may not be necessary to use two indexes, both PPI and DPI. PPI and DPI are more or less the same, because disbursement follows after project progress. Therefore, disbursement can represent the project progress to a certain extent.
- Since the purpose of PPI and DPI is to measure the delay, it is most appropriate to use original schedule of ‘The Project’, which is prepared at appraisal as benchmark.
- Good index should be 1) easy to derive from operational point, 2) simple for everybody’s understanding, and 3) directly comparable with other project without any adjustment.
- Implementation delay from original plan is a concern of PDMO. At the same time, it is also a PDMO’s interest to see current year’s performance.

Two indexes are proposed hereunder; a) New Disbursement Performance Index (NDPI) which shows the degree of delay, if there is, from the original implementation plan, and b) Disbursement Performance Index for Current Year ( $DPI_{current}$ ) which compares actual disbursement of current year against the target of the year.

**a) DPI (new)**

Purpose: To identify delay by comparing with original schedule

Definition:

$$DPI \text{ (mm/yy)} = \frac{\text{Actual cumulative disbursement up to month/year}}{\text{Cumulative disbursement up to month/year in original plan}}$$

**b)  $DPI_{current}$**

Once the project is delayed by years, it is not likely to recover the schedule back

to original plan. NDPI is to compare only with original schedule, delayed project always classified as 'unsatisfactory'. That is the way it goes, and a PIA with such projects is understood as not good performing agency.

But short term performance is also important for PIAs as well as PDMO. PIAs annually prepare the implementation/disbursement plan for its budgeting purpose based on actual progress of the project. Based on PIA's annual plan together with other information, PDMO prepare the annual borrowing plan. Close monitoring of disbursement is of critical importance for PDMO, as it affects annual borrowing plan. This disbursement plan revised annually can be used as disbursement target of the year.  $DPI_{current}$  is intended to measure performance of the project in short-term aspect.

Purpose: To measure the disbursement/implementation performance of the current year

Definition:

$$DPI_{current} (mm) = \frac{\text{Actual disbursement of current year up to mm(month)}}{\text{Planned disbursement target up to mm(month)}}$$

If actual disbursement is same as the disbursement schedule (target),  $DPI_{current}$  is 1.0 (100%).

#### Loan Adequacy Index (LAI)

LAI is supposed to judge whether loan is enough, or loan shortage is likely. LAI is important for PDMO to know from various aspect such as minimizing the borrowing cost, etc. However, it is not an indicator to monitor regularly. The cases, which require judgment and decision, are 1) contract value becomes significantly lower or significantly higher than the estimate, or 2) substantial changes of the project scope are done.

Loan adequacy can be assessed through the process of annual revision of disbursement plan (as indicated at the bottom of Attachment 2), rather than doing it monthly. It may worth to mention that in the case of loan adequacy the amount of surplus or shortage rather than the ratio (percentage).

#### Other Matters

One of the key questions to operate the PME system is "What actions that the PDMO should take to cause the PIA to improve project implementation and loan performance?" While having a good PME system to monitor loan performance

as PDMO's concern, PDMO also needs to institutionalize a mechanism to solve the problems together with PIAs. With this mechanism, the PME system gives real value for improvement of project quality.

#### **D. Suggestion**

This Issue Paper tries to identify the problems of present Loan Performance Indexes. Development of indexes depends how it will be used. This paper believes that the new DPI (NDPI) and DPI<sub>current</sub> would give the answer to "Is there a delay in project implementation?" And adequacy of the loan and budget can be assessed, when annual disbursement plan is prepared.

It is recommended to determine whether PDMO continues to use present indexes system, or to revise it. Then, it has to be incorporated into new LP-MIS which will be re-constructed very soon.

### **3. Guidelines for Monitoring**

General guidelines for monitoring of on-going projects are described in a separate volume of **Monitoring and Evaluation Guidelines**. Please refer to Chapter III.

### **III. EX-POST EVALUATION BY PDMO**

#### **1. PDMO's Functions in Development Project**

The prime responsibility of the PDMO is to enforce debt ceilings established annually, including external debt, and acting to ensure that external debt is used selectively for the most appropriate uses, e.g., technical skills transfer, access to technology, international loans to state enterprises with foreign income, or projects with high foreign content. The PDMO also plays a role in domestic debt approval; domestic bond issues, etc., must be approved by the PDMO. As well as being an approval agency, the PDMO also acts as a resource within the Thai public sector, e.g., advising and assisting state enterprises and government agencies on debt financing mechanisms most appropriate to their requirements. The over-riding objective of PDMO is to ensure Thailand's fiscal sustainability, thus debt is not to be taken on lightly. Over the last several decades Thailand has established a reputation for being conservative in terms of public sector debt. For example, in past borrowing from multilateral development banks, the loan commitments are on the declining trend, and the full value of loans was often not utilized. A similar hard line is taken with many domestic agencies, even those wishing to issue domestic debt instruments. The Ministry of Finance, through PDMO, has discouraged excess borrowing (and refused to guarantee such debt) on the grounds that debt should be used for specific projects in a high capacity institutional and technical environment, not as ongoing deficit financing at the sub-sovereign level.

Each year, the National Debt Committee in the Ministry of Finance establishes a limit on new external debt to ensure fiscal sustainability. This year (Fiscal 2005) the new debt limit is 1 billion U.S., in 2004 it was \$900 million U.S. A limit on domestic debt exists, but because it is so high (10% of total budget expenditure in a fiscal year) it is of no practical importance. An important role of PDMO is that it monitors projects that have taken on foreign debt to ensure that such moneys have been spent as intended, and effectively. In this sense, infrastructure projects involving foreign debt are monitored much more closely by the Thai Government, often a plus in terms of their performances or in deriving learning lessons for similar future projects. This becomes much relevant to PDMO as the new Public Debt Management Act was enacted in February 2005. The new act requires PDMO to monitor and report the public

debt situation as well as the performance of the project (not loan performance but the issues related to outcome of borrowing projects).

The monitoring activities of PDMO in the past were rather limited to record the disbursement and repayment for the loan operations. With an inception of Mega projects in 2005, the public investment, particularly in construction, will continue to grow at double digit rate for couple of years. The question is to what extent and in which areas the PDMO has to strengthen the capacity of monitoring and evaluation. This has to be considered in the national monitoring and evaluation system.

It seems that one of the most relevant regulation of the government for monitoring and evaluation be the Royal Decree on Rules and Procedure for Good Public Administration of 2003. This Decree states that the good public administration is the administration to meet the following targets:

- responsiveness
- **result-based management**
- **effectiveness and value for money**
- lessening unnecessary steps of work
- reviewing mission to meet changing situation
- providing convenient and favorable services
- **regular evaluation**

The Department and SOEs are required to specify in the performance plan, details on steps of works, operation period and budget for each step, and objective, result and key performance indicator of the mission. It also requires them to establish, in addition to their own review and evaluation, an independent inspection committee in order to evaluate the performance of duty of the government agency related to the result of the mission, quality of service, pleasure of customer, and value for money. The prime responsibility of success of implementation of development projects lies on executing agencies. The PDMO's major concern is how much the debt are actually used and disbursed. If it is in addition to PDMO's traditional role, it is not clear that on what ground and with what expectations the PDMO would be involved more heavily in monitoring and evaluations of other departments and agencies projects.

Considering the above facts about PDMO and national monitoring and evaluation system, PDMO may be able to play an important role in monitoring and evaluation

## **2. Ex-post Evaluation by PDMO**

### **A. Joint Ex-post Evaluation Exercise with JBIC**

During the course of this Technical Cooperation Project, PDMO carried out two Joint Ex-post Evaluation Exercises with JBIC, as a on-the-job training.

The projects jointly worked with JBIC are;

- (1) Bangkok Water Supply Project
- (2) Regional Development Program

#### **(1) Bangkok Water Supply Project**

The exercise started in November, and ended at Feedback Seminar jointly organized by PDMO and JBIC in April 2005. PDMO could acquire the knowledge about general process of ex-post evaluation of JBIC. During the course of this joint evaluation, the JICA expert organized a short seminar of introductory project evaluation in January and February 2005 to for PDMO's participating staff to joint evaluation. Monitoring indicators and Monitoring sheet for ex-post monitoring was developed by the PDMO with the assistance of JICA expert, based on the results of ex-post evaluation.

At the end of this program, PDMO prepared the evaluation of this exercise and future (mid-term) work plan for strengthening the ex-post evaluation capability. This was discussed at Feedback Seminar with JBIC, and the ideas are shared with the participants.

#### **(2) Regional Development Program**

This second joint evaluation was not planned in the original implementation plan, but PDMO and JBIC recognized this joint evaluation exercise is so useful to acquire the practical knowledge of ex-post evaluation. Therefore, it was decided to conduct second one. The work started in July 2005. Due to unavailability of the appropriate consultant to be hired by JBIC, the work schedule delayed by two months than originally anticipated. Therefore, we could not complete this additional assignment within the technical cooperation

period, but will continue to finish with feedback seminar which is scheduled in the first half of 2006.

The major outputs produced through the joint exercises are in the following pages. These includes;

(1) Bangkok Water Supply Project

- Implementation Schedule and Roles and Responsibilities
- Evaluation Summary
- Evaluation Report
- Monitoring Indicators and Monitoring Sheets
- PDMO's Action Plan for Monitoring and Evaluation of Development Projects
- Minutes of Discussion on the Joint Evaluation

(2) Regional Development Program

- Implementation Schedule of Second Joint Ex-post Evaluation
- Project Design Matrix traced by PDMO at Ex-post Evaluation (PDMe)
- Evaluation Grid and Evaluation Questions drafted by PDMO



### Implementation Schedule and Roles and Responsibilities of Relevant Authorities

				<u>PDMO</u> <u>(inc. JICA</u> <u>expert)</u>	<u>Executing</u> <u>Agency</u> MWA	<u>External Evaluators Team</u> Leader      Member		<u>JBIC</u>
Before		✓	Finalizing Survey/Action Plan of Joint Evaluation	-	-	○	-	◎
		✓	Drawing up Questionnaire (draft)	-	-	◎	-	○
		✓	Discussion on Questionnaire (draft)	-	-	○	- / ○	◎
		✓	Finalizing Questionnaire	○	-	◎	-	○
		✓	(Answer Questionnaire)	○	◎	-	-	-
Survey & Evaluation	Nov04- Dec04	✓	Workshop	□	□	◎	○	○
		✓	Guidance at On-Site Survey (OJT)	□	□ / -	◎	○	○
		✓	Drawing up Evaluation Summary (draft)	○	- / □	◎	○	-
		✓	Discussion on Evaluation Summary (draft)	◎ / ○	□ / ○	○ / ◎	-	○
		✓	Finalizing Evaluation Summary	○	-	○ / ◎	-	○
	Jan05- Mar05	✓	Drawing up Evaluation Report (draft)	○	- / □	◎	○	-
		✓	Discussion on Evaluation Report (draft)	◎ / ○	□ / ○	○ / ◎	-	○
		✓	Finalizing Evaluation Report	◎ / ○	-	○ / ◎	-	○
		✓	Review of Joint Evaluation (Effectiveness)	◎	-	○	○	- / ○
After		✓	Drawing up Action Plan (draft) *	◎	-	○	-	- / ○
		✓	Discussion on Action Plan (draft)	◎	□ / -	- / ○	-	○
		✓	Finalizing Action Plan	◎	-	- / ○	-	○
	Apr05	✓	Feedback Seminar	◎	□	- / ○	-	○

Notes: PLANNED / ACTUAL (Single mark in one box shows that there was no change in planned and actual responsibilities for the task)  
 ◎ = Leading Agency  
 ○ = Assist Leading Agency (Discussion & comment, give information)  
 □ = Participant  
 - = No task

\* Action plan would be prepared based on the review of the attainment of the objectives of Joint Evaluation

## EVALUATION SUMMARY

**Project Name:** TXVII-7 Fourth Bangkok Water Supply Project (II) and Fifth Project  
TXVIII-7 Networks System Improvement Project

**Overall Rating:** A

**Evaluator:** A.F. (Consultant assigned by JBIC) and Public Debt Management Office, Ministry of Finance

### [Outline of Loan Agreement]

<p><b><u>TXVII-7</u></b>                  Loan Amount / Loan Disbursed Amount: 16,969 million yen / 11,663 million yen                  Date of Loan Agreement: January 1993                  Final Disbursement Date: November 2002</p>	<p><b><u>TXVIII-7</u></b>                  Loan Amount / Loan Disbursed Amount: 5,599 million yen / 3,730 million yen                  Date of Loan Agreement: September 1993                  Final Disbursement Date: January 2001</p>
--	--

### **Project Outline**

To cope with an increase in water demand and reduce water leakage as well as to improve water quality by constructing water treatment plants and improving distribution network systems in the Bangkok Metropolitan Area, thereby improving public health, enhancing industrial and commercial activities, and reducing use of groundwater.

Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes
Relevance [A]	(1) The 7th National Economic and Social Development Plan (1992-1996) focused on the expansion of water	(1) The 9th National Economic and Social Development Plan (2002-2006) put an emphasis on the	<u>Related ODA loan projects</u> - 4th Project (I) (1991)

Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes
	<p>supply facilities.</p> <p>(2) The water shortage in the Bangkok Metropolitan Area was serious; the MWA Master Plan (1990) also emphasized the expansion of the water supply facilities.</p> <p>(3) Aiming at expanding water production and distribution facilities in the Bangkok Metropolitan Area to address the above issues, the Projects had a high priority in the water supply sector.</p>	<p>improvement of water supply facilities.</p> <p>(2) There is still high demand for stable water supply (volume, pressure, and quality) in the Bangkok Metropolitan Area.</p> <p>(3) The Projects addresses the above issues with full regard for their importance and relevance.</p>	<p>- 6th Project (1994)</p> <p>- 7th Project (I) (1999)</p> <p>- 7th Project (II) (2000)</p> <p><u>Master Plan</u></p> <p>Prepared by Thai DCI (Thailand), Safège Consulting (France), and other Thai firms.</p>
<p>Efficiency [B]</p> <p>Output [A]</p> <p>Schedule [C]</p> <p>Cost [A]</p>	<p>[Output]</p> <p><u>4th Project (II)</u></p> <p>(1) Improvement of the existing raw water canal from Sam Lae raw water PS to Bang Khen WTP (17.8 km)</p> <p>(2) Pumping unit at Bang Khen raw water PS</p> <p>(3) Lad Krabang Distribution PS with a 40,000 m<sup>3</sup> reservoir and a 7,500 KVA power station</p> <p>(4) Transmission conduits (20.5 km)</p> <p>(5) Trunk mains (56.7 km)</p> <p>(6) Distribution pipelines (600 km)</p> <p>(7) Rehabilitation of distribution pipelines (163 km)</p> <p>(8) Consulting services: a) Review of tender documents, tender evaluation; b) Construction supervision (1,662 M/M)</p> <p><u>5th Project</u></p> <p>(1) Maha Sawat WTP (400,000 m<sup>3</sup>/d)</p> <p>(2) Trunk mains (100.9 km)</p> <p>(3) Distribution pipelines (1,000 km)</p> <p>(4) Consulting services: a) D/D for water treatment</p>	<p>[Output]</p> <p><u>4th Project (II)</u></p> <p>(1) Cancelled</p> <p>(2) As planned</p> <p>(3) As planned</p> <p>(4) As planned</p> <p>(5) 18.1 km</p> <p>(6) 19 km</p> <p>(7) 310 km</p> <p>(8) As planned</p> <p><u>5th Project</u></p> <p>(1) As planned.</p> <p>(2) 219.5 km</p> <p>(3) 669.3 km</p> <p>(4) As planned</p>	<p>(1) The existing canal was later found to have sufficient conveying capacity for supplying raw water if the canal banks were raised in certain sections. MWA did this with its own resources.</p>

Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes
	<p>plants, review of D/D for other components; b) Construction Supervision (1,720 M/M)</p> <p><u>Networks System Improvement Project</u> (1) Pumping building with a 40,000 m<sup>3</sup> reservoir and a 7,500 KVA power station (2) Distribution pumping units (7 units) (3) Trunk mains (130 km) (4) Distribution pipelines (370 km) (5) Consulting services: a) D/D; b) Construction Supervision (329 M/M)</p>	<p><u>Networks System Improvement Project</u> (1) As planned. (2) 5 controlling systems added (3) 216.4 km (4) 296 km (5) As planned</p>	<p>(2) Controlling systems at the 5 distributing PSs were additionally installed to increase the operational efficiency of pumping units.</p>
	<p>[Schedule] <u>4th Project (II)</u> - Jan. 1993 – Jun. 1996 (42 months) <u>5th Project</u> - Sept. 1992 – Apr. 1996 (44 months) <u>Networks System Improvement Project</u> - Sept. 1993 – Feb. 1998 (54 months)</p>	<p>[Schedule] <u>4th Project (II)</u> - Jan. 1993 – Jun. 2000 (90 months) <u>5th Project</u> - Jan. 1993 – Jan. 2002 (109 months) <u>Networks System Improvement Project</u> - Sept. 1993 – Jan. 2004 (125 months)</p>	<p>- The delays were caused by (a) delays in obtaining land permissions from BMA, (b) construction suspension caused by flooding in Nov. 1995, and (c) cash-flow problems of contractors caused by the Asian economic crisis in 1997.</p>
	<p>[Cost] <u>4th Project (II)</u> - ¥ 22,955 m <u>5th Project</u> - ¥ 39,084 m <u>Networks System Improvement Project</u> - ¥ 20,522 m</p>	<p>[Cost] <u>4th Project (II)</u> - ¥ 13,388 m <u>5th Project</u> - ¥ 20,335 m <u>Networks System Improvement Project</u> - ¥ 12,206 m</p>	<p>- The cost under-runs were caused by (a) intense competition among contractors and (b) fluctuation of exchange rate.</p>

Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes								
Effectiveness [A]	<p>(1) Increase in water production volume (Maha Sawat WTP) (2000 target; 2 years after the project completion) 146 mil. m<sup>3</sup>/year</p> <p>(2) Improvement of overall water service in Bangkok (2000 target; 2 years after the project completion)</p> <p>a) Population Served: 8.39 mil. b) Percentage of Population Served: 80.1% c) Service Area: 1,060 km<sup>2</sup> d) Non-revenue Water Rate: 25.0%</p> <p>(3) Water Quality Improvement</p>	<p>(1) Increase in water production volume (Maha Sawat WTP) (2003 actual) 125.2 mil. m<sup>3</sup>/year (85.8% of target)</p> <p>(2) Improvement of overall water service in Bangkok (2003 actual)</p> <p>a) Population Served: 6.93 mil. b) Percentage of Population Served: 87.5% c) Service Area: 1,515.5 km<sup>2</sup> d) Non-revenue Water Ratio: 33.7% [Beneficiary Interview Survey (N=200)]</p> <ul style="list-style-type: none"> <li>- Water availability: 86.5% answered “largely improved” or “improved.”</li> <li>- Water service stability: 85.5% answered “largely improved” or “improved.”</li> </ul> <p>(3) Water Quality Improvement</p> <ul style="list-style-type: none"> <li>- MWA’s water quality standards, which are based on WHO recommendations for international drinking water standards, have been fulfilled. [Beneficiary Interview Survey]</li> <li>- The result was that 91% answered water quality is “largely improved” or “improved.”</li> </ul> <p>(4) FIRR: <u>4th Project (incl. 4-I)</u> 12.77%; <u>5th Project</u> 5.03%; <u>Networks System</u> 10.67%</p>	<p>(2) The Asian economic crisis in 1997 significantly affected the population growth trend in Bangkok Metropolitan Area (2003: forecasted 11.3 mil.; actual 7.8 mil.) and its economic and commercial activities, thereby lowering the growth rate of water demand below the original plan.</p> <p>b) Percentage of population served = population served / population in responsible areas</p> <p>c) The increase in outputs (trunk mains) has contributed to expanding the MWA service Areas.</p> <p>d) Water leakage was once increased due to the increased water pressure caused by the increase in production. MWA is currently undertaking a NRW reduction project, targeting to reduce NRW to less than 30% by 2006.</p> <p>(3) MWA (WHO) Water Quality Standards</p> <table border="1"> <thead> <tr> <th>Item</th> <th>MWA (WHO)</th> </tr> </thead> <tbody> <tr> <td>E. coli</td> <td>none</td> </tr> <tr> <td>Color</td> <td>15</td> </tr> <tr> <td>Turbidity</td> <td>5</td> </tr> </tbody> </table>	Item	MWA (WHO)	E. coli	none	Color	15	Turbidity	5
Item	MWA (WHO)										
E. coli	none										
Color	15										
Turbidity	5										

Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes		
	(4) FIRR: <u>4th Project (incl. 4-I) 5.35</u> ; <u>5th Project 4.73</u> %; <u>Networks System 4.54</u> %		<table border="1" data-bbox="1599 264 1921 296"> <tr> <td data-bbox="1599 264 1733 296">Arsenic</td> <td data-bbox="1733 264 1921 296">0.01mg/l</td> </tr> </table> <p data-bbox="1599 336 1962 424">(4) Higher FIRR has been achieved because of (a) lower construction cost and (b) lower O&amp;M costs.</p>	Arsenic	0.01mg/l
Arsenic	0.01mg/l				
Impact	<p data-bbox="454 440 748 464">(1) Improvement of sanitation</p> <p data-bbox="454 600 999 624">(2) Enhancement of industrial and commercial activities</p> <p data-bbox="454 727 770 751">(3) Decrease in groundwater use</p>	<p data-bbox="1025 440 1559 528">(1) Decrease in acute diarrhea cases: 877.58 in 1998 to 676.98 in 2002 (per 100,000). [Beneficiary Interview Survey] - 18.5% responded that the project contributed to a decrease in water-born diseases.</p> <p data-bbox="1025 600 1559 719">(2) Significant contribution in the eastern part of the Bangkok Metropolitan Area: GRDP Growth in Samut Prakan Province in 2000-02 was 7.48% p.a., while the national average was 3.17% p.a.)</p> <p data-bbox="1025 727 1559 847">(3) Decrease in groundwater use: MWA groundwater use decreased from 130 mil m<sup>3</sup> (1993) to none in 2004. Areas which recorded land subsidence more than 3cm p.a. are largely decreased.</p>	<p data-bbox="1599 871 1962 1054">(3) Amendment of Groundwater Act (originally stipulated in 1977, revised in 1992 and 2003): oblige to obtain groundwater operating license, and set criteria on groundwater fee.</p>		
Sustainability [A]	<p data-bbox="454 1070 672 1158">(1) Executing Agency [Technical Capacity] - No problems.</p> <p data-bbox="454 1206 815 1270">[Operation and Maintenance System] - No problems.</p>	<p data-bbox="1025 1102 1229 1158">[Technical Capacity] - No problems.</p> <p data-bbox="1025 1206 1386 1270">[Operation and Maintenance System] - Important issues such as revision of water tariff are decided by MWA Board subject to approval of Minister of Interior.</p>	<p data-bbox="1599 1070 1962 1190">- O&amp;M staff are provided training programs at NWTTI (JICA technical cooperation, 1985) and external institutions.</p>		



Criteria	Appraisal (Plan)	Post Evaluation (Actual)	Notes																														
	<p>[Financial Conditions]</p> <p>- No problems (Million Baht)</p> <table border="1"> <thead> <tr> <th></th> <th>Total Revenues</th> <th>Operating Income</th> <th>Net Income</th> <th>Capital-Asset Ratio</th> </tr> </thead> <tbody> <tr> <td>1992</td> <td>5,653</td> <td>1,542</td> <td>1,670</td> <td>44.27%</td> </tr> </tbody> </table>		Total Revenues	Operating Income	Net Income	Capital-Asset Ratio	1992	5,653	1,542	1,670	44.27%	<p>- O&amp;M is undertaken by Office of Bang Khen WTP, Office of Maha Sawat WTP, and Office of the Water Transmission and Distributing System.</p> <p>[Financial Conditions]</p> <p>- No problems (Million Baht)</p> <table border="1"> <thead> <tr> <th></th> <th>Total Revenues</th> <th>Operating Income</th> <th>Net Income</th> <th>Capital-Asset Ratio</th> </tr> </thead> <tbody> <tr> <td>2001</td> <td>12,083</td> <td>3,142</td> <td>2,660</td> <td>37.65%</td> </tr> <tr> <td>2002</td> <td>12,766</td> <td>3,613</td> <td>3,669</td> <td>42.98%</td> </tr> <tr> <td>2003</td> <td>13,992</td> <td>4,200</td> <td>3,536</td> <td>45.71%</td> </tr> </tbody> </table>		Total Revenues	Operating Income	Net Income	Capital-Asset Ratio	2001	12,083	3,142	2,660	37.65%	2002	12,766	3,613	3,669	42.98%	2003	13,992	4,200	3,536	45.71%	<p>- Water tariff was increased three times from 1993 (effective rate: 7.17 Baht/ m<sup>3</sup>) to 1999 (11.88 Baht/ m<sup>3</sup>)</p>
	Total Revenues	Operating Income	Net Income	Capital-Asset Ratio																													
1992	5,653	1,542	1,670	44.27%																													
	Total Revenues	Operating Income	Net Income	Capital-Asset Ratio																													
2001	12,083	3,142	2,660	37.65%																													
2002	12,766	3,613	3,669	42.98%																													
2003	13,992	4,200	3,536	45.71%																													
	(2) Operation and Maintenance Status	(2) Operation and Maintenance Status - No problems																															
Lessons Learned & Recommendations		<p>[Lessons Learned]</p> <p><u>For MWA</u></p> <p>MWA should have established solid and effective communication channels with other concerned governmental agencies, such as BMA and DOH, to share information and facilitate coordination among all agencies concerned to avoid delays in project completion.</p> <p>[Recommendations]</p> <p>N/A</p>																															
Rating		<p>- Relevance: A</p> <p>- Efficiency: B</p> <p>- Effectiveness: A</p> <p>- Sustainability: A</p> <p>- Overall Rating: A</p>																															

Thailand

**Fourth Bangkok Water Supply Project (II) and Fifth Project  
Networks System Improvement Project**

Evaluator: A. F. (Consultant assigned by JBIC) and  
Public Debt Management Office, Ministry of Finance  
Field Survey: December 2004

**1. Project Profile & Japan's ODA Loan**

	
Bangkok Metropolitan Area	Maha Sawat Water Treatment Plant

**1.1 Background**

In the early 1990s, the population of the Bangkok Metropolitan Area was forecast to grow from 8,073,000 in 1991 to 9,353,000 in 1996, and this growth would lead to an increase in maximum water demand from 3,460,000 m<sup>3</sup>/day in 1992 to 4,330,000 m<sup>3</sup>/day in 1996. As the production capacity of water supply facilities at the Metropolitan Waterworks Authority (MWA) around that time was only 3,780,000 m<sup>3</sup>, there would be a supply-demand gap of 550,000 m<sup>3</sup>.<sup>1</sup> The gap would continue to grow at 200,000 m<sup>3</sup> annually to be as much as 1,090,000 m<sup>3</sup> in 1999. In particular, the west bank area of the Chao Praya River, where the population was growing rapidly, was predicted to suffer a serious shortage of water supply, resulting in a supply-demand gap of 350,000 m<sup>3</sup> in 1992 and 550,000 m<sup>3</sup> in 1999. Commercial and industrial development as well as improvement of living standards in the Metropolitan Area would further accelerate this trend. Moreover, water transmission and distribution facilities were also decrepit and weak, causing a high proportion of non-revenue water (NRW). In addition, the Bangkok Metropolitan Area had a serious land subsidence problem because of overuse of groundwater, and there was an

<sup>1</sup> The preceding ODA loan projects for MWA included the 1st, 2nd, 3rd, and 4th (I) Water Supply Improvement Projects. Major outputs of the 4th Project (I) (L/A: September 1991; disbursed amount: 5,849 million yen) were (i) siphons at the raw water canal, (ii) water treatment facilities at Bang Khen water treatment plant, (iii) pumping units at transmission pumping stations, and (iv) transmission and distribution pipelines.



urgent requirement for MWA to expand its coverage area to prevent further use of groundwater.

## 1.2 Objective

The objectives of the projects were to cope with increasing water demand and reduce water leakage as well as to improve water quality by constructing water treatment plants and improving distribution network systems in the Bangkok Metropolitan Area, thereby contributing to improving public health, enhancing industrial and commercial activities, and reducing use of groundwater.

## 1.3 Borrower/Executing Agency

Metropolitan Waterworks Authority/Metropolitan Waterworks Authority

## 1.4 Outline of Loan Agreement

	Fourth Bangkok Water Supply Project (II) and Fifth Project	Networks System Improvement Project
Loan Amount Loan Disbursed Amount	16,969 million yen 11,663 million yen	5,599 million yen 3,730 million yen
Date of Exchange of Notes Date of Loan Agreement	December 1992 January 1993	September 1993 September 1993
Terms and Conditions Interest Rate Repayment Period (Grace Period) Procurement	3.0% p.a. 25 years (7 years) General Untied	3.0% p.a. 25 years (7 years) General Untied
Final Disbursement Date	November 2000	January 2001
Contractors	Obayashi Corporation (Jpn.) Kawasho Corporation (Jpn.) Other Thai Firms	Kubota Corporation (Jpn.) Other Thai Firms
Consultants	Nihon Suido Consultants (Jpn.) Safege Consulting (Fr.) Other Thai Firms	--
Project Planning (F/S)	--	--

## 2. Results & Evaluation

## 2.1 Relevance

### 2.1.1 Relevance at the time of appraisal

Thailand's 7th National Economic and Social Development Plan (NESDP) (1992-1996) emphasized the importance of expanding the city's water supply facilities and reducing water leakage. Corresponding to a serious water shortage at that time, MWA proposed the expansion of water supply facilities in its master plan prepared in 1990.<sup>2</sup> Hence, the subject projects had a high priority, as these projects aimed at expanding water production and distribution facilities in the Metropolitan Area to address these problems.

### 2.1.2 Relevance at the time of ex-post evaluation

The present 9th NESDP (2002-2006) also argues a priority need for improving water supply facilities. Significant needs for stable water supply services still remain, particularly for improvements in volume, pressure, and quality. Thus, the projects continue to hold importance and relevance to address these issues.<sup>3</sup>

## 2.2 Efficiency

### 2.2.1 Outputs

A comparison between the planned outputs at appraisal and the actual outputs at ex-post evaluation shows that most of the major components were implemented as planned with only slight variations (see Table 1 and Figure 1).

In the 4th Water Supply Improvement Project (II) (4th Project (II)), the improvement of the existing canal was cancelled because the canal was later found to have sufficient conveying capacity if some sections of canal banks were raised. This bank raising was conducted through the maintenance activities of MWA. Moreover, in the Network Systems Improvement Project (Network Systems Project), five controlling systems at distribution pumping stations were additionally installed to enhance the operational efficiency of pumping units.

On the other hand, in all the three projects, the pipeline components, such as transmission conduits, trunk mains, and distribution pipelines were modified. The reasons for the modifications were (i) to cope with the increasing water demand in newly expanded service areas, (ii) to adjust to specific conditions of project sites, and (iii) to coordinate with other governmental agencies such as the Bangkok Metropolitan Administration

---

<sup>2</sup> The master plan, "Master Plan for Water Supply and Distribution of Metropolitan Bangkok," was prepared by the Thai DCI in association with Southeast Asia Technology, the Team Consulting Engineers, and the Safege Consulting.

<sup>3</sup> The 7th Water Supply Improvement Project (1999-2006), partially financed by JBIC, is currently being implemented.

(BMA) and the Department of Highways (DOH).

These modifications made in the course of implementation were reasonable and did not affect the overall efficiency of the project implementation.

Table 1: Appraisal Plans & Actual Performance (Outputs)

Phase	Plan	Actual	Reason of modifications
4th Project (II)	<p>(1) Improvement of the existing raw water canal from Sam Lae raw water PS to Bang Khen WTP: 17.8 km</p> <p>(2) Pumping unit at Bang Khen raw water PS: 348 m<sup>3</sup>/m</p> <p>(3) Lad Krabang Distribution PS: 111 m<sup>3</sup>/m; Power station: 7,500 KVA</p> <p>(4) Transmission conduits: 20.5 km</p> <p>(5) Trunk mains: 56.7 km</p> <p>(6) Distribution pipelines: 600 km</p> <p>(7) Rehabilitation of distribution pipelines: 163 km</p> <p>(8) Consulting services: a) Review of tender documents, tender evaluation; b) Construction supervision (1,662 M/M)</p>	<p>(1) Cancelled</p> <p>(2) As planned</p> <p>(3) As planned</p> <p>(4) As planned</p> <p>(5) 18.1 km</p> <p>(6) 819 km</p> <p>(7) 310 km</p> <p>(8) As planned</p>	<p>(1) The existing canal was later found to have sufficient conveying capacity for supplying raw water if the canal banks were raised in certain sections. MWA did this with its own resources.</p>
5th Project	<p>(9) Maha Sawat WTP: 400,000 m<sup>3</sup>/d</p> <p>(10) Trunk mains: 109.5 km</p> <p>(11) Distribution pipelines: 1,000 km</p> <p>(12) Consulting services: a) D/D for water treatment plants, review of D/D for other components; b) Construction Supervision (1,720 M/M)</p>	<p>(1) As planned</p> <p>(2) 219.5 km</p> <p>(3) 669.3 km</p> <p>(4) As planned</p>	
Network Systems Project	<p>(1) Pumping building; Reservoir: 40,000 m<sup>3</sup>; Power station: 7,500 KVA</p> <p>(2) Distribution pumping units: 7</p> <p>(3) Trunk mains: 130 km</p> <p>(4) Distribution pipelines: 370 km</p> <p>(5) Consulting services: a) D/D; b) Construction Supervision (329 M/M)</p>	<p>(1) As planned</p> <p>(2) 5 controlling systems added</p> <p>(3) 216.4 km</p> <p>(4) 296 km</p> <p>(5) As planned</p>	<p>(2) Controlling systems at the 5 distributing PSs were additionally installed to increase the operational efficiency of pumping units.</p>

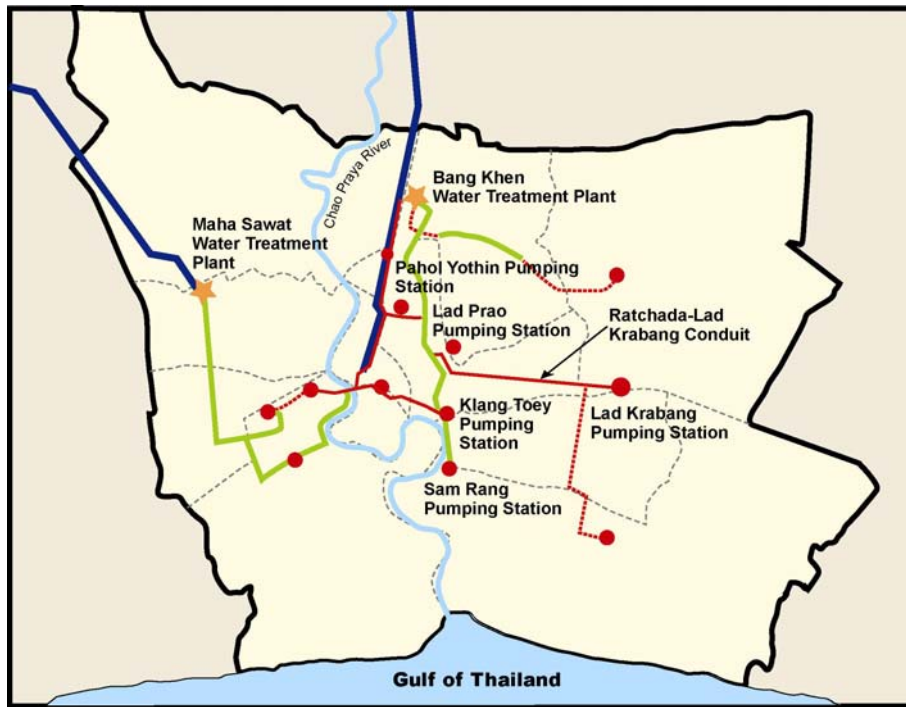


Fig. 1: Project Site Map (Actual)

### 2.2.2 Project Period

Table 2 presents a comparison between the planned project period at appraisal and the actual project period at ex-post evaluation. The pipeline components were greatly delayed, while the water production components were completed on time. The delays were primarily attributable to (i) delays in obtaining construction permissions from BMA, (ii) flooding in November 1995, and (iii) cash-flow problems of contractors due to the Asian economic crisis in 1997.

Table 2: Appraisal Plans & Actual Performance (Project Period)

Phase	Plan	Actual
4th Project (II)	January 1993 – June 1996 (42 months)	January 1993 – June 2000 (90 months)
5th Project	September 1992 – April 1996 (44 months)	September 1992 – January 2002 (113 months)
Network Systems Project	September 1993 – February 1998 (54 months)	September 1993 – September 2004 (133 months)

### 2.2.3 Project Cost

Table 3 shows a comparison between the planned project cost at appraisal and the actual project cost at ex-post evaluation. In all the three projects, the actual project costs were within the initial budgets. These cost under-runs were primarily a result of (i) intense competition among contractors during the tender and (ii) depreciation of local currency.

Table 3: Appraisal Plans & Actual Performance (Project Cost) (¥ million)

Phase	Plan		Actual	
4th Project (II)	¥ 22,955	Foreign ¥ 8,066	¥ 13,388	Foreign ¥ 6,440
		Local ¥ 14,889		Local ¥ 6,948
5th Project	¥ 39,084	Foreign ¥ 16,017	¥ 20,335	Foreign ¥ 5,057
		Local ¥ 23,067		Local ¥ 15,278
Network Systems Improvement Project	¥ 20,522	Foreign ¥ 5,599	¥ 12,206	Foreign ¥ 3,319
		Local ¥ 14,923		Local ¥ 8,887

## 2.3 Effectiveness

### 2.3.1 Increase in Production Volume

As indicated in Figure 3, since its start in 1996, the Maha Sawat water treatment plant has operated effectively at an operation rate of more than 70% on average.<sup>4</sup> The water production volume in 2003 reached as much as 85.8% of the planned figure. In 2000, the subsequent 6th Water Supply Improvement Project further increased the production capacity by 400,000 m<sup>3</sup>/day.

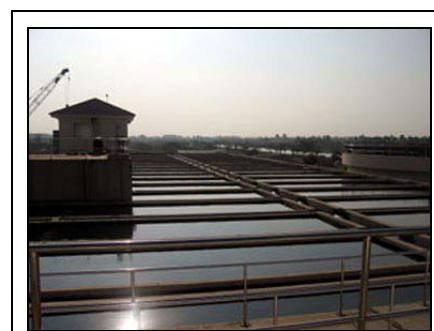


Fig. 2: Filter at Maha Sawat Water Treatment Plant

In 2003, the Maha Sawat water treatment plant treated 14.5% of the total MWA water production. The establishment of the Maha Sawat water treatment plant has made an extremely important change to the entire MWA system, as it reduces the dependence on the Bang Khen water treatment plant and serves the western part of the Bangkok Metropolitan Area.

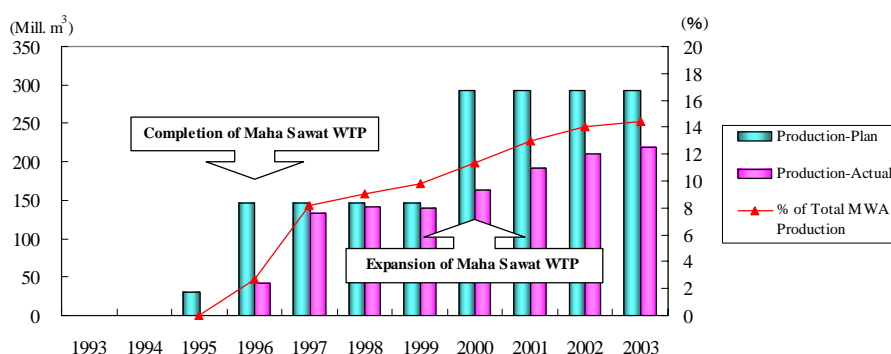


Fig. 3: Appraisal Plans & Actual Performance (Water Production Volume) (Source: MWA)

### 2.3.2 Improvement in Water Supply Services in Bangkok Metropolitan Area

As Table 4 presents, MWA has improved its overall water supply services since the beginning of the projects in 1993. However, the actual figures of population served and

<sup>4</sup> Operational rate = average daily production / facility capacity x 100

total water sales have fallen below the original plan, largely because the Asian economic crisis negatively affected the population growth trend (2003: forecast 11.3 million; actual 7.8 million) as well as commercial and industrial activities in the Bangkok Metropolitan Area. Meanwhile, the fact that the percentage of the population served and service area have exceeded the plan indicates that MWA has successfully expanded its service capacities even under unfavorable socioeconomic conditions.

Table 4: Appraisal Plans & Actual Performance (Water Supply Services)

FY	Project Implementation Period*			Population Served (000)		Percentage of Population Served (%)		Service Area (km <sup>2</sup> )		Total Water Sales (mill. m <sup>3</sup> )	
	4	5	NS	(Plan)	(Actual)	(Plan)	(Actual)	(Plan)	(Actual)	(Plan)	(Actual)
1993				6,559.0	5,583.0	76.4	77.7	780.0	784.4	965.8	836.1
1994				6,790.0	5,792.0	76.8	80.0	810.0	822.3	1,071.0	816.1
1995				7,023.0	5,959.0	77.2	82.2	850.0	892.9	1,178.5	870.3
1996				7,258.0	6,124.0	77.6	83.7	890.0	968.9	1,171.6	911.2
1997				7,495.0	6,307.0	78.0	85.7	940.0	1,096.4	1,193.1	944.7
1998				7,789.0	6,369.0	78.7	85.6	1,000.0	1,129.3	1,334.3	914.8
1999				8,088.0	6,232.0	79.4	85.3	1,030.0	1,148.4	1,352.3	856.6
2000				8,390.0	6,345.0	80.1	84.2	1,060.0	1,242.7	1,445.4	880.3
2001				8,697.0	6,500.0	80.8	85.3	1,090.0	1,279.5	1,445.4	929.5
2002				9,007.0	6,703.0	81.5	86.9	1,120.0	1,448.8	1,554.9	969.4
2003				9,322.0	6,931.0	82.2	87.5	1,150.0	1,515.1	1,554.9	1,013.9

\* 4 = 4th Project; 5 = 5th Project; NS = Network Systems Project

(Source: MWA)

On the other hand, the planned targets for non-revenue water (NRW) ratio have not been achieved (Figure 4). The NRW ratio increased dramatically from 31.9% in 1993 to 43.1% in 1997 because water production volume had increased and consequently raised water pressure in the pipelines. From the peak level in 1997, however, MWA has managed to decrease NRW through a number of measures, including the pipeline components of the projects as well as the recent Water Loss Improvement Project (2002-2005).<sup>5</sup>

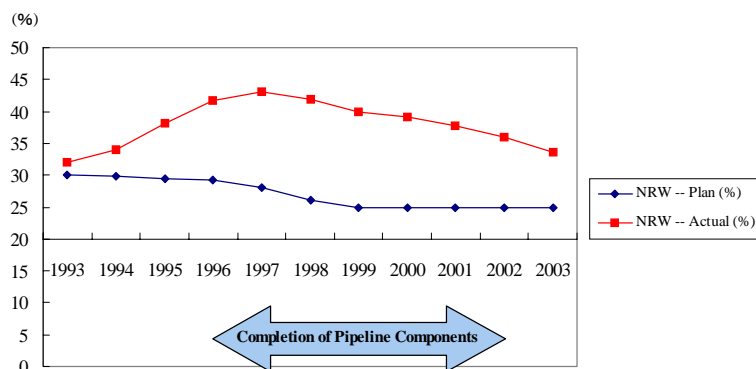


Fig. 4: Appraisal Plans & Actual Performance (Non-revenue Water Ratio) (Source: MWA)

<sup>5</sup> The project aims at reducing NRW ratio to less than 30% by 2006. Specific measures include improvement of distribution facilities and introduction of automatic control system with IT enhancement.

The results of the beneficiary survey show that the beneficiaries of the projects are generally satisfied with the changes that the projects have brought about (see Figure 5).<sup>6</sup> The proportion of interviewees who answered “largely improved” or “improved” was 86.5% when referring to water availability and 85.5% when referring to water stability.

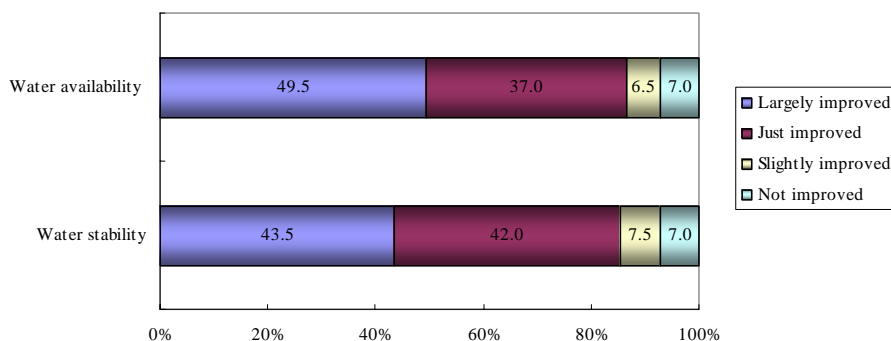


Fig. 5: Beneficiary Interview Survey (Improvement of Water Supply Services) (N=200)

It should be noted that these improvements have become possible with the implementation of other water supply sector projects such as the West Bank Raw Water Canal Project (1993-2002), the Pipe Networks System Improvement Project (1994-2003), the 6th Water Supply Improvement Project (1995-2006) and the 7th Project (1999-2006).

### 2.3.3 Improvement in Water Quality

The subject projects have also contributed to improving the water quality of MWA. The water quality currently satisfies set standards, which are based on the 1993 WHO recommendations on international drinking water standards (see Table 5).

Table 5: Water Quality Standards of MWA

Item	MWA
Escherichia coli	None
Color	15
Turbidity	5
Arsenic	0.01mg/l

(Source: MWA)

This is also evidenced by the fact that 91.0% of the interviewees in the beneficiary interview surveys evaluated water quality as “largely improved” or “improved”.

<sup>6</sup> The beneficiary interview survey was undertaken as a part of this evaluation to measure the contribution of the subject projects to improving the MWA water supply services and subsequently the environment in the Bangkok Metropolitan Area. In each of four selected areas, 50 interviewees were randomly chosen. The interview locations included Bangkok Outer Ring Road and Lad Krabang from the 4th and 5th projects as well as Phahol Yothin and Srinakarindra from the network systems project. These locations were chosen in thorough consultation with MWA.



### 2.3.4 Financial Reevaluation

The recalculated financial internal rates of return (FIRRs) of the 4th Project, 5th Project, and the Networks System Project are 12.8%, 5.0%, and 10.7%, respectively (Table 6).<sup>7</sup> These figures surpass the expected FIRRs at appraisal, primarily because of (i) the decrease in project costs and (ii) decrease in operation and maintenance (O&M) costs due to the enhancement of operational efficiency by reducing personnel (i.e. increase in the customer to employee ratio) and introducing IT.

Table 6: Appraisal Plans & Actual Performance (FIRRs)

Phase	Plan	Actual
4th Project	5.4%	12.8%
5th Project	4.7%	5.0%
Networks System Project	4.5%	10.7%

## 2.4 Impacts

### 2.4.1 Improvement in Sanitation

The Bangkok Metropolitan Area had long suffered from poor sanitation and, consequently, a high incidence of waterborne disease. Even though the results of the beneficiary survey do not clearly indicate that the beneficiaries are aware of the projects' contribution, the cases of acute diarrhea per 100,000 people decreased from a peak level of 877.58 in 1998 to 676.98 in 2002.<sup>8</sup>

The beginning of this trend coincides with the implementation of trunk main and distribution pipeline improvement, and it is therefore suggested that the projects have assisted in improving sanitary conditions in the Bangkok Metropolitan Area.

### 2.4.2 Enhancement of Commercial and Industrial Activities

The subject projects also appear to have enhanced commercial and industrial activity in the Bangkok Metropolitan Area. In particular, positive impacts on economic and commercial activities have been evident in the areas where the Lad Krabang distribution pumping station was constructed under the 4th Project. The average annual GRDP growth rate from 2000 to 2002 in this area was 7.48%, more than double the national average of 3.17%.



<sup>7</sup> The FIRR calculations performed at appraisal took costs to be construction costs and O&M costs (for all the projects), and benefits to be the incremental increase in revenue from water sales (for all the projects) and reduction in water loss (4th Project and Network Systems Project only) as well as savings in energy consumption (for Network Systems Project only). The recalculations of this evaluation use the same terms. It should be noted that these evaluations of the 4th Project cover both the phase I and the phase II.

<sup>8</sup> 18.5% of the interviewees answered "Yes" to the question asking if the Projects have decreased waterborne disease in neighborhood, while 4.5% said "No" and 77.0% "Don't know."

### 2.4.3 Reduction of Groundwater Use

As shown in Table 7, the use of groundwater has decreased since the mid-1990s from 238,400 m<sup>3</sup>/day to none in 2004. This is primarily because (i) several MWA projects, especially the networks system project, have expanded the area served by the central system, and (ii) the government amended the Groundwater Act in 2003 to tighten the enforcement of rules on groundwater use. The areas with land subsidence of more than 3 cm/year have significantly reduced.

Table 7: Groundwater Use in Bangkok Metropolitan Area (1000 m<sup>3</sup>/day)

1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
120.3	191.8	238.4	251.8	214.3	109.3	21.0	24.0	12.0	11.4	7.1	0.0

(Source: MWA)

## 2.5 Sustainability

### 2.5.1 Executing Agency

#### 2.5.1.1 Technical Capacity

The technical capacity of MWA is strong enough to ensure the sustainability of the project effectiveness. In order to further enhance the technical capabilities of each employee, MWA provides a range of training programs at the National Waterworks Technology Training Institute (NWTTI) and external institutions.<sup>9</sup> Moreover, MWA seeks to improve its managerial capacity by obtaining ISO 9001 certification and other measures.

#### 2.5.1.2 Operation and Maintenance System

The responsibility for O&M of the facilities and equipment under the subject projects lies with several departments under the Deputy Governor of Production and Transmission, which include the Office of Bang Khen Water Treatment Plant, Maha Sawat and Thon Buri Water Treatment Plant Department, and the Office of Water Treatment and Distribution Systems (see Figure 7).

The Board of Directors makes important decisions, such as on changes to water prices, in consultation with the Ministry of Interior.<sup>10</sup>

---

<sup>9</sup> NWTTI was established through the receipt of technical cooperation from the Japan International Cooperation Agency (JICA) in 1989.

<sup>10</sup> The tariff structure of MWA is different between domestic and business/governments users. Both types have proportional tariff classifications according to consumption amount with the minimum rate of 8.50 Baht/m<sup>3</sup> (23.3 Yen) for domestic users and 9.50 Baht (26.0 Yen) for business/government users. Minimum tariffs for domestic users are 0.75 Ringgit (20.0 Yen) for domestic users and 1.80 Ringgit (51.4 Yen) for industrial and commercial users in Kuala Lumpur, and 1,335 Rupiah (15.2 Yen) for domestic users and 5,200 Rupee (59.4 Yen) for commercial and industrial users in Jakarta.

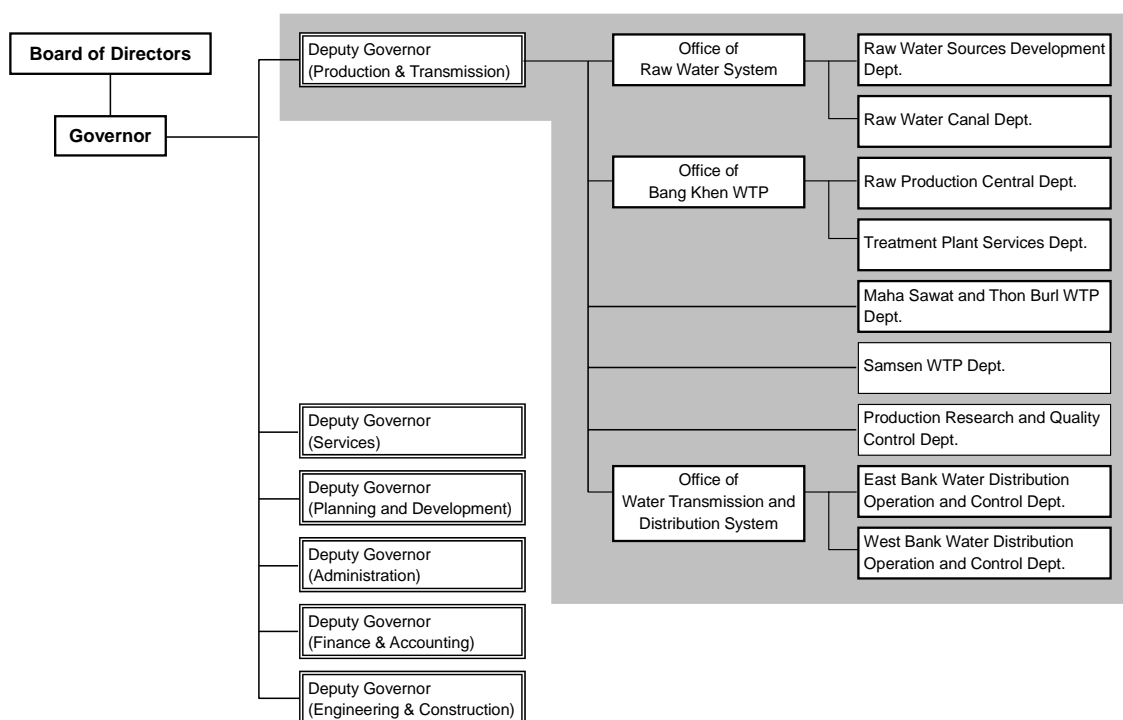


Fig.7: O&M Organizational Chart

### 2.5.1.3 Financial Status

Table 8 indicates the key financial indicators of MWA for the past three years. Overall, the financial status has been stable with a net income ratio of over 20% and an equity to capital ratio of over 40%, levels that should ensure the sustainability of the project facilities. Price increases in 1997, 1998, and 1999 raised the MWA's effective rate from 7.14 Baht/m<sup>3</sup> in 1994 to 11.88 Baht/m<sup>3</sup>, and this has contributed to the financial performance.

Table 8: Key Financial Indicators

FY	Total Revenues (Mill. Baht)	Operating Income (Mill. Baht)	Net Income (Mill. Baht)	Equity to Capital Ratio (%)
1992	5,653	1,542	1,670	44.3
2001	12,083	3,142	2,660	37.7
2002	12,766	3,613	3,669	43.0
2003	13,992	4,200	3,536	45.7

(Source: MWA)

### 2.5.2 Operation and Maintenance Status

The O&M status of the project facilities constructed through the projects is generally favorable.

### 3. Feedback

#### 3.1 Lessons Learned

##### For MWA

MWA should have established solid and effective communication channels with other concerned governmental agencies, such as BMA and DOH, to share information and facilitate coordination among all agencies concerned to avoid delays in project completion.

#### 3.2 Recommendations

None.

Comparison of Original & Actual Scope

Items	Planned	Actual
(1) Outputs - 4th Bangkok Water Supply Improvement Project (II)	<ul style="list-style-type: none"> <li>• Improvement of the existing raw water canal: 17.8 km</li> <li>• Pumping unit at Bang Khen raw water PS: 348 m<sup>3</sup>/m</li> <li>• Lad Krabang Distribution PS</li> <li>• Transmission conduits: 20.5 km</li> <li>• Trunk mains: 56.7 km</li> <li>• Distribution pipelines: 600 km</li> <li>• Rehabilitation of distribution pipelines: 163 km</li> <li>• Consulting services: 1,662 M/M</li> </ul>	<ul style="list-style-type: none"> <li>• Cancelled</li> <li>• As planned</li> <li>• As planned</li> <li>• As planned</li> <li>• 18.1 km</li> <li>• 819 km</li> <li>• 310 km</li> <li>• As planned</li> </ul>
- 5th Bangkok Water Supply Improvement Project	<ul style="list-style-type: none"> <li>• Maha Sawat WTP: 400,000 m<sup>3</sup>/d</li> <li>• Trunk mains: 109.5 km</li> <li>• Distribution pipelines: 1,000 km</li> <li>• Consulting services: 1,720 M/M</li> </ul>	<ul style="list-style-type: none"> <li>• As planned</li> <li>• 219.5 km</li> <li>• 669.3 km</li> <li>• As planned</li> </ul>
- Networks System Improvement Project	<ul style="list-style-type: none"> <li>• Pumping building; Reservoir: 40,000 m<sup>3</sup>; Power station: 7,500 KVA</li> <li>• Distribution pumping units: 7</li> <li>• Trunk mains: 130 km</li> <li>• Distribution pipelines: 370 km</li> <li>• Consulting services: 329 M/M</li> </ul>	<ul style="list-style-type: none"> <li>• As planned</li> <li>• 5 controlling systems added</li> <li>• 216.4 km</li> <li>• 296 km</li> <li>• As planned</li> </ul>
(2) Project period - 4th Project (II)	Jan. 1993 – Jun. 1996	Jan. 1993 – Jun. 2000
- 5th Project	Sept. 1992 – Apr. 1996	Sept. 1992 – Jan. 2002
- Networks System Improvement Project	Sept. 1993 – Feb. 1998	Sept. 1993 – Sept. 2004
(3) Project cost - 4th Project (II)		
Foreign currency	8,066 million yen	6,440 million yen
Local currency	14,889 million yen	6,948 million yen
Total	22,955 million yen	13,388 million yen
Japan's ODA loan	8,836 million yen	6,541 million yen
Exchange rate	¥1 = B 0.196 (June 1992)	¥1 = B 0.399 <small>(Weighted average for execution period)</small>
- 5th Project		
Foreign currency	16,017 million yen	5,057 million yen
Local currency	23,067 million yen	15,278 million yen
Total	39,084 million yen	20,335 million yen
Japan's ODA loan	8,133 million yen	5,122 million yen
Exchange rate	¥1 = B 0.196 (June 1992)	¥1 = B 0.370 <small>(Weighted average for execution period)</small>
- Networks System Improvement Project		
Foreign currency	5,599 million yen	3,319 million yen
Local currency	14,923 million yen	8,887 million yen
Total	20,522 million yen	12,206 million yen
Japan's ODA loan	5,599 million yen	3,730 million yen
Exchange rate	¥1 = B 0.226 (June 1993)	¥1 = B 0.379 <small>(Weighted average for execution period)</small>

## Monitoring Indicators and Monitoring Sheet

### **Selection of Ex-post Monitoring Indicators for Bangkok Water Supply Projects**

#### Objectives and Scope of Projects

To cope with an increase in water demand and reduce water leakage [**Objectives**]

By constructing water treatment plants and improving distribution network systems in Bangkok Metropolis [**Scope**]

Thereby to contribute improving public health, enhancing industrial and commercial activities, and reducing use of groundwater [**Goal**]

#### Three kinds of indicators

Operation of facility

Production of water

Distribution of water

Direct outcome

Increase in water supply (volume of delivered water, number of person served)

Keep water quality standards

Reduction of water loss (NRW)

Reduction of groundwater use

Impact (Goal to be attained as a results of direct outcome)

Productivity improvement (Reduction of cost of water supply)

Reduction of water-born diseases

Economic growth in service areas

Reduction of land subsidence

#### Matters to be considered

Measuring effects/impacts of The Projects (eliminating effects/impacts of other projects)

As less burden to MWA for collection of data as possible

Targets??? (Only collecting data does not make sense. Actual performance should be compared with the targets.) <=But difficult to set the target at this stage

#### Indicators (Long list)

- Water Production of MWA (MCM/year)
- (Water Production at Maha Sawat WTP: a part of the above)
- Volume of Water Sale (MCM/year)
- Population Served (Number of people)
- Non-revenue Water (%)
- Operating expenses per unit sales (B/m3)
- Fulfillment of Water Quality Standard (Y/N)
- Number of Water-born Diseases (number of acute diarrhea per 100,000 people: This data to be collected from XXX by MWA)
- Amount of Grand Water Use (MCM/year, Already xero)
- Land Subsidence (cm of land subsidence per year: This data to be collected from YYY by MWA)

## Project Effect/Impact Indicator Monitoring Sheet (JBIC Funded Project)

The Project and Ex-post Evaluation

Country	Thailand
Project	<b>Fourth Bangkok Water Supply Project/Fifth Project/Network System Improvement Pro</b>
Executing Agency/Monitoring Agency	Metropolitan Waterworks Authority (MWA)
Evaluation Date	December 2004
Rating	Highly Satisfactory (A)
Monitoring Period	Year 2005-2009

Status of Recommendations

Recommendations by Ex-post Evaluation	Action Taken by MWA
None	

Monitoring Indicators

Indicator	Updated , 2005									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	
1 Water production of entire MWA system (MCM)	1,481.7	1,505.0	1,516.1	1,538.0	1,613.0	1,688.0	1,765.0	1,820.0	1,867.0	
2 Water production at Maha Sawat WTP (MCM)	192.1	210.8	219.2	253.3	266.8	281.0	419.7	441.6	467.2	
3 Population served (People, 000)	6,500.0	6,703.0	6,931.0	7,236.0	7,372.0	7,513.0	7,655.0	7,801.0	7,948.0	
4 Non-revenue water rate (%)	37.7%	36.0%	33.7%	30.81%	30.71%	30.68%	30.65%	30.63%	30.62%	
5 Cost per unit sold (B/m3)	9.99	9.13	9.36	9.79	9.1	9.65	9.06	9.21	9.16	
6 Fulfillment of water quality standard	S	S	S	S	S	S	S	S	S	
	actual				target					

Definition of Indicators

- |   |   |
|---|---|
| 1 Water production of entire MWA system (MCM) | Total water production volume of MWA (million cubic meter)                                      |
| 2 Water production at Maha Sawat WTP (MCM)    | Water production volume (million cubic meter) at Maha Sawat WTP                                 |
| 3 Population served (person, 000)             | Population for which MWA provides water supply services   |
| 4 Non-revenue water rate (%)                  | (Volume of water for which tariff not collected)/(Total water production)*100                   |
| 5 Cost per unit sold (B/m3)                   | (Total expense (B))/(Total sales (m3))  |
| 6 Fulfillment of water quality standard       | S: Satisfied MWA's water quality standard ; F: Failure to fulfill (specify non-fulfilled items) |

**The Monitoring Sheet shall be submitted by MWA through PDMO(OSU) to JBIC by end [month] every year.**

Officer in charge at PDMO

- 1) Mr. Rapipit, SEPLD/PDMO, 02-265-8050 (ext. 319), rapipit@pdmo.mof.go.th
- 2) Ms. Sukuma, SPLD/PDMO, 02-265-8050 (ext. 326), sukuma@pdmo.mof.go.th

Officer in charge at MWA

No	Indicator	Definition of Indicator	Reason for Indicator Selection	Target
1	Water production of entire MWA system (MCM)	Annual total production of entire MWA System, including production at water treatment plants, mobile plants, deep wells systemd, and separate systems, etc. (million cubic meters)	To measure the ability of MWA's water supply (whether MWA fulfills the project objective of "to cope with an increase of water demand")	1688 MCM by 2006
2	Water production at Maha Sawat WTP (MCM)	Annual water production at Maha Sawat water treatment plant (million cubic meters)	To measure the operation ratio of facility constructed under the project	281.1 MCM by 2006
3	Population served (People, 000)	Population who recieves water supply service of MWA (Persons, thousand)	To judge whether the objectives "to cope with an increase of water demand" is fulfilled or not	7,400 by 2006
4	Non-revenue water rate (%)	$[1 - (\text{Water supply with reveue collection} / \text{Total water production})] * 100$	The project was aiming to reduce water leakage. The indicator is to measure the achievement of this objective.	30% by 2006
5	Cost per unit sold (B/m3)	$(\text{Total expense (B)}) / (\text{Total sales (m3)})$ MWA considers cost per unit sold based on all kind expenses i.e. Costs for chemical, electrical, salary, interests, raw water, materials, outsource services, depreciation and others to amount of water sold.	Though it was not clearly spelled out, with the facilities of the projects, production efficiency improvement can be reasonably expected	9.65 by 2006
6	Fulfilment of water quality standard	S: Satisfied with MWA's water quality standrad F: Failure to fulfill MWA water quality standards refers to WHO guidelines. For production process, one sample each will be collected from raw water basin, sedimentation tanks, filters and clear water tanks for testing at every 4 hours interval. In distribution system, one sample each from the area with 10,000 inhabitants is collected every day. At present upper than 97.5 % fulfill the standards.	The project was expected to contribute to improveing public health. By knowing whether the water fulfill water quality standard or not, it gives indicative information, though it cannot be considered as direct cause-effect relation.	98% by 2006



MINUTES OF DISCUSSION  
ON  
THE JOINT EVALUATION  
FOR  
FOURTH BANGKOK WATER SUPPLY PROJECT AND FIFTH PROJECT  
AND NETWORKS SYSTEM IMPROVEMENT PROJECT  
BETWEEN  
JAPAN BANK FOR INTERNATIONAL COOPERATION  
AND  
PUBLIC DEBT MANAGEMENT OFFICE  
MINISTRY OF FINANCE

Date: 29 April, 2005

Place: Bangkok

Japan Bank for International Cooperation (hereinafter called “JBIC”) and the Government of the Kingdom of Thailand, represented by the Public Debt Management Office, Ministry of Finance (hereinafter called “PDMO”) have facilitated the joint evaluation on the captioned projects (hereinafter called “BWS Projects”) with the aim of capacity building of PDMO and other organizations in charge of monitoring and evaluation of JBIC-assisted development projects. The joint evaluation activities were designed as per the Aide Memoir of November 30, 2004, and have been carried out by a team of experts for the ex-post evaluation (hereinafter called “External Evaluators Team”) appointed by JBIC and PDMO. Technical assistance for PDMO’s capacity building has been provided by JICA Evaluation Expert. The data collection for the joint evaluation was supported by Metropolitan Waterworks Agency (hereinafter called “MWA”).

JBIC and External Evaluators Team in one part, and PDMO and JICA Evaluation Expert in the other part hereby agree on the following matters.

1. Review on the capacity building for project evaluation through the experience of the joint evaluation for the BWS projects as detailed in the Annex 1.
2. Action Plan for strengthening project monitoring and evaluation by PDMO as shown in the Annex 2.

<p>Mr. Kunio Noda  Evaluation Officer  Development Assistance Operations  Evaluation Office  Project Development Department  Japan Bank for International Cooperation  Japan</p>		<p>Mr. Teerasak Mongkolpod  Director  Project Loan Operation Bureau  Public Debt Management Office  Ministry of Finance  The Kingdom of Thailand</p>
<p>Mr. Atushi Fujino  Team Leader  External Evaluators Team</p>		<p>Mr. Hachiro Ida  JICA Evaluation Expert  Public Debt Management Office  Ministry of Finance  The Kingdom of Thailand</p>

REVIEW  
ON  
THE CAPACITY BUILDING FOR PROJECT EVALUATION  
THROUGH THE EXPERIENCE  
OF  
THE JOINT EVALUATION  
FOR  
FOURTH BANGKOK WATER SUPPLY PROJECT AND FIFTH PROJECT  
AND NETWORKS SYSTEM IMPROVEMENT PROJECT

1. Implementation of the Joint Evaluation

1.1 The joint evaluation of the BWS Projects was carried out basically in line with the framework and the Terms of References (TOR) mentioned in the Aide Memoir of November 30, 2004.

1.2 The comparison between the planned and the actual implementation of the TOR for the joint evaluation is as per Attachment 1 and summarized as follows:

- (i) External Evaluators Team designed the evaluation framework in discussion with JBIC in July- August, 2004.
- (ii) External Evaluators Team collected information including documentation review and site survey with the assistance of MWA in November - December, 2004.
- (iii) External Evaluators Team drafted the evaluation summary in discussion with PDMO, JBIC and MWA in December.
- (iv) External Evaluators Team drafted the evaluation report in discussion with PDMO JBIC and MWA in April, 2005.
- (v) PDMO, JBIC and External Evaluators Team reviewed the achievement of the joint evaluation and drew-up of the Action Plan in April, 2005.

1.3 In performing the Joint Evaluation activities as mentioned in 1.2 above, the following milestones planned on November 30, 2004 were realized:

- (i) Evaluation Workshop attended by all concerned parties (November 12, 2004)
- (ii) First Joint Evaluation Meeting attended by all concerned parties (November 29, 2004)
- (iii) Second Joint Evaluation Meeting attended by PDMO and External Evaluators

Team (December 13, 2004)

- (iv) Submission of draft Evaluation Summary Sheet from External Evaluators Team to PDMO and JBIC (December 27, 2004)
- (v) Training Program for Evaluation of ODA loan projects provided by JICA Evaluation Expert (January - February, 2005)
- (vi) Submission of draft Evaluation Report from External Evaluators Team to PDMO (April 5, 2005)
- (vii) Third Joint Evaluation Meeting attended by all concerned parties (April 7, 2005)
- (viii) Feedback Seminar attended by all concerned parties (April 29, 2005)

## 2. Outcomes attained by the Joint Evaluation

2.1 The objective of the joint evaluation was to enhance the capabilities of PDMO to conduct ex-post evaluation of JBIC-assisted projects. The indicators for this objective were defined as (1) a degree of PDMO's understanding of the concept and the use of the tools/procedures applied in the joint evaluation for the BWS projects, and (2) a willingness of PDMO to coordinate similar evaluation activities for other JBIC-assisted projects.

2.2 With reference to the indicator (1), according to the self-evaluation by the said two organizations and the evaluation by the External Evaluators Team, it could be concluded that PDMO and MWA have gained understanding of the following items:

- (i) Roles of ex-post evaluation to improve project management and accountability.
- (ii) Logical framework and operation/ effect indicators for enabling a systematic and result-based approach of project monitoring and evaluation.
- (iii) Importance of incorporating "before-after" comparison in evaluation design.
- (iv) Importance of quantitative indicators, which are complemented by qualitative indicators, to evaluate outcomes and impacts of a project.
- (v) Definitions and viewpoints of DAC Five Evaluation Criteria (Relevance, Efficiency, Effectiveness, Impact and Sustainability), which could make evaluation multifaceted and comprehensive.
- (vi) Roles of ex-post monitoring (i.e. regular measurement of project effect/ impact indicators for completed projects) to enhance sustainability (continuity) of project benefits after its completion

2.3 With reference to the indicator (2), PDMO expressed its willingness to replicate the joint evaluation experience for other completed JBIC-assisted projects. For this purpose, JBIC, PDMO and the External Evaluators Team jointly formulated the Action Plan for

Strengthening Project Monitoring and Evaluation by PDMO as per Annex 2.

### 3. Issues Arisen During the Course of the Joint Evaluation

3.1 During the course of discussions, the following issues have arisen:

- (i) Though PDMO has actively participated in joint evaluation, constraint was observed due to shortage of staff.
- (ii) PDMO's first priority is to improve monitoring system of on-going projects.

3.2 The above-mentioned issues were taken into consideration in the formulation of the Action Plan.

**ACTION PLAN  
FOR  
STRENGTHENING PROJECT MONITORING AND EVALUATION  
BY PDMO**

**1. Background of the Action Plan**

It has become a consensus of the international development community that evaluation of development assistance is an important management tool for enhancing effectiveness and sustainability of development projects. With the growing recognition of the approach of Result-based Management, more emphasis has been put on performance-oriented evaluation. In response to such a trend, PDMO and JBIC have been engaged in an improvement of their project monitoring and evaluation systems. As part of their efforts, PDMO and JBIC facilitated the ex-post evaluation activities on Fourth Bangkok Water Supply Project and Fifth Project, and Networks System Improvement Project (“BWS Projects”) conducted by PDMO and a team of experts for the ex-post evaluation appointed by JBIC (“External Evaluation Team”). The objectives of this joint evaluation are to strengthen Thailand’s ability for ex-post evaluation, to facilitate development of monitoring and evaluation system, and to harmonize evaluation procedure between Thailand and JBIC.

Through a series of the joint evaluation activities, PDMO has gained understanding of the concept and procedures of JBIC ex-post project evaluation and monitoring. Based on this experience, the Action Plan for strengthening project monitoring and evaluation by PDMO was formulated.

**2. Objective of the Action Plan**

The objective of the Action Plan is to enhance effectiveness and sustainability of development projects under the supervision of PDMO through development of a mechanism in which PDMO implements or coordinates ex-post evaluation and monitoring of completed projects, and feedbacks the results to executing agencies and

other concerned parties. The ultimate target is that all executing agencies under the coordination by PDMO apply standardized procedures of ex-post evaluation and ex-post monitoring for ODA loan projects, and make an effective use of the results of these activities in their project formulation and implementation.

### **3. Output of the Action Plan**

The expected output of the Action Plan is a mechanism for ex-post evaluation and monitoring of completed JBIC-assisted projects in which PDMO takes the initiative and executing agencies are involved. The main outputs are as follows;

- (1) Concerned staff could design, and conduct ex-post evaluation and monitoring of completed projects.
- (2) PDMO could lead and perform ex-post evaluation and monitoring of completed projects.
- (3) Management information system in PDMO to accumulate project information throughout project cycle (Loan Portfolio Management Information System: LP-MIS)<sup>11</sup>
- (4) Ex-post evaluation reports produced through pilot studies and on-the-job training program

### **4. Activities and Implementation Schedule of the Action Plan**

Activities and Implementation schedule of the Action Plan is as per Attachment 2, consisting of three stages; Initial Stage (2005), Enhancement Stage (2006-2007), and Full Implementation Stage (2008-). Activities and implementation schedule of producing the above-mentioned outputs are tentatively set as follows:

- (1) Initial Stage (2005)  
<for PDMO>

---

<sup>11</sup> LP-MIS in PDMO was originally developed to monitor implementation performance of foreign-funded on-going projects. The System could automatically produce implementation performance indicators such as Project Progress Index, Disbursement Progress Index, and Loan Adequacy Index. The PDMO is in the process of enhancing the system, with an intention to build a consistent system for ex-ante (preparatory and approval stage) evaluation, implementation monitoring, and ex-post (completion and operation stage) evaluation.

- i) Conducting one ex-post evaluation study through joint evaluation exercise with JBIC.
- ii) Setting project performance indicators for all on-going projects.
- iii) Modification and Improvement of PDMO's LP-MIS.
- iv) Institutional development including human resources development to accommodate ex-post evaluation and monitoring activities in PDMO.

<for executing agencies involved in the Pilot Project's evaluations>

- i) Participate in ex-post evaluation activities coordinated by PDMO.
- ii) Submit the completed Project Effect/ Impact Indicator Monitoring Sheet to PDMO and JBIC.
- iii) Follow-up the recommendations from the ex-post evaluation.

<for JBIC >

- i) Conduct one ex-post evaluation study through joint evaluation exercise with PDMO during the Initial Stage.

## (2) Enhancement Stage (2006-2007)

<for PDMO>

- i) Conducting pilot ex-post evaluation studies, at least two studies each year.
- ii) Full operation of new LP-MIS, and modification of the system if required.
- iii) Continuation of institutional development including human resources development in PDMO.

<for executing agencies conducting the Pilot Project's evaluation>

- i) Participate in ex-post evaluation activities coordinated by PDMO.
- ii) Submit the completed Project Effect/Impact Indicator Monitoring Sheet to PDMO and JBIC and discuss it with them every year.
- iii) Follow-up the recommendations from the ex-post evaluation.

## (3) Full Implementation Stage (2008 -)

<for PDMO>

- i) Review the enhancement stage's outcome and revise the monitoring and evaluation mechanism if necessary.
- ii) Develop ex-post evaluation and monitoring guidelines and disseminate to executing agencies.



- iii) Implement the ex-post evaluation and monitoring activities for all foreign-funded projects.

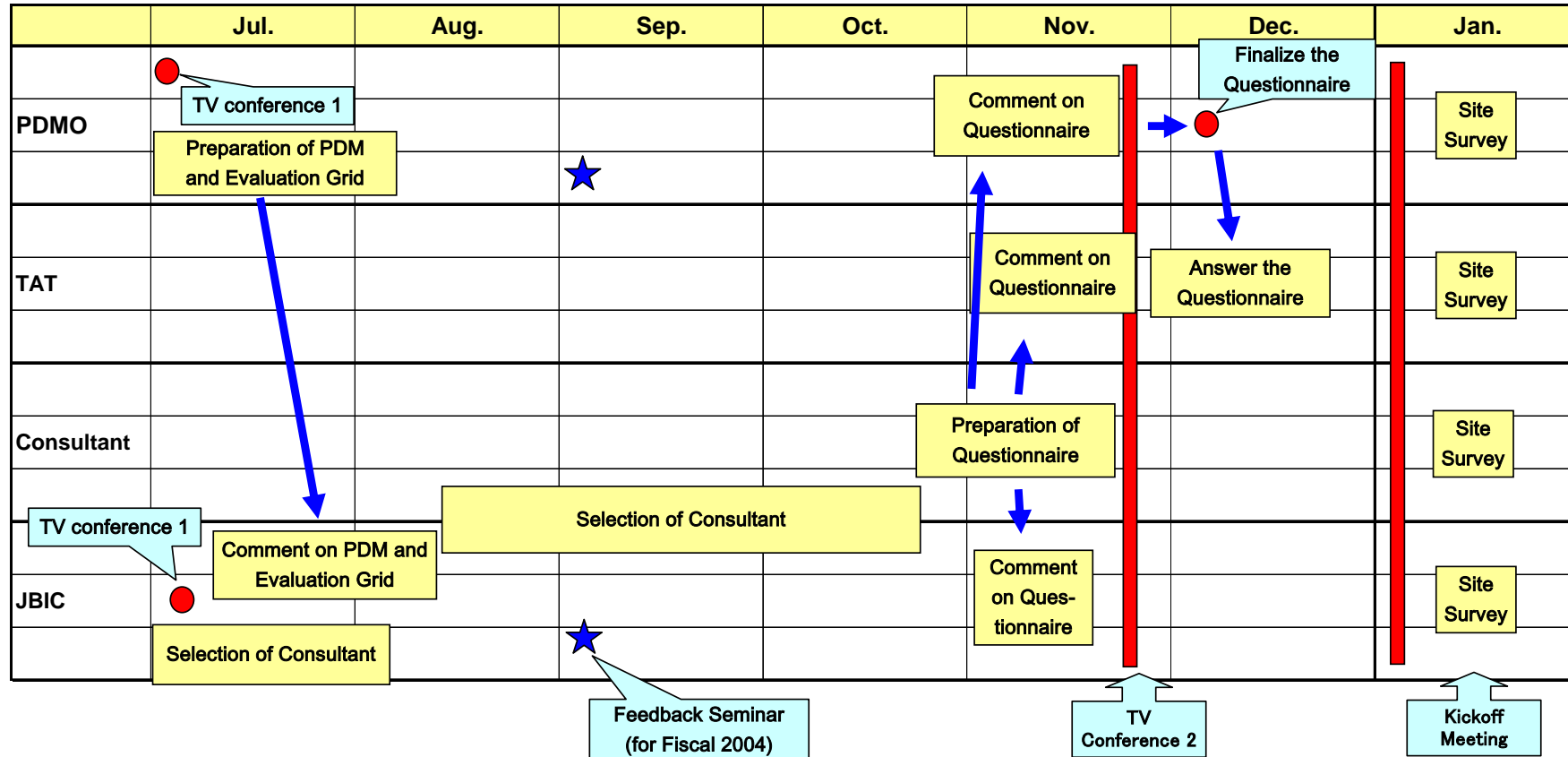
<for all executing agencies >

- i) Participate in ex-post evaluation activities coordinated by PDMO according to the above-mentioned guidelines.
- ii) Submit the completed Project Effect/ Impact Indicator Monitoring Sheet to PDMO and JBIC.
- iii) Take actions according to the recommendations from the ex-post evaluation.

## **5. Measures to Ensure the Proper Implementation of the Action Plan**

The progress of the Action Plan should be regularly (i.e. at least once a year) reviewed by PDMO and JBIC. JBIC would support the human resource and institutional development in PDMO, if necessary and appropriate.

### Implementation Schedule of Joint Evaluation for Regional Development Program (Toursim)



## PDM (Project Design Matrix) at Appraisal

Project Name: Regional Development Program      Duration: Sep 1993 - Sep 1998

Date: [August 5, 2005]

Project Area: 3 Regions; North, North-east and South      Target Group: Tourism Industry

Ver. No.: Version 1.0

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b></p> <p>The overall goal of the project is to develop rural area, to distribute income, to earn foreign currency, and to create employment through tourism industry's development</p>	<ul style="list-style-type: none"> <li>- Income of project areas (GPP)</li> <li>- Foreign exchange earnings</li> <li>- Employment opportunities</li> </ul>	<ul style="list-style-type: none"> <li>- National statistic Office report</li> <li>- Bank of Thailand report</li> <li>- NESDB report</li> <li>- Office of Tourism Development report</li> </ul>	
<p><b>Project Purpose</b></p> <p>Additional tourism demand (increase of visitors) will be created by upgrading tourism infrastructure and adding tourist attractions</p>	<p>[Operation]</p> <ul style="list-style-type: none"> <li>- No. of tourist arrival (Int'l and Domestic)</li> <li>- (Utilization of facilities)</li> </ul> <p>[Effect]</p> <ul style="list-style-type: none"> <li>- New job creation within tourism industry sector</li> <li>- Tourist expenditure (Int'l visitors, domestic tourists)</li> <li>- Increase in hotel rooms</li> </ul> <p>- EIRR</p>	<ul style="list-style-type: none"> <li>- National statistic Office report</li> <li>- Bank of Thailand report</li> <li>- NESDB report</li> <li>- Office of Tourism Development report</li> </ul>	<ul style="list-style-type: none"> <li>- Community acknowledgement/acceptance of the tourist site improvement area</li> <li>- Appropriate O&amp;M of developed facilities</li> </ul>
<p><b>Outputs</b></p> <p>28 Sub-projects of tourism infrastructure and attraction improvement</p> <ul style="list-style-type: none"> <li>- North 13 (CM 10, CR 3)</li> <li>- Upper N/E 1 (UD 1)</li> <li>- Lower N/E 5 (UB 5)</li> <li>- South 9 (PK 5, PN2, KB1, SK1)</li> </ul>	<p>Completed Sub-projects</p>	<p>PCR</p>	<ul style="list-style-type: none"> <li>- No major change in project scope</li> <li>- Tourism Industry would respond and make investment in hotel and restaurant</li> <li>- Marketing Campaign; tourist site promotion, would be done successfully by TAT</li> <li>- No major natural/human disasters</li> </ul>
<p><b>Activities</b></p> <ul style="list-style-type: none"> <li>- Construction/Improvement of infrastructure and other facilities</li> <li>- Project Coordination and management (PMU/Consultant)</li> <li>- Completion of Construction: schedule 1997</li> </ul>	<p style="text-align: center;"><b>Inputs</b></p> <ul style="list-style-type: none"> <li>- Project Cost JY 2,045 mil and B 916 MIL (=JY 6,097 mil)</li> <li>(Financing OECF JY4,268 mil and RTG B414 mil)</li> </ul>		<ul style="list-style-type: none"> <li>- Effective coordination with implementing agencies of sub-projects</li> <li>- RTG's timely allocation of budget</li> </ul> <p style="text-align: center;"><b>Pre-conditions</b></p> <ul style="list-style-type: none"> <li>- Cabinet approved this project</li> <li>- Obtain loan from OECF</li> </ul>

Original	Actual	Title	Type of Work	Agency	Cost (Orig)	Cost (PCR)	Cost (FR)	MEMO
CM-1	CM-1	Ping River Bank Improvement	Landscape and facilities	DOLA	10.4	9.8	9.9	
CM-2	CM-2	Chang Klan and Ta Pae Road Sidewalk Improvement	Landscape and facilities	DOLA	13.6	5.2	9.0	
CM-3	CM-3	Bank Improvement along Maw Ka Canal	Landscape and facilities	DOLA	5.0	1.6	1.7	
CM-4	CM-4	Three Locations of Three Bridges Landscaping Improvement	Landscape and facilities	DOLA	13.7	8.9	8.9	
CM-5	CM-5	Nong Buak Haad City Park Improvement	Landscape and facilities	DOLA	11.5	10.2	10.1	
CM-6	CM-6	Walking Tour Development in Chiang Mai Old City	Landscape and facilities	DOLA	72.4	65.7	66.1	
CM-7	CM-7	Landscaping Improvement along Outer Bank of Moat	Landscape and facilities	DOLA	38.1	22.9	24.4	
CM-8	CM-8	Tha Ton Tourist Pier	Landscape and facilities	DOLA	2.9	2.5	2.7	
CM-9	CM-9-1/9-2	Landscaping improvement of Four City Gates and Praya Mang Rai Tower	Landscape and facilities	DOLA	14.3	13.0	13.0	Divided into 2 procurement lots
CM-10	CM-10	Chiang Mai Art and Culture Center	Restoration and LF	DOLA	68.0	63.0	66.0	
	CM-10-1	[Additional] Exhibition Works	Exhibition works	DOLA	0.0	18.9	20.0	
<b>Subtotal</b>						<b>221.7</b>		
CR-1	CR-1	Development of Doi Thung Tourist Attraction	Landscape and facilities	TAT	33.0	28.0	28.0	
	CR-1-1	[Additional] Development of Doi Thung Tourist Attraction	Landscape and facilities	TAT	0.0	9.7	10.0	
CR-2	CR-2	Development of Rai Mae Fah Luang	Landscape and facilities	TAT	90.0	87.3	84.6	
CR-3	CR-3	Development and Construction of Golden Triangle Information Center	Landscape and facilities	TAT	240.0	241.9	241.9	
	CR-3-1	[Additional] Interior Works			0.0	30.9	N.A	
	CR-3-2	[Additional] Exhibition Works			0.0	26.9	N.A	
	CR-3-3	[Additional] Audio Visual Light and Sound System			0.0	32.1	N.A	
	CR-3-4	[Additional] Additional Engineering and Landscape			0.0	29.8	N.A	
-	CR-4/4-1	[New] Haad Chiang Rai Development in Honor of HMQ's 5th	Landscape and facilities	DOLA	0.0	15.5	15.1	Two contracts
<b>Subtotal</b>						<b>502.1</b>		
KB-1	KB-1	Environmental Improvement of Krabi River Side	Landscape and facilities	DOLA	21.4	20.2	20.4	
	KB-1-1	[Additional] Environmental Improvement of Krabi River Side (Small Pier)	Landscape and facilities	DOLA	0.0	4.8	4.8	
PK-1	PK-1	Surin Beach Development	LF & Road Improvement	DOLA	13.4	12.7	12.8	
PK-2	PK-2	Karon Beach Walkway and Landscaping Development	Landscape and facilities	DOLA	12.5	11.8	11.8	
PK-3	Cancel	Rawai Beach Development			16.4			Canceled because of land acquisition problem
PK-4	Cancel	Por Bay Tourist Pier			32.4			Canceled because of land acquisition problem
PK-5	PK-5	Chalong Bay Tourist Pier	Landscape and facilities	DOLA	42.2	140.6	140.6	Redesigned, and SC agreed to increase cost from 47.7 to 140.6
PN-1	PN-1	Phang Nga Pier Area Utility Services and Landscaping Development		PDA	45.9	42.6	N.A	
PN-2	PN-2	Andaman Cultural and Research Center Construction		FAD	127.6	19.6	N.A	Incompleted (poor performance of contractor), according to PCR
SK-1	SK-1///-8	Restoration and Conservation in Historical Songkhla Old City	Restoration and LF	FAD/DOLA	105.6	63.2	66.9	Divided into 8 procurement lots
<b>Subtotal</b>						<b>315.5</b>		
UB-1	UB-1	Muang Khong Chiam (Two Colors River) Improvement	Landscape and facilities	DOLA	8.8	8.4	8.4	
UB-2	UB-2	Kaeng Saphu Tourist Attraction Improvement	Landscape and facilities	DOLA	25.8	25.2	24.6	
	UB-2-1	[Additional] Haad Sai Kaew	Landscape and facilities	DOLA	0.0	12.9	13.1	
UB-3	UB-3	Kaeng Tana National Park Tourist Attraction Improvement	Landscape and facilities	RFD	11.1	10.2	10.2	
UB-4	UB-4/4-1	Pha Taem National Park Improvement	Landscape and facilities	RFD	20.4	17.5	17.5	Divided into 2 procurement lots
UB-5	UB-5	Thung Sri Muang City Park Improvement	Landscape and facilities	DOLA	11.1	10.9	10.9	
UD-1	UD-1	Bang Chiang National Museum and Poh Sri Nai Temple Historical Improvement	Restoration and LF	FAD	7.8	7.4	7.4	
<b>Subtotal</b>						<b>92.5</b>		

Source of Information

- 1) Project Completion Report
- 2) Final Report, Jun2 2000, TEAM Consulting/Pacific Consultants International

## Evaluation Grid and Evaluation Questions

### EVALUATION GRID

TAT: Regional Development Program

Evaluation Criteria	At Appraisal	At Ex-post Evaluation	Evaluation Question	Data Required	Data source/Survey method
<b>Relevance</b>					
Consistency with national/tourism development policy	7th NESDP (1992-96) International tourism will be promoted to generate foreign exchange earnings, and is set to grow at no less than 13% per year. Number of tourists is to grow at no less than 8% per year. and associated Tourism Development Plan stated - to increase foreign exchange earnings through tourism - to emphasize conservation of tourist destinations and measures to control negative after effects - to disseminate tourism development and services in a wider scope with a view to stimulating investment and employment - to emphasize restoration and management of tourism resources with a view to stimulating investment and employment	9th NESDP (2002-06)  Tourism Dev. Plan	What is the present tourism development policy and strategy of the government? Whether the Project is valid approach in the context of present policy and strategy?	Policies/strategies/targets of tourism sector development	- Literature survey (NESDPs, Tourism Dev Plan, TAT's corporate plan and annual reports, etc.) - Questionnaire/Interview to TAT and government officials
Matching beneficiary needs	[Who are beneficiaries? Private sector in tourism industry, local resident, Thai economy?]		Whether the facilities developed by the Project are useful for tourists and/or tourism industry?	- Beneficiary's assessment on the Project	- Beneficiary survey (Questionnaire and/or interview)
Appropriateness of scope and approach	Strategy of the project is; - to develop gateway cities - with expectation of following private sector investment	- TAT's functions has been separated into development (Min. Tourism), and promotion (TAT)	Will the government continue to develop tourism related infrastructure development? And why? Why TAT's functions are restructured?	[Tourism sector strategies]: -Combination of The Project (Gateway cities dev.) and other projects (complementary measures) - Public sector's role in tourism development	- Literature survey (NESDPs, Tourism Dev Plan, TAT's corporate plan and annual reports, etc.) - Questionnaire/Interview to TAT and government officials

<b>Efficiency</b>						
	Achievement of outputs	- 28 subprojects (- Final report including post evaluation results on the socio-economic and environmental impacts)	As attached sheet (ProjComponent)	Is there any major change of the project scope from the original plan and reasons of changes? How the consultant support for project management contributed to project implementation?	- Final project scope - Reasons of scope change - Consultant outputs	- Questionnaire/Interview to TAT
	Implementataion schedule efficiency	- Consultants: Apr 1994 - May 1998 - Construction: May 1994 - Sep 1997		Why the project implementation delay? What measures were taken? What should have been taken?	- Actual implementation schedule - Reasons of implementation delay, and countermeasures	- Questionnaire/Interview to TAT
	Cost efficiency	Y 2,045 + B916 = Y 6,097 million (including price escalation and phisical contingency)	As attached sheet (ProjComponent)	Was the project cost as planned?	- Actual cost	- Questionnaire/Interview to TAT
	Appropriateness of implementation scheme	Steering Committee - TAT (PMU) - Executing Agencies		What was the improvement from the first project? Who it worked? Any further improvement measures?	- Organizational structure for project implementation	- Questionnaire/Interview to TAT/EAs
<b>Effectiveness</b>						
	Use and operation of outputs	?	[The constructed facilities are used not only by tourists but also by local residents. How the benefits of these will be accounted as project benefits?]	What is the level of utilization of facilities? (Needs to develop this question more specifically) What is TAT's monitoring system?	- Use of facilities (such as number of visitors to musem/visitor center, occupancy rate of shop/restaurant stalls, etc) [What kind of and how we could quantitatively measure the use of facilities -- maybe difficult for some of facilities]	- Questionnaire/Interview to TAT/O&M agencies
	Achievement of project purpose	[TAT's document: Policies of TAT for 1993] - Int'l torusit arrivals (+6% p.a. 7.48m(1996)) - Domestic torists (+3% p.a. 40.5m(1996)) - FOREX by tourism (+13% p.a. B188b(1996)) - New jobs in torism sector (+11% p.a. 1.5m(1996))	- Internarional: 10.0 (2003) - Domestic: 69.36 (2003) - FOREX: B309b (2003) - Stastical data at National level is available, but provinial/regional data is not published. Need To ask TAT	What is the number of tourist arrival, increased by how many? How much was the private sector investment in torism industry induced by the Project? How many new job creation around project area? How much was the international and domestic tourist expenditure? What is the monitoring and evaluation methodology developed by TAT (Monitoring and Evaluation Div of TAT with Chulalongkorn Univ)?	- Tourism arrivals (int'l/domestic) - Revenue from tourism - Tourism sector investment - New jobs in tourism sector - FOREX by tourism ==> - Stastical data at National level is available, but provinial/regional data is not published. Need To ask TAT.	- Searching statistics - Questionnaire/Interview to TAT/EAs
	EIRR/FIRR	(TAT's calculation: EIRR 23.8%; B/C 2.9) [JBIC did not calculate EIRR]	[EIRR and B/C are calculated by region in Final Report]		[We may not need to calculate EIRR, as it is difficult to quantify the project benefit appropriately.]	

<b>Impact</b>					
Contribution to achievement of overall goal			What is the GPP growth around project area?	- Income of project areas (NESDB statistics) - FOREX by tourism	- Searching statistics - Questionnaire/Interview to TAT/O&M agencies
Impacts on natural environment/resettlement/land acquisition	- Not mentioned (no major negative impacts?)				
Impact on policies and institutional systems	?				
Social impact	?	The constructed facilities are used not only by tourists but also by local residents.	How the benefits of these will be accounted as project benefits?	- Countable/unaccountable benefit of improved facilities for local residents	- Questionnaire/Interview to local residents
Economic impact		According to World Travel & Tourism Council Report ('The 2005 Travel & Tourism Economic Research Thailand' attached separately), the macro economic impacts such as employment, GDP, FOREX, investment are quantitatively measured, and shows sizable impact of tourism sector to Thai economy. This subject also related to "Effectiveness".	What is the model for the Tourism Satellite Account (TSA)? And, can it be applied to specific regions?	- Data used as inputs to TSA - Output of TSA	- Questionnaire/Interview to TAT
<b>Sustainability</b>					
Present conditions			What is present conditions of facilities? How TAT monitors conditions from time to time? Are there any damages on sub-projects in south caused by Tsunami?	- Present conditions of facilities developed by the project - Any damages on sub-projects in south caused by Tsunami? - TAT's monitoring and evaluation system for O&M of facilities	- Questionnaire/Interview to TAT/O&M agencies - Visiting to project sites
Operation and maintenance arrangement			How the facilities constructed by the Project have been transferred to O&M agencies? And what kind of assurances given by recipient agencies for future O&M?	- O&M agreement between TAT and IAs? - TAT's monitoring system?	- Questionnaire/Interview to TAT/O&M agencies
Financial resources for O&M			How O&M agencies secure the budget for O&M of facilities? Any rent/user fee collected from visitors/business for facilities developed by the Project?		- Questionnaire/Interview to TAT/O&M agencies
Other matters related to this project					

### **3. Guidelines for Ex-post Evaluation**

General guidelines for ex-post evaluation of completed projects are described in a separate volume of **Monitoring and Evaluation Guidelines**. Please refer to Chapter IV.