THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

THE TECHNICAL COOPERATION PROJECT ON RIVERBANK PROTECTION WORKS IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

FINAL REPORT

MARCH 2007

JAPAN INTERNATIONAL COOPERATION AGENCY
LAOS OFFICE

PREFACE

In response to a request from the Government of Lao People's Democratic Republic (hereinafter, Lao PDR) the Government of Japan decided to conduct the Technical Cooperation Project on Riverbank Protection Works in the Lao PDR and entrusted to implement to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a short-term expert team headed by Mr. Yasuhiko KATO of IDEA Consultants, Ins. (consisting of IDEA Consultants, Inc. and NEWJEC Inc.) to Lao PDR several times between January 2005 and March 2007.

The team held discussion with the officials concerned of the Government of Lao PDR and conducted various project activities at the study area, and prepared this final report.

I hope that this report will contribute to the promotion of riverbank protection in Lao PDR and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Lao PDR for their close cooperation extended to the Project.

March 2007

Senya MORI

Resident Representative
Japan International Cooperation Agency
Laos Office

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Exchange Rate

US Dollar (US$) 1.00 = Lao Kip (Kip) 10,334 Japanese Yen (¥) 100 = Lao Kip (Kip) 9,083 Middle rate as of May 1, 2006

Abbreviation

Lao PDR	Lao People's Democratic Republic
GOL	Government of Lao PDR
GOJ	Government of Japan
JICA	Japan International Cooperation Agency
MCTPC	Ministry of Communication, Transport, Post and Construction
DOR	Departments of Roads, MCTPC
DCTPC	Department of Communication, Transport, Post and Construction, Vientiane Capital
VUDAA	Vientiane Urbane Development and Administration Authority
LNMC	Lao National Mekong Committee
ADB	Asian Development Bank
UNDP	United Nations Development Programme
WWF	World Wide Fund for Nature

1. INTRODUCTION

1.1 Project Purpose

The purpose of the Project is as follows:

MCTPC will be able to execute the riverbank protection works continuously and properly, and the riverbank measures which selected in the M/P will be admitted in the Lao PDR.

1.2 Project Area

The Project Area is the Mekong riverbank around Vientiane Capital City in the Lao PDR (L=approx. 60 km), which is the same as that for the previous JICA Development Study on Mekong Riverbank Protection around Vientiane Municipality. Figure 1.1 shows the general layout of the riverbank protection master plan (M/P) formulated by the Study and the M/P projects implemented by the Government of Lao PDR (GOL) by using national budget with the technical cooperation of the Project for 3 years.

1.3 PDM of the Project

PDM of the Project (Ver. 1: revised version) is as shown in Table 1.1. (refer to Chapter 6 for the details of the PDM revision)

The Project activity should be conducted especially taking into consideration the followings:

1) The Project activities will be predominantly carried out by the counterpart personnel (C/P) of the Department of Roads (DOR), Ministry of Communication, Transport, Post and Construction (MCTPC) and the JICA Expert Team mainly performs support relevant to implementation of activity, advice, and progress management from the side.
2) The first priority of the Project activity is steady construction of the bank protection works of the M/P by GOL mainly concerned with the C/P.

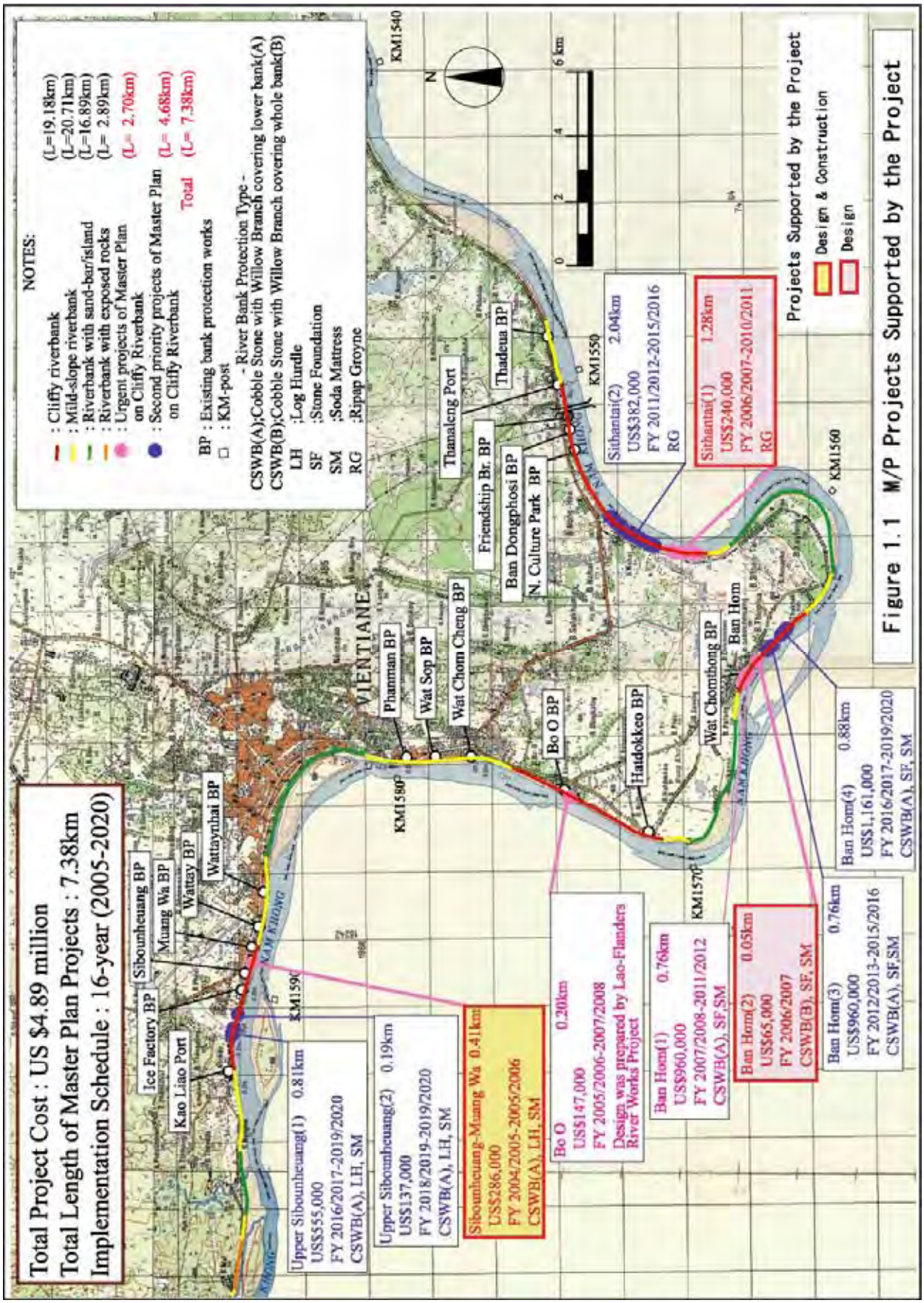

Total Project Cost : US $4.89 million
Total Length of Master Plan Projects : 7.38km
Implementation Schedule : 16-year (2005-2020)
NOTES:
: Cliffy riverbank (L=19.18km)
: Mild-slope riverbank (L=20.71km)
: Riverbank with sand-bar/island (L=16.89km)
: Riverbank with exposed rocks (L= 2.89km)
: Urgent projects of Master Plan on Cliffy Riverbank (L= 2.70km)
: Second priority projects of Master Plan on Cliffy Riverbank (L= 4.68km)
Total (L= 7.38km)
BP : Existing bank protection works
□ : KM-post
- River Bank Protection Type -
CSWB(A);Cobble Stone with Willow Branch covering lower bank(A)
CSWB(B);Cobble Stone with Willow Branch covering whole bank(B)
LH ;Log Hurdle
SF ;Stone Foundation
SM ;Soda Mattress
RG ;Riprap Groyne
Projects Supported by the Project
Design & Construction
Design
VIENTIANE
KM1540
KM1550
KM1560
KM1570
KM1580
KM1590
Ice Factory BP
Kao Liao Port
Sibounheuang BP
Muang Wa BP
Wattay BP
Wattaythai BP
Phanman BP
Wat Sop BP
Wat Chom Cheng BP
Thanaleng Port
Friendship Br. BP
Ban Dongphosi BP
N. Culture Park BP
Thadeua BP
Bo O BP
Hatdokkeo BP
Wat Chomthong BP
Ban Hom
Upper Sibounheuang(1) 0.81km
US$555,000
FY 2016/2017-2019/2020
CSWB(A), LH, SM
Upper Sibounheuang(2) 0.19km
US$137,000
FY 2018/2019-2019/2020
CSWB(A), LH, SM
Sibounheuang-Muang Wa 0.41km
US$286,000
FY 2004/2005-2005/2006
CSWB(A), LH, SM
Bo O 0.20km
US$147,000
FY 2005/2006-2007/2008
Design was prepared by Lao-Flanders River Works Project
Ban Hom(1) 0.76km
US$960,000
FY 2007/2008-2011/2012
CSWB(A), SF,SM
Ban Hom(2) 0.05km
US$65,000
FY 2006/2007
CSWB(B), SF, SM
Ban Hom(3) 0.76km
US$960,000
FY 2012/2013-2015/2016
CSWB(A), SF,SM
Ban Hom(4) 0.88km
US$1,161,000
FY 2016/2017-2019/2020
CSWB(A), SF, SM
Sithantai(2) 2.04km
US$382,000
FY 2011/2012-2015/2016
RG
Sithantai(1) 1.28km
US$240,000
FY 2006/2007-2010/2011
RG
Figure 1.1 M/P Projects Supported by the Project

Table 1.1 PDM of the Project (Project period: Jan. 2005 - Mar. 2007)

Date of Creation; Jan.,2006 **Ver.1**

	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal	Riverbank erosion of Mekong River around Vientiane Capital will be mitigated through execution of riverbank protection works under the Riverbank Protection Mater Plan (M/P) formulated in the Study on Mekong Riverbank Protection around Vientiane Municipality in the Lao P.D.R.	Mitigation rate on damage of riverbank erosion	Monitoring report on riverbank erosion	
Project Purpose	・MCTPC will be able to execute the riverbank protection works properly. ・The riverbank protection measures which selected in the M/P will be disseminated in Vientiane City and the information on the measures will be disseminated in the local area of Lao P.D.R.	・Number of riverbank protection facilities constructed in accordance with the M/P. ・Capacity of MCTPC to construct and maintain riverbank protection facilities. ・Result of evaluation on effectiveness of coping measures to riverbank erosion which selected in the M/P. ・Dissemination degree of coping measures to riverbank erosion which selected in M/P.	1.List of riverbank protection facilities 2.Prograss report 3.Monitoring report 4.Final report	Riverbank protection works will be implemented until 2020 in accordance with the M/P.
Outputs	・Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for activities. ・MCTPC will be able to construct the riverbank protection facilities based on M/P and the effort to improve maintenance setup will be conducted. ・Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented. ・Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.	・Annual plan of riverbank protection works formulated by MCTPC, mandate of the new permanent organization. ・Condition of facilities constructed and maintained by MCTPC. ・Number of seminars or lectures conducted by MCTPC. ・Result of monitoring on riverbank protection facilities.	1.Annual plan 2.Progress report 3.Seminar and lecture reports 4.Final report	The mandate of the new organization for riverbank protection project will be defined in the regulation of Department of Roads, MCTPC.
Activities	**1.Establishment of the new organization for riverbank protection projects** -JICA experts make recommendation on mandate of the new permanent organization for riverbank protection in MCTPC. -MCTPC formulates the annual plan, and JICA experts examine it. -JICA experts provide advice and recommendation on annual plan for next year. **2.Design, Construction, Maintenance and Monitoring of Riverbank Protection Facilities** -MCTPC designs the riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities, and JICA experts provide advices. (include preparatory study, cost estimation, drawing and construction supervision) -MCTPC compile the glossary of riverbank protection term in English-Laotian, and JICA experts provide advices. -MCTPC and JICA experts prepare the manual on monitoring methods and check items. -MCTPC carries out monitoring survey, and JICA experts provide advices. -MCTPC make effort to improve the setup to maintains the existing riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities on Soda method, and JICA experts provide instruction on Soda method technique. **3.Dissemination of Information and Technique** -MCTPC develops materials for seminars and lectures, and JICA experts provide assistance. -MCTPC makes lectures on riverbank protection measures at national university of Laos regulaly for students can teke credit, and JICA experts provide assistance. -MCTPC conducts practical training and seminars for MCTPC, Vientiane and local DCTPC staff, educational institutions and relating agencies, and JICA experts provide assistance. -MCTPC creates materials on riverbank protection to enlighten the inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly, and JICA experts provide assistance. -MCTPC disseminates the simple vegetation riverbank protection works with residents participation, and JICA experts provide assistance. **4.Monitoring on Coping Measures to Erosion** -MCTPC and JICA experts carry out the monitoring survey on pilot works and verify the effectiveness of coping measures to erosion which selected by M/P. -MCTPC and JICA experts compile the report on effectiveness of coping measures to erosion.	**Inputs** <Japanese side> 1.Experts 6 Short-term Experts a) Chief Advisor/Capacity Building b) Facility Design/Monitoring Support c) Construction Supervision and Maintenance Support d)Soda Technique e) Vegetation Work/Monitoring Support f) Coordinator/Capacity Building II 2.Training in Japan Training of 2 counterpart personnel in Japan 3.Provision of Equipment River survey equipments Soda technique tools OA equipments 4.Budget for Seminar and Training <Laos side> 1.Counterpart Personnel Project Manager (MCTPC) 2 MCTPC and 1 DCTPC 2.Fasilities Office Space Training Space 3.Budget Allocation Construction cost for riverbank protection works in accordance with M/P. (for 3year's) Budget plan：US$749,000（Investment plan：US$554,000）		Construction materials will be procured stably in Lao P.D.R. **Preconditions** -Budget for riverbank protection works will be allocated by Laos side in accordance with the M/P. -Proper personnel will be allocated to the new permanent organization.

1.4 PO of the Project

Overall project activity flow is as shown in Figure 1.2. The yearly PO (Plan of Operation) of the Project based on the PDM (Ver. 1) is as shown in Table 1.2.

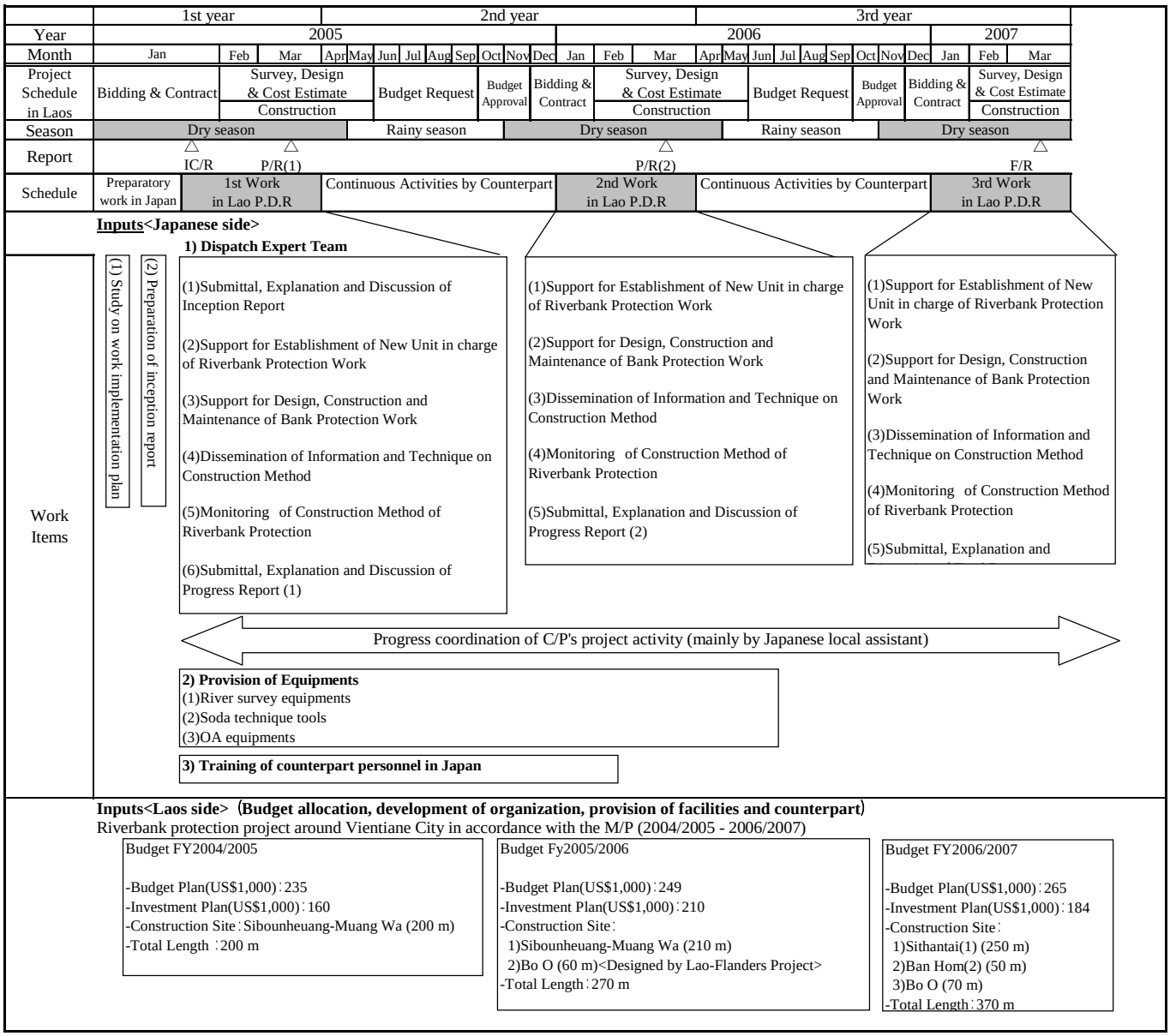


Figure 1.2 Project Activity Flow

1st year (January 2005 - March 2005)

Table 1.2 (1/3) Yearly PO (Plan of Operation)

Date; Jan, 2006 Ver.1

No.	Work Item	Outputs	Activities	Objectively Verifiable Indicators	Means of Verification	Person in Charge	
						C/P	JICA Experts
3.3.2(1)	Recommendation on Role of New Unit	C/P can prepare the work items of responsibility and yearly work schedule (draft) <Technical Coorporation Output>.	- C/P prepare the work items of responsibility and the yearly work program (draft) by themselves and clarify the significance level of works in MCTPC. - JICA Experts support C/P by making recommendations.	Self-reliance level (25%)	Work items of responsibility and yearly work schedule (draft)	Viengsavanh	Kato
3.3.2(2)	Detail Check of M/P Program Prepared by MCTPC	C/P can prepare an appropriate yearly work plan of M/P.	- C/P prepare the yearly work plan by themselves. - JICA Experts confirm the plan and make recommendations according to need	Self-reliance level (60%)	Yearly work plan of M/P	Viengsavanh	Kato
3.3.2(3)	Recommendations to Next Year Work Program of MCTPC	C/P can prepare a next year work plan	- C/P prepare a next year work plan. - JICA Experts support the preparation of work plan.	Self-reliance level (60%)	Next year work plan	Viengsavanh	Kato
3.3.3(1)	Recommendation on Facility Design	C/P can make detailed design of riverbank protection work at Sibounheuang-Muang Wa Site (L=210 m)	- C/P makes the detailed design by themselves - JICA Experts assist review the design by C/P and make advice on it.	Completion degree of report on survey and design drawing exceed 80 %.	Design document prepared by C/P	Viengsavanh Souksavanh Bounleng	Kobayashi
3.3.3(2)	Recommendation on Facility Construction	Bank protection works at Sibounheuang-Muang Wa will be constructed (L=210m)	- C/P execute the construction works by themselves - JICA Experts make the recommendations on the following; Cost estimate/Preparation of bidding documents/Evaluation of tenders/Supervision works/Completion Inspection	-Understanding of work flow (100%) -Preparation of monthly & weekly reports for supervision (100%) -Rate of actual construction length to M/P exceeds 60%	Monthly and weekly reports	Viengsavanh Khamfong	Kameyama
3.3.3(3)	Support for Preparation of Riverbank Protection Glossary	The glossary on riverbank protection work (English-Lao) <Technical Coorporation Output> will be prepared.	- C/P prepare the glossary on riverbank protection work by themselves (Work in the rainy season). - JICA Experts support in preparation of the glossary (in selection of technical terms).	Starting work by preparation of the format	Format of the glossary	Souksavanh Bounleng	Watanabe
3.3.3(4)1	Support for Manual Preparation for Maintenance	Maintenance manual <Technical Coorporation Output> will be prepared.	- C/P prepare the maintenance manual by themselves. - JICA Experts support for that	-Understanding of maintenance work flow (100%) -Listing maintenance equipment (100%)	Table of contents of the manual	Souksavanh Phonesay	Kameyama
3.3.3(4)2	Support for Manual Preparation for Monitoring	Monitoring manual, monitoring item check list <Technical Cooporation Output> are prepared.	- C/P make execution plan for preparation of the manual and checklist by themselves and start to preparation. - JICA Experts assist C/P's preparation work.	Completion degree of execution exceeds 20%	-Monitoring manual -Monitoring check list	Souksavanh Viengsavanh	Kobayashi Kawabata
3.3.3(5)	Recommendation on Monitoring Existing Facilities	Plan of monitoring of existing facilities is prepared.	- C/P prepares the execution plan by themselves - JICA Experts advise on the C/P's achievement.	Completion degree of execution plan of monitoring report exceeds 80%	Execution plan of monitoring	Khamfong Viengsavanh Bounleng	Kobayashi
3.3.3(6)	Recommendations on Maintenance of Existing Facilities	Maintenance works of existing facilities are conducted.	- C/P conduct the maintenance works by themselves. - JICA Experts give advices on the following: selection of rehabilitation places /supervision works method of rehabilitation works/Improvement plan of maintenance organization	Planning rate of maintenance register (20%)	-Location map & drawing of existing facilities -Preparation plan of maintenance register	Souksavanh Khamfong Bounleng	Kameyama
3.3.3(7)	Field Guidance of Soda Technique	Soda related works are constructed at Sibounheuang-Muang Wa site.	- C/P and the contractor execute construction of Soda related works by themselves - JICA Experts conduct field guidance and giving advice	Degree of the executed work exceeds 40%	Yearly check result	Khamfong Bounleng	Ohashi
3.3.4(1)1	Preparation of Seminar and Lecture Materials	C/P can prepare the materials for seminars and lectures <Technical Cooperation Output> by themselves.	- C/P prepare the materials by themselves. - JICA Experts provide assistance.	Session material: 1 Lecture material: 1	Materials for seminars and lectures (MS PowerPoint)	Viengsavanh	Kato Kobayashi Kameyama
3.3.4(1)2	Laotian Translation of Manual for Riverbank Protection	C/P can prepare Manual for Riverbank Protection (Laotian version) <Technical Cooperation Output> by themselves.	–	–	–	–	–
3.3.4(2)	Lectures at Faculty of Engineering and Architecture, National University of Laos	C/P can give lectures by themselves regulaly at the university for students can teke credit and to be able to disseminate the information/technique on construction method.	- C/P give lectures in the university and accept trainee from the university - JICA Experts give lectures at the university and advice C/P on the contents of lessons	・Number of lesson: C/P -1, JICA Experts - 2 ・Number of attendants: More than 50 at each lecture ・Degree of understanding: More than 60 % understand the lecture generally.	・Lecture materials (MS PowerPoint) ・Result of questionnaire survey for attended students	Viengsavanh	Kato Kobayashi
3.3.4(3)	Support for Opening Seminars on Construction Method	C/P can plan and manage seminars by themselves	- C/P open seminars and make presentation in charge. - JICA Experts provide assistance on the planning and management and also make presentation.	Session: 2(outdoor 1, indoor 1)	・Seminar materials ・Result of field practice	Viengsavanh Khamfong Souksavanh	Kato Kobayashi Kameyama Watanabe
3.3.4(4)	Support for Material Preparation to Enlighten Local Inhabitants	C/P can prepare the material to enlighten local inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly	- C/P prepares the draft of the material by themselves. - JICA Experts provide assistance on the preparation.	Self-reliance rate for the preparation (80%)	Draft of explanatory sign at Sibounheuang -Muang Wa site	Souksavanh Phonesay	Watanabe
3.3.4(5)	Assisting Promotion of Residents-participated Simple Vegetation Work	1) C/P can determine the execution site of residents-participated simple vegetation work 2) C/P can execute the work	- C/P decides the site and make the execute plan. - JICA Experts advice on technical and administrative aspects.	Completion degree of execution plan exceeds 70%.	Execution plan(draft)	Souksavanh Phonesay	Kawabata
3.3.5(1)	Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	1) Successive monitoring is executed 2) Monitoring results are arranged and evaluated	- C/P makes execution plan of continuous monitoring work and evaluates the result. - JICA Experts advise for C/P's work.	The degree of completion of execution plan exceeds 50%	Execution plan of monitoring	Souksavanh Viengsavanh Phonesay	Kobayashi Kawabata
3.3.5(2)	Report Preparation on Reasonableness of Construction Method selected in M/P	To prepare a report on the reasonableness of construction method selected in M/P.	–	–	–	–	–

Note) The number described on left-hand column corresponds to the section number of the Inception Report for the Project.

2nd year (April 2005 - March 2006)

Table 1.2 (2/3) Yearly PO (Plan of Operation)

Date; Jan, 2006 Ver.1

No.	Work Item	Outputs	Activities	Objectively Verifiable Indicators	Means of Verification	Person in Charge	
						C/P	JICA Experts
3.3.2(1)	Recommendation on Role of New Unit	C/P can prepare the work items of responsibility and yearly work schedule (draft) <Technical Coorporation Output>.	- C/P prepare the work items of responsibility and the yearly work program (draft) by themselves and clarify the significance level of works in MCTPC. - JICA Experts support C/P by making recommendations.	Self-reliance level (50%)	Work items of responsibility and yearly work schedule (draft)	Viengsavanh	Kato
3.3.2(2)	Detail Check of M/P Program Prepared by MCTPC	C/P can prepare an appropriate yearly work plan of M/P.	- C/P prepare the yearly work plan by themselves. - JICA Experts confirm the plan and make recommendations according to need	Self-reliance level (90%)	Yearly work plan of M/P	Viengsavanh	Kato
3.3.2(3)	Recommendations to Next Year Work Program of MCTPC	C/P can prepare a next year work plan	- C/P prepare a next year work plan. - JICA Experts support the preparation of work plan.	Self-reliance level (90%)	Next year work plan	Viengsavanh	Kato
3.3.3(1)	Recommendation on Facility Design	C/P can make detailed design of riverbank protection work at Sibounheuang-Muang Wa Site (L=200 m)	- C/P makes the detailed design by themselves. - JICA Experts assist review the design by C/P and make advice on it.	Completion degree of report on survey and design drawing exceed 80 %.	Design document prepared by C/P	Viengsavanh Souksavanh Bounleng	Kobayashi
3.3.3(2)	Recommendation on Facility Construction	Bank protection works at Sibounheuang-Muang Wa will be constructed (L=210m)	- C/P execute the construction works by themselves - JICA Experts make the recommendations on the following; Cost estimate/Preparation of bidding documents/Evaluation of tenders/Supervision works/Completion Inspection	Rate of actual construction length to M/P exceeds 60%	-Construction completion report in 2005 -Monthly & weekly reports in 2006	Souksavanh Khamfong	Kameyama
3.3.3(3)	Support for Preparation of Riverbank Protection Glossary	The glossary on riverbank protection work (English-Lao) <Technical Coorporation Output> will be prepared.	- C/P prepare the glossary on riverbank protection work by themselves. - JICA Experts support in preparation of the glossary.	More than 80% of the important terms in the JICA Study Report are included in the glossary.	The glossary on riverbank protection work (English-Lao)	Souksavanh Bounleng	Watanabe
3.3.3(4)1	Support for Manual Preparation for Maintenance	Maintenance manual <Technical Coorporation Output> will be prepared.	- C/P prepare the maintenance manual by themselves. - JICA Experts support for that	-Recognition on constraints and key issue for maintenance -Implementation of interview on the maintenance by the public participation	-Interview to local people near B/P work sites	Souksavanh Khamfong Bounleng	Kameyama
3.3.3(4)2	Support for Manual Preparation for Monitoring	Monitoring manual, monitoring item check list <Technical Cooporation Output> are prepared.	-C/P make the manual and checklist by themselves. -JICA Experts assist C/P's preparation work	Completion degree exceeds 50%	-Monitoring manual -Monitoring check list	Souksavanh Viengsavanh	Kobayashi Kawabata
3.3.3(5)	Recommendation on Monitoring Existing Facilities	Monitoring of existing facilities is executed.	- C/P carries out the monitoring by themselves. - JICA Experts advise on the C/P's achievement.	Monitoring completion degree exceeds 70%	Monitoring report	Khamfong Viengsavanh Bounleng	Kobayashi
3.3.3(6)	Recommendations on Maintenance of Existing Facilities	Effort to improve the setup to maintains the existing riverbank protection facilities is conducted.	- C/P make monitoring plan for maintenance by themselves. - JICA Experts give advices on the following: selection of rehabilitation places /Improvement plan of maintenance setup	-Completion of maintenance register (90%)	-Maintenance register	Souksavanh Khamfong Bounleng	Kameyama
3.3.3(7)	Field Guidance of Soda Technique	Soda related works are constructed at Sibounheuang-Muang Wa site.	- C/P and the contractor execute construction of Soda related works by themselves. - JICA Experts conduct field guidance and giving advice.	Degree of the executed work exceeds 60%	Yearly check result	Khamfong Bounleng	Ohashi
3.3.4(1)1	Preparation of Seminar and Lecture Materials	C/P can prepare the materials for seminars and lectures <Technical Cooperation Output> by themselves.	- C/P prepare the materials by themselves. - JICA Experts provide assistance.	Seminar material: 1 Lecture material: 4	Materials for seminars and lectures (MS PowerPoint)	Viengsavanh Souksavanh	Kato
3.3.4(1)2	Laotian Translation of Manual for Riverbank Protection	C/P can prepare Manual for Riverbank Protection (Laotian version) <Technical Cooperation Output> by themselves.	- C/P translate the manual into Laotian. - JICA Experts conduct progress management and provide assistance.	Progress rate 70%	Laotian Manual	Souksavanh Bounleng	Watanabe
3.3.4(2)	Lectures at Faculty of Engineering and Architecture, National University of Laos	C/P can give lectures by themselves regulaly at the university for students can teke credit and to be able to disseminate the information/technique on construction method.	- C/P give lectures in the university. - JICA Experts give advice on the contents of lectures.	・Number of lesson ; C/P: 4, JICA Experts: 1	・Lecture materials (MS PowerPoint) ・Result of field lecture	Viengsavanh Souksavanh	Kato
3.3.4(3)	Support for Opening Seminars on Construction Method	C/P can plan and manage seminars by themselves	- C/P open seminars and make presentation in charge. - JICA Experts provide assistance on the planning and management.	Seminar: 1 Session: 1	・Seminar materials ・Result of field practice	Viengsavanh Souksavanh	Watanabe Kato Kobayashi
3.3.4(4)	Support for Material Preparation to Enlighten Local Inhabitants	C/P can prepare the material to enlighten local inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly	- C/P prepare and/or distribute the material by themselves. - JICA Experts provide assistance on the preparation.	Self-reliance rate for the preparation (90%)	・PR material ・Contents of project web site	Viengsavanh Souksavanh Bounleng	Watanabe
3.3.4(5)	Assisting Promotion of Residents-participated Simple Vegetation Work	1) C/P can determine the execution site of residents-participated simple vegetation work 2) C/P can execute the work	- C/P decides the site and execute the construction with residents participation - JICA Experts advice on technical and administrative aspects.	Completion degree of execution at one site to plan exceeds 70%.	Execution result	Souksavanh Khamfong	Kawabata
3.3.5(1)	Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	1) Successive monitoring is executed 2) Monitoring results are arranged and evaluated	- C/P executes the continuation of monitoring work arrangement and evaluation of the result - JICA Experts advise for C/P's achievement, arrangement and evaluation	The degree of coverage to plan exceeds 70%.	Yearly report of monitoring result with evaluation	Souksavanh Khamfong	Kobayashi Kawabata
3.3.5(2)	Report Preparation on Reasonableness of Construction Method selected in M/P	To prepare a report on the reasonableness of construction method selected in M/P.	*to be conducted in 3rd year*	—	—	—	Kato

Note) The number described on left-hand column corresponds to the section number of the Inception Report for the Project.

3rd year (April 2006 - March 2007)

Table 1.2 (3/3) Yearly PO (Plan of Operation)

Date; Jan, 2006 Ver.1

No.	Work Item	Outputs	Activities	Objectively Verifiable Indicators	Means of Verification	Person in Charge	
						C/P	JICA Experts
3.3.2(1)	Recommendation on Role of New Unit	C/P can prepare the work items of responsibility and yearly work schedule (draft) <Technical Coorporation Output>.	- C/P prepare the work items of responsibility and the yearly work program (draft) by themselves and clarify the significance level of works in MCTPC. - JICA Experts support C/P by making recommendations.	Self-reliance level (100%)	Work items of responsibility and yearly work schedule (draft)	Viengsavanh	Kato
3.3.2(2)	Detail Check of M/P Program Prepared by MCTPC	C/P can prepare an appropriate yearly work plan of M/P.	- C/P prepare the yearly work plan by themselves. - JICA Experts confirm the plan and make recommendations according to need	Self-reliance level (100%)	Yearly work plan of M/P	Viengsavanh	Kato
3.3.2(3)	Recommendations to Next Year Work Program of MCTPC	C/P can prepare a next year work plan	- C/P prepare a next year work plan. - JICA Experts support the preparation of work plan.	Self-reliance level (100%)	Next year work plan	Viengsavanh	Kato
3.3.3(1)	Recommendation on Facility Design	C/P can make detailed design of riverbank protection at: ・Ban Hom site (2) (L=50 m) ・Sithantai site (1) (L=250 m)	- C/P makes the detailed design by themselves - JICA Experts assist review the design by C/P and make advice on it.	Completion degree of report on survey and design drawing exceed 80 %.	Design document prepared by C/P	Viengsavanh Souksavanh Bounleng	Kobayashi
3.3.3(2)	Recommendation on Facility Construction	・Bank protection works at Sithantai will be constructed (L=250m) ・Bank protection works at Ban Hom will be constructed (L=50m)	- C/P execute the construction works by themselves - JICA Experts make the recommendations on the following; Cost estimate/Preparation of bidding documents/Evaluation of tenders/Supervision works/Completion Inspection	Rate of actual construction length to M/P exceeds 60%	-Construction completion report in 2006 -Monthly & weekly reports in 2007	Souksavanh Khamfong	Kameyama
3.3.3(3)	Support for Preparation of Riverbank Protection Glossary	The glossary on riverbank protection work (English-Lao) <Technical Coorporation Output> will be prepared.	- C/P prepare the glossary on riverbank protection work by themselves. - JICA Experts support in preparation of the glossary.	100 copies of the glossary will be distributed.	Hearing from C/P	Souksavanh Bounleng	Watanabe
3.3.3(4)1	Support for Manual Preparation for Maintenance	Maintenance manual <Technical Coorporation Output> will be prepared.	- C/P prepare the maintenance manual by themselves. - JICA Experts support for that	Self-reliance rate for the preparation (100 %)	Maintenance Manual	Souksavanh Khamfong Bounleng	Kameyama
3.3.3(4)2	Support for Manual Preparation for Monitoring	Monitoring manual, monitoring item check list <Technical Cooporation Output> are prepared.	-C/P make the manual and checklist by themselves. -JICA Experts assist C/P's preparation work	Completion degree exceeds 80%	-Monitoring manual -Monitoring check list	Souksavanh Viengsavanh	Kobayashi Kawabata
3.3.3(5)	Recommendation on Monitoring Existing Facilities	Monitoring of existing facilities is executed.	- C/P carries out the monitoring by themselves - JICA Experts advise on the C/P's achievement	Monitoring completion degree attains to 90%	Monitoring report	Khamfong Viengsavanh Bounleng	Kobayashi
3.3.3(6)	Recommendations on Maintenance of Existing Facilities	Effort to improve the setup to maintains the existing riverbank protection facilities is conducted.	- C/P conduct the maintenance works by themselves. - JICA Experts give advices on the following: selection of rehabilitation places /Improvement plan of maintenance organization	-Field workshop for residents participated rehabilitation work: 1time -Completion of maintenance register (100%)	-Budget plan -Result of field workshop -Maintenance register	Souksavanh Khamfong Bounleng	Kameyama
3.3.3(7)	Field Guidance of Soda Technique	Soda related works are constructed at Bam Hom (2) site	- C/P and the contractor execute construction of Soda related works by themselves - JICA Experts conduct field guidance and giving advice	Degree of the executed work exceeds 60%	Yearly check result	Khamfong Bounleng	Ohashi
3.3.4(1)1	Preparation of Seminar and Lecture Materials	C/P can prepare the materials for seminars and lectures <Technical Cooperation Output> by themselves.	- C/P prepare the materials by themselves - JICA Experts provide assistance	Seminar material: 4 Lecture material: 7	Materials for seminars and lectures (MS PowerPoint)	Viengsavanh Souksavanh	Kato
3.3.4(1)2	Laotian Translation of Manual for Riverbank Protection	C/P can prepare Manual for Riverbank Protection (Laotian version) <Technical Cooperation Output> by themselves.	- C/P translate the manual into Laotian. - JICA Experts conduct progress management and provide assistance	Progress rate 100%	Laotian Manual	Souksavanh Bounleng	Watanabe
3.3.4(2)	Lectures at Faculty of Engineering and Architecture, National University of Laos	C/P can give lectures by themselves regulaly at the university for students can teke credit and to be able to disseminate the information/technique on construction method.	- C/P give lectures in the university. - JICA Experts give advice on the contents of lectures.	・Number of lesson ; C/P: 8	・Lecture materials (MS PowerPoint) ・Result of field lecture	Viengsavanh Souksavanh	Kato
3.3.4(3)	Support for Opening Seminars on Construction Method	C/P can plan and manage seminars by themselves	- C/P open seminars and make presentation in charge. - JICA Experts provide assistance on the planning and management and also make presentation.	Seminar: 2	・Seminar materials ・Result of field practice	Viengsavanh Souksavanh	Watanabe Kato Kobayashi
3.3.4(4)	Support for Material Preparation to Enlighten Local Inhabitants	C/P can prepare the material to enlighten local inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly	- C/P prepare and/or distribute the material by themselves. - JICA Experts provide assistance on the preparation.	Self-reliance rate for the preparation (90%)	・Installed explanatory sign at Sibounheuang -Muang Wa site ・PR material ・Contents of project web site	Viengsavanh Souksavanh Bounleng	Watanabe
3.3.4(5)	Assisting Promotion of Residents-participated Simple Vegetation Work	1) C/P can determine the execution site of residents-participated simple vegetation work 2) C/P can execute the work	C/P decides the site and execute the construction with residents participation JICA Experts advice on technical and administrative aspects.	Completion degree of execution at one site to plan exceeds 90%.	Execution result	Souksavanh Khamfong	Kawabata
3.3.5(1)	Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	1) Successive monitoring is executed 2) Monitoring results are arranged and evaluated	- C/P executes the continuation of monitoring work arrangement and evaluation of the result - JICA Experts advise for C/P's achievement, arrangement and evaluation	The degree of coverage to plan exceeds 90%.	Yearly report of monitoring result with evaluation	Souksavanh Khamfong	Kobayashi Kawabata
3.3.5(2)	Report Preparation on Reasonableness of Construction Method selected in M/P	To prepare a report on the reasonableness of construction method selected in M/P.	- C/P cooperate to prepare the report - JICA Experts prepare the report in cooperation with C/P	Degree of preparation by C/P is 60%	Report on reasonableness of construction method selected in M/P	Viengsavanh	Kato

Note) The number described on left-hand column corresponds to the section number of the Inception Report for the Project.

2. PROJECT OUTPUTS

2.1 Achievement of Outputs

2.1.1 Achievement of Project Purpose

It is judged that the Project Purposes are accomplished in general good as the achievement of the Project Purposes at the end of the Project is as follows:

1) Project Purpose 1: "MCTPC will be able to execute the riverbank protection works properly."
   i. C/P can perform a general operating cycle now by themselves mostly about the construction of riverbank protection works using national budget based on the M/P.
   ii. Compared with the 1st year, to the 2nd and 3rd years, the frequency which C/P stay in the construction site and carry out construction supervision decreased, and it came the situation which it may leave to local contractor considerably.
   iii. Although the budget of MCTPC has been tight and operation & maintenance cost was not allocated, the technology of monitoring was also transferred considerably.
2) Project Purpose 2: "The riverbank protection measures which selected in the M/P will be disseminated in Vientiane City and the information on the measures will be disseminated in the local area of Lao PDR."
   i. C/P recognize the usefulness of the introduced technology fundamentally. C/P carried out the seminars for spreading Soda technique in March, 2006 and March, 2007 for provincial DCTPC personnel. C/P can conduct preparation and management of seminar now by themselves mostly through these experiences.
   ii. Not only for the agencies in Lao PDR, JARCOM international seminar for the technical spread for nine trainees of ASEAN countries was held in February, 2007. C/P carried out most portion of the seminar management by them, although JICA side needed to support the trainee's invitation.

2.1.2 Achievement of Outputs

(1) Outputs

It is judged that four Outputs are accomplished in general good as the achievement of the Outputs at the end of the Project is as follows:

1) Output 1: "Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for activities."
   i. The C/P of newly established Riverbank Protection Unit in DOR can perform now by themselves a series of cycles including budget acquisition, design, implementation schedule, bidding, construction supervision, and completion inspection through 3-year experience about the construction of the riverbank protection works based on the M/P.
   ii. However, although extraordinary dispatch of two C/P from DCTPC was obtained, the full-time staff of the new Unit is only three persons of MCTPC substantially, and is insufficient of the numbers of the personnel.
2) Output 2: "MCTPC will be able to construct the riverbank protection facilities based on M/P and the effort to improve maintenance setup will be conducted."
   i. Since the budget has been tight as restrictions on the organization of DOR, MCTPC, investment is concentrated on the construction of new facilities and the budget allocation for the operation and maintenance after construction is in a difficult situation. Operation and maintenance budget allocation and maintenance works were not carried out during the Project.
   ii. Meanwhile, as a realistic measure towards an improvement, about simple repair of the JICA Pilot Riverbank Protection Works by Soda method, C/P held a small workshop for low cost residents-participated type repair only by human power, and verified the effectiveness.
3) Output 3: "Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented."
   i. As for seminar, the same as that in the Project Purpose 2 (above-mentioned Section 2.1.1).
   ii. About the lectures on riverbank protection and general river engineering in the Department of Communication and Transport (DCT), Faculty of Engineering and Architecture, National University of Laos, the lectures for one school year (2005.10-2006.9) by C/P was completed, and the lectures for two school year has been started now. The scholastic evaluation (3 units) by the university lecturer based on the final test prepared by the C/P was also carried out, and the regularization and unit conferment of the lecture which were aimed at were realized.
   iii. C/P's training competency improved greatly through the above-mentioned seminar and lecture experience.
4) Output 4: "Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed."
   i. Since there was no system of monitoring originally, it seems that an understanding of evaluation of the accuracy of monitoring results, feedback, and the utilizing method is still insufficient. However, C/P can do now the monitoring work for checking the effect of JICA Pilot Riverbank Protection Works to some extent by utilizing the equipments supplied

by the Project.

ii. On the other hand, C/P developed new construction method of human power-intensive type at the low cost which does not use heavy equipment, referring the past construction method in Japan. Thus, C/P promoted reexamination and localization of the construction method vigorously. It is epoch-making that C/P especially developed and introduced the construction method which assembles Soda mattress on the river.

iii. It is judged that the construction method introduced by M/P is the appropriate technology for the Mekong River based on the actual condition of Laos.
(refer to "Report on Reasonableness of Construction Method selected in M/P" in Section 9.4 in detail)

(2) Activities

Achievement of outputs of each activity to accomplish the Outputs above-mentioned in (1) is as shown in Figure 2.1. It is judged that in general good result was obtained, since the average achievement degree is 86 %. Outline of the achievement of output of each activity is summarized in Table 2.1.

Activity Items \ Completion Degree of Objectively Verifiable Indicators (%)	%	10	20	30	40	50	60	70	80	90	100
Support for Establishment of New Unit in charge of Riverbank Protection Work											
3.3.2(1) Recommendation on Role of New Unit	50										
3.3.2(2) Detail Check of M/P Program Prepared by MCTPC	100										
3.3.2(3) Recommendations to Next Year Work Program of MCTPC	100										
Support for Design, Construction and Maintenance of Bank Protection Works											
3.3.3(1) Recommendation on Facility Design	85										
3.3.3(2) Recommendation on Facility Construction	100										
3.3.3(3) Support for Preparation of Riverbank Protection Glossary	90										
3.3.3(4)1 Support for Manual Preparation for Maintenance	85										
3.3.3(4)2 Support for Manual Preparation for Monitoring	75										
3.3.3(5) Recommendation on Monitoring Existing Facilities	75										
3.3.3(6) Recommendations on Maintenance of Existing Facilities	90										
3.3.3(7) Field Guidance of Soda Technique	95										
Dissemination of Information and Technique on Construction Method											
3.3.4(1)1 Support for Preparation of Seminar and Lecture Materials	100										
3.3.4(1)2 Laotian Translation of Manual for Riverbank Protection	100										
3.3.4(2) Lectures at Faculty of Engineering and Architecture, National University of Laos	100										
3.3.4(3) Support for Opening Seminars on Construction Method	100										
3.3.4(4) Support for Material Preparation to Enlighten Local Inhabitants	80										
3.3.4(5) Assisting Promotion of Residents-participated Simple Vegetation Work	95										
Monitoring of Construction Method of Riverbank Protection											
3.3.5(1) Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	50										
3.3.5(2) Report Preparation on Reasonableness of Construction Method selected in M/P	50										
Average	**86**										

Note) 1. Left column number correspond to the Chapter & Section number of the Inception Report for the Project.
2. The completion degree is the weighted average of the completion degree of the indicators of 1st, 2nd & 3rd-year.

Figure 2.1 Achievement of Outputs (average in 3-year)

Table 2.1 Achievement of Outputs

Activities	Accomplishment	Level
3.3.2 Establishment of the new organization for riverbank protection projects		
(1) JICA experts make recommendation on mandate of the new permanent organization for riverbank protection in MCTPC.	• JICA expert supported the preparation of the new riverbank protection unit. • JICA expert made recommendations on work items in Vientiane and whole country and on annual work program. • MCTPC made partial amendment of work items of responsibility and annual work schedule, because the PDM of the Project was revised in March 2006.	50%

Table 2.1 Achievement of Outputs

Activities	Accomplishment	Level
(2) MCTPC formulates the annual plan, and JICA experts examine it.	• JICA expert supported the preparation of work plan. • The expert verified the progress of the works by MCTPC and advised about the future activity policy. • MCTPC made work plan and obtained necessary budget for 2004/05; - $100,000 for construction (Sibounheuang- Muang Wa works, 110m) • MCTPC made work plan and obtained necessary budget for 2005/06; - $120,000 for construction (Sibounheuang- Muang Wa works, 120m) - $20,000 for design (Ban Hom and Sithantai areas) • MCTPC made work plan and obtained necessary budget for 2006/07; - $150,000 for construction (Sibounheuang- Muang Wa works, 180m)	100%
(3) JICA experts provide advice and recommendation on annual plan for next year.	• JICA expert supported C/P on preparation of next year plan (2nd year); - To put priority on work items in M/P - To prepare detailed implementation schedule • C/P and JICA expert prepared the next year (3rd year & after the Project) work plan in the same manner.	100%
3.3.3 Design, Construction, Maintenance and Monitoring of Riverbank Protection Facilities		
(1) MCTPC designs the riverbank protection facilities, and JICA experts provide advices.	• C/P made detailed design of riverbank protection work at Sibounheuang - Muang Wa Site (L=210m for 1st year, and L=280 m for 2nd year). • MCTPC entrusted the detailed design of riverbank protection work at Ban Hom (200 m) and Sithantai (260 m). C/P has been supervising the progress. It is now under draft design preparation. • JICA expert gave advices on C/P activities in the fields of the arrangement (alignment) of riverbank facilities, the cross sectional profile, the log hurdle work, the expression on the design drawings, a way of thinking of riverbank slope protection work, the arrangement of SODA mattress, and the treatment of riverbank slope under drainage pipes.	85%
(2) MCTPC constructs the riverbank protection facilities, and JICA experts provide advices. (include preparatory study, cost estimation, drawing and construction supervision)	• C/P executed the construction of bank protection works at Sibounheuang - Muang Wa (L=110m for 1st year, L=120 m for 2nd year and L=180 m for 3rd year) by themselves. • JICA expert gave advices on C/ P in the fields of estimate of construction cost of various works, design report/tender document confirmation, explanation to DCTPC, etc.	100%
(3) MCTPC compile the glossary of riverbank protection term in English-Laotian, and JICA experts provide advices.	• C/P prepared the glossary on riverbank protection work (English - Lao). • JICA experts assisted the C/P's activities in the points of preparation of the format of the glossary, selection of the technical terms concerning riverbank protection, translation of the selected terms into Laotian.	90%

Table 2.1 Achievement of Outputs

Activities	Accomplishment	Level
(4) MCTPC and JICA experts prepare the manual on monitoring methods and check items.	• Preparation of the maintenance manual by C/P is going on. It will be complete by the end of the Project period. • JICA experts assisted the C/P's activities in the manner of objective, scope of monitoring, organization for execution of monitoring, monitoring item, monitoring related to planning and design, preparation of basic information data for execution and evaluation of monitoring result, and taking example figures for expression of monitoring results. • C/P has been making execution plan for preparation of the manual and checklist for vegetation by themselves and started to preparation under the assistance of JICA experts.	80%
(5) MCTPC carries out monitoring survey, and JICA experts provide advices.	• C/P prepared the execution plan on monitoring by themselves. • Monitoring works were carried out periodically under advises of JICA experts. • Annual Monitoring Reports were prepared.	75%
(6) MCTPC make effort to improve the setup to maintains the existing riverbank protection facilities, and JICA experts provide advices.	• General Location Map (A1 size) was prepared. • Riverbank Protection Works Register Book was prepared. • Small scale rehabilitation work by using only manpower of local residents was conducted at JICA pilot work site in June 2006.	90%
(7) MCTPC constructs the riverbank protection facilities on Soda method, and JICA experts provide instruction on Soda method technique.	• Soda related works were constructed at Sibounheuang - Muang Wa site by C/P. • JICA expert conducted field guidance and gave necessary advises to C/P.	95%
3.3.4 Dissemination of Information and Technique		
(1) MCTPC develops materials for seminars and lectures, and JICA experts provide assistance.	• C/P prepared material on riverbank protection works under assistance of JICA expert, using MS PowerPoint as follows: -1 for seminar and 1 for lecture (1st year -1 for seminars and 4 for lectures (2nd year) -4 for seminars and 6 for lecture (5 lectures and final test) (3rd year). • C/P prepared Manual for Riverbank Protection (Laotian version) by themselves.	100%

Table 2.1 Achievement of Outputs

Activities	Accomplishment	Level
(2) MCTPC makes lectures on riverbank protection measures at national university of Laos regularly for students can take credit, and JICA experts provide assistance.	• C/P gave lectures at Faculty of Engineering and Architecture, National University of Laos to be able to disseminate the information and technique on construction method. • In 1st year, Number of lesson: C/P -1 time, JICA Experts - 2 times Number of attendants: More than 50 students at each lecture Degree of understanding: More than 60 % of students understand the lecture generally. • MCTPC, National University of Laos and JICA Expert Team formed agreement concerning the regularization and realization of credit of lectures based on the syllabus of the following composition, and concluded the Memorandum of Understanding on January 19, 2006. • C/P conducted 6 lectures according to the MOU after Jan. 2006. • Nagao Natural Environmental Fund, Japan funded for the lecture activity to accelerate and expand the activity in July 2006. • The University conducted final test using the material prepared by C/P in June 2006 and made evaluation of 53 students, 5-year bachelor for giving 3 credits.	100%
(3) MCTPC conducts practical training and seminars for MCTPC, Vientiane and local DCTPC staff, educational institutions and relating agencies, and JICA experts provide assistance.	• C/P opened seminars and made presentation by themselves under assistance of JICA experts. • In 1st year, an indoor session (C/P joined the MCTPC seminar for the introduction of MCTPC projects to 17 students from National University of Laos) was conducted. • In 2nd year, one seminar and one session were conducted as follows. - Seminar for spreading information on riverbank protection technique to local provinces composed of 1) Indoor presentation at MCTPC, 2) Workshop at MCTPC construction site and 3) Site visit to JICA pilot riverbank protection works in March 2006 <around 60 participants from provincial DCTPC, MCTPC, LNMC, ADB, National University of Laos> - Outdoor session of demonstration for residents-participated simple vegetation work (Nongheo site) in February 2006 <more than 200 participants from relating agencies, local residents, National University of Laos, UNDP> • In 3rd year, two seminars were conducted as follows - C/P made presentation at UNDP seminar in Bokeo as invited lecturer in May 2006 - JARCOM international seminar to spread information on riverbank protection technique in ASEAN countries in February 2007 - Seminar for spreading information on riverbank protection technique to local provinces (same as that in 2nd year) in March 2007	100%

Table 2.1 Achievement of Outputs

Activities	Accomplishment	Level
(4) MCTPC creates materials on riverbank protection to enlighten the inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly, and JICA experts provide assistance.	• C/P prepared materials to enlighten local inhabitants and tried to prepare the material for JICA Website to practice public relations (PR) of the Project regularly. • The Project made a calendar with catch-phrase for environmental conservation and pictures of the Project's activities, as a PR material.	80%
(5) MCTPC disseminates the simple vegetation riverbank protection works with residents participation, and JICA experts provide assistance.	• C/P determined the execution site of residents-participated simple vegetation work, selected the suitable method of simple vegetation work and execute the work under assistance of JICA expert.	95%
3.3.5 Monitoring on Coping Measures to Erosion		
1) MCTPC and JICA experts carry out the monitoring survey on pilot works and verify the effectiveness of coping measures to erosion which selected by M/P.	• C/P made execution plan of continuous monitoring survey on the pilot riverbank protection work. • C/P understood necessity of monitoring work. • Evaluation of the monitoring results is not satisfied yet.	50%
2) MCTPC and JICA experts compile the report on effectiveness of coping measures to erosion.	• The report was prepared at the end of the Project period.	50%

Note)

1. Activity: Left column number correspond to the Chapter & Section number of the Inception Report for the Project.
2. Level: The level is the weighted average of the completion degree of the indicators of 1st, 2nd & 3rd-year.

2.2 Technical Cooperation Outputs

The C/P have prepared the Technical Cooperation Outputs with the support of the Expert Team as the outputs of the Project in the form of the following separate volumes of this report. However, the biggest outputs is virtually the M/P Sibounheuang - Muang Wa riverbank protection works (L= 410 m) constructed by MCTPC during the Project period for 3 years using national budget of US$370,000.

0) Design Report and Tender
   I. M/P Sibounheuang - Muang Wa Riverbank Protection Works (Design Report and Tender)
   II. M/P Ban Hom and Sithantai Riverbank Protection Works (Draft Drawings)
1) New Permanent Organization for Riverbank Protection /Affairs in charge・Draft of annual schedule
2) Glossary of Riverbank Protection (English-Laotian)

3) Operation and Maintenance Manual for Riverbank Protection
   I. Operation and Maintenance Manual for Riverbank Protection (English)
   II. Riverbank Protection Works Register Book (English)
4) Monitoring Manual for Riverbank Protection (English)
5) Materials for Seminars or Lectures
   I. Materials for Seminars
   II. Materials for Lectures
6) Manual for Riverbank Protection (Laotian translation)
7) Materials on Riverbank Protection to Enlighten Local Inhabitants
8) Monitoring Report on Riverbank Protection selected by the M/P of the JICA Study

3. ACTUAL IMPLEMENTATION SCHEDULE OF ACTIVITY

The actual implementation schedule of the Project activities is as shown in Table 3.1.

Table 3.1 Actual Implementation Schedule of Activity

Activities	2005				2006				07
	I	II	III	IV	I	II	III	IV	I
(1) Establishment of the new organization for riverbank protection projects									
1) JICA experts make recommendation on mandate of the new permanent organization for riverbank protection in MCTPC.	** ==	* =			* * = =	* =		* =	* * = =
2) MCTPC formulates the annual plan, and JICA experts examine it.	* * = =	* --=	---	-	* * = =	* =		* =	* * = =
3) JICA experts provide advice and recommendation on annual plan for next year.	* =	* =			* * = =	* =		* =	* * = =
(2) Design, Construction, Maintenance and Monitoring of Riverbank Protection Facilities									
1) MCTPC designs the riverbank protection facilities, and JICA experts provide advices.	** ==	* --=	---	* -=-	* -=	---	---	* -=-	* =
2) MCTPC constructs the riverbank protection facilities, and JICA experts provide advices. (include preparatory study, cost estimation, drawing and construction supervision)	** ==	* --=	* =	* =	** -==	* --		-	*** ===
3) MCTPC compile the glossary of riverbank protection term in English-Laotian, and JICA experts provide advices.	** ==	---	* =	---	* --=				* =
4) MCTPC and JICA experts prepare the manual on monitoring methods and check items.	*** ===	* =	* =	** ==	** ==	* =		* =	** ==
5) MCTPC carries out monitoring survey, and JICA experts provide advices.	* =	* --=	---	* -=-	** -==	---	---	---	** ==-
6) MCTPC make effort to improve the setup to maintains the existing riverbank protection facilities, and JICA experts provide advices.	** ==	* --=	* =--	* --=	** -==	* =			* =
7) MCTPC constructs the riverbank protection facilities on Soda method, and JICA experts provide instruction on Soda method technique.	* =	--			* =	--		-	* -=-
(3) Dissemination of Information and Technique									
1) MCTPC develops materials for seminars and lectures, and JICA experts provide assistance.	** ==	* -=	* -=-	* =--	* * =-=	* =			* * = =
2) MCTPC makes lectures on riverbank protection measures at national university of Laos regularly for students can take credit, and JICA experts provide assistance.	*** ===	* -=			* * = =	* ==			* * = =
3) MCTPC conducts practical training and seminars for MCTPC, Vientiane and local DCTPC staff, educational institutions and relating agencies, and JICA experts provide assistance.	** ==				** ==	-			** ==
4) MCTPC creates materials on riverbank protection to enlighten the inhabitants and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly, and JICA experts provide assistance.	** ==				* =				* =
5) MCTPC disseminates the simple vegetation riverbank protection works with residents participation, and JICA experts provide assistance.	* =				* =				** ==
(4) Monitoring on Coping Measures to Erosion									
1) MCTPC and JICA experts carry out the monitoring survey on pilot works and verify the effectiveness of coping measures to erosion which selected by M/P.	* =-	---	---	---	* -=-	** ==-	---	---	** ==
2) MCTPC and JICA experts compile the report on effectiveness of coping measures to erosion.									* =

Note: *** means a schedule on activity by Japanese experts.
=== means an activity made by the experts and C/P, and --- means an activity mainly made by the C/P.

4. ACTUAL INPUTS

4.1 Actual Inputs from Japanese Side

4.1.1 Dispatch of Short-term JICA Expert Team

JICA Short-term Expert team consists of the following six (6) members is dispatched to assist technically the Project activities conducted by the C/P. Actual assignment schedule of the Expert Team is as shown in Figure 4.1 and Table 4.1.

1) Chief Advisor/ Capacity Building
2) Co-Chief Advisor/ Experts on Facility Design/ Monitoring Support
3) Experts on Construction Supervision and Maintenance Support
4) Experts on Soda Technique
5) Experts of Vegetation Work/ Monitoring Support
6) Capacity Building 2/ JARCOM Seminar Support/ Coordinator

4.1.2 Counterpart Training in Japan

One C/P, Mr. Souksavanh Thithavong (Riverbank Protection Unit of DOR, MCTPC) has participated in the training in Japan, "Group Training Course "River and Dam III" for 3.5 months (2005.08.09 - 11.26) in the 2nd year of the Project. After the training, he has developed the teaching materials on general river engineering including riverbank protection making full use of the training results and made lectures at the National University of Laos by himself.

The scheduled dispatch of chief C/P, Mr. Viengsavanh Phasavath (Riverbank Protection Unit of DOR, MCTPC) to the same course in the 3rd year was canceled due to the reason of MCTPC side.

Assignment	Name	FY2004	FY2005												FY2006												Total Days	Assigned MM
			2005												2006												2007		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3		
Chief Advisor / Capacity Building	Mr. Yasuhiko Kato	30	30				10				10			25		27		14					13	7		21		25	212	6.37
Co-Chief Advisor/ Experts on Facility Design/ Monitoring Support	Dr. Rokuro Kobayashi	45					10					10		25										12			20		122	4.07
Experts on Construction Supervision and Maintenance Support	Mr. Tsutomu Kameyama	31	21					18					15			18			17								8	17	148	4.90
Experts on Soda Technique	Mr. Shingo Ohashi		21													21											26		68	2.10
Experts on Vegetation Work / Monitoring Support	Ms. Ikuko Kawabata		21													14		20								15	9		79	2.03
Capacity Building 2/ JARCOM Seminar Support/ Coordinator	Mr. Hiroki Watanabe	60								10						30											15	27	142	0.50
REPORTS	Time of submittal △ (Name of Report)	IC/R		△ P/R(1)												△ P/R(2)												△ F/R	771	19.97

Figure 4.1 Assignment Schedule of JICA Expert Team

Table 4.1 Assignment Schedule of JICA Expert Team (Actual)

Field	Name	Period	Remarks
Chief Advisor/ Capacity Building	KATO Yasuhiko	Jan. - Feb. 2005 (30 days) Feb. - Mar. 2005 (30 days) June 2005 (10 days) Oct. 2005 (10 days) Jan. 2006 (25 days) Feb. - Mar. 2006 (27 days) May 2006 (14 days) Oct. 2006 (13 days) Nov. 2006 (7 days) Jan. 2007 (21 days) Mar. 2007 (25 days)	 (own expense: 14 days) (own expense: 7 days)
Co-chief Advisor/ Expert on Facility Design/ Monitoring Support	KOBAYASHI Rokuro	Jan. - Feb. 2005 (45 days) June 2005 (10 days) Nov. 2005 (10 days) Jan. - Feb. 2006 (25 days) Nov. 2006 (12 days) Feb. 2007 (20 days)	
Expert on Construction Supervision and Maintenance Support	KAMEYAMA Tsutomu	Jan. - Feb. 2005 (26 days) Mar. 2005 (26 days) June - July 2005 (18 days) Dec. 2005 (15 days) Feb. - Mar. 2006 (18 days) June 2006 (24 days) Feb. 2007 (8 days) Mar. 2007 (17 days)	 (own expense: 1 days)
Expert on Soda Technique	OHASHI Shingo	Feb. - Mar. 2005 (21 days) Mar. 2006 (21 days) Feb. 2007 (26 days)	 (own expense: 5 days)
Expert on Vegetation Work/ Monitoring Support	KAWABATA Ikuko	Jan. Feb. 2005 (21 days) Feb. 2006 (14 days) Apr. - May 2006 (20 days) Jan. 2007 (15 days) Feb. 2007 (9 days)	 (own expense: 11 days) (own expense: 9 days)
Capacity Building 2/ JARCOM Seminar Support /Coordinator	WATANABE Hiroki	Jan. - Mar. 2005 (60 days) Sept. 2005 (10 days) Feb. - Mar. 2006 (30 days) Jan. - Feb. 2007 (15 days) Feb. - Mar. 2007 (27 days)	 (own expense: 2 days)

4.1.3 Provision of Equipment

The equipments shown in Table 4.2 were provided to GOL (MCTPC and DCTPC) in order to promote voluntary Project activity of the C/P.

Table 4.2 List of Equipment Provided

Name	Quantity	Year	Procured	Condition	Usage
1) River Survey Equipment - MCTPC					
Eco-Sounder	1	2004/05	Japan	Good	Monitoring
Stuff Gauge (L=1m)	50	2004/05	Japan	Good	Monitoring
Rubber Boat	1	2004/05	Japan	Good	Monitoring
Outboard Motor for Rubber Boat (6PS)	1	2004/05	Japan	Good	Monitoring
Theodolite	1	2004/05	Laos	Good	Monitoring
Level	1	2004/05	Laos	Good	Monitoring
Transceiver	2	2004/05	Laos	Good	Monitoring
Sextant	1	2004/05	Laos	Good	Monitoring
Laser Rangefinder	2	2004/05	Japan	Good	Monitoring
Life Jacket	10	2004/05	Laos	Good	Monitoring
Wave Current Meter, ADCP (Ultrasonic Doppler Method)	1	2005/06	Japan	Good	Monitoring
2) Soda Technique Equipment - MCTPC					
Ya	4	2004/05	Japan	Good	Construction
Kakeya	4	2004/05	Japan	Good	Construction
Measuring Wire	2	2004/05	Japan	Good	Construction
Other Tools	1	2004/05	Japan	Good	Construction
3) Office Automation Equipment - MCTPC					
Desktop Computer	2	2004/05	Laos	Good	Office Work
Notebook Computer	1	2004/05	Laos	Good	Office Work
Laser Printer	1	2004/05	Laos	Good	Office Work
Ink-Jet Color Printer	2	2004/05	Laos	Good	Office Work
Copy Machine	1	2004/05	Laos	Good	Office Work
Facsimile Machine	1	2004/05	Laos	Good	Office Work
Multimedia Projector	1	2004/05	Laos	Good	Presentation
Projector Screen	1	2004/05	Laos	Good	Presentation
Digital Video Camera	1	2004/05	Laos	Good	Monitoring
Digital Camera	2	2004/05	Laos	Good	Monitoring
Portable GPS	2	2004/05	Laos	Good	Monitoring
USB Memory	2	2004/05	Laos	Good	Office Work
AutoCAD LT	1	2004/05	Laos	Good	Office Work
Uninterruptible Power Supply (UPS)	2	2004/05	Laos	Good	Office Work
Scanner	1	2005/06	Laos	Good	Office Work

Name	Quantity	Year	Procured	Condition	Usage
4) Office Automation Equipment - DCTPC					
Desktop Computer	1	2005/06	Laos	Good	Office Work
Ink-Jet Color Printer	1	2005/06	Laos	Good	Office Work
Digital Camera	1	2005/06	Laos	Good	Monitoring
Scanner	1	2005/06	Laos	Good	Office Work
Uninterruptible Power Supply (UPS)	1	2005/06	Laos	Good	Office Work

4.1.4 Operational Expense in Lao PDR

Total amount of operational expense required to conduct all Project activities in Laos is as shown in Table 4.3.

Table 4.3 Operational Expense in Lao PDR

Expense item	Breakdown	1st year	2nd year	3rd year (Expectancy	Total
Genaral affairs	Employment	¥116,314	¥439,155	¥23,294	¥578,763
	Consumable	¥25,375	¥27,233	¥27,952	¥80,560
	Transportation	¥0	¥303,729	¥23,290	¥327,019
	Material	¥114,199	¥138,027	¥1,118,599	¥1,370,825
	Car Rent	¥457,024	¥592,442	¥770,929	¥1,820,395
	Traning	¥0	¥0	¥349,410	¥349,410
Equipment Perchase	Perchase	¥6,177,200	¥3,421,000	¥0	¥9,598,200
	Transport	¥798,000	¥95,000	¥0	¥893,000
Total		¥7,688,112	¥5,016,586	¥2,313,474	¥15,018,172

Own expense by Expert Team for running cost of office, consumable fee for Experts and communication charge is not included in the amount mentioned above.

4.2 Actual Input from Lao Side

4.2.1 Organization Setup and Facilities

Based on the proposal in the M/P, a new unit, "Riverbank Protection Unit" (the Unit) was newly established in DOR, MCTPC (the counterpart agency) in January 2005. Tha organization chart of DOR, MCTPC is as shown in Figure 4.2 and the official announcement on the establishment of the Unit is as shown in Appendix 1. The Unit is due to take charge of the riverbank protection of not only around Vientiane Capital but the Laos whole country.

MCTPC has prepared the Unit office using the previous JICA Study office in DOR as it is. The C/P has conducted the Project activities in collaboration with the Expert Team in the Unit office.

4.2.2 Counterpart Personnel

Based on the proposal in the M/P, MCTPC organized the Unit staff as shown in Table 4.4. They have conducted the Project activities as the C/P in collaboration with the Expert Team for 3 years.

表 4.4 Assigned C/P for the Project (the Unit Staff)

Field	Name	Organization	Period	Remarks
Chief	Mr. Viengsavanh Phasavath	DOR, MCTPC	Jan. 2005 – Mar. 2007	Permanent C/P of M/P Study
Senior Staff	Mr. Souksavanh Thithavong	DOR, MCTPC	Jan. 2005 - Mar. 2007	Permanent
Senior Staff	Mr. Khamfong Souvannavong	DOR, MCTPC	Jan. 2005 - Mar. 2007	Permanent C/P of M/P Study
Junior Staff	Mr. Bounleng	DCTPC, Vientiane	Jan. 2005 - Nov. 2006	Part-time
Junior Staff	Mr. Phonesay Souliyavong	DCTPC, Vientiane	Jan. 2005 - Mar. 2005	Part-time in 1st year

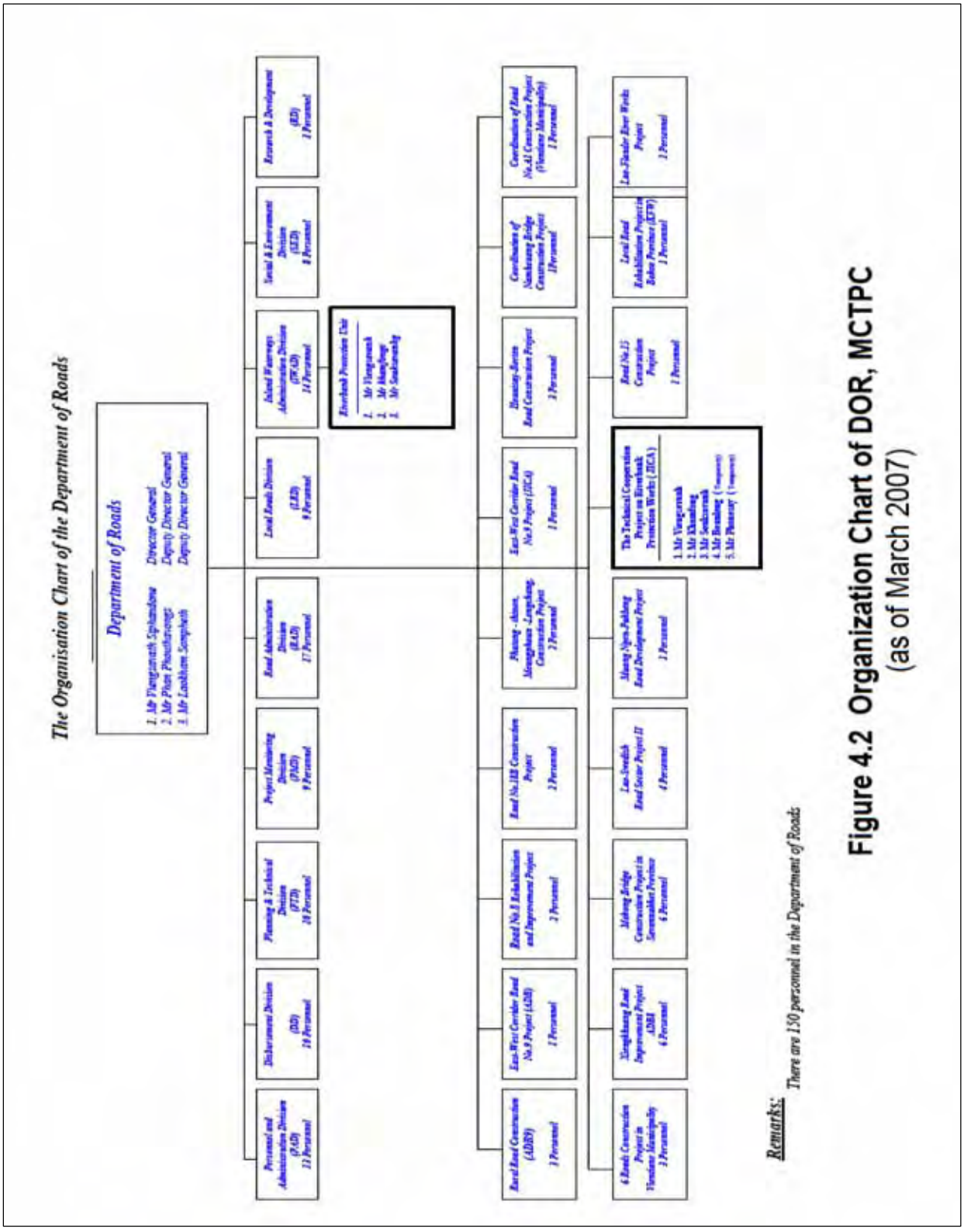


Figure 4.2 Organization Chart of DOR, MCTPC
(as of March 2007)

4.2.3 Budget Allocation

Based on the M/P, MCTPC has secured the national budget for 3 years and implemented the following M/P projects as the biggest activity of the Project. The accomplished M/P projects technically supported by the Expert Team and the actual budget secured are as shown in Table 4.5.

1) Sibounheuang - Muang Wa Riverbank Protection Works (L=410 m) <design & construction>
(MCTPC has directly implemented for 3 years by entrusting the construction to local contractor and to be completed by the end of March 2007)

2) Ban Hom (1) (2) (L=810 m in total) and Sithantai (1) (L=1280 m) <survey & design>
(MCTPC has entrusted the design work to DCTPC in December 2005. The design work is under draft stage in March 2007)

Table 4.5 M/P Projects supported by the Project (Achievement)

Fiscal Year	Secured Budget (US$1,000)	Name of the M/P Riverbank Protection Projects	Length of Construction (m)
1st Year (2004/2005)	100	Sibounheuang - Muang Wa (design & construction)	110
2nd Year (2005/2006)	120	Sibounheuang - Muang Wa (continuation of construction)	120
	20	Ban Hom (1)&(2) and Sithantai (1) (survey & design)	
3rd Year (2006/2007)	150	Sibounheuang - Muang Wa (continuation of construction)	180
Total	**390**		**410**

The M/P projects supported by the project are initially scheduled as shown in Table 4.6. The actual secured budget is around 70 % of the initial investment plan of the M/P. The rehabilitation cost for existing bank protection works and operation cost of the Unit could not be allocated.

However, under budgetary restraint, MCTPC has continued investment of national budget steadily, and actually promoted the M/P projects. The accomplishment record can be evaluated highly.

Table 4.6 M/P Projects supported by the Project (Initial Plan)

Fiscal Year	Budgeting Plan (Investment Plan) (US$1,000)	Name of the M/P Projects	Length of Construction (m)
1st Year (2004/2005)	235 (160)	1. Sibounheuang - Muang Wa <connecting to JICA Pilot Work at Sibounheuang using the same work type with the Work>	200
2nd Year (2005/2006)	249 (210)	1. Sibounheuang - Muang Wa 2. Bo O <technically assisted by GOB and to be executed by national budget> Total	210 60 270
3rd Year (2006/2007)	265 (184)	1. Sithantai (1) <Riprap groyne work> 2. Ban Hom (2) <similar work type with JICA Pilot Work at Ban Dongphosi> 3. Bo O Total	250 50 70 370
Total	749 (554)		840

5. ISSUES, IDEAS AND LESSONS LEARNED ON PROJECT IMPLEMENTATION

It is judged that the Project Purposes and Outputs are accomplished in general good at the end of the Project as mentioned in Chapter 2. Meanwhile, the issues, ideas and lessons learned on the Project implementation are summarized as follows.

5.1 Issues, Ideas and Lessons Learned

(1) Technical Level

1) Issues: (refer to Section 5.2 in detail)
   i. MCTPC achieved the technical standard to be able to conduct the M/P construction method by themselves through the experience of the construction of the M/P Sibounheuang - Muang Wa riverbank protection works using national budget for three years. However, it seems necessary to gain experiences to conduct the M/P Ban Hom and Sithantai riverbank protection works by C/P based on the M/P preliminary study, where the river condition is different from that in Sibounheuang (especially riprap groin works requires try and error).
   ii. Progress of the M/P design of Ban Hom and Sithantai riverbank protection works which MCTPC entrusted to DCTPC in February, 2006 is unsatisfactory. At the beginning, the design was due to be completed in June, 2006. However, as of March, 2007, although the survey has been completed, design is draft stage and is not completed as a design documents. As a result, the construction work at these two sites has not yet been conducted, which was initially scheduled to be executed in 3rd year.
2) Ideas and lessons learned:
   i. In the difficult condition mentioned above, the Expert has given technical advice on the design directly to the person in charge in DCTPC and tried to make them understood the concept of the M/P construction method selected. However, their understanding and cooperation has still been insufficient.

(2) Development of Successor

1) Issues:
   i. The number of MCTPC staff working in the Riverbank Protection Unit as the C/P for the Project was only three personnel because of the lack of the human resources in DOR, MCTPC. DCTPC Vientiane dispatched two personnel to the Unit as the C/P (one of them was only for 1st year), however, they are temporary staff during the Project period. Thus,

human resources layer for riverbank protection is still very thin. Therefore, it is crucial issue to develop young successors from the viewpoint of the project sustainability.

2) Ideas and lessons learned:

i. The Expert in charge has focused his efforts on conducting educational activity to continue and expand the lectures on riverbank protection in the Department of Communication and Transport (DCT), the Faculty of Engineering and Architecture, the National University of Laos in order to increase the student who think that he was interested in the riverbank protection and would like to be engaged in such work in MCTPC in the future.

ii. Therefore, initial proposed activity was only to conduct the lectures irregularly; however, the regularization of the lectures was realized as a formal subject for three credits receiving a great deal of cooperation from DCT. (The corresponding description of PDM was revised according to the strengthening of the educational activity as described in Chapter 6.)

(3) Dissemination of M/P Construction Method in Provincial Level

1) Issues:

i. In Vientiane Capital, the dissemination of the M/P construction method was accomplished to some extent as there was the achievement of the construction by MCTPC. However, in provincial level, it was judged that the dissemination of the method in real meaning (=construction) could not be accomplished, although there was some dissemination and acknowledgement of the knowledge on the method thorough the seminar activity conducted by the Project period. Provincial DCTPC staff remain in the stage to getting to know the method through participating in the seminars and accordingly construction only by provincial DCTPC is difficult.

2) Ideas and lessons learned:

i. The human resources development activities by seminars were strengthened for the purpose of the construction in provinces in the future. Specifically, the practical Soda method dissemination seminars for district DCTPC personnel were held twice in Vientiane during the Project period. (PDM was revised as described in Chapter 6 according to the change in activity.)

(4) Acquisition of Operation and Maintenance Cost

1) Issues:

i. Operation and maintenance cost (including monitoring cost):

Since the budget of MCTPC had been tight, investment concentrated only on the

construction of new riverbank protection works and the budget to the Unit to maintain the existing works including monitoring has not been allocated during the Project period.

ii. Running cost for the new Unit:

Allocation of the budget of MCTPC to the running cost of new Unit (fuel, stationery, communication, equipments maintenance, seminar holding expenses) other than construction cost and personnel expenses was not made like the above.

2) Ideas and lessons learned:

i. Operation and maintenance cost (including monitoring cost):

① Monitoring:

The Expert tried for C/P to recognize the importance of the monitoring including vegetation to some extent through technical guidance. The Expert also tried for C/P to conduct monitoring activities to some extent utilizing the equipment provided by the Project.

② Maintenance of existing works:

Instead of the rehabilitation works by MCTPC budget, importance was moved to the activity on residents-participated small-scale rehabilitation work. As a realistic measure towards an improvement, about simple repair of the JICA Pilot Riverbank Protection Works by Soda method, C/P held a small workshop for low cost residents-participated type repair only by human power, and verified the effectiveness. (PDM was revised as described in Chapter 6 according to the change in activity.)

ii. Running cost for the new Unit:

MCTPC could not secure the invitation expenses of provincial DCTPC participants to Soda technical dissemination seminars on the organization regulation, but the Japanese side paid cost instead like other running costs of the Unit.

(5) Issues on Input

1) Issues:

i. There were few dispatch periods of six Short-term Experts with 25 months in total during three years (27 months) of the Project. For this reason, the dispatch has became a short period each time, and there was some difficulty in progressing the activity and communication between C/P and Expert.

2) Ideas and lessons learned:

i. While not being in Vientiane, the Experts have communicated with C/P by E-mail, and tried to advance activity. However, the efficiency of indirect communication was neither so good nor easy, and the Expert and C/P have recognized the importance of conducting the Project

activity jointly in Vientiane.

5.2 Issues Expected the Measure by Laotian Side

The issues expected for Laotian side to tackle continuously from now on were summarized for the following for the improvement in sustainability concerning the M/P project implementation after the end of the Project.

5.2.1 Upgrading of Riverbank Protection Unit

Now, MCTPC is advancing the organization reorganization. Present Inland Waterway Division (IWD) is to be raised to the status of a department and Riverbank Protection Unit belongs to IWD is also due to be raised to the status of a division in DOR.

After the end of the Project, it is desired that the Unit to be raised to a division at an early stage, to secure continuously not only construction and personnel costs but administrative and maintenance cost (organizational operation expense also be included), and to promote further the M/P projects implementation and dissemination of construction method to provinces.
Furthermore, the Unit is wanted to apply the construction method to other fields like road, and to play a role of a Soda technique center in the future.

In addition, it is important for the Unit to maintain a set of equipments provided by the Project succeedingly even after the promotion so that it may not interfere with activity by loss and breakage.

5.2.2 Strengthening of Cooperation between MCTPC and DCTPC

As stated in 5.1 (1), the progress of the design of the M/P Ban Hom and the Sithantai riverbank protection works is unsatisfactory, which MCTPC entrusted to DCTPC in February 2006. As of March 2007, the design is still draft stage and is not completed as design documents. Moreover, after the completion of the design, although DCTPC is due to take charge also of the construction of both works, the construction budget and execution scheme are not clear.

Thus, in the implementation of the M/P projects, the cooperation of MCTPC and DCTPC is not so smooth. From now on, it will be necessary to build a system which strengthens both cooperation and by which steady implementation of the M/P is guaranteed.

5.2.3 Continuation of Cooperative Activity with National University of Laos

It is necessary to develop young human resources further in MCTPC for the M/P project continuation and deployment. Furthermore, in order to undertake the project in local provinces, it is necessary to raise human resources also in local DCTPC.

The MOU on the regularization of C/P lectures as a formal subject (refer to Appendix 4) was exchanged between DOR of MCTPC, DCT of National University of Laos and JICA Expert Team on January 19, 2006. Based on the MOU, C/P have continued to develop the teaching materials and to make lectures, and the regularization was realized finally as a formal subject receiving a great deal of cooperation from DCT.

After the end of the Project, it is very important for C/P to continue the lectures based on the MOU in cooperation with the University from a viewpoint of human resources development of young next generation on the future riverbank protection in MCTPC.

5.3 Lessons Learned applicable to Other Projects

(1) Effectiveness of Coordination between JICA Projects

It is judged that that the Project (2005.1-2007.3) was succeedingly carried out immediately by the development study "The Study on Mekong Riverbank Protection around Vientiane Municipality (2001.12-2004.12)" had high validity in the following viewpoints, and it led to heightening the synergistic effect during both projects.

1) Speedy implementation of the M/P projects:
   MCTPC conducted the M/P projects immediately using national budget taking advantage of the experience of the Pilot Work construction and the M/P formulation in the Study.
2) Sustainable technology transfer:
   The result of the technology transfer achieved by the Study was able to be continued in the Project, since some C/P of the Project was the same as that in the Study.

(2) Importance of Reasonableness of Selected Technology

It is judged that the construction method introduced by the M/P is the appropriate technology for the Mekong River based on the actual condition of Laos. (refer to "Report on Reasonableness of

Construction Method selected in M/P" in Section 9.4 in detail)

1) Erosion-proof: (The most important function expected from riverbank protection works)
2) Cost and ease of construction (compared with conventional method)
3) Construction able to be conducted by local contractor
4) Localization of construction method
5) Job creation by labor concentration construction type
6) Ease of operation and maintenance
7) Positive impact to environment
   i. Natural environment (creation of favorable waterfront environment)
   ii. Social environment (construction without resettlement)
8) Application and deployment
   i. Actual result of M/P method adoption in Japanese grant aid project in Vientiane (2007)
   ii. Possibility of adoption to road slope protection

It is judged that the appearance of the following positive impact beyond a part of category of the Project shows the importance of selecting the appropriate technology adapted to the actual condition of project site.

1) Adoption of the M/P construction method by Japanese Grant Aid Project in Vientiane (2007):
   Soda mattress method has been formally adopted for a part of the riverbank protection works along the Mekong River to protect the water intake facility constructed by Japanese grants aid project, "The project for the Vientiane water supply development", and a local subcontractor (same company for M/P Sibounheuang - Muang Wa works) is constructing the mattress now.
2) Enhancement in presence of C/P lectures in the National University of Laos:
   Besides the realization of C/P lecture as a formal subject described in section 5.2.3, although DCT of the University has chosen the road projects of MCTPC as a practical training course for the last grade students until now, the University comes to ask for the training in the riverbank protection unit every year, and C/P has received the student positively in recent years according to the request.
3) Advice to the riverbank protection by various sectors:
   As the Unit has a high name-recognition rate now, many questions and consultations about the riverbank protection measures come to be brought from many sectors such as Laos organs concerned, other donors, NGOs, local citizen, and private companies, and the Unit corresponds to these earnestly as a window of technical consultation. Based on the technical consultation, there is a track record that the private sector had already constructed riverbank protection works by their own expense, for example, the wooden pile groin works by comparatively rich citizen and

the riprap groin works by Don Chan Palace hotel.

4) Lecture by C/P in other donor sponsorship seminars:

At the UNDP sponsorship seminar in Bokeo Province in May 2006, C/P conducted the presentation with technical demonstration about “Residents-participated simple vegetation works” as an invited lecturer at the site, and the presentation was well-received. In addition, not only the target Laotian side residents but many Thailand side residents of the Mekong opposite bank which showed interest to technology participated in the seminar independently.

5) Environmental aspect:

i. Natural environment:

The Pilot Works which has passed four (4) years from the completion got used with the surrounding scene by deposition of sedimentation, advance of luxuriant growth of vegetation, and changed into a desirable state almost like a natural riverbank. Therefore, it is in the state where the trace of construction is hardly known now. Installed Soda mattress serves as a habitat of fish and the local resident's fish catch is increasing. Thus, the mattress contributes not only to the measure against bank erosion but to good waterfront environmental creation.

ii. Social environment:

By a construction method selected in the M/P, it is absolutely none to generate involuntary resettlement in construction. Since local resident is welcoming riverbank protection construction in principle, trouble has not occurred on land problem between MCTPC and residents when constructing. Moreover, for the human power concentration type construction method, also in the material procured place besides the worker of the construction site, extraordinary employment of local resident was produced mostly and has led also to job creation.

6. REVISION OF PDM

In 2nd year of the Project, the C/P and the Expert Team has reviewed the initial PDM (Ver. 0) formulated in January 2005 taking into account the following items.

1) Completion degree of the indicators for each activities
2) Addition of new activity items newly needed through the activity up to the 2nd year
3) Restrictions of activities by external preconditions

As a result, the revised PDM (Ver. 1) was formulated in January 2006 because of the reasons as shown in Table 6.1. The initial PDM (Ver. 0) and revised PDM (Ver. 1) are shown in Table 6.2 and 6.3, respectively.

Table 6.1 Main Points on PDM Revision

PDM Ver. 0	PDM Ver. 1	Reason of Revision	Measures
Project Purpose			
The riverbank protection measures which selected in the M/P will be disseminated in the Lao PDR	The riverbank protection measures which selected in the M/P will be disseminated *in Vientiane City and the information on the measures will be disseminated in the local area of Lao PDR*	**Vientiane**: The dissemination (=construction) has already been started based on the M/P and will be achieved by the end of the Project, March 2007. **Local area**: It is virtually difficult to disseminate (=construct) in local provinces by March 2007, the seminars to spread information for the provinces has been started from 2nd year, though.	To strengthen human development related activities such as seminars and training for local provinces
Outputs			
MCTPC will be able to construct and maintain the riverbank protection facilities based on M/P.	MCTPC will be able to *construct* the riverbank protection facilities based on M/P *and the effort to improve maintenance setup will be conducted.*	Because of MCTPC's budgetary restraint, rehabilitation cost for existing bank protection work cannot be allocated.	To consider residents-participated small-scale rehabilitation work for the time being.

Table 6.1 Initial PDM of the Project (Project period: Jan. 2005 - Mar. 2007)

Date of Creation;Jan, 2005 **Ver0**

	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal	Riverbank erosion of Mekong River around Vientiane Capital will be mitigated through execution of riverbank protection works under the Riverbank Protection Mater Plan (M/P) formulated in the Study on Mekong Riverbank Protection around Vientiane Municipality in the Lao P.D.R.	Mitigation rate on damage of riverbank erosion	Monitoring report on riverbank erosion	
Project Purpose	・MCTPC will be able to execute the riverbank protection works continuously and properly. ・The riverbank protection measures which selected in the M/P will be disseminated in the Lao P.D.R.	・Number of riverbank protection facilities constructed in accordance with the M/P. ・Capacity of MCTPC to construct and maintain riverbank protection facilities. ・Result of evaluation on effectiveness of coping measures to riverbank erosion which selected in the M/P. ・Dissemination degree of coping measures to riverbank erosion which selected in M/P.	1.List of riverbank protection facilities 2.Prograss report 3.Monitoring report 4.Final report	Riverbank protection works will be implemented until 2020 in accordance with the M/P.
Outputs	・Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for sustainable activities. ・MCTPC will be able to construct and maintain the riverbank protection facilities based on M/P. ・Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented. ・Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.	・Annual plan of riverbank protection works formulated by MCTPC, mandate of the new permanent organization. ・Condition of facilities constructed and maintained by MCTPC. ・Number of seminars or lectures conducted by MCTPC. ・Result of monitoring on riverbank protection facilities.	1.Annual plan 2.Progress report 3.Seminars report 4.Final report	The mandate of the new organization for riverbank protection project will be defined in the regulation of Department of Roads, MCTPC.
Activities	**1.Establishment of the new organization for riverbank protection projects** -JICA experts make recommendation on mandate of the new permanent organization for riverbank protection in MCTPC. -MCTPC formulates the annual plan, and JICA experts examine it. -JICA experts provide advice and recommendation on annual plan for next year. **2.Design, Construction, Maintenance and Monitoring of Riverbank Protection Facilities** -MCTPC designs the riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities, and JICA experts provide advices. (include preparatory study, cost estimation, drawing and construction supervision) -MCTPC compile the glossary of riverbank protection term in English-Laotian, and JICA experts provide advices. -MCTPC and JICA experts prepare the manual on monitoring methods and check items. -MCTPC carries out monitoring survey, and JICA experts provide advices. -MCTPC maintains the existing riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities on Soda method, and JICA experts provide instruction on Soda method technique. **3.Dissemination of Information and Technique** -MCTPC develops materials for seminars and lectures by using the existing manuals, and JICA experts provide assistance. -MCTPC makes lectures on riverbank protection measures at national university of Laos, and JICA experts provide assistance. -MCTPC conducts seminars for local DCTPC staff, educational institutions and relating agencies, and JICA experts provide assistance. -MCTPC creates materials on riverbank protection to enlighten the inhabitants, and JICA experts provide assistance. -MCTPC disseminates the simple vegetation riverbank protection works with residents participation, and JICA experts provide assistance. **4.Monitoring on Coping Measures to Erosion** -MCTPC and JICA experts carry out the monitoring survey on pilot works and verify the effectiveness of coping measures to erosion which selected by M/P. -MCTPC and JICA experts compile the report on effectiveness of coping measures to erosion.	**Inputs** <Japanese side> 1.Experts Short-term Experts 5 persons (18M/M) a) Chief Advisor/Capacity Building b) Facility Design/Monitoring Support c) Construction Supervision and Maintenance Support d)Soda Technique e) Vegetation Work/Monitoring Support Coordinator 2.Training in Japan Training of counterpart personnel in Japan 3.Provision of Equipment River survey equipments Soda technique tools OA equipments <Laos side> 1.Personnel Project Manager (Counterpart Chief of MCTPC) Counterparts of MCTPC 2.Fasilities Office Space Training Space 3.Budget Allocation Construction cost for riverbank protection works in accordance with M/P. (for 3year's) Budget plan：US$749,000（Investment plan：US$554,000）		Construction materials will be procured stably in Lao P.D.R. **Preconditions** -Budget for riverbank protection works will be allocated by Laos side in accordance with the M/P. -Proper personnel will be allocated to the new permanent organization.

Table 6.2 Revised PDM of the Project (Project period: Jan. 2005 - Mar. 2007)

Note) Revise parts are shown as *Italic & Underlined*. **Date of Creation; Jan.,2006** **Ver.1**

	Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal	Riverbank erosion of Mekong River around Vientiane Capital will be mitigated through execution of riverbank protection works under the Riverbank Protection Mater Plan (M/P) formulated in the Study on Mekong Riverbank Protection around Vientiane Municipality in the Lao P.D.R.	Mitigation rate on damage of riverbank erosion	Monitoring report on riverbank erosion	
Project Purpose	・MCTPC will be able to execute the riverbank protection works *properly*. ・The riverbank protection measures which selected in the M/P will be disseminated *in Vientiane City and the information on the measures will be disseminated in the local area of Lao P.D.R.*	・Number of riverbank protection facilities constructed in accordance with the M/P. ・Capacity of MCTPC to construct and maintain riverbank protection facilities. ・Result of evaluation on effectiveness of coping measures to riverbank erosion which selected in the M/P. ・Dissemination degree of coping measures to riverbank erosion which selected in M/P.	1.List of riverbank protection facilities 2.Prograss report 3.Monitoring report 4.Final report	Riverbank protection works will be implemented until 2020 in accordance with the M/P.
Outputs	・Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for *activities*. ・MCTPC will be able to *construct* the riverbank protection facilities based on M/P *and the effort to improve maintenance setup will be conducted.* ・Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented. ・Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.	・Annual plan of riverbank protection works formulated by MCTPC, mandate of the new permanent organization. ・Condition of facilities constructed and maintained by MCTPC. ・Number of seminars or lectures conducted by MCTPC. ・Result of monitoring on riverbank protection facilities.	1.Annual plan 2.Progress report 3.Seminar *and lecture* reports 4.Final report	The mandate of the new organization for riverbank protection project will be defined in the regulation of Department of Roads, MCTPC.
Activities	**1.Establishment of the new organization for riverbank protection projects** -JICA experts make recommendation on mandate of the new permanent organization for riverbank protection in MCTPC. -MCTPC formulates the annual plan, and JICA experts examine it. -JICA experts provide advice and recommendation on annual plan for next year. **2.Design, Construction, Maintenance and Monitoring of Riverbank Protection Facilities** -MCTPC designs the riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities, and JICA experts provide advices. (include preparatory study, cost estimation, drawing and construction supervision) -MCTPC compile the glossary of riverbank protection term in English-Laotian, and JICA experts provide advices. -MCTPC and JICA experts prepare the manual on monitoring methods and check items. -MCTPC carries out monitoring survey, and JICA experts provide advices. -MCTPC *make effort to improve the setup to* maintains the existing riverbank protection facilities, and JICA experts provide advices. -MCTPC constructs the riverbank protection facilities on Soda method, and JICA experts provide instruction on Soda method technique. **3.Dissemination of Information and Technique** -MCTPC develops materials for seminars and *lectures, and* JICA experts provide assistance. -MCTPC makes lectures on riverbank protection measures at national university of Laos *regulaly for students can teke credit*, and JICA experts provide assistance. -MCTPC conducts *practical training and* seminars for *MCTPC, Vientiane and* local DCTPC staff, educational institutions and relating agencies, and JICA experts provide assistance. -MCTPC creates materials on riverbank protection to enlighten the inhabitants *and cooperate to prepare the material for JICA Website to practice public relation of the Project regularly*, and JICA experts provide assistance. -MCTPC disseminates the simple vegetation riverbank protection works with residents participation, and JICA experts provide assistance. **4.Monitoring on Coping Measures to Erosion** -MCTPC and JICA experts carry out the monitoring survey on pilot works and verify the effectiveness of coping measures to erosion which selected by M/P. -MCTPC and JICA experts compile the report on effectiveness of coping measures to erosion.	**Inputs** <Japanese side> 1.Experts *6* Short-term Experts a) Chief Advisor/Capacity Building b) Facility Design/Monitoring Support c) Construction Supervision and Maintenance Support d)Soda Technique e) Vegetation Work/Monitoring Support *f)* Coordinator*/Capacity Building II* 2.Training in Japan Training of *2* counterpart personnel in Japan 3.Provision of Equipment River survey equipments Soda technique tools OA equipments *4.Budget for Seminar and Training* <Laos side> 1.Counterpart Personnel Project Manager (MCTPC) *2 MCTPC and 1 DCTPC* 2.Fasilities Office Space Training Space 3.Budget Allocation Construction cost for riverbank protection works in accordance with M/P. (for 3year's) Budget plan：US$749,000（Investment plan：US$554,000）		Construction materials will be procured stably in Lao P.D.R. **Preconditions** -Budget for riverbank protection works will be allocated by Laos side in accordance with the M/P. -Proper personnel will be allocated to the new permanent organization.

7. RECORDS OF JCC AND SEMINARS

7.1 JCC

(1) 1st Year

(1) JCC on Inception Report

The general result of the 1st JCC (Joint Coordination Committee) for Inception Report (IC/R) is as follow. The Minutes of the Meeting (M/M) of this JCC was not prepared.

1) Date：January 19, 2005
2) Venue: Meeting room in DOR, MCTPC
3) Participants：15 persons
   i. Laotian side: 10 persons (including DG of DOR (Mr. Viengsavath Siphandone))
   ii. JICA Side: 5 persons (3 Experts, Mr. Sano (JICA Laos Office) and Mr. Kondo (Expert to MCTPC))
4) Main subject：
   i. Agreement and approval of IC/R by JCC
   ii. Confirmation of the newly established Riverbank Protection Unit in DOR, MCTPC
   iii. Assignment of 5 staff to the new Unit as the C/P for the Project
   iv. Secured national budget of US$ 100,000 for the 1st year construction of M/P Sibounheuang - Muang Wa site

(2) JCC on Progress Report (1)

The general result of the 2nd JCC for Progress Report (1) (P/R (1)) is as follow. The M/M is as shown in Appendix 2.

1) Date：March 21, 2005
2) Venue: Meeting room in DOR, MCTPC
3) Participants：14 persons
   i. Laotian side: 7 persons (including Deputy DG of DOR (Mr. Phan Phouthavongs))
   ii. JICA Side: 7 persons (3 Experts, JICA Laos Office (Mr. Mori (Resident Representative), Mr. Sano and local staff), Mr. Kondo (Expert to MCTPC))
4) Main subject：
   i. Agreement and approval of P/R (1) by JCC
   ii. Delay of the commencement of the construction work
   iii. Official announcement of a “Riverbank Protection Unit” within the DOR
   iv. Future integration of a bank protection related organization within MCTPC
   v. Realization of the counterparts of the necessity of maintenance work
   vi. Installation of benchmarks for monitoring

vii. Scheduling of the project activities in the 2nd year

(2) 2nd Year

The general result of the 3rd JCC for Progress Report (2) (P/R (2)) is as follow. The M/M is as shown in Appendix 3.

1) Date : March 20, 2006
2) Venue: Meeting room in DOR, MCTPC
3) Participants : 16 persons
   i. Laotian side: 11 persons (including Deputy DG of DOR (Mr. Phan Phouthavongs))
   ii. JICA Side: 5 persons (2 Experts, JICA Laos Office (Mr. Mori (Resident Representative), Mr. Sekine), Mr. Kondo (Expert to MCTPC))
4) Main subject :
   i. Agreement and approval of P/R (2) by JCC
   ii. Revision of the PDM of the Project
   iii. Next year (3rd year) activity schedule
   iv. Sustainability of the C/P's lectures at the National University of Laos
   v. Assignment of additional C/P for assisting seminars during the dry season

(3) 3rd Year

The general result of the 4th JCC for Final Report (F/R) is as follow.

1) Date : March 20, 2006
2) Venue: Meeting room in DOR, MCTPC
3) Participants : 15 persons
   i. Laotian side: 10 persons (including Deputy DG of DOR (Mr. Phan Phouthavongs))
   ii. JICA Side: 5 persons (2 Experts, JICA Laos Office (Mr. Mori (Resident Representative), Mr. Sekine), Mr. Kondo (Expert to MCTPC))
4) Main subject :
   i. Agreement and approval of F/R by JCC
   ii. Upgrading of Riverbank Protection Unit
   iii. Management and maintenance of the Equipment Supplied by the Project
   iv. Strengthening of Cooperation between MCTPC and DCTPC
   v. Continuation of Cooperative Activity with National University of Laos
   vi. Sustainability of the Implementation of the M/P after the Project Completion
   vii. Dissemination of the M/P Construction Method in Local Provinces

7.2 Seminars and Workshops

The C/P held the seminars as shown in Table 7.1 with the assistance of the JICA Experts for the purpose of spreading the information on riverbank protection technology and the construction method selected by the M/P in Laos. In addition to original schedule, two C/P were invited to the UNDP seminar on dissemination of simple vegetation works in Bokeo province on May, 2006 as lecturer.

Table 7.1 Record of Seminars and Workshops (Achievement)

Date	Kind	Contents	Venue	Lecturer	Participants	Number of Participants	Period
2006/02	Outdoor session	Field practice of Simple Vegetation Works (Mekong Willow planting by local people participation)	Vientiane City	Mr. Viengsavanh Mr. Souksavanh Ms. Kawabata	Local residents, Vientiane DCTPC, National University of Laos, NGO	About 30 persons	1 day
2006/03	Indoor session, Outdoor seminar	Lecture, Field practice and opinion exchange for spreading SODA Method through regional area	MCTPC main conference room and construction site in Vientiane City	Mr. Viengsavanh Mr. Souksavanh Mr. Ohashi	Provincial DCTPC(15 DCTPC suffered from riverbank erosion), MCTPC, Vientiane City DCTPC, National University of Laos, Local contractor, Local consultant	About 60 persons	2 days
2006/05	Outdoor seminar (UNDP)	Field practice of Simple Vegetation Works (Mekong Willow planting by local people participation) organized by UNDP	Construction site of simple vegetation works in Bokeo Province	Mr. Viengsavanh Mr. Souksavanh	Local residents, Provincial DCTPC	About 30 persons	2 days
2007/03	Indoor session, Outdoor seminar	Lecture, Field practice and opinion exchange for spreading SODA Method through regional area	MCTPC main conference room and construction site in Vientiane City	Mr. Viengsavanh Mr. Souksavanh	Provincial DCTPC(15 DCTPC suffered from riverbank erosion), MCTPC, Vientiane City DCTPC, National University of Laos, Local contractor, Local consultant	About 60 persons	2 days

7.3 Support of JARCOM Seminar

The secretariat of JICA-ASEAN Regional Cooperation Meeting (JARCOM) decided to conduct international workshop “Low Cost and Sustainable Method for River Bank Protection in ASEAN Countries” in July 2006. The Seminar was held by the C/P for 5 days from February 5 to 9, 2007 at

MCTPC and the construction site of the M/P riverbank protection works in Vientiane Capital obtaining 9 participants from 5 ASEAN countries. The C/P has prepared and operated the seminar with the assistance of the Expert Team. The objective of the seminar is for the participants to understand that "Soda" method can be effective not only for riverbank protection but also for environment preservation and job creation. The contents of the seminar are as shown in Table 7.2 and the list of participants is as shown in Table 7.3.

Table 7.2 Contents of JARCOM Seminar

Date	Contents	i) Lecturer ii) Facilitator
Feb.5(Mon)	- Presentation of country report focused on Riverbank Protection	ii) Mr. Viengsavanh
Feb.6(Tue)	- General Riverbank Protection Policy in Lao PDR - Outline of Technology Transfer from IDI test project to JICA Development Study - Construction Works by MCTPC at Sibounheuang-Muang Wa site - Special Lecture	i)Mr. Phoumyenh i)Mr. Viengsavanh i)Mr. Viengsavanh i)Mr. Ukisu
Feb.7(Wed)	- -Demonstration of Soda Works	i)Mr. Viengsavanh
Feb.8(Thu)	- -Site Survey on Existing Damaged Riverbank Protection and New One by JICA Pilot Works	i)Mr. Souksavanh
Feb.9(Fri)	- Question and Answer, Group Discussion on Soda Method	ii)Mr. Souksavanh ii)Mr. kameyama

Table 7.3 List of Participants

Country		Name (Family Name/ Middle Name; First Name)		Position	Gender (SEX)	Age
Indonesia	1	SEMBIRING	CERITERA	Chief of Section of Conservation, Directorate General of Water Resources, Ministry of Public Works	M	46
	2	SUKARNO	DJAYA	Engineering Staff, Directorate General of Water Resources, Ministry of Public Works	M	38
Cambodia	1	NONG	KUNTHARA	Vice Chief of Public Works Office of DPWT	M	46
	2	CHEA	VANTHA	Vice Chief of Dike and River Bank Protection Division of DPWT	M	33
Myanmar	1	THEIN	LINN	Assistant Engineer, Directorate of Water Resources and Improvement of River Systems	M	35
	2	YIN	YIN SOE	Assistant Engineer, Directorate of Water Resources and Improvement of River Systems	F	44
Philippine	1	MADRIGAL	ALEXANDER	Regional Director, Department of Science & Technology	M	49
Vietnam	1	NGUYEN	HUU PHUC	Chief of Department of Dyke management and flood control, Ministry of Agriculture and Rural Development	M	52
	2	NGUYEN	MINH ANH	Senior Expert to International Cooperation Department, Ministry of Agriculture and Rural Development	M	46

8. PROGRESS OF ACTIVITIES IN 1ST AND 2ND YEARS

8.1 1st Year

The result of the 1st year Project activity conducted from January to March 2005 is summarized in Table 8.1 as achievement of outputs and Table 8.2 as progress of activities for each output. The achievement degree of "Objective Verifiable Indicators" of each activity is shown in Figure 8.1.

Activity Items \ Completion Degree of 1st Year's Objectively Verifiable Indicators (%)	%	10	20	30	40	50	60	70	80	90	100
Support for Establishment of New Unit in charge of Riverbank Protection Work											
3.3.2(1) Recommendation on Role of New Unit	50	■	■	■	■	■					
3.3.2(2) Detail Check of M/P Program Prepared by MCTPC	100	■	■	■	■	■	■	■	■	■	■
3.3.2(3) Recommendations to Next Year Work Program of MCTPC	100	■	■	■	■	■	■	■	■	■	■
Support for Design, Construction and Maintenance of Bank Protection Works											
3.3.3(1) Recommendation on Facility Design	70	■	■	■	■	■	■	■			
3.3.3(2) Recommendation on Facility Construction	10	■	Start construction: Mar. 21, 2005								
3.3.3(3) Support for Preparation of Riverbank Protection Glossary	100	■	■	■	■	■	■	■	■	■	■
3.3.3(4)1 Support for Manual Preparation for Maintenance	100	■	■	■	■	■	■	■	■	■	■
3.3.3(4)2 Support for Manual Preparation for Monitoring	100	■	■	■	■	■	■	■	■	■	■
3.3.3(5) Recommendation on Monitoring Existing Facilities	60	■	■	■	■	■	■				
3.3.3(6) Recommendations on Maintenance of Existing Facilities	100	■	■	■	■	■	■	■	■	■	■
3.3.3(7) Field Guidance of Soda Technique	10	■	Start construction: Mar. 21, 2005								
Dissemination of Information and Technique on Construction Method											
3.3.4(1)1 Support for Preparation of Seminar and Lecture Materials	100	■	■	■	■	■	■	■	■	■	■
3.3.4(1)2 Laotian Translation of Manual for Riverbank Protection	-	*Activity is planned to be started from 2nd year*									
3.3.4(2) Lectures at Faculty of Engineering and Architecture, National University of Laos	100	■	■	■	■	■	■	■	■	■	■
3.3.4(3) Support for Opening Seminars on Construction Method	50	■	■	■	■	■	Construction work required				
3.3.4(4) Support for Material Preparation to Enlighten Local Inhabitants	100	■	■	■	■	■	■	■	■	■	■
3.3.4(5) Assisting Promotion of Residents-participated Simple Vegetation Work	100	■	■	■	■	■	■	■	■	■	■
Monitoring of Construction Method of Riverbank Protection											
3.3.5(1) Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	25	■	■	■							
3.3.5(2) Report Preparation on Reasonableness of Construction Method selected in M/P	-	*Activity is planned to be started from 3rd year*									
Average	**75**										

Note) Left column number correspond to the Chapter & Section number of the Inception Report for the Project

Figure8.1 Completion Degree of Objectively Verifiable Indicators for 1st Year Activities

Table 8.1 Achievement of Outputs (from Jan. 2005 to Mar. 2005) (*"Output" must be the same as the description in PDM*)

Outputs	Indicators	Targets in this term	Achievements in this term	Reasons if planned targets were not satisfied
1) Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for sustainable activities.	Annual plan of riverbank protection works formulated by MCTPC, mandate of the new permanent organization	C/P prepare various relating outputs described in Indicators column by themselves for the activity of "Riverbank Protection Unit" established in Jan. 2005.	C/P could prepare almost of those outputs by themselves excluding mandate of the Unit. (i) MCTPC started the construction on Mar. 21, the end of 1st year activity and accordingly C/P and JICA Expert could not conduct relating activity satisfactory. (ii) Monitoring & maintenance related activities became rather difficult task for C/P. Therefore, entry-level targets were adopted.	(i) The construction started on Mar. 21 due to the delay of MCTPC's bidding and contractual procedures. (ii) Monitoring and maintenance of bank protection works have not fully been performed in MCTPC by severe restrictions of budget,
2) MCTPC will be able to construct and maintain the riverbank protection facilities based on M/P.	Condition of facilities constructed and maintained by MCTPC	C/P construct Sibounheuang - Muang Wa bank protection works by themselves and learn how to monitor & maintain facilities.		Necessary countermeasures (i) To start bidding preparation by C/P earlier in 2nd year to start construction as early as possible. (ii) To increase direct instruction by JICA Experts as indispensable condition or to disperse dispatch period of the Experts
3) Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented.	Number of seminars or lectures conducted by MCTPC	C/P give lectures and open seminars as many as possible to disseminate the information by themselves.	A C/P (and 2 JICA Experts) gave lectures as planned at National University of Laos by himself with full cooperation of the university. C/P opened a seminar on a voluntary basis.	Impact (expected/unexpected) ・Many relating Lao and Japanese agencies and missions have interested in the Project. C/P and JICA Experts guided them to the project sites many times as a course of output item 3). ・National University of Laos has requested the Project to receive their trainee and wanted the lectures to be regular ones.
4) Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.	Result of monitoring on riverbank protection facilities	C/P formulate the monitoring plan of the Pilot Riverbank Protection Works (completed by JICA in 2003) by themselves.	This monitoring related activity also became rather difficult task for C/P as item 2). Therefore, entry-level targets were adopted.	

Table 8.2 (1/4) Progress of Activities for each Output (*Output No. 1 in the PDM and its description ; Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for sustainable activities.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	Self-reliance level	Official announcement should be documented by MCTPC on the establishment of the new "Riverbank Protection Unit" in DOR, MCTPC.	(Targets) C/P prepare each items with higher self-reliance level than that in 1st year. <"Technical Achievement Output" is to be finally completed by Mar. 2007.> (Activities plan) ･Revision of item 1) ･Preparation of 2) and 3) for next year
	Actual	Self-reliance level		
C/P prepare the followings: 1) Work items of responsibility and yearly work schedule (draft) 2) Yearly work plan of M/P 3) Next year work plan	P A P A P A	 25 % 12.5 % (50% for 1st year) 60% 60% (100% for 1st year) 60% 60% (100% for 1st year) <u>Self-reliance level for 1st year's target is around 85 % in average.</u>		
Progress of technology transfer to C/P C/P can prepare item 2) and review item 3) by themselves.				

Table 8.2 (2/4) Progress of Activities for each Output (*Output No. 2 in the PDM and its description; MCTPC will be able to construct and maintain the riverbank protection facilities based on M/P.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed			(Targets) ・On construction of M/P Work, C/P construct additional 200 m of the remaining stretch by themselves. ・On monitoring & maintenance, C/P continue to prepare those output based on the retouch of 1st year's output. <"Technical Achievement Output" is to be finally completed by Mar. 2007.> (Activities plan) C/P will start the bidding procedures as early as possible, so that JICA Experts are able to implement activities as smoothly as planned.
	Actual			
C/P conduct the followings: <u>On construction of M/P Work</u> 1) Detailed design of M/P riverbank protection work at Sibounheuang - Muang Wa Site (the Work) (L=210m) 2) Construction of the Work (L=210m) 3) Construction of Soda related works for the Work <u>On monitoring & maintenance</u> 1) Preparation of glossary on riverbank protection work 2) Preparation of maintenance & monitoring manual, monitoring item check list 3) Conducting monitoring of existing facilities 4) Conducting maintenance works of existing facilities	P A P A P A P A P A P A P A	80% 56% (70% for 1st year) 60% (rate of length to M/P) 6% (10 % for 1st year) 40% (rate of execution) 4% (10% for 1st year) Preparation of format 100% Preparation of draft 100% Preparation of execution plan 60% Preparation of draft 100% <u>Compression degree for 1st year's target is around 70 % in average.</u>	<u>On construction of M/P Work</u> ・Although the bid by MCTPC was carried out in early February, the contract and start construction became on March 21. ・Therefore, JICA Experts were not fully able to conduct the construction related activities: <u>On monitoring & maintenance</u> ・In MCTPC, the monitoring and maintenance of bank protection works have not fully been performed by severe restrictions of budget. ・For this reason, those activities was difficult for C/P. ・It proves that the direct instruction by JICA Experts in Vientiane is indispensable.	
Progress of technology transfer to C/P C/P can conduct the paperwork relating to the construction work by themselves.				

Table 8.2 (3/4) Progress of Activities for each Output (*Output No. 3 in the PDM and its description; Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed			(Targets) C/P continue to have lectures, seminars and relating activities to spread the information by themselves. <"Technical Achievement Output" is to be finally completed by Mar. 2007.> (Activities plan) C/P will request the administration budget to MCTPC for the smooth implementation of items 3) and 5).
	Actual			
C/P conduct the followings: 1) ･Preparation of the materials for seminars and lectures ･Translation of Manual for Riverbank Protection into Laotian<to be started from 2nd year> 2) Giving lectures at the University of Laos and accept trainee from the university 3) Opening seminars by themselves 4) Preparation the material to enlighten local inhabitants 5) ･C/P can determine the execution site of residents- participated simple vegetation work ･C/P can execute the work	P A P A P A P A P A	preparation of materials 100% Giving lectures 100% opening 2 seminars 50% preparation of draft 100% preparation of draft execution plan 100% Compression degree for 1st year's target is around 90 % in average.	･1 seminar could not be opened because of the delay of the construction of the Work ･Riverbank Protection Unit newly established has no administration budget for opening seminar and relating events.	
Progress of technology transfer to C/P C/P can make lecture at the university by themselves including the material preparation. C/P can also organize the seminar by themselves.				

Table 8.2 (4/4) Progress of Activities for each Output (*Output No. 4 in the PDM and its description; Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed		・In MCTPC, the monitoring of bank protection works have not fully been performed by severe restrictions of budget. ・For this reason, the activity was difficult for C/P. ・It proves that the direct instruction by JICA Expert in Vientiane is indispensable.	(Targets) The monitoring is carried out based on the execution plan prepared in 1st year. (Activities plan) On cross-sectional survey, C/P will learn the usage of survey equipment supplied by the Project and conduct the survey using the supplied equipment.
	Actual			
Successive monitoring of the Pilot Riverbank Protection Works is executed. Monitoring results are arranged and evaluated *To prepare a report on the reasonableness of construction method selected in M/P* *<to be conducted in 3rd year>*	P A	preparation of execution plan 25%		
Progress of technology transfer to C/P				
The activity period of 1st year was only 2.5 months and accordingly no significant progress could be seen.				

8.2 2nd Year

The result of the 2nd year Project activity conducted from April 2005 to March 2006 is summarized in Table 8.3 as achievement of outputs and Table 8.4 as progress of activities for each output. The achievement degree of "Objective Verifiable Indicators" of each activity is shown in Figure 8.2.

Completion Degree of 2nd Year's Objectively Verifiable Indicators (%) / Activity Items	%	10	20	30	40	50	60	70	80	90	100
Support for Establishment of New Unit in charge of Riverbank Protection Work											
3.3.2(1) Recommendation on Role of New Unit	50										
3.3.2(2) Detail Check of M/P Program Prepared by MCTPC	100										
3.3.2(3) Recommendations to Next Year Work Program of MCTPC	100										
Support for Design, Construction and Maintenance of Bank Protection Works											
3.3.3(1) Recommendation on Facility Design	90										
3.3.3(2) Recommendation on Facility Construction	100										
3.3.3(3) Support for Preparation of Riverbank Protection Glossary	100										
3.3.3(4)1 Support for Manual Preparation for Maintenance	50										
3.3.3(4)2 Support for Manual Preparation for Monitoring	70										
3.3.3(5) Recommendation on Monitoring Existing Facilities	85										
3.3.3(6) Recommendations on Maintenance of Existing Facilities	60										
3.3.3(7) Field Guidance of Soda Technique	100										
Dissemination of Information and Technique on Construction Method											
3.3.4(1)1 Support for Preparation of Seminar and Lecture Materials	100										
3.3.4(1)2 Laotian Translation of Manual for Riverbank Protection	100										
3.3.4(2) Lectures at Faculty of Engineering and Architecture, National University of Laos	100										
3.3.4(3) Support for Opening Seminars on Construction Method	100										
3.3.4(4) Support for Material Preparation to Enlighten Local Inhabitants	50										
3.3.4(5) Assisting Promotion of Residents-participated Simple Vegetation Work	100										
Monitoring of Construction Method of Riverbank Protection											
3.3.5(1) Confirmation of Fixation Condition of the Pilot Riverbank Protection Works	60										
3.3.5(2) Report Preparation on Reasonableness of Construction Method selected in M/P	-	*to be conducted from 3rd year*									
Average	**83**										

Note) Left column number correspond to the Chapter & Section number of the Inception Report for the Project

Figure8.2 Completion Degree of Objectively Verifiable Indicators for 2nd Year Activities

Table 8.3 Achievement of Outputs (Apr. 2005 - Mar. 2006) (*"Output" must be the same as the description in PDM*)

Outputs	Indicators	Targets in this term	Achievements in this term	Reasons if planned targets were not satisfied
1) Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for activities. 2) MCTPC will be able to construct the riverbank protection facilities based on M/P and the effort to improve maintenance setup will be conducted. 3) Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented. 4) Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.	Annual plan of riverbank protection works formulated by MCTPC, mandate of the new permanent organization Condition of facilities constructed and maintained by MCTPC Number of seminars or lectures conducted by MCTPC Result of monitoring on riverbank protection facilities	C/P prepare various relating outputs described in Indicators column by themselves for the activity of "Riverbank Protection Unit" newly established C/P continue to construct Sibounheuang - Muang Wa bank protection works by themselves and conduct continuous monitoring & maintenance activities C/P give lectures and open seminars as many as possible to disseminate the information by themselves. C/P conduct continuous monitoring work of JICA pilot riverbank protection works completed in 2003 by themselves.	C/P could prepare almost of these outputs by themselves. (i) MCTPC completed M/P Sibounheuang - Muang Wa bank protection work for 110m in May 2005 and is now executing for 120 m to be completed May 2006. (completed 50 % as of Mar. 20) (ii) C/P could prepare monitoring & maintenance related reports with the assistance of JICA Experts, these activities were still difficult for C/P to some degree, though. (i)C/P made lectures at national university of Laos regularly based on agreed syllabus for students can take credit. (ii) C/P opened 2 practical outdoor seminars for relating agencies including local residents and provincial DCTPC C/P could prepare monitoring report with the assistance of JICA Experts, the activities was still difficult for C/P to some degree, though.	(i) Because of MCTPC's budgetary restraint, rehabilitation cost for existing bank protection work cannot be allocated. (ii) The advance-preparation for large-scale outdoor seminars inviting such as provincial DCTPC staff became a burden considerably for C/P causing some delay of other activities. Necessary countermeasures (i) Open workshop for residents-participated small-scale rehabilitation work. (ii) Reconsider opening time/date and contents of seminars by reviewing lessons learned from seminars in 2nd year and to increase additional C/P during seminar season (January to March), if possible. Impact (expected/unexpected) ・Many relating International, Lao and Japanese agencies and missions have interested in the Project. C/P and JICA Experts explained the project and/or guided them to the project sites as a course of output item 3). ・National University of Laos has requested the Project to accept students for practical training.

Table 8.4 (1/4) Progress of Activities for each Output (*Output No. 1 in the PDM and its description ; Basic functions and institutions of the new organization for riverbank protection projects will be established and secured for activities.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	(completion in 2nd year)	Because of MCTPC's budgetary restraint, rehabilitation cost for existing bank protection work cannot be allocated.	(Targets) C/P prepare each items with higher self-reliance level than that in 2nd year. <A related Technical Corporation Output is to be completed by Mar. 2007.> (Activity plan) ・Revision of item 1) ・Preparation of 2) and 3) for next year
	Actual	(completion degree of above)		
1) Work items of responsibility and yearly work schedule (draft)	P A	Self-reliance level 50 % 50%		
2) Yearly work plan of M/P	P A	Self-reliance level 90% 100%		
3) Next year work plan	P A	Self-reliance level 90% 100%		
		Average completion degree : 84 %		
Progress of technology transfer to C/P				
C/P can prepare item 2) and review item 3) by themselves.				

Table 8.4 (2/4) Progress of Activities for each Output (*Output No. 2 in the PDM and its description; MCTPC will be able to construct the riverbank protection facilities based on M/P and the effort to improve maintenance setup will be conducted.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	(completion in 2nd year)		(Targets) ･On construction of M/P Work, C/P construct remaining 180 m by themselves. C/P also prepare M/P design at Ban Hom and Sithantai areas entrusted to DCTPC. ･On monitoring & maintenance, C/P continue activities to prepare these output based on the retouch of 2nd year's output. <2 related Technical Achievement Output is to be completed by Mar. 2007.> (Activities plan) ･C/P plan to start remaining M/P work for 180 m in Jan. 2007, earlier than that in 2nd year. ･C/P may open workshop on residents-participated small-scale rehabilitation of existing work.
	Actual	(completion degree of above)		
<u>On construction of M/P Work</u> 1) Detailed design of M/P riverbank protection work at Sibounheuang - Muang Wa Site (the Work) (remaining 280m)	P A	Completion degree 80% 90%	<u>On construction of M/P Work</u> None	
2) Construction of the Work for 110m in 1st year and 120m in 2nd year	P A	1st year completed 100% 2nd year under execution 100%		
3) Construction of Soda related works for the Work	P A	Rate of execution 60% 100%		
<u>On monitoring & maintenance</u> 1) Preparation of glossary on riverbank protection work	P A	Preparation of glossary 100%	<u>On monitoring & maintenance</u> ･Because of MCTPC's budgetary restraint, rehabilitation cost for existing bank protection work could not be allocated. Therefore, relating part of original PDM was revised.	
2) Preparation of maintenance manual	P A	Preparation of concept 50%		
3) Preparation of monitoring manual	P A	Draft preparation rate 50% 70%		
4) Conducting monitoring of existing facilities	P A	Execution rate 70% 85%		
5) Making effort to improve the setup to maintains the existing facilities	P A	Preparation of register 90% 60% Average compression degree: 82 %		
Progress of technology transfer to C/P C/P could successfully complete M/P Sibounheuang - Muang Wa bank protection work by themselves. C/P could prepare monitoring & maintenance related reports.				

Table 8.4 (3/4) Progress of Activities for each Output (*Output No. 3 in the PDM and its description; Efforts to spread the information on riverbank protection measures which selected in M/P will be implemented.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	(completion in 2nd year)	・Riverbank Protection Unit still has no administration budget for opening seminars. ・The advance-preparation for large-scale outdoor seminars inviting many relating agencies including provincial DCTPC became a burden considerably for C/P causing some delay of other activities.	(Targets) C/P continue to have lectures, seminars and relating activities to spread the information by themselves. <3 related Technical Corporation Output is to be completed by Mar. 2007.> (Activities plan) ・JICA Expert Team will assist the budget of seminars for smooth implementation. ・Reconsider opening times/date and management of seminars by reviewing lessons learned from seminars in 2nd year to decrease C/P's burden.
	Actual	(completion degree of above)		
1) ・Preparation of materials for seminars and lectures ・Translation of "Manual for Riverbank Protection" into Laotian 2) Making lectures at the University of Laos regularly for students can take credit 3) Opening practical seminars by themselves 4) Preparation of material to enlighten local inhabitants and JICA web site to PR 5) ・C/P can determine the execution site of residents- participated simple vegetation work ・C/P can execute the work	P A P A P A P A P A P A	Preparation of 5 materials 100% Translation 70% 100% Making 4 lectures 100% Opening 2 seminars 100% Preparation of draft material 50% Preparation of execution plan 100% Average compression degree : 87 %		
Progress of technology transfer to C/P C/P can prepare the materials and make lectures at the university by themselves. C/P can also organize the seminars and make presentation by themselves.				

Table 8.4 (4/4) Progress of Activities for each Output (*Output No. 4 in the PDM and its description; Effectiveness of pilot riverbank protection facilities will be confirmed and riverbank protection measures which selected in M/P will be reviewed.)*

Progress of activities			Problems in this term	Targets and activities in the next term
Activities	Planed	(completion in 2nd year)		(Targets) Continuous monitoring is carried out according to the schedule prepared in 1st year. <A related Technical Corporation Output is to be completed by Mar. 2007.>
	Actual	(completion degree of above)		
Successive monitoring of JICA Pilot Riverbank Protection Works is executed. Monitoring results are arranged and evaluated	P A	70% 60%	･In MCTPC, monitoring of bank protection works have not been performed by budgetary restriction. ･For this reason, it is still difficult for C/P to understand the importance of monitoring activity and to conduct the activity based on schedule. ･It proves that the direct instruction by JICA Expert in Vientiane is indispensable.	
To prepare a report on the reasonableness of construction method selected in M/P	P A	<to be conducted in 3rd year>		(Activities plan) C/P conduct monitoring works utilizing the survey equipment supplied by the Project.
Progress of technology transfer to C/P				
C/P learned the usage of survey equipment supplied and could prepare monitoring report.				

9. RESULT OF ACTIVITIES IN 3RD YEAR

9.1 Support for Establishment of New Unit in charge of Riverbank Protection Work

The summary of following Project activities in 3rd year related to this category is as shown in Table 9.1.1 to Table 9.1.3

1) Recommendation on Role of New Unit
2) Detail Check of M/P Program Prepared by MCTPC
3) Recommendations to Next Year Work Program of MCTPC

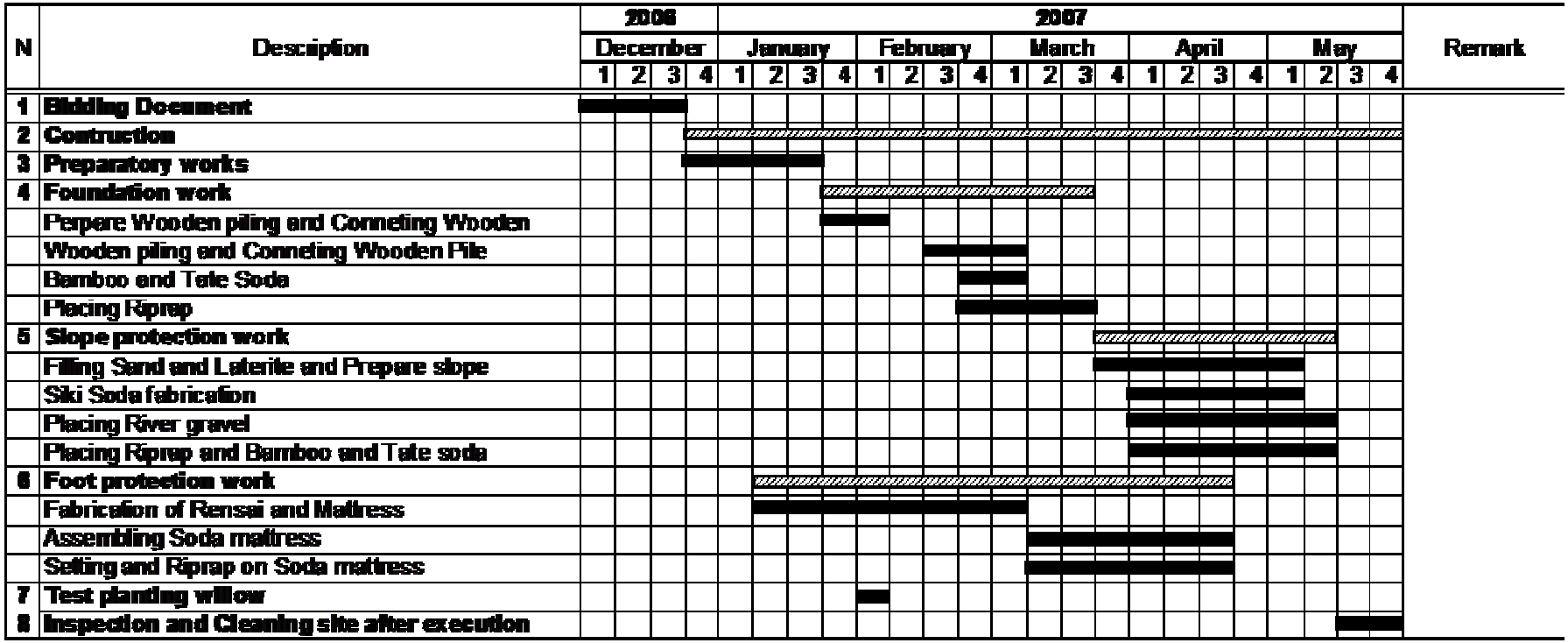
Table 9.1.1 Summary of Each Activity in 3rd Year

Item	3.3.2 Support for Establishment of New Unit in charge of Riverbank Protection Work (1) Recommendation on Role of New Unit		Writer Y. Kato
Outputs	C/P can prepare the work items of responsibility and yearly work schedule (draft) <Technical Corporation Output>		
Activities	C/P	C/P prepare the work items of responsibility and the yearly work program (draft) by themselves. C/P clarify the significance level of works in MCTPC. (Person in charge: Mr. Viengsavanh)	
	JICA Expert	JICA Experts support C/P by making recommendations. (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Self-reliance level (100%)		
Means of verification	Work items of responsibility and yearly work schedule (draft) <refer to Technical Cooperation Outputs 1>		
Summary	C/P and Expert carried out the partial amendment of the previous version formulated in 2nd year.		
Completion degree of the indicators	50%		
Activity record	March 2007: C/P and Expert carried out the partial amendment of the previous version together.		
Supporting material by JICA experts	Draft work items and yearly work schedule of the new unit		
Issues to be improved			
Activity policy for the next year			
Remark	C/P has responded positively to the technical consultation from contractor concerning the Soda mattress works to protect water intake facilities under construction by Japanese grants aid project “The project for the Vientiane water supply development” as one of the activity of the Unit.		

Table 9.1.2 Summary of Each Activity in 3rd Year

Item	3.3.2 Support for Establishment of New Unit in charge of Riverbank Protection Work (2) Detail Check of M/P Program Prepared by MCTPC		Writer Y. Kato
Outputs	C/P can prepare an appropriate yearly work plan of M/P.		
Activities	C/P	C/P will prepare the yearly work plan by themselves. (Person in charge: Mr. Viengsavanh)	
	JICA Expert	JICA Experts will confirm the plan and make recommendations according to need. (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Self-reliance level (100%)		
Means of verification	Yearly work plan of M/P (for 3rd year) <refer to next page and Technical Cooperation Output 1>		
Summary	The Expert checked the following progress based on the M/P annual work plan from MCTPC C/P and DCTPC, and advised about the future activity policy. 1. Construction of the M/P riverbank protection works (by MCTPC) <refer to Technical Cooperation Output 0-I> i) Sibounheuang - Muang Wa works (L=120 m) 2nd year construction: started by local contractor in Feb. 2006, completed and inspected in May 2006 ii) Sibounheuang - Muang Wa works (L=180 m) 3rd year construction: a. C/P secured the national budget of US$ 150,000 in Nov. 2006. b. Bidding in Jan. 2007 and started by local contractor, to be completed in May 2007 (total stretch of 410m will be completed) 2. Design of the M/P riverbank protection works (by DCTPC): MCTPC secured the budget and entrusted the work to DCTPC i) Ban Hom (1)&(2) (L=810m) and Sithantai (1) (L=1280m): DCTPC entrusted the design work to local consultant in Feb. 2006 ii) Present progress: refer to "Issues to be improved"		
Completion degree of the indicators	100%		
Activity record	C/P can prepare the work plan now by himself. C/P and Expert have discussed the work progress and future schedule at any time.		
Supporting material by JICA experts	None		
Issues to be improved	Progress of the M/P design which MCTPC entrusted to DCTPC in February, 2006 is unsatisfactory. At the beginning, the design was due to be completed in June, 2006. However, as of March, 2007, although the survey has been completed, design is draft stage and is not completed as a design documents.		
Activity policy for the next year			
Remark			

Construction schedule of Ban Sibounheuang - Meuang Wa in 2007



N	Description	2006	2007																							Remark
		December				January				February				March				April				May				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	Bidding Document																									
2	Contruction																									
3	Preparatory works																									
4	Foundation work																									
	Perpare Wooden piling and Conneting Wooden																									
	Wooden piling and Conneting Wooden Pile																									
	Bamboo and Tate Soda																									
	Placing Riprap																									
5	Slope protection work																									
	Filling Sand and Laterite and Prepare slope																									
	Siki Soda fabrication																									
	Placing River gravel																									
	Placing Riprap and Bamboo and Tate soda																									
6	Foot protection work																									
	Fabrication of Rensai and Mattress																									
	Assembling Soda mattress																									
	Setting and Riprap on Soda mattress																									
7	Test planting willow																									
8	Inspection and Cleaning site after execution																									

December - 20 - 2006

Table 9.1.3 Summary of Each Activity in 3rd Year

Item	3.3.2 Support for Establishment of New Unit in charge of Riverbank Protection Work (3) Recommendation to Next Year Work Program of MCTPC		Writer Y. Kato
Outputs	C/P can prepare a next year work plan.		
Activities	C/P	C/P prepare a next year work plan. (Person in charge: Mr. Viengsavanh)	
	JICA Expert	JICA Experts support the preparation of work plan. (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Self-reliance level (100%)		
Means of verification	Next year work plan (after the Project: 2007.4 – 2008.3) <refer to Attachment and Technical Cooperation Output 1>		
Summary	C/P and Expert prepared the next year work plan based on the following ways: ・The important work items are selected on the M/P implementation after the completion of this Project. ・The work schedule is planned for each selected work item.		
Completion degree of the indicators	75%		
Activity record	Mar. 2007：C/P and Expert completed final plan together based on the draft prepared by the Expert.		
Supporting material by JICA experts	Draft next year work plan (after the Project)		
Issues to be improved			
Activity policy for the next year	In the implementation of the M/P projects, the cooperation of MCTPC and DCTPC is not so smooth (e.g. design of the M/P Ban Hom and Sithantai works). From now on, it will be necessary to build the organization which strengthens both cooperation and by which steady construction of the selected method in the M/P is guaranteed.		
Remark			

Viengsavanh, March 2007

Next Year Activity Program of Riverbank Protection Unit, MCTPC (DRAFT)

Activity Items	Year	After Project											
		2007									2008		
	Month	4	5	6	7	8	9	10	11	12	1	2	3
	Project Schedule in Laos	Survey, Design & Cost Estimate		Budget Request				Budget Approval		Bidding & Contract		Survey, Design & Cost Estimate	
		Construction										Construction	
	Water Level	Low Water		High Water					Low Water				
1) Construction of Sibounheuang - Muang Wa Site (L=180 m)		■	■										
2) Construction of M/P Ban Hom(1 & 2) and Sithantai (1) Works													
-Budget request (MCTPC)				■									
-Budget approval (MCTPC)									■				
-Bidding (DCTPC)										■			
-Construction (DCTPC)											■	■	■
3) Other activities													
-Monitoring works		■	■								■		
-Lecture at University of Laos		■	■		■	■			■		■		■
-Seminars												■	

9.2 Support for Design, Construction and Maintenance of Bank Protection Works

The summary of the following Project activities in 3rd year related to this category is as shown in Table 9.2.1 to Table 9.2.8.

1) Recommendation on Facility Design
2) Recommendation on Facility Construction
3) Support for Preparation of Riverbank Protection Glossary
4) Support for Manual Preparation for Maintenance
5) Support for Manual Preparation for Monitoring
6) Recommendation on Monitoring Existing Facilities
7) Recommendations on Maintenance of Existing Facilities
8) Field Guidance of Soda Technique

Table 9.2.1 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (1) Recommendation on Facility Design		Writer R. Kobayashi
Outputs	C/P can make detailed design of riverbank protection work at Sibounheuang-Muang Wa Site (remaining length L=171m). Detailed design of riverbank protection work at Ban Hom(L=200m) and Sittantai(L=260m) is done by DCTPC. Originally this work is designated by MCTCP.		
Activities	C/P	C/P makes the detailed design by themselves. (Person in charge: Mr. Viengsavanh, Mr. Souksavanh and Mr. Bouleng, and Mr. Somchit of DCTPC)	
	JICA Expert	JICA Expert assists review the design by C/P and makes advice on it. (Person in charge: Dr. Kobayashi)	
Objectively verifiable indicators	Completion degree of report on Survey and design drawing exceed 80%.		
Means of verification	Design document prepared by C/P and DCTPC		
Summary	JICA expert gave advices on C/P activities in the manner below: 1. Advice on the Sibounheuang site of smoothly connection to Wat Muang Wa site and of riverbank protection just under drainage works 2. Advice on the arrangement (alignment) of rip-rap groyne work at Ban Hom Site. Shift angle up-stream wards is recommended as 10 degree. 3. Advice on the order of construction of groyne works at the site. From up-stream side groyne shall be first set and follow downstream ward at both Ban Hom site and Sittantai site.		
Completion degree of the indicators	90 %		
Activity record	-Nov.3'06:Check of facility design drawing at Sibounheuang site -Nov.6,'06:Advice and explanation on drainage works at Sibounheuang site -Nov.8'06: Check of plan and cross section survey results of Ban Hom site and Sittantai site. Advice and explanation on types of riverbank protection work -Feb.9'07: Hearing of the facility design for Ban Hom and Sittantai Site. -Feb.13'07: Received the facility design of Ban Hom and Sittantai. -Feb.14'07: Site inspection at Ban Hom and Sittantai. -Feb.16'07: Advice and explanation on the groyne works done by DCTPC		
Supporting material by JICA experts	-Explanatory document for the activities described above. <refer to Attachment -1>		
Issues to be improved	-Comprehension of basic way of thinking on the design of riverbank protection work by using groyne woks..		
Remark	Advised the necessity of feed-back of the monitoring result of the riverbank after setting groyne works into the design of groyne works.		

Table 9.2.2 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (2) Recommendation on Facility Construction		Writer T. Kameyama
Outputs	Bank protection works at Sibounheuang-Muang Wa will be constructed (L=220m)		
Activities	C/P	C/P will execute the construction works by themselves. (C/P in charge: Mr. Viengsavanh, Mr. Souksavanh, Mr. Bounleng)	
	JICA Expert	JICA Experts will make the recommendations on the following; Cost estimate, Prepare of bidding documents, Evaluation of tenders, Supervision works and Completion inspection	
Objectively verifiable indicators	- Completion of Sibounheuang Muang Wa (Phase 1) Project - Implementation of Sibounheuang Muang Wa (Phase 2) Project		
Means of verification	Phase 2 project completion report (Lao language) Tender document preparation for Phase 3 (Lao language) Starting of Phase 3 Construction		
Summary	JICA expert gave advices on C/P activities as follows: Promotion on recognition of MCTPC/DCTPC for B/P works implementation Discussion for alternative sites of new B/P work. Discussion on the implementation schedule of new B/P work. Brain storming session to counterpart on the JARCOM seminar concept. Promotion new finance for new B/P works (JAIF)		
Completion degree of the indicators	100%		
Activity record	Discussion with DCTPC for new B/P work under DCTPC Verification of Sibounheuang Muang Wa (Phase 2) completion report Site reconnaissance of Phase 3 project Confirmation MCTPC to manage and prepare JARCOM seminar		
Supporting material by JICA experts	･Explanatory document for alternative sites of new B/P works.		
Issues to be improved	･Capacity development on IP report writing of B/P works ･Upgrading of report writing capacity on B/P construction completion		
Remark	･Succeed of Soda drainage system construction on the bank slope in Phase 3 ･MCTPC capacity development is required for arrangement of new budget for B/P works. ･Dissemination on B/P (Soda mattress & willow branch work) construction management of MCTPC should be provided into surrounding countries.		

Table 9.2.3 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (3) Support for Preparation of Riverbank Protection Glossary		Writer H.Watanabe
Outputs	The glossary on riverbank protection work (English-Lao) as a "Technical Cooperation Output" will be prepared.		
Activities	C/P	C/P prepare the glossary on riverbank protection work by themselves (mainly work in the rain season) (Person in charge: Mr. Souksavanh & Mr. Bounleng)	
	JICA Expert	JICA Experts support in preparation of the glossary (Person in charge: Mr. Watanabe)	
Objectively verifiable indicators	-100 Copies of the glossary will be distributed.		
Means of verification	-Hearing from C/P		
Summary	JICA Expert conducted to support activity of C/P in the following manner: 1. See about distribution of glossary with C/P (To whom the glossary should be distributed). 2. Suggest distributing the glossary to participants from provincial DCTPC at seminar on March, 2007.		
Completion degree of the indicators	None		
Activity record	- 60 copies of glossary were distributed to participants at seminar on "Riverbank Protection Technique based on River Works in Japan" during March 14 to 15, 2007.		
Supporting material by JICA experts	None		
Issues to be improved	It is desired that glossary will be distributed aggressively at seminar held by MCTPC themselves, or at the time of attendance to seminar held by other organizations or donors.		
Activity policy for the next year	None		
Remark	Glossary contains 322 words. Copies of glossary were distributed to following provincial DCTPC; -Vientiane Capital, Phongsaly, Luangnamtha, Borkeo, Udomxay, Huaphanh, Luangphabang, Xiengkhuang, Sayaboury, Vientiane, Borlikhamxay, Saravanh, Khammouan, Savannakhet, Champasack Copies of glossary were also distributed to participants from National University of Laos, Mekong River Committee at the seminar.		

Table 9.3.2 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (4)1 Support for Manual Preparation for Maintenance		Writer T. Kameyama
Outputs	Maintenance manual will be prepared as "Technical achievement output"		
Activities	C/P	C/P will prepare the maintenance manual by himself. (C/P in charge: Mr. Souksavanh, Mr. Bounleng, Mr. Khamfong)	
	JICA Expert	JICA Experts assist C/P's activities. (Expert in charge: Mr. Kameyama)	
Objectively verifiable indicators	- Preparation of maintenance manual - Development the model of the maintenance activity by the public participation - Preparation of B/P work register book		
Means of verification	- Maintenance manual - Riverbank protection work register book		
Summary	JICA experts assisted the C/P's activities in the following points: - Indicate the contents of manual and register book - Guidance of the register book - Preparation the figure and photograph for the manual		
Completion degree of the indicators	100%		
Activity record	- Confirmed the progress of the C/P' activities. - Review about the content of maintenance manual. - Hearing & interview on budget for maintenance work - Hearing constraints and key issue for maintenance in MCTPC - Discussion for collaboration on public participation for maintenance - Advise for preparation on maintenance manual and B/P works register book		
Issues to be improved	- Awareness on the improving and revise of manual and register book. - C/P make their job more efficient, it is necessary to bring out their ownership. - MCTPC understands importance of the maintenance work but the priority is low due to budget volume. - MCTPC: C/Ps will promote the maintenance work incorporated with public participation. - Monitoring and detailed maintenance articles shall be sustainable to improve the manual.		
Remark	The maintenance work shall be incorporated with public participation due to insufficient budget. It is required that the pilot workshop for B/P works maintenance activity will be held at the site (Dongphosi or Sibounheuang). The method of maintenance by public participation will be created sustainable.		

Table 9.2.5(1/2) Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (4)2 Support for Manual Preparation for Monitoring		Writer R. Kobayashi
Outputs	Monitoring manual, monitoring check list are prepared by C/P.		
Activities	C/P	C/P makes execution plan for preparation of the manual and checklist by themselves and start to preparation. (Person in charge: Mr. Souksavanh and Mr. Viengsavanh)	
	JICA Expert	JICA Experts assist C/P's activities. (Person in charge: Dr. Kobayashi and Ms. Kawabata)	
Objectively verifiable indicators	Completion degree of execution exceeds 80%.		
Means of verification	Monitoring manual and monitoring check list prepared by C/P		
Summary	JICA experts assisted the C/P's activities in the following manner: Advice on the items below in preparation of the monitoring manual: -Preparing check list during executing monitoring work -Preparation of manual on connecting ADCP equipments -Calibration method of the echo sounder equipment for the cross sectional survey -Method of data arrangement from the bathymetric survey recording chart		
Completion degree of the indicators	50 %		
Activity record	-Nov.9 and Nov.10'06:Advice and explanation on preparation of check list and manual on connecting ADCP equipment -Feb. 19'07: Explanation of calibration method of echo sounder -Feb. 22'07: Explanation of data arrangement from the bathymetric survey recording chart.		
Supporting material by JICA experts	Nothing		
Issues to be improved	-Permeation of basic understanding on recording monitoring results -Understanding of the important points on achieving the bathymetric survey.		
Remark			

Table 9.2.5(2/2) Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (4)2 Support for Manual Preparation on Monitoring(Vegetation)		Writer I. Kawabata
Outputs	Monitoring manual, monitoring item check list are prepared.		
Activities	C/P	C/P makes execution plan for preparation of manual and checklist by themselves and start to preparation.. (Person in charge: Mr. Viengsavanh, Mr. Souksavanh)	
	JICA Expert	JICA Expert assist C/P's preparation. (Person in charge: Mr. Kobayashi, Ms. Kawabata)	
Objectively verifiable indicators	Completion degree of execution exceeds 80%		
Means of verification	Monitoring manual Monitoring check list		
Summary	JICA expert saw the change of vegetation with C/P, and advised them the point of view about the monitoring.		
Completion degree of the indicators	100%		
Activity record	・8/May/06: Survey of vegetation in Nongheo site. ・9/JMay/06: Survey of vegetation in Dongphosi site. ・10/May/06: Survey of vegetation in Sibounheuang site Chom Cheng site. ・19/Jan/07: Survey of vegetation in Nongheo site. ・24/Jan/07: Survey of vegetation in Sibounheuang site Chom Cheng site. ・26/Jan/07: Survey of vegetation in Dongphosi site.		
Supporting material by JICA experts	None		
Issues to be improved	Continuation of monitoring		
Activity policy for the next year	To promote making the monitoring manual and monitoring check list		
Remark	It is not necessary to continue monitoring of willow individual. Monitoring of vegetation will be continuing.		

Table 9.2.6 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (5) Recommendation on Monitoring Existing Facilities		Writer R. Kobayashi
Outputs	Plan of monitoring of existing facilities is prepared.		
Activities	C/P	C/P prepares the execution plan by themselves. (Person in charge: Mr. Souksavanh, Mr. Kamfong, Mr. Bouleng and Mr. Viengsavanh)	
	JICA Expert	JICA Expert advises on the C/P's achievement. (Person in charge: Dr. Kobayashi)	
Objectively verifiable indicators	Completion degree of execution plan of monitoring report exceeds 90%.		
Means of verification	Monitoring Report prepared by C/P		
Summary	JICA expert assisted the C/P's activities in the following manner: 1. Hearing of the monitoring progress on the existing riverbank protection works 2. Advice on the schedule management of the monitoring work 3. Advice on the monitoring results writing 4. Guidance on report making based on monitoring check list for existing riverbank protection facilities		
Completion degree of the indicators	80 %		
Activity record	・ Nov.2'06:Adivice on monitoring report making ・ Nov.3'06:Check of monitoring results on existing riverbank protection works ・ Nov.8'06:Explanation of compiling monitoring results on existing riverbank protection works ・ Nov.9'06:Advice on scheduling based on the monitoring report prepared by C/P and on further report making ・ Feb.12'07 ： Advised on preparation of monitoring report ・ Feb. 16'07: Check of the monitoring result partly ・ Feb 19'07: Check of the remaining monitoring report ・ Feb 19- 22'07: Advice on the preparation work of the monitoring report		
Supporting material by JICA experts	Explanatory materials on the occasion of above activities		
Issues to be improved	・Permeation of understanding the basic of monitoring facilities by continuous repetition of monitoring activities.		
Remark			

Table 9.2.7 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (6) Recommendation on Maintenance of Existing Facilities		Writer T. Kameyama
Outputs	Engagement for maintenance management improvement of existing facilities is conducted.		
Activities	C/P	C/P will conduct the maintenance works by themselves. (Person in charge: Mr. Souksavanh, Mr. Khamfong and Mr. Bounleng)	
	JICA Expert	JICA Experts will give advices on the following; ・Selection of rehabilitation or repair places ・Improvement plan of maintenance organization.(Person in charge: Mr. Kameyama)	
Objectively verifiable indicators	- Maintenance monitoring report preparation - Rehabilitation or repair work - Maintenance manual guideline preparation		
Means of verification	- B/P works register book and annual monitoring report - Rehabilitation or repair work document - Maintenance manual report		
Summary	JICA experts assisted the C/P's activities as follows: - Preparation and implementation of repair work at Dongphosi site - Preparation to provide maintenance manual. - Utilization of monitoring result of existing B/P protection works. - Key issue identification and recommendation for maintenance activity		
Completion degree of the indicators	Existing B/P works register book (100%) Repair work (100%) Maintenance manual (100%)		
Activity record	- Advised on maintenance items the existing B/P works - Distributed the material of existing B/P works - Advised on developing policy for register of existing B/P works - Explanation to local residents for repair work incorporated public participation - Equipment procurement for repair work incorporated of public participation. - Arrangement of Meeting between MCTPC&DVTPC for maintenance		
Supporting material by JICA experts	・Explanatory document and data for the activities described above.		
	・Budget preparation for repairing existing collapsed place. ・Extraction of comments in monitoring report ・Revise of register book (next stage-2007) ・Procurement of vehicle for monitoring & rehabilitation work ・Workshop organizing of public participation for maintenance work		
Remark	- Budget for maintenance is not secured. - Procurement some equipments for of public participation for maintenance work - Management capacity of MCTPC is required for public participation for maintenance work		

Table 9.2.8 Summary of Each Activity in 3rd Year

Item	3.3.3 Support for Design, Construction and Maintenance of Bank Protection Works (7) Field Guidance of Soda Technique		Writer S.Ohashi
Outputs	Soda related works are constructed at Sibounheuang-Muang Wa Site		
Activities	C/P	C/P and the contractor execute construction of Soda related works by themselves (Person in charge: Mr. Khamfong & Mr. Bounleng)	
	JICA Expert	JICA Experts conduct field guidance and giving advice (Person in charge: Mr. Ohashi)	
Objectively verifiable indicators	Degree of the executed work exceeds 60%		
Means of verification	Yearly check result		
Summary	JICA expert instructs following articles for C/P: 1. Instruction of SODA mattress assembling 2. Demonstration of Cobble Stone with SODA works 3. Instruction of culvert drain work by RENSAI and cut bamboo 4. Instruction of culvert drain work on slope at Nongheo site		
Completion degree of the indicators	80% （As understanding of progress management using Soda method.）		
Activity record	-From Feb.2: to Feb 21: Explained and instructed progress management mentioned above four items to C/P.		
Supporting material by JICA experts	-Sample document for checking material -Sample document for checking completion work		
Issues to be improved	To understand the importance of TAISHA (connection branch) for hurdle work, and to understand the skilled worker's spirit		
Activity policy for the next year			
Remark	・The way of SODA flooring and assembling in consideration of the flow condition to obtain the mattress function and the way of making TAISHA are understood.		

9.3 Dissemination of Information and Technique on Construction Method

The summary of the following Project activities in 3rd year related to this category is as shown in Table 9.3.1 to Table 9.3.6.

1) Support for Preparation of Seminar and Lecture Materials
2) Laotian Translation of Manual for Riverbank Protection
3) Lectures at Faculty of Engineering and Architecture, National University of Laos
4) Support for Opening Seminars on Construction Method
5) Support for Material Preparation to Enlighten Local Inhabitants
6) Assisting Promotion of Residents-participated Simple Vegetation Work

Table 9.3.1 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method		Writer Y. Kato
	(1) Support for Preparation of Seminar and Lecture Materials 1. Preparation of Seminar and Lecture Materials		
Outputs	C/P can prepare the materials for seminars and lectures <Technical Cooperation Output> by themselves		
Activities	C/P	C/P prepare the materials by themselves (Person in charge: Mr. Viengsavanh & Mr. Souksavanh)	
	JICA Expert	JICA Experts provide assistance (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Seminar material: 4 Lecture material: 7		
Means of verification	Materials for seminars and lectures (MS PowerPoint) <refer to Technical Cooperation Output 5-I & II>		
Summary	C/P have almost prepared the following materials by themselves gaining the assistance of Expert. -Seminar material:5 -Lecture material：7		
Completion degree of the indicators	100%		
Activity record	<Seminar material: 5> -UNDP seminar on riverbank erosion at Bokeo province: 1 (by Mr. Viengsavanh, Presentation on May 24, 2006) -JARCOM seminar on riverbank protection works：2 (by Mr. Viengsavanh, Presentation on February 6, 2007) -Seminar on riverbank protection technique based on river works in Japan for provincial DCTPC：2 (by Mr. Viengsavanh and Mr. Souksavanh, Presentation on March 14, 2007) <Lecture materials for university: 7> -Lectures on May 16 & 18, 2006：2 (by Mr. Souksavanh) -Q & A of final test on July 26, 2006：2 (by Mr. Viengsavanh and Mr. Souksavanh) -Lectures on March 7, 2007：2 (by Mr. Viengsavanh and Mr. Souksavanh) -Lecture on May 2007 to be conducted：1 (by Mr. Souksavanh)		
Supporting material by JICA experts			
Issues to be improved			
Activity policy for the next year	C/P will continue seminar and lecture materials creation even after the completion of this Project.		
Remark			

Table 9.3.2 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method (1)2 Laotian Translation of Manual for Riverbank Protection		Writer H.Watanabe
Outputs	C/P can prepare Manual for Riverbank Protection (Laotian version) <Technical Cooperation Output> by themselves.		
Activities	C/P	C/P translate the English manual into Laotian. (Person in charge: Mr. Souksavanh & Mr. Bounleng)	
	JICA Expert	JICA Experts conduct progress management and provide assistance. (Person in charge: Mr. Watanabe)	
Objectively verifiable indicators	- Translation progress rate 100%		
Means of verification	- Laotian Manual		
Summary	JICA Expert conducted progress management and provided assistance for C/P in the following manner: 1. Check on progress based on translation schedule, and 2. Complete draft of manual "MANUAL FOR THE RIVERBANK PROTECTION" in Laotian. (Translation progress rate 90%)		
Completion degree of the indicators	100% (C/P completed draft of manual in Laotian)		
Activity record	- C/P completed draft of manual in Laotian on June, 2006. - C/P completed manual in Laotian on August, 2006.		
Supporting material by JICA experts	None		
Issues to be improved	Draft of manual in Laotian was completed by C/P themselves(Mr. Souksavanh, Mr. Bounleng and Mr. Khamfong) on June, 2006. Right after this, Mr. Viengsavanh conducted comprehensive inspection in rainy season 2006.		
Activity policy for the next year	None		
Remark	Sharing of roles for translation is as follows; (Page is in English version) - Mr. Khamfong from Page A1 to A15, from Page B1 to B15 - Mr. Bounleng from Page A16 to A29, from Page B16 to B30 - Mr. Souksavanh from Page A30 to A45, from Page B31 to B45 - Mr. Viengsavanh Comprehensive inspection		

Table 9.3.3 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method (2) Lectures at Faculty of Engineering and Architecture, National University of Laos		Writer Y. Kato
Outputs	C/P can give lectures by themselves regularly at the university for students can take credit and to be able to disseminate the information/technique on construction method.		
Activities	C/P	C/P give lectures in the university (Person in charge: Mr. Viengsavanh & Mr. Souksavanh)	
	JICA Expert	JICA Experts give advice on the contents of lectures. (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Number of lectures: 8 times		
Means of verification	Lecture materials (MS PowerPoint)、Result of field lecture ＜refer to Technical Cooperation Output 5-II>		
Summary	C/P have conducted the following activities by themselves based on the MOU (refer to Appendix 4) gaining the cooperation of the university. As a result, the regularization of lecture and the conferment of credit which this activity aimed at were realized. -C/P: Make lectures and the preparation of final test -University: Evaluation of 53 attended students of 5-year bachelor to give 3 credit		
Completion degree of the indicators	100%		
Activity record	<6 lectures and scholastic evaluation> -Lectures on May 16 & 18, 2006：2 (by Mr. Souksavanh) -Q & A of final test on July 26, 2006：2 (by Mr. Viengsavanh and Mr. Souksavanh) -Scholastic evaluation by DCT on August 2006 -Lectures on March 7, 2007：2 (by Mr. Viengsavanh and Mr. Souksavanh) <Relating activities> -The support application to Nagao Natural Environment Foundation, Japan (NEF) by Expert for making lecture activities more active by cooperation with the Project was approved in July 2006. -October 10, 2006: Expert utilized the above-mentioned NEF support, purchased one notebook PC, and supplied the university. -March 2007: The syllabus proposed in the MOU was revised based on the discussion with C/P, the university and Expert.<refer to next page>		
Supporting material by JICA experts			
Issues to be improved	Since the cooperation degree to the Project activity of the university has been very large, it can consider mostly that the university is sub C/P agency. Therefore, some direct support to DCT from JICA will be desired in the future.		
Activity policy for the next year	Based on the MOU, C/P will continue lectures in cooperation with the university even after the project is completed.		
Remark	The mechanism in which not only C/P but a university lecturer of DCT (Mr. Khamseum) could continue teaching-materials development and lecture by use of NEF support was built after the end of the Project.		

2007/3/7

Syllabus of Lectures in 2007 by MCTPC
and Department of Communication and Transport (DCT)
Faculty of Eng. & Architecture, National University of Laos

Name of lecture	Riverbank Protection Technique
Contents of lecture	1) Outline of Mekong riverbank protection around Vientiane City (Introduction of river work technique in Japan based on technical cooperation by JICA) 2) Introduction of latest topics on general river engineering (based on the outcome of JICA training in Japan for MCTPC counterpart)
Objectives of lecture	To make students interest in and understand general river engineering focusing on riverbank protection
Number of credit	3 credit
Objective course	Communication & Transportation Engineering
Objective grade	5-year, bachelor
Number of students	Around 50 students
Lecturer	Mr. Viengsavanh (DOR, MCTPC), Mr. Khamseum (DCT) and Mr. Souksavanh (DOR, MCTPC)
Location of lecture	Classroom in DCT & Construction site of MCTPC bank protection works
Format of teaching material	Attractive PowerPoint material including many photos, graphs and movies (Handout of the PowerPoint will be distributed to students)
Grading of students	1) final test/ year and 2) attendance rate will be reflected to transcript sheet.
Cycle of lecture	September – August (Lao school year)

Lecture Schedule (DRAFT)

Date	Lecturer	Subject of lecture	Lecture time
Mar. 2007	Mr. Viengsavanh	Challenge to protect Mekong riverbank around Vientiane City	90 minutes (45 min.*2 times)
Mar. 2007	Mr. Souksavanh	Introduction of traditional river works in Japan	90 min.
Apr. 2007	Mr. Viengsavanh	Construction of riverbank protection works by MCTPC	90 min.
Apr. 2007	Mr. Viengsavanh	Visit construction site of MCTPC riverbank protection work (outdoor)	90 min.
May. 2007	Mr. Viengsavanh	Test of riverbank protection by Mekong willow planting	90 min.
May 2007	Mr. Khamseum	Riverside environment after Soda (Part 1)	90 min.
May 2007	Mr. Souksavanh	Introduction of river structures	90 min.
Jul. 2007	Mr. Khamseum	Riverside environment after Soda (Part 2)	90 min.
		Total	8 lectures/ year
Aug. 2007		Final Test	
Remarks			

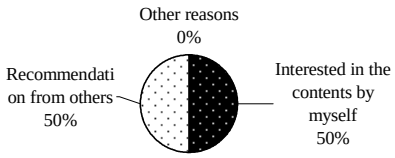
Table 9.3.4 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method (3) Support for Opening Seminars on Construction Method		Writer Y. Kato
Outputs	C/P can plan and manage seminars by themselves		
Activities	C/P	C/P open seminars and make presentation in charge. (Person in charge: Mr. Viengsavanh & Mr. Souksavanh)	
	JICA Expert	JICA Experts provide assistance on the planning, management. (Person in charge: Mr. Kato, Mr. Kameyama and Mr. Watanabe,)	
Objectively verifiable indicators	Seminar: 2		
Means of verification	Seminar materials＜refer to Technical Cooperation Output 5-I＞		
Summary	C/P and Expert prepared and held the following 2 seminars together.		
Completion degree of the indicators	100%		
Activity record	C/P opened the following 2 seminars in cooperation with Experts: -February 5−9, 2007 (5 days)：JARCOM seminar on riverbank protection (9 participants from 5 ASEAN countries)<refer to the program and the result of questionnaire survey for participants attached to this table> -March 14-15, 2007 (2 days)： Seminar on riverbank protection technique based on river works in Japan for provincial DCTPC <refer to the program attached to this table> C/P make lectures at the following UNDP seminar as invited lecturer: -May 23-24, 2006 (2 days)：UNDP seminar on the riverbank erosion at Bokeo Province (Mr. Viengsavanh lecture： Demonstration for residents-participated simple vegetation work)		
Supporting material by JICA experts	Seminar Program (Draft)		
Issues to be improved	-The advance-preparation work of JARCOM seminar became a heavy burden considerably for C/P and Experts causing the delay and obstruction of other project activities. It is necessary to examine the smoother preparation/ management method taking advantage of these teachings. - At the seminar for provincial DCTPC in March, since MCTPC was not able to secure the trainee's traveling expenses on the organization regulation like last year, Japanese side paid instead. It is necessary to demand the budget system improvement of MCTPC succeedingly.		
Activity policy for the next year			
Remark			

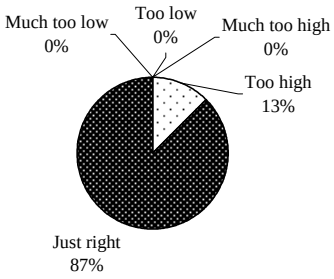
JARCOM SEMINAR PROGRAM

DATE	DAY	ACTIVITY	DETAILS
5th Feb 2007	Mon	Opening Ceremony & Training Course	**Opening Ceremony** **Module 1** **Presentation of Country Reports focusing on Riverbank Protection** - Presentation of country reports - Group discussion on country reports
6th Feb 2007	Tue	Training Course	**Module 2** **The Present Status of River Bank Protection in the Lao PDR** - General Riverbank Protection Policy in the Lao P.D.R. - Outline of the History of Technology Transfer in Riverbank Protection in the Lao P.D.R. - Construction of Riverbank Protection in Vientiane City by MCTPC **Module 3** **Traditional Riverbank Protection Methodology in Japan** - Special Lecture (Application of the Soda Method for Riverbank Protection in Japan) - Question and answer session
7th Feb 2007	Wed	Site Workshop	**Module 4 Site Visit** - Site Tour by Boat (comparison of previous attempts of bank protection with those of JICA and MCTPC) - Site Explanation of JICA's Pilot Bank Protection Work - Site Explanation of Simple Bank Protection Work through the Planting of Vegetation
8th Feb 2007	Thu	Site Workshop	**Module 5 Site Demonstration of the Soda Method** - Site Explanation of Bank Protection Work by IDI, JICA's Pilot Work and MCTPC's Work - Demonstration and Field Practice of the Soda Method (Soda Mattress, Soda Drainage, Cobble Stone with Willow Branch Work)
9th Feb 2007	Fri	Evaluation of the Training Course & Closing Ceremony	*** Training Evaluation** - Preparation of a training report - Evaluation of trainees *** Closing Ceremony**

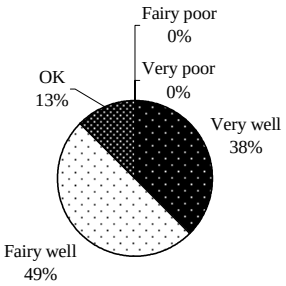
Q1. What is the reason you applied to this seminar?



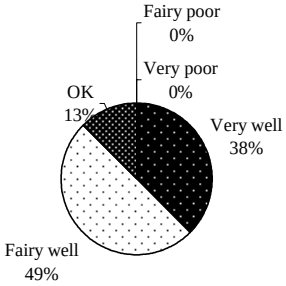
Q2. How appropriate was the speed of the lecture?



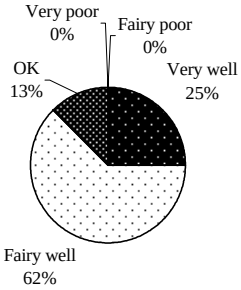
Q3. How clearly was the lecture heard?



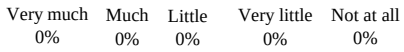
Q4. How clearly could you understand lecturer's English?



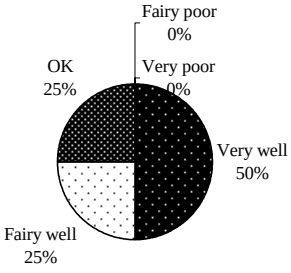
Q5. How well did the lecture use the Power Point?



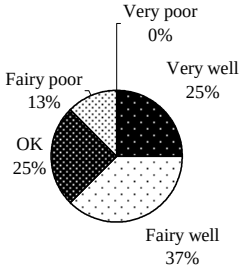
Q6. If not, how much of a problem was this?



Q7. How clearly were the aim of the lecture covered?

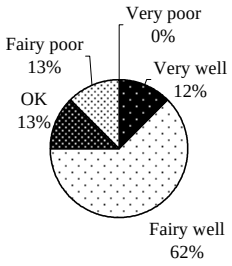


Q8. How well did the lecture link with the problem of rivernbank / sea shore protection in your country?

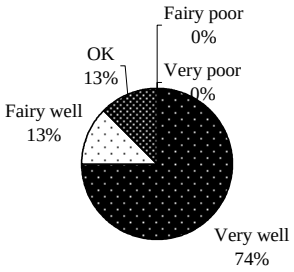


Result of Questionnaire Survey (JARCOM Seminar)

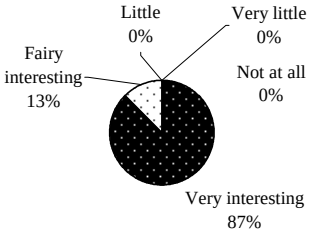
Q9. How informative was the lecture to solve the problem of riverbank / sea shore protection in your country?



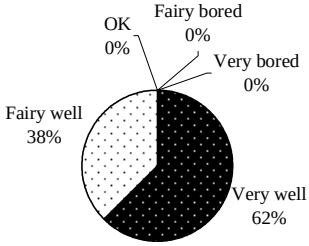
Q10. How appropreate was the demonstration of SODA works?



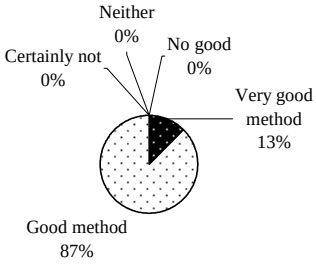
Q11. How interesting was the demonstration of SODA works?



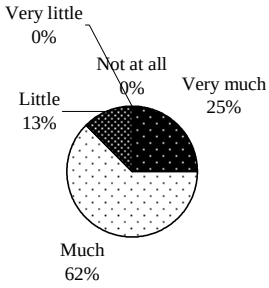
Q12. How appropriate was the site visit?



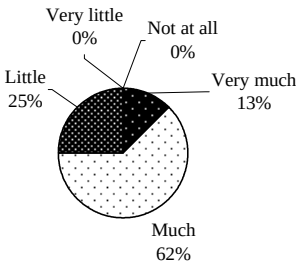
Q13. How appropriate was the SODA Method for applying construction work?



Q14. How well did you communicate with participants or lecturers?



Q15. How well did you exchange opinions with participants or lecturers?

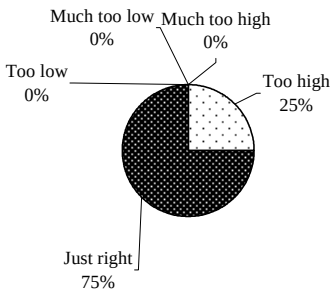


Result of Questionnaire Survey (JARCOM Seminar)

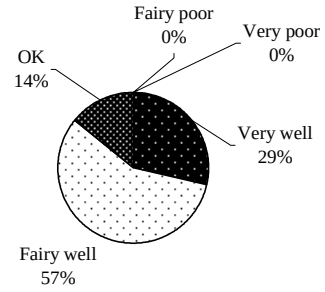
Q16. Which session was the most interested in for you? Please place in the order.

Ranking	Title of Session	Satisfaction rating
1	Demonstration and Field practice of Soda Works	84.85%
2	Special Lecture (Application of Soda method for Riverbank Protection in Japan)	59.09%
3	Supervised tour by boat - Site survey on existing damaged bank protection facilities and new facilities by JICA Pilot Works-	42.42%
4	Construction of Riverbank Protection Works by MCTPC at Sibounheuang - Muang Wa, Vientiane City	39.39%
5	Site Explanation on Bank Protection Works by IDI, JICA Pilot Works and MCTPC Works at Sibounheuang-Muang Wa Construction Site	37.88%
6	Site Explanation on Bank Protection Works by JICA Pilot Works at Dongphosi Site	36.36%
7	Site Explanation on Bank Protection Works by Simple Vegetation at Nongheo Site	25.76%
8	Outline of Technology Transfer History – from IDI test project to JICA Development Study –	24.24%
9	Site Explanation on Bank Protection Works by JICA Pilot Works at Chom Cheng Site	24.24%
10	General Riverbank Protection Policy in Lao P.D.R.	18.18%

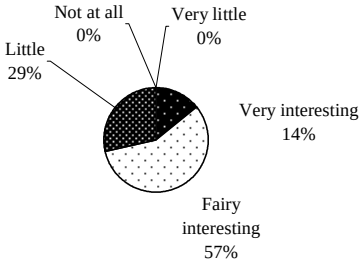
Q17. Overall, how appropriate was the level of information presented?



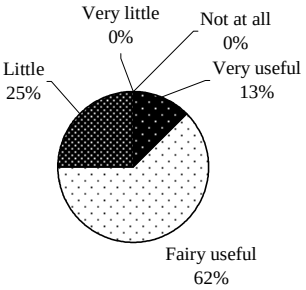
Q18. Overall, how clearly was the information presented?



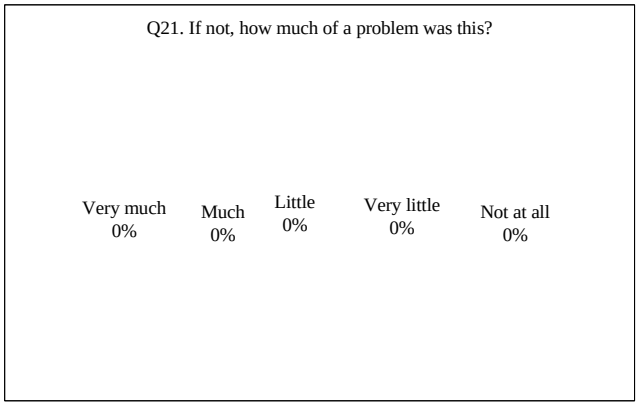
Q19. Overall, how interesting was the information presented?

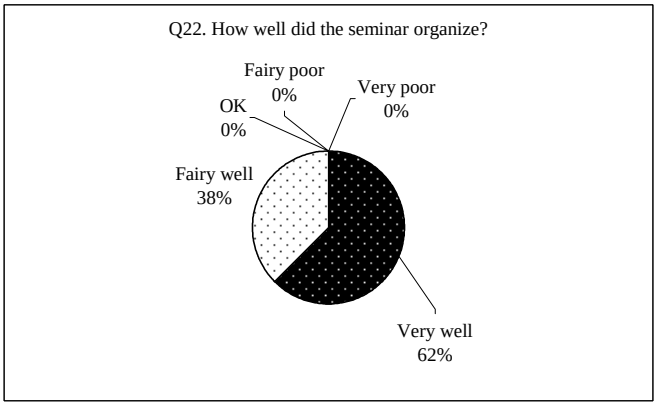


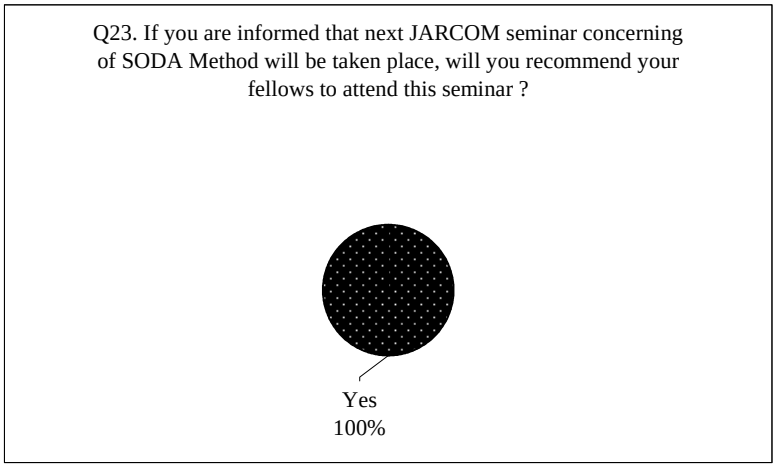
Q20. Overall, how useful were any textbook or handouts?



Result of Questionnaire Survey (JARCOM Seminar)







Result of Questionnaire Survey (JARCOM Seminar)

Ministry of Communication, Transport, Post and Construction (MCTPC)

Japan International Cooperation Agency (JICA)

JICA Expert Team for Technical Cooperation Project on Riverbank Protection Works in the Lao P.D.R.

Seminar on Riverbank Protection Technique based on River Works in Japan - Vientiane, 14th and 15th March, 2007 -

Program:

Time	Theme	Lecturer
The 1st Day (14th)		
Morning <Indoor Presentation in MCTPC Meeting Room>		
9:00 ~ 9:10	Keynote Opening Speech	Mr. Viengsavath Siphandone, Director General of DOR, MCTPC
9:10 ~ 10:15	Construction of Riverbank Protection Works by MCTPC at Sibounheuang - Muang Wa, Vientiane City (Part 1)	Mr. Viengsavanh Phasavath, Chief of Riverbank Protection Unit, MCTPC
10:15 ~ 10:25	Break	
10:25 ~ 11:10	Construction of Riverbank Protection Works by MCTPC at Sibounheuang - Muang Wa, Vientiane City (Part 2)	Mr. Viengsavanh Phasavath, Chief of Riverbank Protection Unit, MCTPC
11:10 ~ 11:40	Test of riverbank protection by Mekong willow planting	Mr. Souksavanh Thithavong Senior Staff of Riverbank Protection Unit, MCTPC
11:40 ~ 12:00	Free Discussion	
12:00 ~ 13:30	Break	
Afternoon <Outdoor Workshop>		
13:30 ~ 14:00	Move from MCTPC to Site	
14:00 ~ 14:30	Site Explanation on Existing Bank Protection Works at Sibounheuang by JICA and MCTPC	Mr. Viengsavanh Phasavath (MCTPC), Mr. Yasuhiko Kato (Chief JICA Expert)
14:30 ~ 16:30	Demonstration and Field practice on Soda Mattress (River works in Japan) at Sibounheuang - Muang Wa Construction Site	Mr. Viengsavanh Phasavath (MCTPC), Mr. Souksavanh Thithavong (MCTPC)
16:30 ~ 17:00	Move from Site to MCTPC	

The 2nd Day (15th)		
Morning <Outdoor Workshop>		
9:00 ~ 9:30	Move from MCTPC to Site	
9:30 ~ 11:30	Demonstration and Field practice on Cobble Stone with Willow Branch Work (River works in Japan) at Sibounheuang - Muang Wa Construction Site	Mr. Viengsavanh Phasavath (MCTPC), Mr. Souksavanh Thithavong (MCTPC)
11:30 ~ 12:00	Move from Site to MCTPC	
12:00 ~ 13:30	Break	
Afternoon <Site Visit>		
13:30 ~ 14:00	Move from MCTPC to Site	
14:00 ~ 15:00	Site Explanation on Existing Bank Protection Work at Ban Dongphosi by JICA	Mr. Viengsavanh Phasavath (MCTPC), Mr. Yasuhiko Kato (Chief JICA Expert)
15:00 ~ 15:15	Move	
15:15 ~ 15:40	Site Explanation on Existing Bank Protection Work at Wat Chom Cheng by JICA	Mr. Viengsavanh Phasavath (MCTPC), Mr. Yasuhiko Kato (Chief JICA Expert)
15:40 ~ 16:00	Move from Site to MCTPC	
16:00 ~ 16:05	Closing Address	Mr. Phan Phouthavongs, Deputy Director General of DOR, MCTPC
16:05 ~ 17:00	Convivial Meeting	

Table 9.3.5 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method (4) Support for Material Preparation to Enlighten Inhabitants		Writer H.Watanabe
Outputs	C/P can prepare the material to enlighten local inhabitants.		
Activities	C/P	C/P prepare and/or distribute the material by themselves. C/P send the material for JICA website regularly. (Person in charge: Mr. Viengsavanh, Mr. Souksavanh and Mr. Bounleng)	
	JICA Expert	JICA Experts provide assistance on the preparation. (Person in charge: Mr.Watanabe)	
Objectively verifiable indicators	Self-reliance rate for the preparation (90%)		
Means of verification	- Public Relations(PR) material (advertising of our project and enlightening river environment conservation) - Contents of project web site		
Summary	JICA Expert conducted to support activity of C/P in following manner ; 1. Introduction of JICA Technical Cooperation Website for all C/P. 2. Request sending material which should be posted on Website for C/P. 3. Supervise PR material.		
Completion degree of the indicators	90%		
Activity record	-JICA Expert introduced JICA Technical Cooperation Website for all C/P. -C/P sent material to be posted on Website approximately every 3 months. - Mr. Souksavanh made PR material by himself.		
Supporting material by JICA experts	None		
Issues to be improved	Considering that contributing PR material to public is shortage of impact, we decided to make a calendar with catch-phrase for river environment conservation and pictures of our activities. The calendar will be contributed restaurants or shops, posted on the wall.		
Activity policy for the next year	None		
Remark	Explanatory signboard at Sibounheuang-Muang Wa site will be installed after finish construction work this year. Articles posted on JICA website are as follows; - 2006/04/12 Japanese TV program introduced our project - 2006/07/04 Mr. Souksavanh gave a second lecture at University of Laos - 2006/08/08 UNDP invited us to the seminar as instructor at Borkeo Province - 2006/09/27 We are trying to establish maintenance system by local people - 2007/02/24 JARCOM Seminar was taken place successfully		

Table 9.3.6 Summary of Each Activity in 3rd Year

Item	3.3.4 Dissemination of Information and Technique on Construction Method (5) Assisting Promotion of Residents-participated Simple Vegetation Work		Writer I. Kawabata
Outputs	1) C/P can determine the execution site of residents-participated simple vegetation work 2) C/P can select the method of simple vegetation work and execute the work		
Activities	C/P	C/P decides the site and make the execute plan. . (Person in charge: Mr. Souksavanh, Mr. Phone Say)	
	JICA Expert	JICA Expert advice on technical and administrative aspects.	
Objectively verifiable indicators	Completion degree of execution plan exceeds 90%		
Means of verification	Execution plan (draft)		
Summary	It was supported for technique and management in the following ways. 1. Suggestion for selecting the site. 2. Suggestion for the design. 3. Advises about the method of construction.		
Completion degree of the indicators	80%		
Activity record	・15/Jan：To check the condition of the site in Nongheo. ・16/Jan：To discuss about construction method with C/P. ・17/Jan：To discuss about planting method with C/P. ・18/Jan：To advise about planting method with C/P. ・22/Jan：To advise about construction method in Nongheo site. with C/P ・23/Jan：To discuss about construction method in Nongheo site. with C/P ・25/Jan：To plant willow tempolary in Nongheo site. with C/P ・15/Feb：To check the condition of the site in Nongheo. ・16/Feb：To discuss about construction method with C/P. ・19-20/Feb：To support for construction.		
Supporting material by JICA experts	・Design of the new method(draft)		
Issues to be improved	Since the situation of a riverbank changes with places, it is necessary to select construction method according to the situation of riverbank. In this time, the simple drain only using Soda and willow was constructed by residents as a measure against gully erosion which is one of the causes of riverbank erosion. Although simple vegetation work can be enough enforced by residents, its element influenced by natural conditions, and it requires that C/P can select now a suitable construction method and construction time.		
Activity policy for the next year			
Remark	The residents of Laos had high capability, and when it could teach appropriately, simple vegetation work can be constructed by residents enough. It is required that simple vegetation work will be spread to rural areas by cooperation with NGO.		

9.4 Monitoring of Construction Method of Riverbank Protection

The summary of the following Project activities in 3rd year related to this category is as shown in Table 9.4.1 to Table 9.4.2.

1) Confirmation of Fixation Condition of the Pilot Riverbank Protection Works
2) Report Preparation on Reasonableness of Construction Method selected in M/P

Table 9.4.1(1/2) Summary of Each Activity in 3rd Year

Item	3.3.5 Monitoring of Construction Method of Riverbank Protection (1) Confirmation of Fixation Condition of the Pilot Riverbank Protection Works		Writer R. Kobayashi
Outputs	1) Continuous monitoring is executed. 2) Monitoring results are arranged and evaluated		
Activities	C/P	C/P makes execution plan of continuous monitoring work and evaluated the results. (Person in charge: Mr. Souksavanh, Mr.Viengsavanh and Mr. Phonesay)	
	JICA Expert	JICA Experts advise for C/P's work. (Person in charge: Dr. Kobayashi)	
Objectively verifiable indicators	The degree of completion of execution plan exceeds 90%.		
Means of verification	Monitoring report including result and consideration prepared by C/P		
Summary	JICA experts assisted the C/P's work on the items below: 1. Hearing and confirmation of water level monitoring 2. Staff gauge situation at Dongphosi site 3. Cross sectional survey work progress 4. Guidance on velocity measurement by ADCP 5. Advice on the execution of cross sectional survey at site		
Completion degree of the indicators	70%		
Activity record	・ Nov.2'06:Hearing the situation of water level gauging equipment ・ Nov.4'06:Comfirming the breaking situation of water level staff gauge at Dongphosi site ・ Nov.7,'06:Check of connection of ADCP equipments ・ Nov.8'06:Advice on arrangement of water level monitoring record and cross sectional survey results ・ Nov.9'06:Comfirmation of monitoring execution situation and advice on the repairing damaged water level gauging staff ・ Feb.9'07 ：Hearing of monitoring situation ・ Feb. 10'07: Confirmation of the staff gauge condition at Dongphosi site ・ Feb.12'07 : Advice on the execution plan of monitoring work and arrangement of water level data ・ Feb.19-21'07: Advice on the cross sectional survey activities		
Supporting material by JICA experts	Explanatory material on the above activities		
Issues to be improved	・ Permeation of understanding the meaning of cross sectional survey in the monitoring of the pilot riverbank done by JICA		
Remark			

February 14, 2006

Recommendation on Riverbank Protection Work by Gryones

By Rokuro Kobayashi, JICA

1. Riverbank Protection by Groyne at Ban Hom

   -Arrangement of groynes at Ban Hom in the design drawing prepared by DCTPC is located just up-stream of existing rip-rap groynes

   The riverbank just downstream of the upper existing groyne is eroded in the flood during last flood season. So, the new groynes is to be set inclined about 5 degree upstream wards to reduced possible erosion just downstream of the groyne structures.

   -Impingement point of the main flow of the Mekong river is further upstream about 200m from the upper end groyne, that is, there is some no-riverbank protection in the area. Continuous groyne works will be necessary to protect the riverbank of this area.

2. Rverbank protection work by groyne work at Sittantai

   -Arrangement of groynes at this site is also same situation at Ban Hom site, that is, there is some unprotected riverbank between the upstream-end groyne and the impingement point of the main flow of the Mekong river. Additional groynes are to be set in this area considering the result of actual riverbank situation after next flood season around the groynes work structure to be constructed this year.

   -Setting of the groyne structure is at 90 degree with the riverbank line.

   -Additional groyne work to be set upstream or down stream shall be set considering the riverbank situation after flood season around the groyne works constructed this year.

Table 9.4.1(2/2) Summary of Each Activity in 3rd Year

Item	3.3.5 Monitoring of Construction Method of Riverbank Protection (1) Confirmation of Fixation Condition of Pilot Riverbank Protection Works (Vegetation)		Writer I. Kawabata
Outputs	1) Successive monitoring is executed. 2) Monitoring results are arranges and evaluated.		
Activities	C/P	C/P makes execution plan of continuous monitoring work and evaluates the result. (Person in charge: Mr. Viengsavanh, Mr. Souksavanh)	
	JICA Expert	JICA Expert advise for C/P's work. (Person in charge: Mr. Kobayashi, Ms. Kawabata)	
Objectively verifiable indicators	Completion degree of execution plan exceeds 90%		
Means of verification	Execution plan of monitoring		
Summary	It was supported in the following ways. 1. Monitoring was executed with C/P using the sample. 2. To advise about making the investigation list of monitoring.		
Completion degree of the indicators	100%		
Activity record	・24/May/06: Survey of vegetation in Sibounheaung site and Chom Cheng site. ・26/May/06: Survey of vegetation in Dongphosi site. ・17/Jan/07: Discussion about the planting method of willow in Sibounheaung site site. ・24/Jan/07: Survey of vegetation in Sibounheaung site and Chom Cheng site. ・26/Jan/07: Survey of vegetation in Dongphosi site.		
Supporting material by JICA experts	None		
Issues to be improved	A lot of natural willows grow up in Dongphosi site. The formation process of willow community and the effective planting method is established.		
Activity policy for the next year			
Remark	In Sibounheaung site willow cannot grow up easily. Since it was thought that the artificial influences of abandonment of garbage etc. are great as for this. In this time, seedling was planted in established riverbank in this time.		

Table 9.4.2 Summary of Each Activity in 3rd Year

Item	3.3.5 Monitoring of Construction Method of Riverbank Protection (3) Report Preparation on Reasonableness of Construction Method selected in M/P		Writer Y. Kato
Outputs			
Activities	C/P	C/P cooperate to prepare the report (Person in charge: Mr. Viengsavanh)	
	JICA Expert	JICA Expert prepare the report in cooperation with C/P (Person in charge: Mr. Kato)	
Objectively verifiable indicators	Degree of preparation by C/P exceeds 60%		
Means of verification	Report on reasonableness of construction method selected in M/P <refer to next page>		
Summary	Expert and C/P prepared the report together in the following ways: ・Expert prepared the draft. ・The report was prepared together with the discussion based on the draft.		
Completion degree of the indicators	50 %		
Activity record	March 2007: The report was prepared by Expert and C/P with the discussion based on the draft prepared by Expert.		
Supporting material by JICA experts	Draft report on the reasonableness of construction method selected in M/P		
Issues to be improved			
Activity policy for the next year			
Remark			

March 2007

Report on Reasonableness of Construction Method selected in M/P

JICA Expert Team for the Project
Riverbank Protection Unit, DOR, MCTPC

1. Background

In the succeeding JICA development study, "The Study on Mekong Riverbank Protection in and around Vientiane Municipality (the Study)" (2001-2004), traditional river works of Japan including Soda method was selected for the construction of JICA Pilot Riverbank Protection Works (the Pilot Works) and the Master Plan (M/P) formulated by the Study. The Study was not the technology transfer already established like other usual study. The Study was accompanied by the trial and error for adapting a traditional river works of Japan to Laos where climate and environment completely differ from Japan.

The traditional works will make full use of the capabilities of the original function by the progress of sedimentation and the vegetation growth on it after 5 - 6 years from the completion. It was impossible to monitor and confirm the stable condition of sedimentation and vegetation on the Pilot Works at the Study completion in December 2004, less than 2 years from the completion.

For this reason, the C/P continued to carry out monitoring works from January 2005 to March 2007 with the assistance of the Expert Team of the Project.

Moreover, MCTPC constructed the M/P Sibounheuang - Muang Wa riverbank protection works (L=410m) by using national budget by entrusting to a local contractor (The final extension of 180 m for the 3rd year to be completed in May, 2007). The work type is based on it of the Sibounheuang site which shows in Table 1 of the following clause 2.

In consideration of the above-mentioned condition, the Expert and C/P verified the reasonableness of the construction method selected in the M/P for the Mekong River.

2. General of JICA Pilot Riverbank Protection Works：

In advance of the verification of reasonableness of construction method, the outline of the Pilot Works is summarized as follows:

1) General of the Pilot Works

a. Location of construction site: 3 sites in Vientiane Capital as shown in Figure 9.4.1

b. Scheme of execution：Sublet contract with the Study Team for JICA Development Study

c. Design & Supervision: JICA Study Team (in full cooperation with MCTPC/ DCTPC)

d. Contractor: Obayashi Corporation (selected by competitive bidding)

e. Construction Period: January 2003 - May 2003 (5 months)

f. Construction Cost (engineering estimate): US$ 1,259,000 in total

i.	Ban Dongphosi Site	US$ 1,088,000 (approx. US$ 1,690/m)
ii.	Wat Chom Cheng Site	US$ 49,000 (approx. US$ 200/m)
iii.	Sibounheuang Site	US$ 122,000 (approx US$ 810/m)

g. Work Type of Pilot Works: refer to Table 9.4.3

Figure 9.4.1 Site Location of JICA Pilot Riverbank Protection Works

Table 9.4.3 Work Type of JICA Pilot Riverbank Protection Works

Site	Work Type	Construction Length
(1) Ban Dongphosi (at Lao National Fuel Company)	1) Slope protection work (Cobble stone with willow branch work; executed by making gentle slope embankment by backfill of cliffy bank using river sand) 2) Foundation work (Riprap work) 3) Foot protection work (Soda mattress work; 66 sheets 10m*6m)	643m
(2) Wat Chom Cheng	Wooden pile groynes (6 groynes: L=20 m, interval=40 and 60m) (3 groynes were reinforced by Soda mattresses and riprap on bank for comparison)	240m
(3) Sibounheuang	1) Slope protection work (Cobble stone with willow branch work; covering lower half of the cliffy bank for cost reduction) 2) Foundation work (Riprap work) 3) Foot protection work (Soda mattress work; 23 sheets 10m*6m)	156m
	Total	1,039m

The riverbank condition and the construction situation at Ban Dongphosi Site, the typical and the biggest site, are as shown in Figure 9.4.2.

Figure 9.4.2 Construction of Pilot Works at Ban Dongphosi Site

Note) lower left: installation of Soda mattress, upper right: construction of cobblestone with willow branch works

3. Reasonableness of Construction Method selected in M/P

In consideration of the observation of the state transition, the Expert and C/P verified considered as follows the reasonableness of the construction method selected in the M/P for the Mekong River not only from monitoring result but from a many-sided viewpoint. In conclusion, this construction method is judged to be the appropriate technology adapted to the actual condition of Lao PDR.

1) Erosion-proof: (The most important function expected from riverbank protection works)
   i. The Pilot Works has passed about four (4) years (4 flood seasons) as of March, 2007 at the end of the Project since the completion in May, 2003. According to the various monitoring results (topographical survey, velocity measurement, vegetation investigation and visual inspection) for four (4) years, sedimentation and luxuriant growth of vegetation are progressing on the three (3) Pilot Works. Since the Works continues stopping the progress of bank erosion and the damage is hardly seen as a matter of fact, either, it is judged that the Pilot Works goes into the stable state. Therefore, the Works is considered to have achieved the expected function. The fixed point photographs of Ban Dongphosi site are shown in Figure 9.4.3, as typical of the state transition observation after the completion.
   ii. The M/P riverbank protection works which MCTPC has been constructing succeedingly since 2005 similarly is also functioning well.
2) Cost and ease of construction

   All the materials and equipment required for construction can be procured in and around Vientiane Capital. Since there is much work based on human power not using heavy equipment mostly, it is a method with easy construction in view of the actual condition of Lao PDR. For this reason, it became possible to lower the construction cost to around the half of that for conventional construction method (around US$ 2,000/m) using gabion mainly. Moreover, localization of the construction method described in 4) realized further cost down.
3) Construction by local contractor

   In the M/P Sibounheuang - Muang Wa riverbank protection works which is an object of the technical assistance of the Project, MCTPC constructed by entrusting a local contractor (Bousavanh Irrigation Construction Company Ltd.) over 3 years. The local contractor's construction technology has improved every year, and at the end of the Project, even if C/P did not always make technical guidance and supervision like the beginning, the contractor could construct most portions by themselves.
4) Localization of construction method

   C/P have developed the construction method which was suitable for Laos by itself, and are advancing localization of the construction method. Especially about Soda method, the example of construction of the past of Japan was referred to, and the assembly on the river was developed

and introduced instead of the assembly on the land using the conventional heavy equipment, and also improvement in the ease of construction and cost reduction were realized.

5) Job creation

As stated above, for the human power concentration type construction method, also in the material procured place besides the worker of the construction site, extraordinary employment of local resident was produced mostly and has led also to job creation.

6) Operation and maintenance

In March, 2007 after about four years from the completion, damage has stopped at the slight thing in the maintenance-free state mostly.

Although the subject on the organization of MCTPC with difficult reservation of operation and maintenance cost exists, it is assumed that the operation and maintenance in cheap expense is possible taking residents-participated simple repair technique also into account.

7) Impact to environment

i. Natural environment (creation of favorable waterfront environment):

The Pilot Works which has passed four (4) years from the completion got used with the surrounding scene by deposition of sedimentation, and advance of luxuriant growth of vegetation, and changed into a desirable state almost like a natural riverbank. Therefore, it is in the state where the trace of construction is hardly known now. Installed Soda mattress serves as a habitat of fish and the local resident's fish catch is increasing. Thus, the mattress contributes not only to the measure against bank erosion but to good waterfront environmental creation.

ii. Social environment (construction without resettlement):

By a construction method selected in the M/P, although several houses move in temporary houses may occur temporarily only during the construction period accompanying construction of temporary road, it is absolutely none to generate involuntary resettlement in construction. Since local resident is welcoming riverbank protection construction in principle, trouble has not occurred on land problem between MCTPC and residents when constructing.

8) Application and deployment

i. Actual result of M/P construction method adoption in other projects (2007)：

Soda mattress method has been formally adopted for a part of the riverbank protection works along the Mekong River to protect the water intake facility constructed by Japanese grants aid project, “The project for the Vientiane water supply development”, and a local subcontractor (same company for M/P Sibounheuang - Muang Wa works) is constructing the mattress now.

ii. Possibility of adoption to road slope protection:

In Japan, Soda method is already used not only for riverbank protection but for road slope

protection. Even in Lao PDR which has many mountains roads, it has a possibility that Soda method can be applied and developed not only to the river field but to the road field in the future.

Before construction (Dec. 2001)

Just after completion (May 2003)

After 1 flood season (Jan. 2004)

After 2 flood seasons (Mar. 2005)

After 4 flood seasons (Jan. 2007)

Vegetation growth situation (Jan. 2007)

Figure 9.4.3 State Transition of Pilot Works（Ban Dongphosi Site）

APPENDIX

Appendix 1

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນະຖາວອນ

ກະຊວງ ຄົມມະນາຄົມ ຂົນສົ່ງ ໄປສະນີ ແລະ ກໍ່ສ້າງ
ກົມຂົວທາງ

ເລກທີ: 1723/ຂທ
ທີ່ ນະຄອນຫຼວງ, ວັນທີ :04 ....ກໍລະກົດ 05

ຂໍ້ຕົກລົງ

ຂອງຫົວໜ້າກົມຂົວທາງ
ກ່ຽວກັບການສ້າງຕັ້ງໜ່ວຍງານຄຸ້ມຄອງປ້ອງກັນຕະຝັ່ງເຊື່ອນ

- ອີງຕາມ ຂໍ້ກຳນົດ ຂອງ ທ່ານ ລັດຖະມົນຕີວ່າການ ກະຊວງ ຄຂປກ, ສະບັບເລກທີ1723/ຄຂປກ, ລົງວັນທີ 26/5/2000, ວ່າດ້ວຍ ການຈັດຕັ້ງ ແລະ ເຄື່ອນໄຫວ ຂອງ ກົມຂົວທາງ.
- ອີງຕາມ ການສະເໜີຂອງ ຄະນະຊ່ຽວຊານຍີ່ປຸ່ນ ປະຈຳໂຄງການກໍ່ສ້າງແຂມແມ່ຍຶດປ້ອງກັນຕະຝັ່ງເຊື່ອນເຂດນະຄອນຫຼວງວຽງຈັນ.
- ອີງຕາມ ການຕົກລົງ ເຫັນດີ ເປັນເອກະພາບ ຂອງ ຄະນະຮັບຜິດຊອບກົມ.

ຫົວໜ້າກົມຂົວທາງຕົກລົງ:

ມາດຕາ 01: ສ້າງຕັ້ງໜ່ວຍງານຄຸ້ມຄອງປ້ອງກັນຕະຝັ່ງເຊື່ອນ ຂຶ້ນກັບພະ ແນກ ຄຸ້ມຄອງທາງນ້ຳຂອງ ກົມຂົວທາງ.

ມາດຕາ 02: ມອບໃຫ້ພະແນກຄຸ້ມຄອງທາງນ້ຳ ກຳນົດພາລະບົດບາດ ການເຄື່ອນໄຫວໃຫ້ໜ່ວຍງານ ດັ່ງກ່າວຕາມ ຄວາມເໝາະສົມ.

ມາດຕາ 03: ໃຫ້ທຸກພາກສ່ວນທີ່ກ່ຽວຂ້ອງຈົ່ງຮັບຮູ້ແລະໃຫ້ຄວາມຮ່ວມມືໃນການຈັດຕັ້ງປະຕິບັດ ວຽກງານໃຫ້ ສຳເລັດຜົນເປັນຢ່າງດີ.

ມາດຕາ 04: ຂໍ້ຕົກລົງສະບັບນີ້ມີຜົນສັກສິດນຳໃຊ້ນັບແຕ່ມື້ລົງລາຍເຊັນເປັນຕົ້ນໄປ.

ຫົວໜ້າກົມ

ພັນ ພຸດທະວົງສ໌

Official Establishment Announcement of Riverbank Protection Unit

Appendix 2

MINUTES OF THE MEETING
OF
THE DISCUSSION ON THE PROGRESS REPORT (1)
FOR
THE TECHNICAL COOPERATION PROJECT
ON RIVERBANK PROTECTION WORK
IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

AGREED UPON BETWEEN
THE MINISTRY OF COMMUNICATION, TRANSPORT, POST AND CONSTRUCTION
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Vientiane, March 21, 2005

Mr. Senya MORI
Resident Representative
Japan International Cooperation Agency
Laos Office

Mr. Phan PHOUTHAVONGS
Deputy Director General
Department of Roads
Ministry of Communication, Transport,
Post and Construction

Appendix 2

MINUTES OF THE MEETING
OF
THE DISCUSSION ON THE PROGRESS REPORT (1)
FOR
THE TECHNICAL COOPERATION PROJECT
ON RIVERBANK PROTECTION WORKS
IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Japan International Cooperation Agency's (JICA) Expert Team for the Technical Cooperation Project on Riverbank Protection Works in the Lao People's Democratic Republic (the Project) submitted the Progress Report (1) to the Department of Roads (DOR) of the Ministry of Communication, Transport, Post and Construction (the MCTPC), the counterpart agency to the Project. The Report was clarified and discussed with the MCTPC at the Joint Coordinating Committee (JCC) meeting for the Project in Vientiane on the 21st of March, 2005. The attendees of the meeting are listed in the attachment.

The Progress Report (1), detailing the Project's activities which have been carried out by predominantly the counterpart personnel (the C/P) with support from the Expert Team, was agreed upon and approved by the MCTPC. The main comments and points of discussion have been summarised as follows:

1. Delay of the Commencement of the Construction Work

The construction of the Master Plan project (Sibounheuang - Muang Wa bank protection work, L=110m for the first year of construction) commenced on the 21st of March, 2005, due to delays resulting from MCTPC's bidding and contractual procedures. This was almost when the Expert Team's assignment was completed and they were therefore not able to fully conduct their supporting activities related to the construction. The MCTPC and the Expert Team both learned lessons because of these events and the MCTPC therefore expressed their willingness to start the bidding procedures as early as possible for the next year (second), so that the Expert Team are able to implement activities as smoothly as planned.

The MCTPC made inquiries regarding the method in which the construction work could be conducted in April and May by only the C/P and the local contractor without the presence of the Expert Team. The Expert Team explained that the construction could be conducted solely by the Lao side, whilst keeping in close contact with the Expert Team through telecommunications. However direct instruction by the Expert Team would be preferable.

Appendix 2

The Expert Team felt that Lao side would have the ability to do this as they have already gained experience with the JICA Study Team at the Pilot Work in 2003, and also the construction method at the Sibounheuang - Muang Wa site is almost the same as that for the adjacent Pilot Work.

2. Official Announcement of a "Riverbank Protection Unit" within the Department of Roads

The MCTPC explained that the ministry has official regulations which stipulate the role of each internal organization. The JICA Laos Office and the Expert Team therefore requested that the MCTPC should officially declare the establishment of a "Riverbank Protection Unit" to the JICA Laos Office as the unit was initiated in January 2005. The MCTPC agreed to make this official announcement.

3. Future Integration of a Bank Protection Related Organization within MCTPC

The MCTPC put forward the idea of the integration of a riverbank protection related organization/committee within the MCTPC, including the future "Riverbank Protection Unit". The Japanese side fully agreed with the idea and requested the presentation of an updated organizational chart visualising this new organization/committee. The Expert Team would then be able to review the present correlation and be able to make suggestions for the visualisation of the integration. The MCTPC agreed to present an organisational chart.

4. Realisation of the Counterparts of the Necessity of Maintenance Work

The MCTPC clarified that the board of directors of the Ministry had acknowledged the necessity of the maintenance of existing bank protection work, but that actual maintenance work has not been sufficiently conducted due to severe budgetary restrictions. The Expert Team stated that they could understand the situation and proposed to MCTPC that as of the next meeting, all other C/P and not only the chief C/P should attend the JCC meeting as observers. Listening to the discussions between both parties would help the other C/P realise the necessity of maintenance work. The MCTPC agreed to the proposal.

5. Installation of Benchmarks for Monitoring

The MCTPC proposed a monitoring method through the installation of benchmarks at the most critically eroded riverbanks. This would make it possible to make a quantitative measurement of the distance from the mark to the riverbank. The Expert Team fully agreed with the idea and commented that the C/P and the Expert Team will discuss the installation of benchmarks and as well as monitoring, taking into consideration physical limitations such as

Appendix 2

the "Riverbank Protection Unit's" lack of an administrative budget and the number of C/P personnel.

6. Scheduling of the Project Activities in the Second Year

The Japanese side proposed to MCTPC that the C/P should be in frequent contact with the Expert Team during their absence so as to schedule the Project's activities during the second year, which will commence in April 2005. As a result of the various lessons which were learned in the Project's first year efforts would be made to improve bidding procedures and project operations. The MCTPC also agreed to promote the activities of C/P's based on the proposal from the Japanese side.

Technical Cooperation Project on Riverbank Protection Works (MCTPC-JICA)

LIST OF ATTENDANTS (JCC for PR(1), Mar. 21, 2005)

No.	Name	Organization	Position
1	Yasuhiko KATO	JICA Expert Team	Chief Adviser
2	Hiroki WATANABE	JICA Expert Team	Coordinator
3	ThongChip CHANDALASANE	Lao National Mekong Committee	Technical Officer
4	Viengsavanh PHASAVATH	DOR	Project Manager
5	Tsutomu KAMEYAMA	JICA Expert Team	Adviser
6	MORI Seiya	JICA	R-R
7	SANO Akihiro	"	P.F.A
8	Somsanouk Vongsamphou	DOR / ESD	Dept. Director
9	Bouapheuak THEPPAVANH	WAD (DOR)	Deputy Director
10	Khamphet Inthideth	Planning & Technical Division	Director
11	Chanthaneth PHAKASONE	JICA LAOS	A.P.O
12	Phan Phouthavong	DOR	DDG
13	Say VIXAYXONGDETH	WAD	Director of Division
14	Castor Conde	Jica Expert for MCTPC	

Appendix 3

MINUTES OF THE MEETING
OF
THE DISCUSSION ON THE PROGRESS REPORT (2)
FOR
THE TECHNICAL COOPERATION PROJECT
ON RIVERBANK PROTECTION WORK
IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

AGREED UPON BETWEEN
THE MINISTRY OF COMMUNICATION, TRANSPORT, POST AND CONSTRUCTION
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Vientiane, March 21, 2006

Mr. Senya MORI
Resident Representative
Japan International Cooperation Agency
Laos Office

Mr. Phan PHOUTHAVONGS
Deputy Director General
Department of Roads
Ministry of Communication, Transport,
Post and Construction

Appendix 3

MINUTES OF THE MEETING
OF
THE DISCUSSION ON THE PROGRESS REPORT (2)
FOR
THE TECHNICAL COOPERATION PROJECT
ON RIVERBANK PROTECTION WORKS
IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

Japan International Cooperation Agency's (JICA) Expert Team (the Expert Team) for the Technical Cooperation Project on Riverbank Protection Works in the Lao People's Democratic Republic (the Project) submitted the Progress Report (2) to the Department of Roads (DOR) of the Ministry of Communication, Transport, Post and Construction (the MCTPC), the counterpart agency to the Project. The Report was clarified and discussed with the MCTPC at the Joint Coordinating Committee (JCC) meeting for the Project in Vientiane on the 20th of March, 2006. The attendees of the meeting are listed in the attachment.

The Progress Report (2), detailing the Project's activities which have been carried out by predominantly the counterpart personnel (the C/P) with support from the Expert Team in 2nd Year (April 2005 - March 2006), was agreed upon and approved by the MCTPC. The main comments and points of discussion were summarised as follows:

1. Revision of the PDM of the Project

The Expert Team explained that the C/P and the Expert Team revised the PDM (Project Design Matrix) of the Project in January 2006, the midpoint of the Project, and by the review of the original PDM the completion degree of each activity, addition of new activity items and restriction by external preconditions would be taken into account. The MCTPC agreed to the revised PDM.

2. Next Year (3rd Year) Activity Schedule

The MCTPC requested to reflect their budget allocation for M/P riverbank protection projects at Ban Hom (1 & 2) tivity schedule presented in the Progress Report (2). fully agreed with the request and welcomed their effort. The Expert Team explained to revise the schedule in the Report reflecting the request.

Appendix 3

3. Sustainability of the C/P's Lectures at the National University of Laos

The JICA Laos Office questioned the MCTPC about the sustainability of the lectures at the National University of Laos by C/P in considering the fact that the MCTPC has only two C/P lecturers, that is, the number of candidates for lecturers would be still small in the future. The MCTPC raised several ideas to increase the number of lecturers in the future, for example, human resources development not only for C/P personnel but also for other DOR division, Provincial DCTPCs and the National University of Laos. The Japanese side welcomed the enthusiastic self-supporting ideas. Both parties agreed to discuss the issue during next year activity to make sure the sustainability.

4. Assignment of Additional C/P for Assisting Seminar during Dry Season

The Expert Team requested MCTPC to assign an additional C/P from January to March 2007 for assisting seminars to be held. The expert team explained that the large-scale outdoor seminars inviting many participants including provincial DCTPC staff for disseminating the technical information have successfully completed and were well appreciated by the participants, however, preparation for the seminars was a considerable burden for C/P causing some delay of other activities because of the limitation of manpower of the Project. The MCTPC agreed to consider the assignment. The Expert Team appreciated the kind consideration.

(END)

Appendix 3

No ลำดับ	Name ชื่อและนามสกุล	Organization	Sign เซ็น
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10	Mr. JOTA SEKINE	JICA Laos Office	
11	Mr. Sana Mori		
12	Mr. Katsuro KONDO	JICA Expert To Mekong Project	
13			
14			
15	Mr. Hiroki WATANABE	JICA Expert	
16	Mr. Yasuhiko KATO	JICA Expert Team	
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Appendix 4

MEMORANDUM OF UNDERSTANDING OF DISCUSSION
ON COOPERATION ON REGULAR LECTURES
ON RIVERBANK PROTECTION TECHNIQUE
AGREED UPON BETWEEN
FACULTY OF ENGINEERING AND ARCHITECTURE,
NATIONAL UNIVERSITY OF LAOS,
MINISTRY OF COMMUNICATION, TRANSPORT, POST AND CONSTRUCTION,
AND JICA EXPERT TEAM

The discussion on the cooperation between the Department of Communication and Transport, the Faculty of Engineering and Architecture, National University of Laos (the University) and the Department of Roads, the Ministry of Communication, Transport, Post and Construction (the MCTPC) on regular lectures in the University by the MCTPC engineers on riverbank protection technique was held between the University, the MCTPC and the JICA Expert Team on the Technical Cooperation Project on Riverbank Protection Works (the JICA Expert Team) on January 17, 2006. Through the discussion, three parties agreed to cooperate in principle to make regular lectures based on the Syllabus as shown in Attachment, which students can take a credit.

Vientiane, January 19, 2006

Mr. Sourykane SAMATSENGVONGXAY
Director of Department of
Communication and Transport,
Faculty of Engineering and Architecture,
National University of Laos

Mr. Phan PHOUTHAVONGS
Deputy Director General,
Department of Roads, MCTPC

Mr. Yasuhiko KATO
Chief Advisor, JICA Expert Team

Appendix 4

ATTACHMENT

Syllabus of Lectures by MCTPC in Faculty of Eng. & Architecture, National University of Laos

Name of lecture	Riverbank Protection Technique
Contents of lecture	1) Outline of Mekong riverbank protection around Vientiane City (Introduction of river work technique in Japan based on technical cooperation by JICA) 2) Introduction of latest topics on general river engineering (based on the outcome of JICA training in Japan for MCTPC counterpart)
Objectives of lecture	To make students interest in and understand general river engineering focusing on riverbank protection
Number of credit	1 credit (90 minutes*8 lectures)
Objective course	Communication & Transportation Engineering
Objective grade	5-year, bachelor
Number of students	Approx. 50 students
Lecturer	Mr. Viengsavanh (DOR, MCTPC), Mr. Souksavanh (DOR, MCTPC)
Location of lecture	Classroom in the faculty & Construction site of MCTPC bank protection works
Format of teaching material	Attractive PowerPoint material including many photos, graphs and movies (Handout of the PowerPoint will be distributed to students)
Grading of students	1) A final test/ year and 2) attendance rate will be reflected to transcript sheet.
Cycle of lecture	September – August (Lao school year)

Lecture Schedule (DRAFT)

Date	Lecturer	Subject of lecture	Lecture time
Oct. 2005	Mr. Kato (JICA Expert)	Challenge to protect Mekong riverbank around Vientiane City	90 minutes (45 min.*2 times)
Jan. 26, 2006	Mr. Viengsavanh	Test of riverbank protection by Mekong willow planting	90 min.
	Mr. Souksavanh	Rivers in Laos and Japan (by outcome of Training in Japan)	90 min.
Mar. 2006	Mr. Viengsavanh	Visit construction site of MCTPC riverbank protection work (outdoor)	90 min.
Mar. 17, 2006	Mr. Souksavanh	Introduction of traditional river works in Japan (by outcome of Training in Japan)	90 min.
May 2006	Mr. Viengsavanh	Construction of riverbank protection works by MCTPC	90 min.
	Mr. Souksavanh	Introduction of river structures (by outcome of Training in Japan)	90 min.
Aug. 2006	Mr. Souksavanh	Introduction of flood control measures (by outcome of Training in Japan)	90 min.
		Total	8 lectures/ year

Date	Lecturer	Subject of lecture	Lecture time
Nov. 2006	Mr. Viengsavanh	Challenge to protect Mekong riverbank around Vientiane City	90 min.
	Mr. Souksavanh	Technique of construction of riverbank protection works by MCTPC	90 min.
Jan. 2007	Mr. Viengsavanh	*(to be prepared using outcome of Training in Japan)*	90 min.
	Mr. Souksavanh	Test of riverbank protection by Mekong willow planting	90 min.
Mar. 2007	Mr. Souksavanh	Visit construction site of MCTPC riverbank protection work (outdoor)	90 min.
Mar. 2007: JICA technical cooperation project on riverbank protection works will be completed.			
Jun. 2007	Mr. Viengsavanh	*(to be prepared using outcome of Training in Japan)*	90 min.
	Mr. Souksavanh	Construction of riverbank protection works by MCTPC	90 min.
Aug. 2007	Mr. Viengsavanh	*(to be prepared using outcome of Training in Japan)*	90 min.
		Total	8 lectures/ year

Remarks	1) The lectures shall be continued regularly after the completion of the JICA project on March 2007. 2) In future, it is desirable that the lectures be an independent subject having 3 credits (24 lectures/ year) by increasing the number of lectures gradually.