



**Improvement of Irrigation Efficiency
on Paddy Fields
in the Lower Mekong Basin project**

**Progress Report
for the Funding 2005**

July 2005 to July 2006

**under the framework of
“Programme to analyze and evaluate
water and ecosystem in Asian paddy fields”**

**funded by the Ministry of Agriculture, Forestry and
Fisheries, Japan**

MK G/R-06026

**November 2006
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LIST of ABBREVIATIONS and ACRONYMS

AEWEPF	Programme to analyze and evaluate water and ecosystem in Asian paddy fields
AIFP	Agriculture, Irrigation and Forestry Programme
CEO	Chief Executive Officer, MRC
CNMC	Cambodia National Mekong Committee
DMPF	Project to Demonstrate the Multi-Functionality of the Paddy Fields over the Mekong River Basin
ESPIM	Evaluation Study of Paddy Irrigation under Monsoon Regime
FAO	Food and Agriculture Organization of the United Nations
FAO-RAP	FAO Regional Office for Asia and the Pacific
IIEPF	Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project
INWEPF	International Network for Water and Ecosystem in Paddy Fields
JC	Joint Committee
LA(s)	Line Agency(ies)
LNMC	Lao National Mekong Committee
MAF	Ministry of Agriculture and Forestry, Laos
MAFF	Ministry of Agriculture, Forestry and Fisheries, Japan
MOWRAM	Ministry of Water Resources and Meteorology, Cambodia
MRC	Mekong River Commission
MRCS	Mekong River Commission Secretariat
NMC(s)	National Mekong Committee(s)
OPD	Operations Division
RAP	Rapid Appraisal Process
RID	Royal Irrigation Department, Thailand
SIWRR	Southern Institute of Water Resources Research, Vietnam
TNMC	Thai National Mekong Committee
VNMC	Vietnam National Mekong Committee

1 Introduction

Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF) aims to improve irrigation efficiency through the introduction of the guidelines, which cover technical, institutional and managerial aspects of irrigation scheme and facilities operation.

This project is funded by the Ministry of Agriculture, Forestry and Fisheries, Japan under the framework of “Programme to analyze and evaluate water and ecosystem in Asian paddy fields (AEWEPP.)”

The project funding was made in June 2005 based on the submission of the project document. However that project document covers only outline of the project concept and leaves formulation of detailed action plan as the major activity at the beginning stage of the project implementation.

Second half of the year 2005 was spent to restructure the project concept, logical framework and to identify detail activities under the project. Based on the first draft of the amended project document, national consultation meetings with the four member countries were conducted from December 2005 to January 2006, followed by another consultation meeting with the FAO Regional Office for Asia and the Pacific (FAO-RAP).

Further improvement of the project document was made in early 2006 in order to incorporate the inputs made through the above consultations. A consultant from FAO supported this improvement.

Following the improvement of the project document, the first regional workshop was conducted in May 2006. This workshop aimed to

- Finalize the project document, and
- Discuss the outline of the forthcoming activities under the project.

As discussed at the workshop, field trips to confirm or decide appropriate sites in Cambodia, Thailand and Vietnam were conducted from May to July 2006. (For Laos, it was made as a part of workshop preparation before May 2006.)

Training workshop on Rapid Appraisal Process (RAP), which is a tool to assess irrigation scheme performance, followed by initial scheme assessments by RAP in four member countries were conducted from July to August 2006. These activities are core part of FAO-MRC collaboration under the project.

Negotiation process to conclude sub-contracts with four NMCs were substantially conducted from July to November 2006 and then contracts were made in October and November.

This progress report covers the activities done by the funding 2005 from July 2005 to July 2006 (except sub-contract for fieldwork completed in November). Due to some delays in project implementation, some activities and related costs lying with the Funding 2005 were spent after the due date of July 2006. A summary report was therefore issued in July 2006, while further details and supplementary information are now included in this report. Major contents are summarized as follows:

- Preliminary consultation with the member countries,
- Internal discussion and drafting,
- Consultation with FAO,
- Recruitment of the Programme officer,
- National consultation meetings,
- Consultation meeting with FAO-RAP,
- Improvement of the Project concept,
- Collaboration with FAO,
- First regional workshop,
- Submission of the revised project document,
- Procurement of equipment,
- Pilot site selection, and
- Sub-contract for Fieldwork

RAP training workshop and initial scheme assessments by RAP, which were partially funded by the funding 2005, are to be reported in the next progress report in 2007.

2 Activities

2.1 *Preliminary consultation with the member countries*

Another Japan funding AIFP project namely “Project to Demonstrate Multi-functionality of Paddy Fields (DMPF)” organized its third regional workshop on 27 and 28 July 2005 in Haiphong, Vietnam. The workshop aimed to summarize the activities so far done under the DMPF and provided an opportunity for preliminary consultations on IIEPF with member countries. In this opportunity, basic concept of the project was presented in order to gain comments from the member countries.

The member countries participants provided comments actively. Most of the comments were useful to re-formulate project design. The basic concept to focus on irrigation efficiency and its improvement was supported by the participants. However the participants were reluctant if the project would deal with policy related issues and recommended the project concentrating on technical issues only.

Presentation handout and summary of the comments are attached as Annex 1.

2.2 *Internal discussion and drafting*

Following the comments made at the DMPF third regional workshop and respecting to the donor’s intention, a concept note was prepared for internal discussion. A series of discussions with AIFP colleagues, OPD director and CEO was held to develop project concept and to make consensus. Based on the discussions, the concept note was finalized and ready to consult with the FAO for collaboration. These activities were conducted from August to early September 2005.

Drafting of the project document was conducted in September 2005 in parallel with the consultation with the FAO. Drafting the Terms of Reference for field activities and its technical backstopping note was the followed activity conducted in November 2005.

2.3 *Consultation with FAO*

Consultation with the FAO for collaboration, which was ceased by the separation of the previous officer in charge of the project, was resumed by sending the concept note in early September 2005.

The FAO headquarters (H.Q.) was the consultation counterpart at the initial stage, because FAO H.Q. is in charge of another Japan funding project under the framework of AEWEPP. A series of e-mail communication reached the basic understanding for the FAO to provide conceptual assistance to the project implementation. These communications also provided the points needed to clarify in the project document.

Another series of consultations via e-mail communication was conducted based on the draft project document by the middle of October 2005. The FAO agreed in principle to

provide assistance to the project by data provision and others, which were described in the project document.

Further direct discussions were held in Ho Chi Minh City in late October 2005. These discussions were realized at the occasion of the workshop organized by the FAO namely “Regional Workshop on the Future of Large Rice Based Irrigation System.”

These discussions concluded that:

- The FAO basically agreed to support the MRC’s project by providing data, know-how etc. as described in “4. Implementation arrangement” of the draft project document.
- As the FAO and the MRC reached basic understanding on collaboration, FAO Regional office for Asia and the Pacific (FAO-RAP) will be involved in forthcoming activities for both sides’ convenience.
- The FAO will basically follow their original 5 years project design. Requirement by the donor for collaboration will be mainly realized by supporting the MRC’s project. But the FAO’s project will consider paying more attention to the Mekong river basin.

As the FAO H.Q. side agreed MRC to contact FAO-RAP, two very brief consultations were conducted with FAO-RAP staff at the above regional workshop and at MRC “International Forum on Integrated Water Resources Management of the Mekong River Basin” at Chiang Rai, Thailand in the late of November 2005. These two consultations led to the full consultation with FAO-RAP in January 2006.

2.4 Recruitment of the Programme officer

Since reviewing nature of the project revealed necessity of a supporting staff mainly in charge of fieldwork and its technical backstopping, one programme officer was recruited by the project.

The process of the recruitment was as follows;

Internal approval	Late September 2005
Advertisement	November to early December
Shortlist	4 January 2006
Interview	30 January 2006
Enrolment	9 March 2006

Job description of this position is attached as Annex-2.

2.5 National consultation meetings

A series of national consultation meetings with four member countries to discuss detail of the project document and other related issues were proposed by the MRC’s official letter dated 20 October 2005. However the meetings were held from December 2005 to January 2006, after “the International Forum on Integrated Water Resources

Management of the Mekong River Basin” and the MRC Council and Donor Consultative Group Meetings, which had been scheduled in early December 2005.

Meetings were held as followed schedule;

Lao PDR	7 December 2005,
Cambodia	13 December 2005,
Vietnam	21 December 2005, and
Thailand	12 January 2006.

All four countries basically agreed on the project concept focusing on irrigation efficiency and its improvement.

Major comments are as follows:

[Final product]

- Examine the structure of the guideline proposed as the final output of the project;
- Suggest to conduct trial application of the drafted guideline within the project implementation time frame;
- Consider either guideline or manual as the appropriate final product;

[Site selection]

- Advise that site selection would be important for producing guideline applicable to the whole basin;
- Suggest to discuss site selection at the regional workshop;
- Request site visit as a part of workshop activities;

[Others]

- Add water productivity analysis (crop production per water supply) as a part of project activities’
- Consider to add crop water requirement analysis as a part of project activities; and
- Inquire focus is efficiency on either canal system or field application.

Detail meeting records are attached as Annex-3.

Presentation handout and other distributed documents (the project document, its annex, the terms of reference and its technical backstopping note) are also attached as Annex-4.

2.6 Consultation meeting with FAO Regional Office for Asia and the Pacific

Following a series of national consultation meetings, further consultation meeting with FAO Regional Office for Asia and the Pacific (FAO-RAP) was held in Bangkok on 20 January 2006. Deep discussion revealed that the project concept needed further improvement especially in terms of its technical aspects. Specific comments for improvement were as follows:

- Definition of irrigation efficiency focusing only on flow rates in various points is old-fashioned and causes the problem;

- Modern definitions of efficiency are based on a irrigation system level water balance analysis and defined as water volume consumed by the crops divided by irrigation supply; and
- Water balance should take re-circulation of drainage and re-use of seepage into account.

The FAO-RAP suggested hiring a consultant to improve the project concept and promised to identify an appropriate consultant for this improvement in cooperation with the FAO H.Q.

Collaboration with the FAO in general was also discussed. The FAO-RAP suggested to conduct “Rapid Appraisal Process (RAP)” in order to assess irrigation scheme performance and promised assistance to conduct training workshop for RAP and conducting RAP itself. It was suggested that a letter of agreement should be concluded between the two organizations, which stipulate cost-sharing principle agreed at this meeting.

Detail meeting record is attached as Annex-5.

2.7 Improvement of the Project concept

One international consultant was identified by the FAO H.Q. to improve project concept. This assistance was arranged as a part of FAO-MRC collaboration under the framework of AEWEPP. The cost of this consultancy service was covered by the Japan funding FAO project namely “Evaluation Study of Paddy Irrigation under Monsoon Regime (ESPIM).” IIEPF covered only travel cost, i.e. airfare and DSA, for this consultant.

From 20 February to 14 March 2006 with 20 working days, the recruited consultant conducted improvement of 1) project document, 2) its annexes, 3) terms of reference for fieldwork and 4) its technical backstopping note incorporating modern concept of water balance and irrigation efficiency analysis. Its final products with slight amendment were distributed to member countries prior to the first regional workshop.

Terms of reference for this consultancy service and Note for inception discussion are attached as Annex-6.

2.8 Collaboration with FAO

Discussions with relevant section of the MRC and with the FAO-RAP were conducted from the middle of March 2006 to fix the Letter of Agreement, which stipulates the extent of collaboration and its cost-sharing principle. Agreement came into force on 28 April 2006 with reception of the reply letter from FAO-RAP.

Specific inputs to the project by FAO-RAP are:

- Dispatch one resource person to the inception workshop in order to provide comments and other related information to reinforce project concept;

- Dispatch two resource persons as lecturers to the workshop on Rapid Appraisal Process (RAP);
- Dispatch one resource person for each of the four RAPs in the MRC member countries in order to assess the irrigation scheme performance;
- Identify appropriate consultant to draft guideline to improve irrigation efficiency; and
- Dispatch one resource person to the closing regional workshop and to each of the four closing national workshops in order to support the conclusion of the project including the comments on draft guideline.

Under this collaboration framework, MRC will provide to FAO-RAP the result of RAPs and other assessed data under IIEPF.

Agreed cost-share for this arrangement is that the MRC covers travel cost of FAO-RAP staff and the FAO-RAP covers staff contribution time.

The letter exchanged by the two organizations is attached as Annex-7.

2.9 *First regional workshop*

The first regional workshop was held in Vientiane, Lao PDR on 3 and 4 May 2006. The workshop aimed to

- Finalize the project document, and
- Discuss the outline of the forthcoming activities under the project.

During one and half day workshop, items below were presented and discussed.

- Project concept and draft revised project document
- Rapid Appraisal Process (RAP) and FAO's collaboration
- Field observation and Data analysis work and its Terms of Reference
- Candidate pilot project site
- RAP training workshop

Brief conclusion of the workshop was:

- The project document would be submitted to the donor for its approval after agreed amendment was made;
- Terms of reference was confirmed by NMC/LAs and MRCS, It would be sent to NMCs soon attached with invitation letter calling for contract procedure; and
- RAP workshop would be conducted 18 to 21 July 2006 as agreed.

Workshop proceedings main report is attached as Annex-8. Other relevant information is made available in the workshop proceedings.

2.10 Submission of the revised project document

Revision of the project document was initiated just after the first regional workshop. All the comments were taken into account including the revision of the budget plan. The revised version, once prepared in the middle of May and required another a few weeks for internal quality control process, was sent to the donor through the Embassy of Japan in Lao PDR on 14 June 2006.

Revised project document submitted is made available in Annex-9.

2.11 Procurement of equipment

Procurement process was delayed from the original schedule, because its process was once postponed to wait the discussion to confirm the capacity and preference of the Line Agencies at the first regional workshop. A total of four sets of electro-magnetic current meter were procured. The process included a-month-long model selection, another one-month-long communication with supplier for confirming the specification and selecting options and around two months of delivery time. The supplier provided a-half-day free of charge training in Laos only. This training is to be reported in the next progress report together with the training by MRCS to other three countries.

2.12 Pilot site selection

During the first regional workshop, some countries proposed to conduct joint field visit with MRCS and NMC/Line Agencies in order to finalize pilot project sites. These field visits were conducted as the following schedule.

On the other hand, any special discussion or arrangement was not made for Laos after the workshop, because Nam Houm project proposed as a pilot project by Laos was carefully reviewed in the preparation process of the workshop and showed to the workshop participants as an example of irrigation system in Laos.

Vietnam	23 to 26 May 2006
Cambodia	5 to 8 June 2006, and
Thailand	5 to 7 July 2006

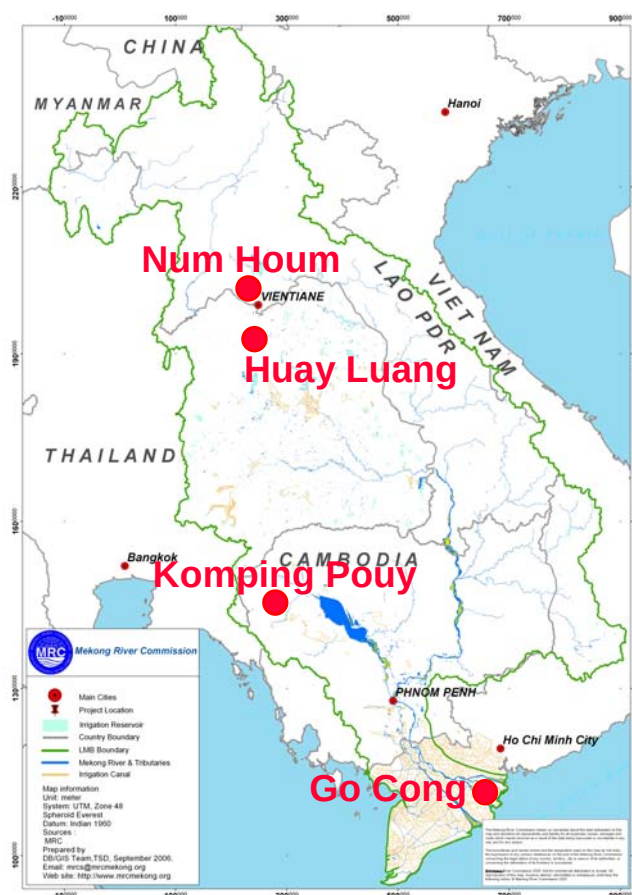
In Vietnam, because of complexity of Mekong delta irrigation practice, careful discussion and field observation were conducted to identify appropriate pilot site. After the briefing of overview of Mekong delta irrigation systems, MRCS, VNMC and SIWRR recognized that selecting some small plot with closed boundary within an irrigation scheme was realistic option to conduct field observation effectively and smoothly. Further explanations from the project office (called “irrigation works company”) and field visits identified Long Hai irrigation system of Go Cong irrigation project as an appropriate pilot site. Other two plots (one in Go Cong project and the other in other project) were also observed but recognized their difficulties with plenty of open outlet connected to outside of the boundary.

In Cambodia, the field visit revealed that Koming Pouy project in Battambang province, the first priority candidate, was suitable pilot site with both physical conditions (the only completed irrigation system in Cambodia as cited as MOWRAM staff and with closed boundary) and availability of relevant data. Two other projects in Pursat province were also visited but they were confirmed not to be appropriate for the project purpose because of their insufficient physical conditions and data availability.

In Thailand, Huay Luang project proposed by TNMC and RID was even recognized as appropriate pilot site, the field visit was conducted mainly to confirm flow measurement points and other detail of the fieldwork. Following the field visit, discussion with RID Headquarter staff was also held to negotiate their first submission of the proposal for field observation sub-contract. The discussion also covered the preparation of RAP workshop.

Detail of the field visit is described in the Back-To-Office-Reports attached as Annex-10. Locations of the four pilot sites are shown in Figure 1.

Figure 1 Location Map



2.13 Sub-contract for Fieldwork

Negotiation processes to conclude sub-contracts with NMCs were delayed from the original schedule. Even though official invitations to call for proposals from NMCs was delivered just after the first regional workshop as agreed, most of the countries had not been able to start their substantial work until the RAP training workshop was held in Vientiane in the middle of July 2006.

In Thailand, a first submission of the proposals was made on 14 June 2006, however the proposals were lacking of detail explanations especially on each task in the field and its reflection into the cost estimation. Direct discussions between Thai team and MRCS were conducted twice, once at RAP training workshop in Vientiane and another one at RAP initial scheme assessment at Huay Luang project. These two meetings deepened the mutual understanding and proposals were finalized at the fourth submission on 28 August 2006. Another two and a half months were necessary to conclude the contract because of incomplete contract documents.

VNMC replied their first draft proposals at RAP training workshop in July 2006. These proposals described detail of Mekong delta irrigation features and some insights of efficiency analysis, but were lacking of concrete explanations of tasks in the field. Several discussions in direct at RAP initial scheme assessment and other occasion and by email improved the proposals. The major point to be hard to reach the agreement was the total cost or, in other word, input for observation work. The original idea proposed by SIWRR, Vietnamese line agency, was too intensive observation. The discussion put emphasis mainly on finding out a good compromise between ensuring the quality of the data observed and reducing the input and the cost. After two revisions and submissions of the draft in September, VNMC submitted the final version on 3 October 2006, which reached to agree on concluding the contract.

Since the Laos team did not have clear idea on what was the requirement as the proposals, additional explanation and discussion were conducted after RAP initial scheme assessment. Interventions were also provided by the MRCS Programme officer in Lao language which helped to improve their proposals. The second submission was agreed for concluding the contract with supplementary verbal explanation mainly conducted in Lao language on 28 September 2006, and official submission of the proposals was made on 5 October.

In Cambodia, the first submission was made at the RAP training workshop including only cost estimation, bar chart work plan and maps for measurement points. The proposals did not include any description and explanation. Communications through emails and other occasions including RAP initial scheme assessment tried to improve the proposals. The MRCS Programme officer also visited Phnom Penh and helped MOWRAM partners to finalize their proposals on 12 and 13 October 2006. Another few weeks were necessary to clear the proposals internally. This took more time than expected, mainly because of their relative unfamiliarity with this type of the contract procedure.

Most of the discussions with NMCs were made based on evaluation reports. The evaluation reports for each submission of the proposals are made available in Annex-11.

Contract value and date with each country is as follows.

Thailand	17 November 2006	42,965 USD	Contract No,	717/2006
Vietnam	27 October 2006	49,968 USD		721/2006
Laos	26 October 2006	42,855 USD		722/2006
Cambodia	29 November 2006	43,391.5 USD		723/2006

TOR of the fieldwork for each country is common in general except implementing agency and duty station. Even a specific TOR is actually used for each contract, a common TOR is attached as Annex-11 for reference.

3 Plan and Progress

Table 1 shows planned activities, its schedule as of the beginning stage of the project preparation (i.e. July 2005) and actual progress mainly up to the submission of the revised project document (June 2006.) (Table 1 also includes sub-contract procedure, equipment procurement, which were originally planned to complete before July, and reporting work of this progress report.) Thick line shows the planned schedule and thin line shows actual progress.

Actual progress was ahead of the original schedule up to the national consultation meetings (i.e. by January 2006.) Since the consultation with the FAO-RAP revealed the necessity to improve project concept, the project document and other relevant documents, one month from the middle of February 2006 was spent for this work. Participation to the Fourth World Water Forum in March, Joint Committee Meeting and Lao New Year holidays (they are also for holidays in Cambodia and Thailand) in April forced to postpone the first regional workshop to May 2006. By the submission of the revised project document, overall schedule is approximately one and half-month behind the original schedule.

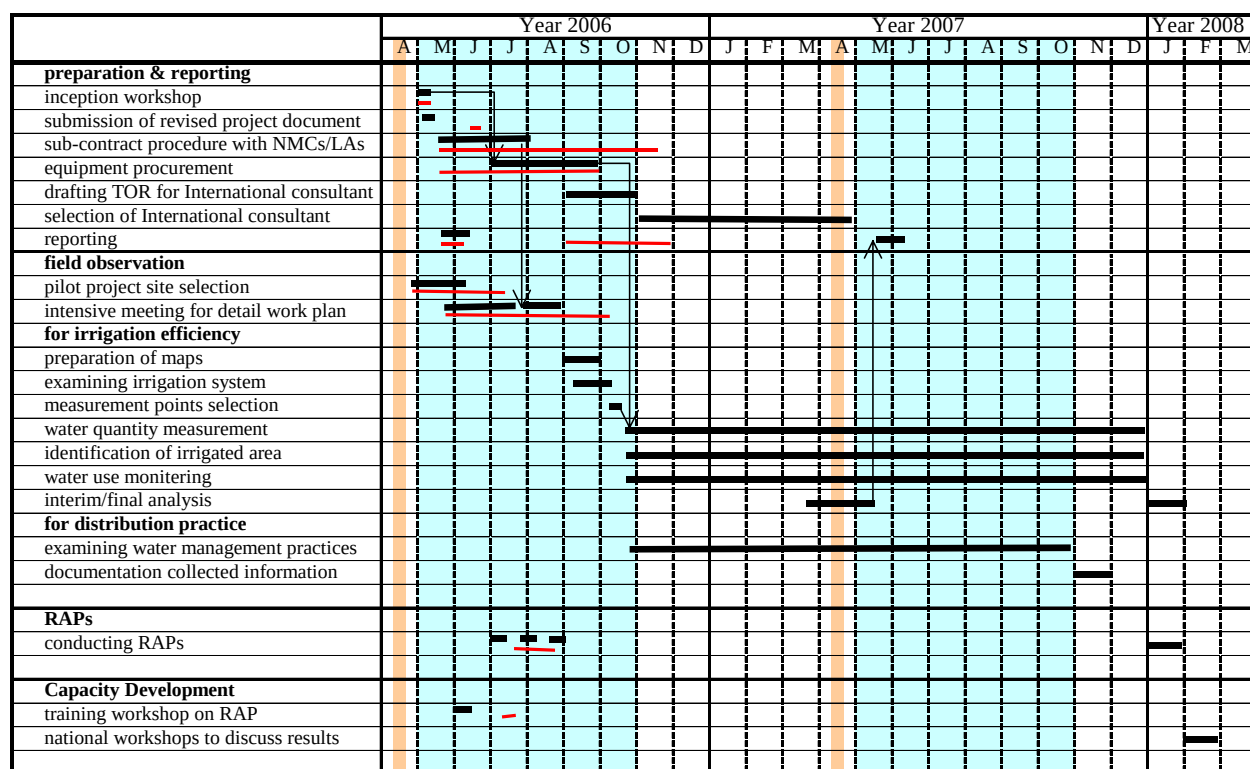
Table 1 *Comparison table between plan and progress*

	Year 2005						Year 2006											
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Relevant events																		
reporting deadline																		
end of assignment																		
JC																		
Council																		
preparation & reporting																		
regional workshop (3rd DMPF)																		
internal discussion																		
negotiation with FAO																		
drafting project document																		
circulating project document																		
national consultation meeting																		
preparation of workshop																		
kick-off workshop																		
submission of revised project document																		
drafting TOR for line agencies																		
sub-contract procedure with line agencies																		
drafting TOR for Programme officer																		
recruitment of Programme officer																		
equipment procurement																		
reporting																		

Legend **—** Plan
 — Actual

Table 2 shows the schedule and the actual progress of activities planned after the first regional workshop. This table is reflecting the changes of the implementation plan based on the progress up to the workshop.

Table 2 **Comparison table between plan and progress (2)**



Legend Plan
 Actual

4 Achievements

4.1 *Project formulation*

Most of the activities in the first year (July 2005 to July 2006) were to restructure project design and re-formulate the project. Thanks to a lot of contributions and inputs from member countries, FAO-RAP and FAO consultant, project concept, its logical framework (objectives both overall and immediate, outputs and activities), implementation arrangement, work plan, budget allocation and roles and responsibilities of related persons were agreed in principle by the member countries. Draft revised project document was agreed to be submitted to the donor with further slight amendment at the first regional workshop.

4.2 *Collaboration with FAO*

This project is supported under the framework of AEWEPF by the Ministry of Agriculture, Forestry and Fisheries, Japan. This framework is funding both this MRC project and the FAO implementing “Evaluation Study of Paddy Irrigation under Monsoon Regime (ESPIM)” project and expecting two projects (IIEPF and ESPIM) and two organizations (MRC and FAO) to collaborate each other to develop better outcome of each project.

In this connection, the following two approaches were carried out or agreed under the project.

- Assistance to the project formulation by the FAO consultant
- Assistance to the project implementation by the FAO-RAP staff on 1) Providing technical comments through participation to the workshop, 2) Transferring irrigation scheme appraisal technique through RAP training workshop and its on-the-job training and 3) Identifying appropriate consultant to draft guidelines

First approach was initiated by the FAO H.Q.

For the second approach, the MRC concluded Letter of Agreement with FAO, which stipulates the content of the collaboration and cost sharing principle with the FAO-RAP.

5 Financial Status

5.1 Fund status

Final fund status report as of the closure of the project is attached as Table 3.

Item by item analysis shows both negative and positive balance and approximately 3,200 USD overspent for the project cost was covered by the Secretariat Support Cost. Major negative-balanced items and their reasons are as follows:

[International Experts]

Negative balance was mainly caused by twelve and a half months (from 16 July 2005 to 31 July 2006) of remuneration to original twelve months budget.

[Support staff]

The cost for editing assistance by Communication unit of MRCS, which was not planned as original project design, caused negative balance, which however is covered by the surplus of the item “Riparian Professional staff.”

[Workshop]

Since the expenditure for the first regional workshop was less than planned, some part of RAP training workshop was charged. It is kept over charged to reduce the budget deficit for the coming year implementation.

5.2 Summary of expenditure

(1) International consultant

Travel cost for FAO consultant only is charged to this budget line. This consultant was engaged in improvement of project concept, the project document and related documents. Remuneration of this consultant is covered by the Japan funding FAO project as a part of FAO-MRC collaboration.

(2) International experts

This budget line covers remuneration of Senior advisor of AIFP (covering from July 2005 to July 2006), the cost for his enrolment and home leave and other related expenditure.

(3) Support staff

This budget was originally secured for hiring riparian staff temporally supporting International expert to reduce his workload. Since recruitment process of Riparian Professional staff was done smoother as predicted, Riparian Professional staff has replaced this position. On the other hand, the project required the assistance for editing the published documents, such as the workshop proceeding, the project brochure and so

on. Communication unit of MRCS provided this assistance and the cost was charged to this budget line.

(4) Official travels

All the travel cost for Senior advisor and Programme officer of AIFP is covered. This includes national consultation meetings and other meetings under the project and participation to other MRC initiated meetings and forums and INWEPF steering meeting.

(5) Riparian Professional staff

This budget line covers remuneration of Programme officer of AIFP (covering from March to July 2006), the cost for his recruitment and other related expenditure.

(6) Sub-contract

Initial payment (40% of contract value) of the field observation and analysis work to be entrusted to four National Mekong Committees was charged to this budget line.

(7) Workshop

This budget covers expenditure for a series of national consultation meetings, the first regional workshop and some part of RAP training workshop.

For national consultation meetings, domestic travel cost of NMCs and Line Agency(ies) is included, but travel cost of MRCS staff is excluded. Additional field visit to determine pilot project site is also covered.

For the workshop, travel cost of the FAO resource person is included.

(8) Equipment

Two sets of laptop computer for the MRC office use are procured.

Four sets of electromagnetic current meter are also procured.

(9) Reporting costs

Printing the workshop proceeding and the progress report is charged to this budget line.

Date: Wednesday, 17 January, 2007
Time: 09:11AM
User: LATDARA

Mekong River Commission
Yearly Fund Status Report - Detail

Page: 1 of 1
Report: PA02Y.rpt
Company: MRCS

Period Ending 12-2006

Project : 1.124105JPNVA

Funding Source : Japan

Improvement of Irrigation Effion Paddy Fields in the LowerMekong Basin-2005/06

Budget Line	Description	Approved Budget (1)	Year-To-Date Actual (2)	Proj-To-Date Actual (3)	Unliquidated Obligations (4)	Total Expenditure (5) = (3) + (4)	Budget Balance (6) = (1) - (5)	Expenditure / Budget (7) = (5) / (1)
11-00-00	International consultants	6,000.00	4,496.46	4,496.46	0.00	4,496.46	1,503.54	74.94 %
12-00-00	International experts	135,000.00	71,436.03	140,425.63	0.00	140,425.63	-5,425.63	104.02 %
13-00-00	Support staff	500.00	8,000.00	8,000.00	0.00	8,000.00	-7,500.00	,600.00 %
15-00-00	Official Travels	14,350.00	5,640.94	14,050.66	0.00	14,050.66	299.34	97.91 %
17-00-00	Riparian experts	0.00	0.00	0.00	0.00	0.00	0.00	0.00 %
18-00-00	Riparian professional staff	17,200.00	8,449.70	9,593.22	0.00	9,593.22	7,606.78	55.77 %
21-00-00	Sub-contracts (line agencies)	75,000.00	71,683.60	71,683.60	0.00	71,683.60	3,316.40	95.58 %
30-00-00	Workshop	23,800.00	28,762.31	29,145.31	0.00	29,145.31	-5,345.31	122.46 %
42-00-00	Non-Expendable Equipment	28,500.00	21,862.00	25,513.00	0.00	25,513.00	2,987.00	89.52 %
51-00-00	Operation and Maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00 %
52-00-00	Reporting costs	1,000.00	775.88	775.88	0.00	775.88	224.12	77.59 %
53-00-00	Miscellaneous	953.00	1,324.23	1,805.38	0.00	1,805.38	-852.38	189.44 %
	Subtotal :	302,303.00	222,431.15	305,489.14	0.00	305,489.14	-3,186.14	101.05 %
70-00-00	Secretariat Support Cost (11%)	39,299.00	26,976.47	36,112.86	0.00	36,112.86	3,186.14	91.89 %
	Total :	341,602.00	249,407.62	341,602.00	0.00	341,602.00	0.00	100.00 %

Total Fund Received : 341,602.00
Outstanding Advance: 0.00
Total Cash available : 0.00

Table 3 Fund status

ANNEX

Annex 1

Preliminary consultation with the member countries



Introduction of DMPF Phase II (tentative)

OKUDAIRA Hiroshi
AIFP, MRCS

1



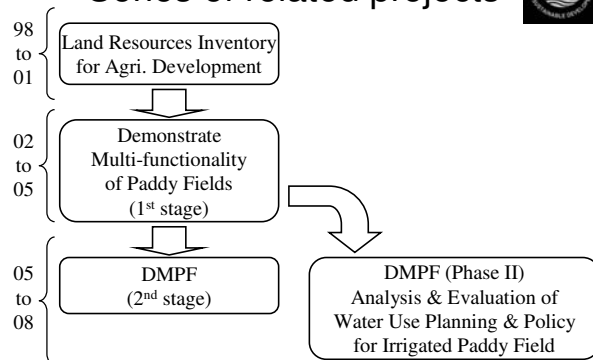
Background

- Paddy field irrigation
--- Dominant on water use
- Understanding of irrigation water use
--- major interest of MRC
- Database on irrigation facilities
--- LRIAD
- Understanding of Multi-Functionality
--- DMPF

2



Series of related projects



3



Funding

Source : Ministry of Agriculture, Forestry
and Fisheries (MAFF), JAPAN
Period : JFY 2005 to 2007 (3 years)
Title : A Project to Analyze and
Evaluate Water and Ecosystem
in Asian Paddy Fields

4



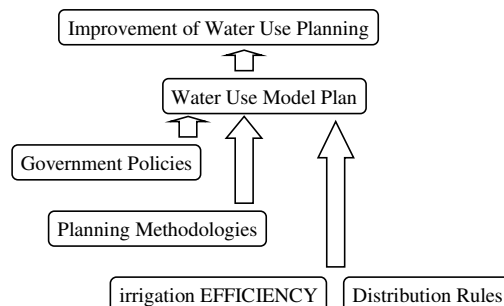
Overall objective (tentative)

- To improve WATER USE PLANNING
in MRC member countries
in order to promote sustainable
agricultural development

5



Outputs & Objectives



6



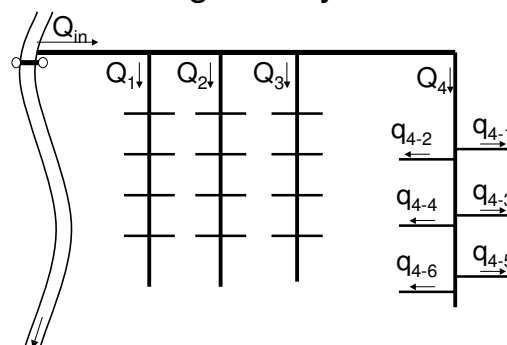
Immediate objectives (tentative)

- To examine water distribution rules
- To estimate irrigation efficiency
- To review irrigation planning methodologies
- To review government policies related to multi-functionality
- To propose water use model plan

7



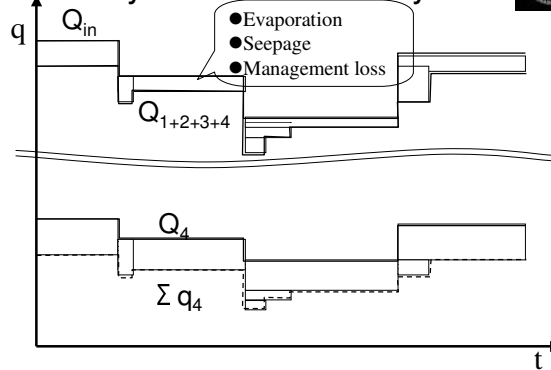
Irrigation system



8



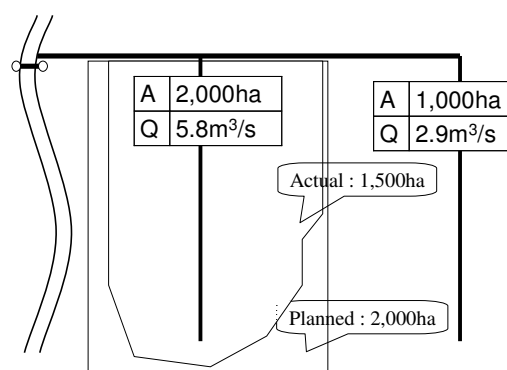
Convey & distribution in system



9



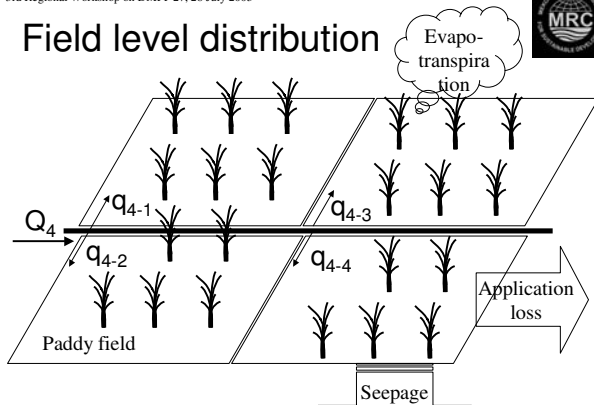
Gap of planned & actual



10



Field level distribution



11



Irrigation efficiency

Irrigation system efficiency (Convey and distribution)	$\Sigma q \div Q_{in}$
Field application efficiency	Water requirement (Evapo.+Seepage) $\div q$
Project efficiency	Irrigation system efficiency $\times$ Field application efficiency

12



A research result

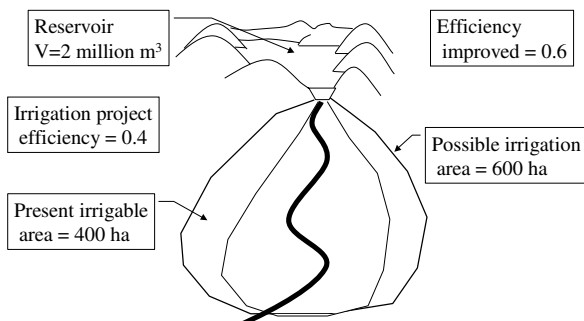
	Plan (%)	Measured (%)
Irrigation system efficiency	72	48.5
Field application efficiency	85	82.9
Project efficiency	61	40.2

at KM6 project, suburban of Vientiane
analyzed by NIRE

13



Efficiency improvement



14



Time Frame (tentative)

	2005		2006		2007				2008	
	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Preparation stage										
Workshop	-									
Site selection										
Field observation										
Data analysis										
Review policies										
Drafting PLAN										
Finalizing										

15



Thank you very much
for your attention

16

Comments on 3rd regional workshop and Responses for DMPF Phase 2

Okudaira

Comments	by	Responses	Responses (draft)
Immediate objectives and outputs for those are unclear through presentation.	Mr. Toan (V)	Project document to be prepared through further internal discussion shows immediate objectives and outputs clearly.	
On what aspect of improvement on irrigation water efficiency is the Project going to aim? Structural or Institutional?		Both structural and institutional aspects are examined through the Project. Management loss is caused by both aspects. Application loss is mainly caused by institutional aspects.	
Does the Project aim to propose any policies for member countries?		The Project reviews related government policies in order to make proposing model plan in accordance with them, but do not intend to propose policies to member countries.	
Linkage with phase 1 is unclear in terms of multifunctional roles.		Program officer should make further consideration on this point.	
Time frame shown at presentation needs more in detail.		Outline of time frame is shown as introduction of the Project. Detail will be shown in the project document.	
Project document should be circulated to member countries.	Mr. Chatchai (T)	MRCS organizes kick-off workshop followed by consultation meeting with each country.	
Focusing on not only irrigation efficiency and irrigated area but also rain fed area is expected.			
Expansion to basinwide and linkage with other program such as WUP are expected.	Ms. Pakawan (T)		The Project is placed as an experimental project. Because of limitation of resources, the Project focus on tributaries or irrigation schemes, however examined irrigation efficiency is to be provided to WUP and other related program to improve those reliability.
National consultative meeting makes approval of introduced concept.	Mr. Sourasay (L)		Consultative meeting will be held 1 st or 2 nd week of August. Participation of program officer is expected.
Not only review but also establishment of irrigation planning methodology should be conducted through the Project.	Dr. Tara (C)		Establishment of methodology needs more resources and cannot be realized by the Project. This comment is not common opinion by member countries but unique to Cambodia and appropriate for bi-lateral cooperation.
What can be expected beyond this project?			Basinwide analysis and improvement project on irrigation efficiency can be proposed as the next step.

Annex 2

Recruitment of the Programme officer

JOB DESCRIPTION

Title:	Programme officer
Functional Title:	Programme officer, Agriculture and Irrigation
Division:	Agriculture, Irrigation and Forestry Programme, Operations Division
Level of post:	M 10
Location:	MRC Secretariat, Vientiane, Lao PDR
Reporting to:	Director, Operations Division

1. THE MEKONG RIVER COMMISSION

The Mekong River Commission (MRC) was established by the 1995 *Agreement on Co-operation for the Sustainable Development of the Mekong River Basin*, between the governments of Cambodia, Laos, Thailand and Viet Nam. In accordance with this Agreement, the **Mission** of MRC is: "To promote and coordinate sustainable management and development of water and related resources for the countries' mutual benefit and the people's well being by implementing strategic programmes and activities and providing scientific information and policy advice."

2. THE OPERATIONS DIVISION

The Operations Division is charged with managing the implementation of the various **Sector Programmes**; the Agriculture, Irrigation and Forestry Programme (AIFP), the Fisheries Programme (FIP), the Navigation Programme (NAP), the Tourism Programme (TOP) and the Water Resources Management Programme (WRMP). These programmes focus on specific sectors and address regional issues that are significant to the management of the entire Mekong River Basin. While the programmes have a regional focus, they also complement and support initiatives at the national and trans-boundary levels.

The Agriculture, Irrigation and Forestry Programme

The Agriculture, Irrigation and Forestry Programme promotes sustainable management of resources in a variety of ways. Irrigation systems will be modernised and water use will be carefully monitored in order to promote effective and efficient water use. Special attention will be paid to cross-border areas and fragile watersheds, where careful planning of agricultural and forestry activities is crucial for the Basin's integrity.

3. JOB SUMMARY

Under the overall supervision of the AIFP Programme Coordinator, the Programme officer supports the Senior Adviser on Irrigation to implement "Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)"

4. KEY TASKS

The incumbent performs the following tasks:

- Supports NMCs and line agencies to establish work plan including quotation based on TOR shown by MRC Secretariat.
- Conducts technical backstopping for field observation on 1) current speed measurement, 2) calculation of flow quantity, 3) identification of actual irrigated area and 4) water requirement measurement.
- Conducts technical backstopping to calculate and analyze irrigation efficiency based on data obtained through field observation.
- Conducts technical backstopping to compile present water distribution practices on selected pilot sites.
- Supports NMCs and line agencies to finalize country reports
- Supports Senior Advisor to organize regional workshop.
- Supports Senior Advisor to manage consultancy services.
- Drafts annual and final reports based on activities conducted by both MRC Secretariat and NMCs with line agencies.

5. SCOPE OF AUTHORITY

- (a) **Supervision requirements:** The incumbent does not have any supervisory responsibilities but is responsible for the on-the-job training of MRC, NMC and line agency staff as required.
- (b) **Level of autonomy:** Decision-making is largely recommendatory, subject to the final approval of others, unless decision is clearly in line with MRC policy.
- (c) **Level of problem solving required:** Problem solving can be complex and the incumbent must display initiative and creativity.
- (d) **Level and type of communications required:** Communications are wide, both within and outside of the organisation, and a variety of written documentation is required of the position.

6. COMPETENCE REQUIREMENTS

- (a) **Core Values:** Integrity, professionalism and respect for diversity.
- (b) **Core Competencies:** Communication, teamwork, planning & organising, accountability, creativity, client orientation, commitment to continuous learning, and technological awareness.

7. POST-SPECIFIC QUALIFICATIONS

University degree in agricultural engineering or related fields (Master degree is an advantage.)

At least 10 years experience on project management in the field of irrigation or water resources development

Practical experiences on 1) water use management and 2) irrigation project survey and planning including hydrological observation are required.

Language: Very good knowledge of written and spoken English and spoken one riparian language are required. Knowledge of more than two riparian languages is an advantage.

8. SIGNATURES

Incumbent: _____ (_____) _____ (date)

Supervisor: _____ (Vitoon Viriyasakultorn) _____ (date)

Annex 3

National consultation meetings (Detail meeting record)

National Consultation Meeting with LAO

1. Date, Time 7th Dec. 2005 9:00-12:00
2. Venue LNMC conference room
3. Participants 9 participants from Lao side (list attached), Dr. Vitoon, Okudaira
4. Summary

(1) For Project and its document

The concept of the project and content of draft project document are basically accepted by Lao side. Significant opinions, etc. and those responses are as follows.

By Lao side	By MRCS
Expecting to analyze water productivity (used water quantity per crop per hectare) under the project.	<u>Promised to put water productivity analysis</u> either project document or TOR. (Depending on whether common interest by other countries or unique demand by Lao)
Does the project draft one guideline for all the member countries or one for each country?	<u>Structure of guidelines needs further consideration.</u> Promised to show it clearer at the regional workshop. Guidelines might have several parts depending on irrigation type, geographical feature, agro-ecosystem, etc.
Does the project focus on efficiency on water distribution only? Not examine crop water requirement factor?	Importance of crop req. factor is understood, but avoiding complexity of field observation, this factor is neglected. The project focuses distribution within canal system.
Requesting to set up (simple) database.	As a part of project activity, observed data should be stored with digital format, in either appropriate database or excel worksheet.
Which area does the project cover? Central, Northern or Southern Lao?	Project site will be selected by Lao side through consultation with MRCS. MRCS showed several criteria for selection for smooth implementation. Accessibility is one factor.
Has the project document been sent to WUP team of MRCS for prior consultation? This project seems to deal with inter-basin diversion work.	Power Point presentation was misleading. Target area of the project is irrigation scheme level within a sub-basin. Its size would be several hundreds to several thousands hectare. The project does not deal with inter-basin diversion. Therefore prior consultation with WUP is not needed, but observation will be fed back to other MRC programme.
One million USD for Lao only?	For 4 member countries, <u>including all expenditure, not only for sub-contract</u>
Workshop for Lao?	Regional W.S. for all member countries.

(2) For implementation arrangement

[Line agency]

- Lao side will set up working group for this project implementation (field observation and analysis) following (or referring) DMPF working group.
- This working group is not advisory cadre but the one actually conducting fieldwork and analysis work.
- The team will be headed by Planning dept. of MAF and composed by Irrigation dept, NAFRI and other relevant.
- Member of the team will be fixed by late January.
- The team should have more irrigation engineers and research persons compared with DMPF, because of the nature of the work.

[Preparation]

- Preparation of filed work, including examination of TOR, setting up of work plan etc. will start after the working group is established.
- But for advanced consideration, working draft of TOR was distributed to participants in hard copy and in digital data (pdf file) to LNMC.

[Equipment]

- Current meters, which are provided by DMPF and stored in Vientiane and Luanprabang, seem to have problem on control software.
- These will be checked by MRCS.

[Sub-contract]

- Steps for sub-contract shown in presentation was confirmed by Lao side.
- Contractor to MRCS will be LNMC.

[Workshop]

- Lao side does not have any inconvenient date for regional workshop in February at this moment.

List of Participants

Venue LNMCs

Date 07/12/2005

Name	Organization, Department and Title	Contact (Email or Telephone)
Mr. Keomany Luangthi	Deputy Director of Water utilization and management Division, Lao National Mekong Committee Secretariat	keomany.l@lnmc.mekong.org Tel: 260 981-3 ext 117 Fax: 260 984
Mr. Virana SONNASINH	Tech officer, LNMCs Office LNMCs	Virana@lnmc.mekong.org Tel: 260 981-3 ext 115 Fax: 260 984
Mr. Khamduane 'K.	National Agriculture and Forestry Research Institute (NAFRI) - Rice Research Program, Ministry of Agriculture	Khamduane@laoel.com Tel: 5528499 Fax: 021 970082
Mr. Chemsang	TACT member for Lao PDR LNMCs	Tel: 26-0981 ext 109
Mr. Boua Chanh	Irrigation Engineer Department of Irrigation, MAF	020 5657620
Mr. Phanthavong VONGTRAVONG	Officer Department of planning, MAF	5603102
Mr. Souk Savanh INTHARACK	Senior Officer Head of MSE, Department of Planning MAF	020 2204949
Mr. Soumaray Phomany	DDG, LNMCs	0260 981-3 ext. 110
Mr. Phonpasenth Phoulaphanh	National Coordinator, LNMCs	phonpasenthpp@yahoo.com

National Consultation Meeting with Cambodia

1. Date, Time 13th Dec. 2005 8:45-11:30
2. Venue CNMC conference room
3. Participants 8 participants from Cambodia side (list attached), Okudaira
4. Summary

(1) For Project and its document

The concept of the project and content of draft project document are basically accepted by Cambodia side. Questions, clarifications and those responses are as follows.

By Cambodia side	By MRCS
Who select site?	<u>Cambodia side select site, with full understanding of project concept, and with close consultation with MRCS.</u>
Asking any criteria for site selection? In Cambodia, some scheme has headwork structure but no canal; some has canal but no headwork. Some scheme has facilities but no stable water.	Site selection is very important of successful result. Several criteria shown on presentation and project document. <u>Selection is flexible in principle.</u> <u>Cambodia side can propose any kind of irrigation scheme (reservoir system, pump, weir, etc.) suitable for project purpose and its implementation.</u>
Judging from DMPF, field observation needs at least two years, one year is not enough.	Understood DMPF, but present work plan shown in project document (14 months for observation) is maximum within 3 years project. This period covers at least one full rainy and dry season.
Asking whether this is research project?	Not purely research project. Focusing on technical issues.
How the project improves irrigation efficiency?	Improvement is expected to realize through application of project output, i.e. guidelines. This will happen beyond the project, i.e. overall objective.
Observation is difficult in rainy season?	If rainy season supplementary irrigation scheme is selected, observation should be conducted rainy season. Even rainy season, sometime paddy field requires water through irrigation system. This can be measured.
What counter measure can improve efficiency?	Observation will show the causes of low efficiency. If convey loss, lining of canal is one solution (, but project does not cover construction work.) If management loss, better management shown in guidelines is the other solution.

(2) For implementation arrangement

[Line agency]

- MOWRAM is capable to conduct this field observation and analysis including setting up work plan and quotation.
- MOWRAM and MAFF will set up team to conduct this work, and MOWRAM is focal point.

[Equipment]

- MOWRAM has several current meters, but those belong to other departments and projects.
- There is no available current meter exclusively used by this project.

[Communication]

- All the official correspondence should be sent to CNMC and CC to MOWRAM.
- Other preliminary discussion on technical issues, such as content of TOR, MRCS can directly contact MOWRAM and CC to CNMC.

[Sub-contract]

- Cambodia side confirmed steps for sub-contract shown in presentation.
- In the case of DMPF, invitation from MRCS was sent to CNMC, but contract was signed by MOWRAM.

[Preparation]

- MOWRAM promised to examine distributed draft TOR for their consideration for quick start.
- MOWRAM also promised to think about appropriate site.
Discussion for site selection will be held with MRCS.
- (During lunch time) Dr. Tara shows project in Siem Reap (or Baray) is candidate of site, because stable water flow through the year.

[Workshop]

- MOWRAM will inform unavailability of workshop date.
- MRCS promised to check availability of workshop date by email first, before sending official invitation.

[Implementation]

- MOWRAM emphasised timely launching of the project for smooth implementation, avoiding difficulty and delay DMPF facing.
- MRCS replies this needs cooperation by Cambodia side including prior consideration of TOR and site selection.

List of Participants

Venue _____

Date _____

Name	Organization, Department and Title	Contact (Email or Telephone)
THENG TARA	MOURAM	012470232 @ mobitel, com.kh
CHAN DARONG	MRD	cbddp@online.com.kh 012 599 599
YIN SAVUTH	HOWRAM	savuthyin@yahoo.com 011 974322
CHHENG KIMSUN	FA / MAFF	chhang_kimsun@yahoo.com 011 813633
MEAS MAKARA	FA/ MAFF	dfwgis@online.com.kh. 012 368898
PRAK CHEATTHO	DAALI /MAFF	cheatto@hotmail.com (855) 012 856476
SOK KHOM	AIFP / CNMC	khom@cnmc.gov.kh
8x Chheang Hong	CNMC	hong@cnmc.gov.kh

National Consultation Meeting with Vietnam

1. Date, Time 21st Dec. 2005 8:35-11:15
2. Venue Victory hotel meeting room
3. Participants 9 participants from Vietnam side (list attached), Okudaira
4. Summary

[Project document]

- Draft project document, especially in terms of objectives, outputs and activities, is basically agreed by Vietnamese participants.
- Title of the project “IIEPF” instead of DMPF phase 2 was also welcomed, because the title shows the concept of the project clearly.
- Further discussion was made mainly in terms of “how” to implement the project smoothly and effectively.

[Output – guideline –]

- Vietnam side insisted that the output of the project is manual rather than guideline. Guideline can be applied to limited project, such as pilot project and similar one, but manual should be applicable wider area and aspect.
- This manual aims to train farmers how to save water and will be used for “training of trainees.”
- Manual is composed of 1) general part and 2) annex as a technical guidance and should cover two aspects, 1) water management and 2) agricultural extension.
- Manual should be applicable to the LMB. Selection of appropriate pilot irrigation scheme representing the feature of each country and whole basin will ensure this point.
- Draft manual will be produced by international consultant, such as FAO, in cooperation with local consultant.
- Draft manual should be applied to other irrigation scheme to confirm its adaptability and improve manual itself within the project.
- Feed back from this application and comment to improve this manual will be made through the regional workshop.

[Site selection]

- Responding the question, MRCS confirmed that only one site would be selected in each country, because of budget limitation.
- MRCS agreed that selection criteria should include representativity of 1) cropping pattern and 2) soil type, which was suggested by Vietnam side.
- Both side confirmed site selection is crucial not only because of smooth implementation, but also for fruitful result.
How the selected sites from four countries represent the feature of the basin will widely affect applicability of the manual produced based on field observation.
In this connection, site selection should be discussed with other countries at the regional workshop.
- MRCS showed the concern about complexity of Mekong delta irrigation system. As project document is the common document for four countries, irrigation system is simplified as gravity irrigation, but Mekong delta irrigation system is rather

different and more complicated. In this sense, selection of suitable scheme for the purpose of the project should be carefully conducted. Vietnam side understood this point and promised to take into account.

- Vietnam side promised to start internal discussion to select appropriate site.
- During the process of selection, Vietnam side will invite MRCS to visit candidate sites for confirmation.

[Connection with DMPF]

Since DMPF set two pilot fields and collected quite a lot of data from the fields (and also the presentation said DMPF and IIEFP are parallel,) Vietnam side raised the question to continue field observation on the same fields. The answer by MRCS is below.

- (Even both are parallel under current AIFP,) IIEFP is focusing on water distribution aspect through canal system rather than field level DMPF did. In this sense, continuation of pilot field does not directly benefit to IIEP. To say simply, site selection for IIEFP can be done apart from DMPF.
- Learning from wide delay of DMPF, MRCS explained the concept of the project was simplified as much as possible. For example, focusing only on irrigation water distribution, trying not to install complicated gauging equipment in the field, etc, and this idea was basically supported by Vietnam side.

[TOR]

- Vietnam side promised to review distributed working draft TOR and to make comment later.

[Equipment]

- Vietnam side also promised to check availability of equipment needed for the project.
- Vietnam side basically understood to simplify field observation and installation of equipment on the field as much as possible in order to avoid the same failure DMPF encountered.

[Crop productivity]

- Vietnam side understood another significance of the project was to identify water productivity (i.e. crop production per water input per hectare.)
- (Even MRCS did not explain this but,) this is the same idea raised by Lao, and needs to take into account.

[Exchange information]

- Vietnam side suggested having opportunities for related member country persons to visit each pilot site mutually to deepen understanding.

[Workshop]

Suggestions below were made by Vietnam side.

- To arrange field visit to proposed pilot irrigation scheme for mutual understanding.

- To let participants from four countries to bring ideas, concerns, issues, etc. to share for all and discuss to improve the project. Site selection is one of those.

[Implementation arrangement]

Below is confirmed, promised by Vietnam side.

- Working group to implement the project, including field observation etc. proposed as line agencies' tasks in the presentation, will be set up.
Leading agency and appropriate agency from that agency will be appointed for overall responsibility by Vietnam side.
The person of that agency and Mr. Hung of VNMC are the focal points.
- Work plan, cost estimation and other necessary arrangement for sub-contract will be made by that working group in cooperation with VNMC.
- Steps for sub-contract explained through the presentation was agreed by Vietnam side.

List of Participants

Venue Vietnam Hotel, HCM City,
Date 21/12/05

Name	Organization, Department and Title	Contact (Email or Telephone)
TRINH H. NINH	VNMC	Tel: 08. 8272652 email: uosmevn6@gmail.com
Ho Trong Tien	SIWRRP	hotien70@yahoo.com
Trần gia Khảm	Department of Water Resources Management (MARD)	Tel (08) : 8282459
Nguyen Van Nhan	Sub. NIAPP	Tel : 84-8- 8204030 Email : irmevn@hcm.vnn.vn
Huỳnh Phước Hải	Tiền Giang DARD	Tel 0909 563 011 e-mail: hpDh@gmail.com
To Quang Toan	SIWRR	Toan_SIWRR@yahoo.com 091.8000377
Nguyen-Hang-Toan	VNMC	Toan.vnmc@hn.vnn.vn
LE VAN KHOA	CANTHO UNIVERSITY	84-71-832971 lvkhoa@ctu.edu.vn
Do Manh Hung	VNMC	(84-4) 9343565 hungvnmc@vnn.vn

National Consultation Meeting with Thai

1. Date, Time 12th Jan. 2006 10:25-12:45
2. Venue Huay Luang project office
3. Participants 11 participants from Thai side (list attached), Okudaira
4. Summary

(1) For Project and its document

The objectives and scope of the project are basically understood and agreed by Thai side. Questions, clarifications and those responses are as follows.

By Thai side	By MRCS
In the dry season, not rice but other crop such as bean etc. is planted in the paddy fields. Does the project focus only rice cultivation?	Since rice cultivation in the paddy fields is the biggest water user, presentation put stress on rice cultivation, but this is misleading. Irrigation water use in the paddy fields is target of this project regardless of crop.
Irrigation schemes in Thailand have various types, such as with or without reservoir. Does the project focus on canal system only or including reservoir? Does MRCS show specific criteria for site selection?	Since each country has its own feature of irrigation type, MRCS expects that combination of four selected sites by member countries cover various variation of irrigation schemes in the LMB. At least one scheme with reservoir should be included, because of its big influence on water management. Tentative selection criteria is shown in the project document and draft TOR. MRCS plans to discuss site selection among member countries and MRCS at the coming workshop.
Does the project focus on efficiency of both canal system and filed application level?	This point is deeply related to both the feature of selected site and demand by Thai side. MRCS is flexible on this point.
What outcome is expected from the discussion with FAO and National consultation meeting in the first year?	Results of both activities will be fed back to the project document. Expected outcome is to improve the project content.
According to the time frame, only one dry and one rainy season are covered by field observation. It seems insufficient on its duration.	Because of limited project period (i.e. 3 years) and necessary preparation period, proposed time frame is the result of maximum effort.
Who drafts guidelines?	MRCS is planning to hire consultants for this work.
In terms of institutional aspect, necessity of guideline or manual for Thai is doubtful.	Project document is uniform and common for four member countries. Institutional aspect might not useful for Thai but must be useful for other countries. Guidelines to meet various demands by member countries will be effective on basin wide viewpoints.
On the other hand, other Thai participants recognized the importance of institutional counter measures for better water management.	

(2) For implementation arrangement

[Roles by Thai side]

- In terms of field observation and related activities, TNMC is coordinating agency, and RID is implementing agency.
- Correspondence from MRCS should be basically sent to Mr. Santi of TNMC and CC to Mr. Chatchai of RID.
In case of technical issues, sent to Mr. Chatchai and CC to Mr. Santi.

[Contract]

- Official invitation letter from MRCS for contract should sent to TNMC.
- Under this contract, Huay Luang project office staff will be assigned as member of implementing agency team.

[TOR]

- Working draft of TOR is distributed to Thai side for their advanced consideration.
- Thai side promised to check this TOR and make comments, if any.
- MRCS promised to reconsider the wording of “consultancy service” and “consultant” in TOR avoiding misunderstanding.
- MRCS also promised to rewrite “working principle” as “under supervision of MRCS and NMCs.”

[Work plan]

- Huay Luang project office of RID is capable to set up work plan for field observation, etc. under the guidance (or supervision) of RID H.Q. (Mr. Chatchai.)
- MRCS agrees that quotation will be calculated based on allowance, but NOT man month rate.
(i.e. allowance for engineer multiplied by working days.)

[Equipment]

- MRCS is ready to provide current meter for this project. But other equipment such as level and staff gauge etc. is expected to be prepared by implementing agency.
- Huay Luang project office replied current meter provided by DMPF is available.

[Workshop]

- At present, 27 and 28 Feb and 13 to 20 March are the days unavailable by Thai side.

List of Participants

Venue Huay Luang Project office

Date 12 Jan 06

Name	Organization, Department and Title	Contact (Email or Telephone)
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Annex4

National consultation meetings (Presentation and Documents)

National Consultation Meeting



Introduction of AIFP new project

- focusing on Paddy Irrigation -

Okudaira Hiroshi
AIFP, MRCS

1

National Consultation Meeting



Content

- Review of Project Document
- Response to DMPF 3rd Workshop
- Issues for implementation

2

National Consultation Meeting



Part I Project document

3

National Consultation Meeting



Background

- Paddy field irrigation
→ Dominant on water use
- Understanding of irrigation water use
→ major interest of MRC
- Database on irrigation facilities
→ LRIAD
- Understanding of Multi-Functionality
→ DMPF

4

National Consultation Meeting



Series of related projects

```

graph TD
    A["98 to 01 { Land Resources Inventory for Agri. Development }"] --> B["02 to 05 { Demonstrate Multi-functionality of Paddy Fields (1st stage) }"]
    B --> C["05 to 08 { DMPF (2nd stage) }"]
    B --> D["New project (not DMPF phase II)"]
  
```

5

National Consultation Meeting



Project Information

Source : Ministry of Agriculture, Forestry and Fisheries (MAFF), JAPAN

Period : June 2005 to June 2008 (3 years)

Budget : approx. one (1) mill. USD in total including all the expenditure
(previous DMPF budget reshuffled)

Title : Improvement of Irrigation Efficiency on Paddy Fields in LMB project (IIEPF)

6

National Consultation Meeting

DMPF, IIEPF & current AIFP

- DMPF to show visible examples of paddy fields' multi-functionality
- IIEPF to introduce guidelines to improve efficiency
- AIFP sub-comp. #4 to build accurate picture of functions by rice farming
- AIFP sub-comp. #1 efficiency of water use in irrigation systems (c.f. Current AIFP 2000-2005)

7

National Consultation Meeting

Objectives of IIEPF

- Overall objective
To improve irrigation efficiency on paddy fields in the Lower Mekong Basin
- Immediate objective
To introduce guidelines to improve irrigation efficiency based on actual water use conditions to member countries

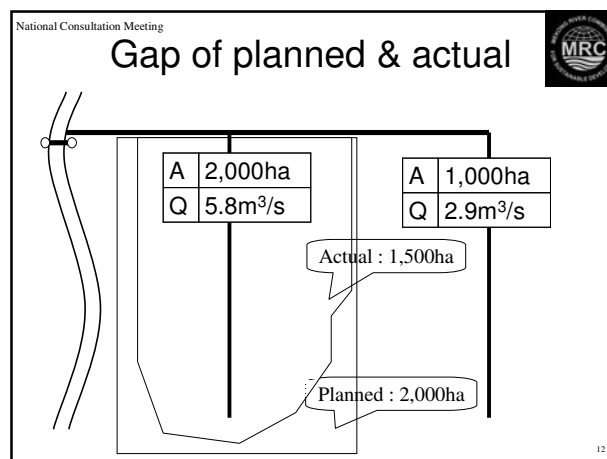
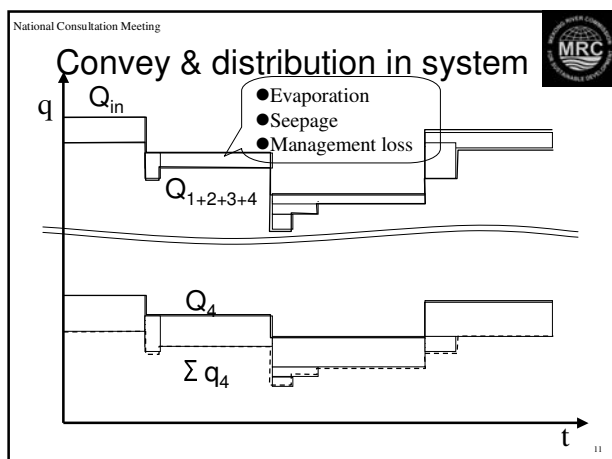
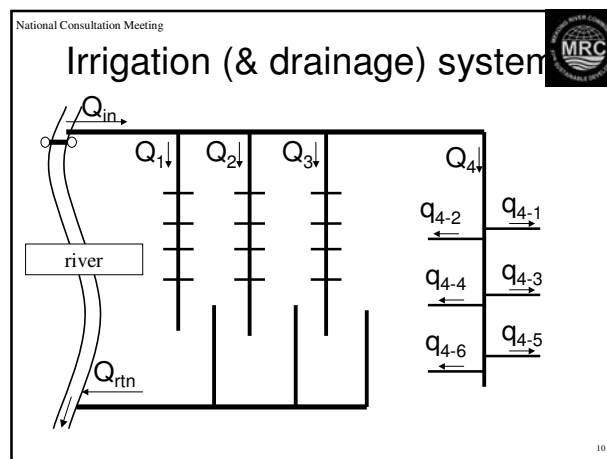
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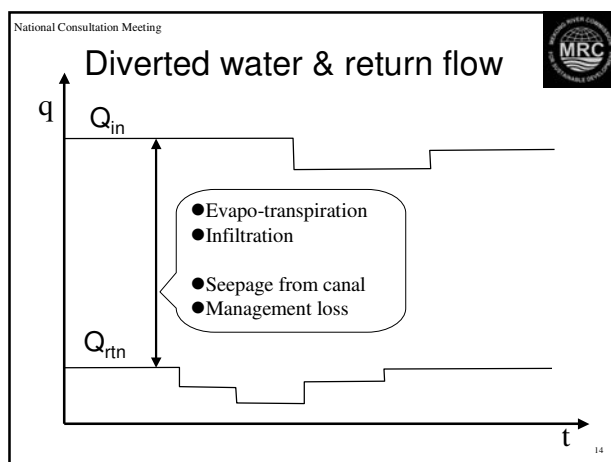
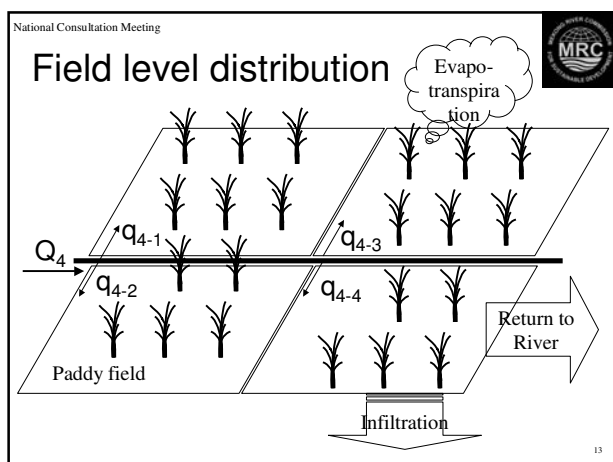
National Consultation Meeting

Justification of IIEPF

- Irrigation → biggest water user
- Optimization of irrigation water use → crucial issue
- Irrigation efficiency in LMB → LOW in general → not much evidence
- → understanding, improvement needed

9





National Consultation Meeting

Irrigation efficiency

Irrigation system efficiency (Convey and distribution)	$\Sigma q \div Q_{in}$
Field application efficiency	Water requirement (Evapo.+Infiltration) $\div q$
Project efficiency	Irrigation system efficiency $\times$ Field application efficiency

15

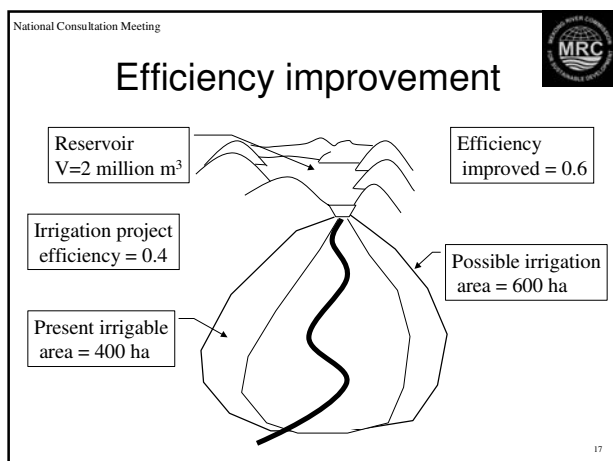
National Consultation Meeting

A research result

	Plan (%)	Measured (%)
Irrigation system efficiency	72	48.5
Field application efficiency	85	82.9
Project efficiency	61	40.2

at KM6 project, suburban of Vientiane
analyzed by NIRE

16



- National Consultation Meeting
- ### Outputs of IIEPF
- Actual conditions regarding to water use analyzed and documented
 - Guidelines to improve irrigation efficiency drafted
- 18



Activity 1 for actual conditions

- To measure water flow at irr. scheme
- To identify actual irrigated area
- To measure water requirement
- To calculate irrigation efficiency
- To examine water distribution practices

19



Activity 2 for guidelines

- To review documents
- To identify best practices
- To analyze relation between irrigation efficiency & distribution practices
- To draft guidelines

20



Implementation arrangements

- Cooperate with NMCs
- Work with line agencies in charge of Irrigation project planning survey (incl. hydrology) water use management
- Collaborate with FAO

21



Time Frame

	2005		2006				2007				2008	
	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd
Preparation stage												
Regional Workshop												
Site selection												
Field observation												
Data analysis												
Review documents												
Drafting guidelines												
Finalizing												

22



Part II response to 3rd W.S.

23



Major comments at 3rd W.S.

- Objectives and outputs unclear.
- On what aspect of improvement? Structural or Institutional?
- Proposing policies to member countries?
- Linkage with phase I unclear.
- Detail Time frame needed.
- Focusing on rain fed area expected.
- Expansion to basinwide expected.
- Linkage with other program expected.
- Establishment of irrigation planning methodology expected.

24



Response on present P.D.

- Objectives and outputs unclear.
→ Pls. refer P3
- On what aspect of improvement?
Structural or Institutional?
→ institutional, managerial & technical
NOT structural (budget limitation)

25



Response on present P.D. (2)

- Proposing policies to member countries?
→ NO, modified from original idea
- Linkage with phase I unclear.
→ DMPF & IIEPF parallel (P6)
IIEPF considers multi-functions (P7)

26



DMPF, IIEPF & current AIFP

- DMPF
to show visible
examples of paddy
fields' multi-
functionality
- IIEPF
to introduce
guidelines to
improve efficiency
- AIFP sub-comp. #4
to build accurate
picture of functions
by rice farming
- AIFP sub-comp. #1
efficiency of water
use in irrigation
systems
(c.f. Current AIFP 2000-2005)

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Response on present P.D. (3)

- Detail Time frame needed.
→ Pls. refer Annex1
- Focusing on rain fed area expected.
→ Irrigation is donor's concern
(even importance of rain fed paddy deeply understood)

28



Response on present P.D. (4)

- Expansion to basinwide expected.
→ Application of guidelines as
overall objective
- Linkage with other program expected.
→ Observation fed back to WUP

29



Response on present P.D. (5)

- Establishment of irrigation planning
methodology expected.
→ Planning methodology too big work
Planning is out of focus

30



Thank you very much
for your attention

(to be continued)

31



Part III for implementation

32



Issues to be discussed

- Line agencies' participation
- Activities by Line agencies
- Toward sub-contract
- Sub-contract
- Site selection
- Technical backstopping
- Kick-off workshop
- For smooth implementation

33



Line agencies' participation

- Main task:
field observ. for data collection } Sub-contract
data analysis
contrib. to finalize guidelines → Workshop
(Pls. Refer P3 and Annex-2)
- Requirement:
capability of irrigation planning, survey
water use management
- Available resources:
human resources
equipment

34



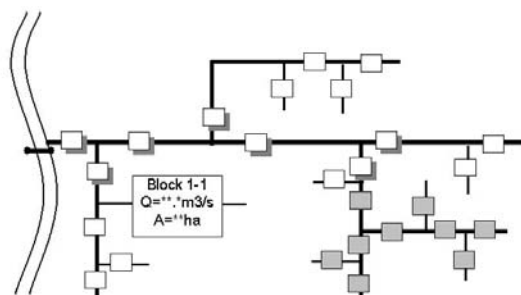
Activities by L.A.

- Work Plan (CV, quotation - M/M & rate -)
- Site selection
- Schematic mapping (if needed)
- Measurement of water quantity
water requirement
- Identification of irrigated area
- Analysis of irrigation efficiency
- Water distribution practice
(TOR will show more info.)

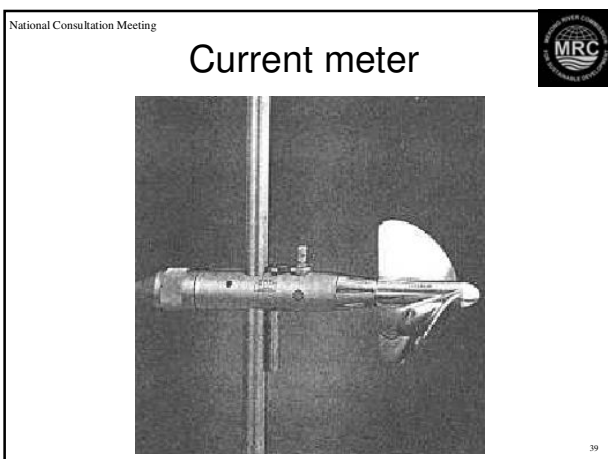
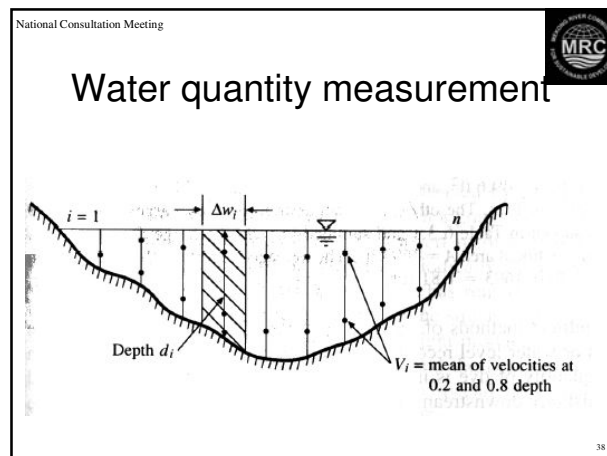
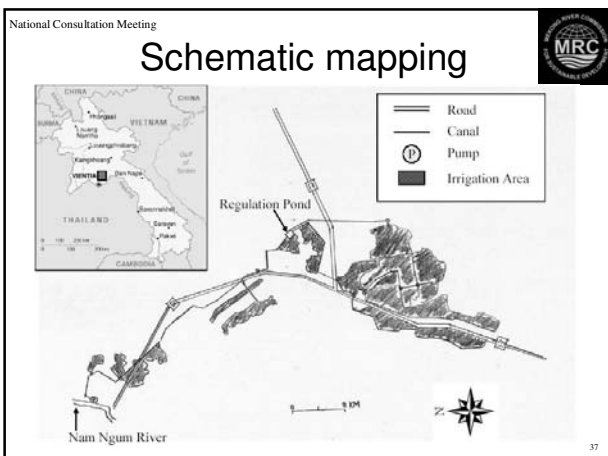
35



Schematic irrigation system



36



- National Consultation Meeting
- ## Toward Sub-contract
- Basic agreement on TOR
 - Invitation letter from MRCS to NMC
 - Nomination of L.A.
 - Submission of work plan
 - CV
 - quotation (rate, M/M)
 - by NMC
 - Examination by MRCS
 - Negotiation of contract
- 40

- National Consultation Meeting
- ## Sub-contract
- Draft TOR to be ready on W.S.
 - Series of discussion needed for work plan & contract
 - Scheduled May to July 2006
 - One (1) contract in each country
- 41

- National Consultation Meeting
- ## Site selection criteria
- Representativity of agro-ecosystem & irrigation type of the country
 - Accessibility
 - Appropriate size
 - Availability of relevant information
(Pls. Refer Annex-2 P4 [18])
- 42



Technical backstopping

- MRCS to be provide Technical B.S.
- One P.O. under recruitment
- Specific activities are
 - detail work plan
 - field observation
 - data analysis (Pls. refer Annex-2)

43



Regional Workshop (tentative)

- Purpose:
 - understanding of project content
 - reflection of N.C.M.
 - official adoption of P.D.
 - discussion for coming activities
- Date: mid-Feb. or early April
- Venue: MRCS conference room
- Participants: 5 persons each country
- Others: Donor & FAO to be invited

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Tentative program of W.S.

- Opening remarks by Donor & MRCS
- P.D. review by MRCS
- Possible collaboration by FAO
- Feedback from N.C.M. by MRCS
- Work plan & implementation modality
- Q&A

45



For smooth implementation

- Line Agencies, who?
 - their capacity –
 - equipment –
 - focal point –
- Procedure for Sub-contract
- Review draft TOR for work plan & cost estimation
- Selection of appropriate site
- Date for Workshop

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Thank you very much
for your attention

47

Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)

Project document

1. Background

The Mekong River is the biggest international river in Southeast Asia. The Mekong River Basin has high development potential because of its ecological diversity such as climate, land, flora and fauna, soil and water resources. Water resources are widely used for agriculture, hydropower generation, navigation, fisheries, industries, tourism, domestic use and others and contribute economic development and people's well-being of the region.

Agriculture is the predominant economic sector of the Lower Mekong Basin (LMB) which some 85% of about 60 millions of inhabitants is engaged in and supplies staple diet of 300 millions of population. In addition to this present condition, rapidly growing population of the region requires further agricultural development. Therefore agriculture is put as an important element in each riparian country's development strategy.

Rice is dominant crop of this region and is suitable for climate of the region, which allows short-term inundation caused by intensive rainfall. Inundation on paddy fields also prevents soil erosion and replant failure, contributes to remove salinity and so on. However long-term growth of rice cultivation requires further development on irrigation, because of coping with unstable precipitation in rainy season and meeting increasing demand to expand cultivable land in dry season.

Rice cultivation shows relatively higher productivity on calorie per area. Hence it requires huge amount of water, although most of its portion is not consumed but returned to ground water or river water downstream via infiltration underground or outflows to drainage canal. Thus water use efficiency, or water productivity in other word, should be paid attention to. For effective and efficient agricultural development with environmentally sustainable manner, "more crop per drop" is one of the vital approaches to be carried out.

In this line, optimization of irrigation water use is one of the crucial issues for successful agricultural development. Irrigation efficiency of schemes varies between countries but is low in general. Low efficiency is a constraint of effective water use. Improvement of irrigation efficiency will lead to effective use of water resources and contribute to enlarge cultivable land and planting duration. However, in the region, not many significant studies have been made nor many evidences have been shown on actual condition of water use. Therefore analysis of actual water use condition, including irrigation efficiency and manner of water distribution, and introduction of improving method based on analysis are vital tasks for the LMB.

Apart from an asset for agricultural production, rice cultivation and paddy field irrigation have the nature of a public asset and play a wide range of roles connected with environmental conservation, traditional culture, local society and so on. Those are called multi-functionality. This multi-functionality is a secondary function, but also produces economic and social benefits in combination with

appropriate farming practice on paddy field. In this sense, agricultural development should always pay attention to multi-functionality in order to maximize benefit of rice cultivation.

2. Objectives

As described as background, improvement of irrigation efficiency is one of the key issues to optimize water use of the basin and to utilize limited water resources effectively. In this context, IIEPF sets overall objectives as below:

Overall objective:

To improve irrigation efficiency on paddy fields in the Lower Mekong Basin

In order to achieve overall objective above, IIEPF sets immediate objective as below.

Immediate objective:

To introduce guidelines to improve irrigation efficiency based on actual water use conditions to member countries

3. Outputs and activities

Output 1 Actual conditions regarding to water use at specific irrigation schemes representing agro-ecosystem of the basin analyzed and documented

- Activity 1.1*** To measure actual water quantity of flow at 1) intake, 2) main, secondary and tertiary canals, and 3) paddy field on several pilot project sites
- 1.2 To identify actual irrigated area on pilot project sites
 - 1.3 To measure water requirement in depth on pilot project sites
 - 1.4 To examine planned irrigation efficiency if exists
 - 1.5 To calculate and analyze irrigation efficiency based on above observation and relevant outputs from other projects
 - 1.6 To examine water distribution practices on pilot project sites
 - 1.7 To document collected information

Output 2 Guidelines to improve irrigation efficiency drafted

- Activity 2.1*** To review documents related to water management
- 2.2 To identify best practices of water management from reviewed documents
 - 2.3 To analyze relation between actual irrigation efficiency and water distribution practice based on Output 1
 - 2.4 To draft institutional, managerial and technical guidelines (manuals) for irrigation facilities operation

4. Implementation arrangement

(1) Under the framework of the MRC

The project and MRC's vision

IIEPF is implemented under the framework of the MRC, more specifically IIEPF manages a part of Sub-component #1 "Water Use Efficiency in Paddy Irrigation System" of the Agriculture, Irrigation and Forestry Programme (AIFP) of the MRC. IIEPF will contribute the Mission of the MRC, that is "To promote and coordinate sustainable management and development of water and related resources," through achieving immediate and overall objectives.

MRC Secretariat

Senior advisor on Irrigation/AIFP is responsible for day-to-day management of project implementation under the supervision on the AIFP Programme Coordinator and the OPD Director. Programme officer is to be recruited to support Senior advisor mainly in terms of field observation and related activities.

National Mekong Committees

Since the MRC is an inter-government organization, involvement of NMCs as representatives of its member countries is the essential approach. Through utilization of knowledge and experience of member countries, this approach is advantageous in some aspects such as 1) smooth coordination of the project implementation, 2) prioritization of specific subjects to be analyzed through the project, 3) implementation of practical activities, and 4) selection of pilot project sites.

Line agencies

Moreover, involvement of line agencies responsible for water issues, such as irrigation planning and/or water resources management is crucial to conduct field observation and to finalize guidelines on effective water use appropriately, reflecting real needs of each country.

This project also provides some opportunities for capacity building of the relevant officers in the related fields. In other word, roles and responsibilities of relevant line agencies should be carefully determined in accordance with their existing capabilities and target level of capacity building.

(2) Collaboration with the Food and Agricultural Organization of the United Nations

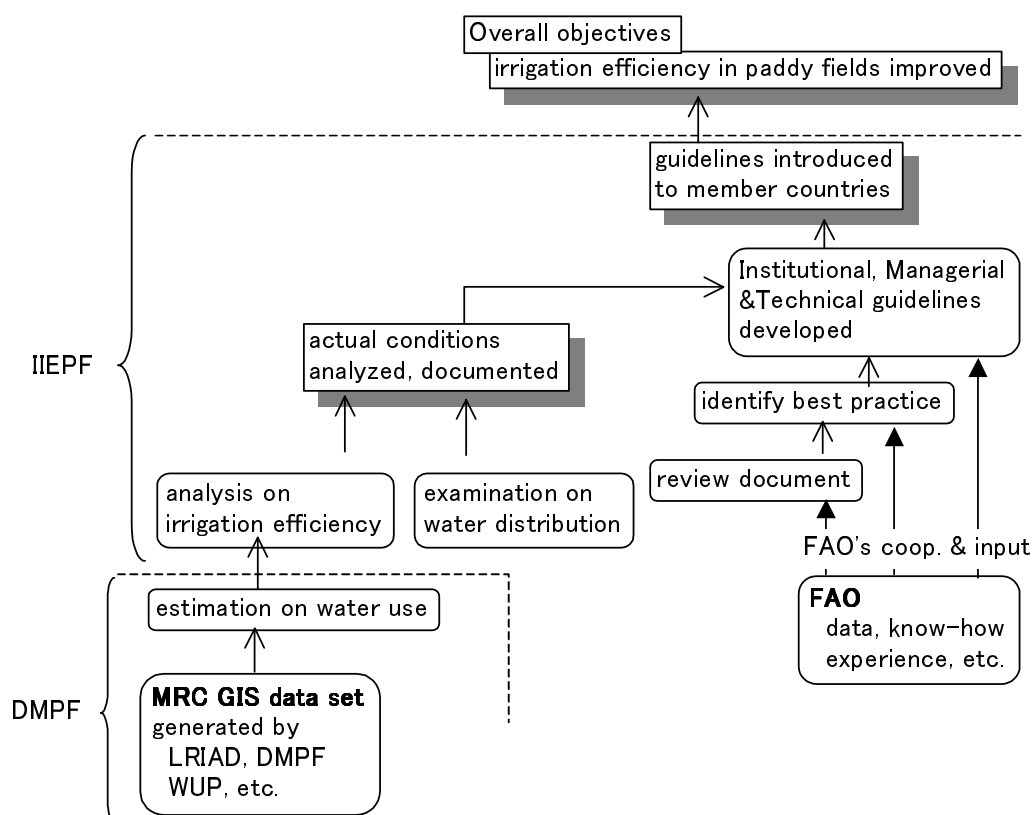
Collaboration with international organizations specialized in agriculture and irrigation will contribute to reinforce output of this project. Among UN agencies, with the reasons below, the FAO is one of the most significant organizations to collaborate with the MRC for implementation of this project.

- The FAO is the only UN technical organization specializes in agriculture, agricultural development including irrigation
- The FAO has broad knowledge, experience, know-how and remarkable history on agricultural and irrigation development all over the world
- The FAO is conducting "the Evaluation Study for Paddy Irrigation in Monsoon areas" which is funded by the Government of Japan

Thus IIEPF is implemented by the MRC in close collaboration with the FAO. In particular Output 2 of the project will expect cooperation and input from the FAO. Vast data, documents, knowledge, experience stored in the FAO will be reviewed and contribute to identify best practices of water management. In addition to those

physical inputs from the FAO, inputs on institutional, managerial and technical issues to formulate guidelines are also expected from the FAO.

Schematic diagram of implementation arrangement is shown below:



5. Work plan

Project period is three (3) years, commencing in June 2005 and to be completed in June 2008.

Work plan will be revised yearly responding to the progress of the project. This work plan shows outline of year-by-year schedule for project implementation at the beginning stage. Detail time frame for each activity is shown as Annex-1.

(1) 1st year (June 2005 to June 2006)

Most of time of this period is spent for preparation, because there is a gap of funding and implementation. The project started middle of June 2005, when budget was transferred from the donor to the MRC bank account, and officer in charge of the project implementation assigned to the MRCS middle of July 2005. Then revision of the project document has been started. Revised project document should be adopted by four member countries and submitted to donor for approval.

Planned major activities in this period are as below:

- Discussion with the FAO for collaboration
- Series of discussions and national consultation meeting with four National Mekong Committees and other relevant line agencies to reach consensus on content of the project
- Regional workshop to officially adopt project document

- Preparation of sub-contract with line agencies

(2) 2nd year (June 2006 to June 2007)

Field observation by line agencies starts in this period and continues to the third year. Sub-contract for drafting guidelines to improve irrigation efficiency is made at the late stage of this period.

Planned major activities in this period are as below:

- Preparation of detail work plan for field observation
- Topographical survey and mapping
- Drawing schematic irrigation system
- Current speed measurement and calculation of water quantity
- Identification of actual irrigated area
- Measurement of water requirement in depth
- Examination of water distribution practice

(3) 3rd year (June 2007 to June 2008)

Field observation continues first half of this period by line agencies. Riparian consultant reviews existing documents, identifies best practices of water management, and drafts institutional, managerial and technical guidelines for efficient water use. Workshop is organized to propose draft guidelines. Final report is produced based on the result of all the activities.

6. Cost breakdown

Total budget is approximately one (1) million USD. Details with breakdown are described below.

Item	1st Year	2nd Year	3rd Year	Total
International staff	115,000	110,000	120,000	345,000
Support Staff	1,500	0	0	1,500
Official travels	5,200	10,400	13,000	28,600
Riparian Consultants			95,000	95,000
Riparian Professional staff	9,000	40,000	45,000	94,000
Sub-contract with line agencies	103,500	136,500		240,000
Workshop	23,000	4,000	25,000	52,000
Equipment	43,500	0	0	43,500
Operation and Maintenance	0	0	0	0
Reporting cost	1,000	1,000	2,000	4,000
Miscellaneous	603	403	2,303	3,309
Secretariat support cost	39,299	39,299	39,299	117,897
Total	341,602	341,602	341,602	1,024,806

7. Other relevant information

(1) Achievements under AIFP and others

Through past activities including LRIAD¹, the MRC has generated and stores various GIS data sets. Data sets relevant to water use are as follows:

- Topography

¹ LRIAD is "Land Resources Inventory for Agricultural Development project" conducted from 1998 to 2001 as one of AIFP projects.

- District boundary
- Catchment boundary
- River Network
- Soil (by LRIAD)
- Population density
- Irrigation Scheme (by LRIAD)
- Isohyets
- Maximum flood extend (by LRIAD)
- Forest cover

Through implementation of DMPF², the MRC has also produced supplementary GIS data sets related to paddy rice farming and rainfall. Details are as follows:

- Rice farming statistics at district, which are composed of
1) planted area, 2) harvested area, 3) production and 4) yield of rainy and dry seasons respectively,
6) planted area, 7) production, 8) yield of whole year, and
9) population, 10) per capita production.
- Rice cropping area in each month
- Fertilizer use
- Rainfall in time series, which are composed of
1) monthly, 2) rainy and dry season, 3) annual of average of 1985 to 2000.
- Land use map, which reclassifies agricultural land and focuses on paddy field.

DMPF also tries to estimate actual condition of water use. Expected output is estimation of irrigation water use, which is mapped in GIS data sets and is composed of

- Rainfed and irrigated paddy rice areas
- Monthly water requirement and estimated water use

Since this work will be conducted based on existing data, result is based on a lot of approximations and assumptions.

(2) Linkage with DMPF

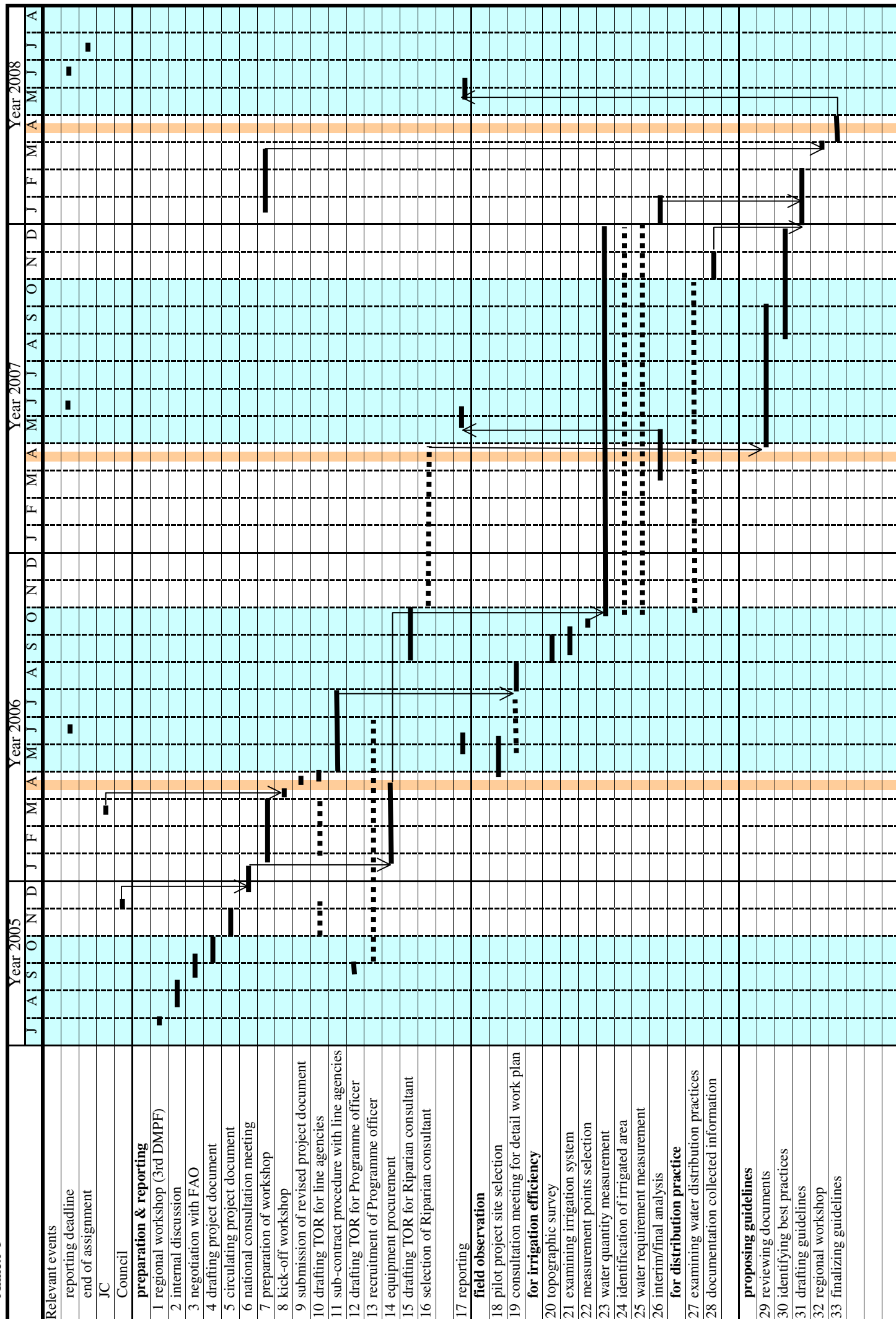
DMPF is conducting estimation of irrigation water use based on dataset presently available at the MRC. In this process, DMPF pointed out that the reliability of some data needed to be improved for more accurate estimation. Irrigation efficiency is one of those data. Unlike other data needed reliability improvement, irrigation efficiency is a factor, which is affected by aspects on structure and management. This means improvement of irrigation efficiency can be expected by counter-measures on structure or management and leads to effective water use. In this context, awareness of the issues for IIEPF comes up from DMPF.

On the other hand, IIEPF and DMPF cover some part of sub-component #1 and #4 of AIFP respectively. In this sense, IIEPF is positioned parallel with DMPF under AIFP framework.

² DMPF is another AIFP project, namely "Project to Demonstrate the Multi-functionality of the Paddy Fields over the Mekong River Basin."

(3) Multi-functionality

Multi functional roles are secondary functions, which are generated naturally and additionally in process of water use for agricultural production. In this sense, aiming to generate multi functional roles cannot be principle objective of water use. Thus, proposed guidelines consider improvement of irrigation efficiency as priority objective and also pay maximum attention to maintain multi functional roles, especially multiple use of irrigation water.



ANNEX -2

1. Roles and responsibilities

The project is planned to be conducted by four parties, 1) Senior Advisor, 2) Programme officer, 3) Line agencies and 4) Riparian consultant. Roles and responsibilities of four parties are as follows.

(1) Senior advisor

Senior advisor has overall responsibility for project implementation in cooperation with Programme officer, line agencies and Riparian consultant. Roles are shown below.

- Overall management of the project
- Coordination with NMCs and line agencies
- Organizing collaboration with the FAO
- Organizing regional workshop
- Making sub-contract with line agencies, Riparian consultant
- Managing consultancy services
- Conducting supplement backstopping to line agencies
- Reporting to the MRCS and the donor

(2) Programme officer

Programme officer is mainly responsible for technical backstopping of field observation and related activities conducted by line agencies. Specific items for technical backstopping are as below:

- Establishment of detailed work plan for field observation including preparation of quotation
- Field observation on
 - current speed measurement
 - calculation of water quantity
 - identification of actual irrigated area
 - water requirement measurement on field
 - examination of water distribution practices
- Calculation and analysis of irrigation efficiency
- Finalization of country reports

Other roles of Programme officer are to assist Senior advisor's task in particular items listed below.

- Organizing regional workshop
- Management consultancy services
- Reporting to the MRCS and the donor

(3) Line agencies

Line agencies are in charge of data collection on the fields and other related activities with necessary technical backstopping by Programme officer. Items responsible for are below.

- Topographic survey and mapping
- Measurement of water quantity on canals in time series
- Identification of actual irrigated area in time series
- Measurement of water requirement in depth

- Examination and documentation of water distribution practice
- Reporting to AIFP

(4) Riparian consultant

Roles and responsibilities of Riparian consultant are to propose institutional, managerial and technical guidelines for efficient water use. These activities are made in close cooperation and with input from the FAO. In order to achieve this purpose, Riparian consultant conducts activities mentioned below.

- Review of existing documents
- Identify best practices
- Drafting institutional, managerial and technical guidelines
- Presentation of draft guidelines at regional workshop
- Finalization of guidelines
- Reporting to AIFP

(5) FAO

In addition to the said four parties, the FAO is expected to be involved in project implementation as a collaboration partner. Expecting collaboration partners are the Land and Water Management Division of the FAO headquarters and the FAO Regional Office for Asia and the Pacific (RAP). Expected contributions made by the FAO are as below.

- Providing existing data, documents, knowledge, know-how, experience related to water management
- Providing information to identify best practices
- Providing ideas and recommendations to formulate draft guidelines
- Providing ideas and recommendations to improve draft guidelines through participation of workshop organized by the MRC

2. Breakdown of activities

Here is a brief explanation of each activity shown in appendix.

[1] Regional workshop

Senior advisor introduces tentative concept and time frame of IIEPF to member countries on the occasion of the 3rd DMPF regional workshop. Purpose of this activity is to share basic concept of the project with member countries, to retrieve ideas, demands, comments and expectations etc. on the project in order to reflect those into draft project document.

[2] Internal discussion

Senior advisor prepares concept note of the project and organizes a series of discussions among AIFP team, with OPD director and with CEO to share common understanding and to establish basic concept of the project.

[3] Negotiation with FAO

Based on drafted concept note, Senior advisor conducts negotiation with the FAO in terms of collaboration work on principle and its detail.

[4] Drafting project document

Senior advisor drafts project document. Project document includes basic concept, detail work plan, implementation arrangement, budget allocation and agreed collaboration with the FAO.

[5] Circulating project document

Senior advisor distributes draft project document to relevant authorities of member countries prior to the national consultation meetings.

[6] National consultation meeting

Senior advisor holds national consultation meeting in each member country respectively. Purpose of the meeting is to deepen understanding of the project concept and to receive comments from member countries. Comments are fed back to improve project document.

[7] Preparation of workshop

[8] Kick-off workshop

The MRCS organizes kick-off workshop for member countries to officially adopt project document.

At workshop, Senior advisor reviews draft project document, addresses member countries' comments made through national consultation meetings and their reflections and/or reactions into project document and its implementation.

Forthcoming activities and their necessary arrangement are to be discussed at this workshop in detail. Roles and responsibilities with time frame of line agencies are one of the most important issues to be clarified at the workshop.

[9] Submission of revised project document

The MRCS submits adopted project document to the donor to be approved as a revised version.

[10] Drafting TOR for line agencies

[11] Sub-contract procedure with line agencies

Senior advisor prepares TOR for subcontract with line agencies, which covers roles and responsibilities described above in 10. (3). TOR is finalized reflecting on outputs of the workshop [8]. Negotiation to make contract is held between relevant sections of the MRCS and line agencies. Contracts need to be made at the end of 1st year of the project (by June 2006) or the early beginning stage of the 2nd year.

[12] Drafting TOR for Programme officer

[13] Recruitment of Programme officer

Recruitment of Programme officer, who is mainly responsible for technical backstopping to line agencies, is conducted in parallel with national consultation meeting, workshop etc (activity [3] to [11].) Appointment of Programme officer is expected not later than June 2006.

[14] Equipment procurement

Reflecting comments through national consultation meetings, Senior advisor finalizes necessary equipment and starts procurement procedure with relevant sections of the MRCS. Four sets of electromagnetic current meter are on the short list. Delivery of equipment might be critical path of field observation. The MRCS tries quick delivery of necessary equipment.

[15] Drafting TOR for sub-contract

[16] Selection of Riparian consultant

Senior advisor finalizes roles and responsibilities of Riparian consultant, documents them into TOR, and recruits it in cooperation with relevant sections of the MRCS. Contract needs to be made before the end of the 2nd year of the project (April 2007).

[17] Reporting

Deadline of reporting for the 1st year is June 2006. Senior advisor prepares progress report of the 1st year.

[18] Pilot project site selection

Line agencies of each country determine appropriate pilot project site (irrigation scheme) to conduct field observation respectively with close consultation with the MRCS. Senior advisor and/or Programme officer are to be involved in this activity.

Tentative criteria of selection are 1) representativity of agro-ecosystem and irrigation of the basin, 2) accessibility, 3) appropriate size, 4) availability of relevant information. Expected representativity for each site of the country is as follows.

Lao	paddy field in hilly area, pump irrigation
Thailand	gravity irrigation, with PIM approach
Cambodia	wet low land around the Great Lake or other sub-basin
Vietnam	irrigation in low land delta, tidal irrigation

[19] Consultation meeting for detail work plan

A series of national consultation meetings is to be held to support line agencies to establish their detail work plan including quotation. Senior advisor and Programme provides necessary backstopping for this activity.

[20] Topographic survey

Line agencies of each country conduct topographical survey and draw schematic ground plan of the pilot project site. This activity is conducted with backstopping by Programme officer.

[21] Examining irrigation system

Line agencies of each country examine irrigation system of the pilot project site and draw schematic plan of irrigation system, which includes command area and planned water quantity of each secondary canal. This activity is conducted with backstopping by Programme officer.

[22] Measurement points selection

Line agencies of each country determine measurement points for both current speed and water requirement with close consultation with Senior advisor and Programme officer.

Number of measurement points for current speed is determined according to the size of the pilot project site, but measurement points should basically cover from intake to paddy fields.

Measurement points for water requirement are determined by representing water use of the pilot project site and to cover all the classification of soil in the pilot project site. Outputs of [20] and [21] are referred for this activity.

[23] Water quantity measurement

Line agencies of each country measure current speed of water flow on the points determined in [22]. Measurement is conducted once a week and covers all the points on the same day. Instrument for measurement is electromagnetic current meter, which is lent by the MRCS. Line agencies of each country convert current speed into water quantity.

Programme officer provides technical backstopping for both current speed measurement and conversion into quantity.

[24] Identification of irrigated area

Line agencies of each country identify actually irrigated extent of paddy fields and calculate its area. Identification is conducted in the following day of quantity measurement.

Specific method to identify the area is to be considered, but combination of 1) manual observation of whole pilot project site, 2) plotting into the schematic ground plan, and 3) measurement on the schematic ground plan is proposed as one of the options. Further discussion and consideration to determine specific identification method is needed.

Programme officer provides technical backstopping for this activity.

[25] Water requirement measurement

Line agencies of each country measure water requirement in depth at several specific points of the pilot project site determined in [22].

Water requirement in depth is combined value of evapo-transpiration and infiltration, which is measured by temporal change of water level in paddy field per day in principle. Measurement is conducted twice a month avoiding the days with rainfall.

Programme officer provides technical backstopping for this activity.

[26] Interim analysis

At late stage of 2nd year (assumed in April to May 2007), line agencies of each country compile interim analysis of irrigation efficiency in terms of both distribution and field application based on field observation mentioned in [18] to [25] and submits to the MRCS. Planned irrigation efficiency for irrigation scheme is taken into consideration for analysis if available.

Programme officer provides technical backstopping for this activity.

[17] Reporting

Senior advisor prepares progress report of the 2nd year, which mainly covers field observation and analysis of observed result

[27] Examining water management practices

Line agencies of each country examine actual water management procedure at the pilot project site from head works, main to tertiary canals up to paddy fields. Examination is mainly conducted by field observation and hearing from related

persons including irrigation project officers to farmers. Programme officer provides technical backstopping for this activity.

[28] Documentation of collected information

Line agencies of each country document information obtained as a practice of water distribution at the pilot project site. Programme officer provides technical backstopping for this activity.

[26] Final analysis

At the end of field observation (assumed in January 2008), line agencies of each country compile final analysis of irrigation efficiency in terms of both distribution and field application based on field observation mentioned in [18] to [25] and submit to the MRCS. Planned irrigation efficiency for irrigation scheme is taken into consideration for analysis if available. Programme officer provides technical backstopping for this activity.

[29] Reviewing documents

Riparian consultant reviews existing documents and information relevant to water use, water management, irrigation facilities operation and maintenance, etc. Inputs from the FAO headquarters and RAP are taken into account.

[30] Identifying best practices

Riparian consultant identifies best practices of efficient and effective water use and management among reviewed documents and information in [29]. Another inputs from the FAO are taken into account for this activity.

[31] Drafting guidelines

Riparian consultant drafts institutional, managerial and technical guidelines, which contribute to improve irrigation efficiency and to enhance multi-function of rice cultivation and paddy field irrigation.

On the occasion of drafting, Riparian consultant examines observed and analyzed irrigation efficiency of the pilot project sites obtained through [23] to [26], analyzes relationship between irrigation efficiency and water distribution practices obtained through [26] to [28] and takes that information into account. This activity is also reinforced by inputs from the FAO.

[32] Regional workshop

The MRCS organizes regional workshop. Purpose of the workshop is to discuss institutional, managerial and technical guidelines for efficient water use and management among the MRC and member countries based on draft guidelines prepared in [31].

Riparian consultant presents draft guidelines with their process of drafting and expected benefits.

The MRC invites official(s) from Headquarters and/or RAP of the FAO as resource person(s). The FAO official(s) is (are) expected to provide recommendations based on their output of Japan funded project and other existing knowledge and experience, etc.

[33] Finalizing guidelines

Riparian consultant finalizes guidelines with reference to outputs made by regional workshop [37] in close cooperation with the MRCS.

[17] Reporting

Senior advisor prepares final report, which covers field observation activities, analysis of observations and proposed guideline for efficient water use.

**(Working draft of) Terms of Reference
For
Field Observation and Data Analysis for Irrigation Efficiency
on IIEPF**

1. Project Title

Improvement of Irrigation Efficiency on Paddy Fields In the Lower Mekong Basin project (IIEPF)

2. Title of Consultancy Service

Field Observation and Data Analysis for Irrigation Efficiency on IIEPF

3. Duty Station (tentative)

Ministry of Water Resources and Meteorology, Phnom Penh, Cambodia,
Ministry of Agriculture and Forestry, Vientiane, Lao PDR,
Royal Irrigation Department, Bangkok, Thailand, or
Ministry of Agriculture and Rural Development, Hanoi, Vietnam

4. Duration

This consultancy service is expected to be conducted from the beginning of August 2006 to the end of January 2008.

Preparation should be completed not later than the middle of October 2006.

Field observation for irrigation efficiency should start following the preparation and continue by the end of December 2007, which covers at least 12 months including whole dry and rainy season.

Water distribution practice should be examined following the preparation and continued 12 months from the starting date.

5. Backgrounds and Objective of the Consultancy Service

The Mekong River Commission (MRC) is implementing Improvement of Irrigation Efficiency on Paddy Fields In the Lower Mekong Basin project (IIEPF) in order to contribute improvement of irrigation efficiency basinwide through introduction of guidelines covering institutional, managerial and technical aspect of irrigation facilities operation.

In this line, the MRC is going to entrust “field observation and data analysis work” to National Mekong Committee (and/or Line Agencies) of each member country. This work aims to analyze and document actual conditions regarding to water use at specific irrigation schemes representing agro-ecosystem of the basin, especially in terms of irrigation efficiency and water distribution practices.

6. Expected Outputs

Two major outputs below are expected through implementation of this consultancy service.

- Present irrigation efficiency observed, analysed and examined

- Water distribution practices documented

For irrigation efficiency, items below shall be included as a part of output.

- Water flow quantity at selected points in time series
- Irrigation efficiency based on above observation

For water distribution practices, documented output shall include items below.

- (Substantial) organization structure of stakeholders relating to water distribution
- Mechanism to decide water allocation and to put it into practice

All those outputs should be compiled into Interim report and Final report.

7. Responsibilities and Tasks of Consultant

The Consultant shall perform the tasks listed below with close consultation with Senior Advisor and Programme Officer, AIFP of the MRCS.

[Preparation]

1. To identify appropriate pilot project site (irrigation scheme)
2. To prepare schematic plan of irrigation system
3. To prepare to schematic ground plan of irrigation scheme

[Irrigation efficiency]

4. To identify points for current speed (water quantity) measurement
5. To conduct current speed measurement
6. To calculate water flow quantity
7. To measure water requirement in depth on selected points
8. To identify actual irrigated area
9. To analyse and examine planned irrigation efficiency, if any

[Water distribution practices]

10. To identify stakeholders to decide distribution of irrigation water within the project
11. To draw diagram of relationship among stakeholders
12. To document procedure to decide water allocation
13. To document practical operation practices to ensure above allocation

8. Itinerary

Commencement of field observation: October 2006

Submission of Interim report: May 2007

Submission of Draft Final report: November 2007

Submission of Final report: January 2008

9. Working Principles

The consultants will work under supervision of Senior Advisor and Programme Officer of AIFP.

10. Qualifications

Head of the consultant team should hold master degree or equivalent with minimum 15 years experience on irrigation planning, water resources development or other relevant fields.

Team members should have educational and practical background of either 1) water use management, 2) irrigation (or water resources development) project survey, 3) irrigation (or water resources development) project planning, or 4) hydrological observation and analysis. (All fields (i.e. from 1) to 4) above) should be covered by the team as whole.)

11. Condition of Payment

Payment is made in three parts.

- (1) 40% of the Contract value, after signing of the Contract.
- (2) 30% of the Contract value, upon submission and acceptance of the Interim report.
- (3) 30% of the Contract value, upon submission and acceptance of the Final report.

Some technical backstopping to Consultancy service

This is a part of technical backstopping for appointed consultant team to conduct its consultancy service described mainly in “7. Responsibilities and Tasks of Consultant” of the TOR.

[1 Site selection]

On the selection, following items should be taken into account.

- Representativity of agro-ecosystem and irrigation type of the basin
- Accessibility
- Appropriate size
- Availability of relevant information

(Representativity)

Selected site should be representing agro-ecosystem of the country and featuring typical irrigation type of the country among the Lower Mekong Basin. Examples of representing feature of the countries are as follows:

Lao	paddy field in hilly area, pump irrigation
Thailand	gravity irrigation, with PIM approach
Cambodia	wet low land around the Great Lake or other sub-basin
Vietnam	irrigation in low land delta, tidal irrigation

(Accessibility)

“Accessibility” is one of the important criteria to select site. Field observation requires frequent visits to the selected site. Selected site should ensure those frequent visits without serious constraint.

(Appropriate size)

Field observation will be conducted whole the irrigation scheme covering from main to tertiary canal up to paddy field level. Therefore “size” of the selected site is also crucial factor for smooth observation. Appropriate size varies depending on accessibility inside the scheme (such as road network distribution and its condition) and means of transportation, but it would be several hundreds hectares to several thousands hectares.

(Data availability)

For smooth implementation of the field observation, existing data and document should be utilized as much as possible in order to minimize preparation work, such as topographic survey. Example of effective data is as follows:

- Schematic plan of irrigation system
- Schematic ground plan of irrigation scheme
- Planned water distribution (management) practice & organization
- Planned irrigation efficiency and other related factors

[2 Schematic plan of irrigation system]

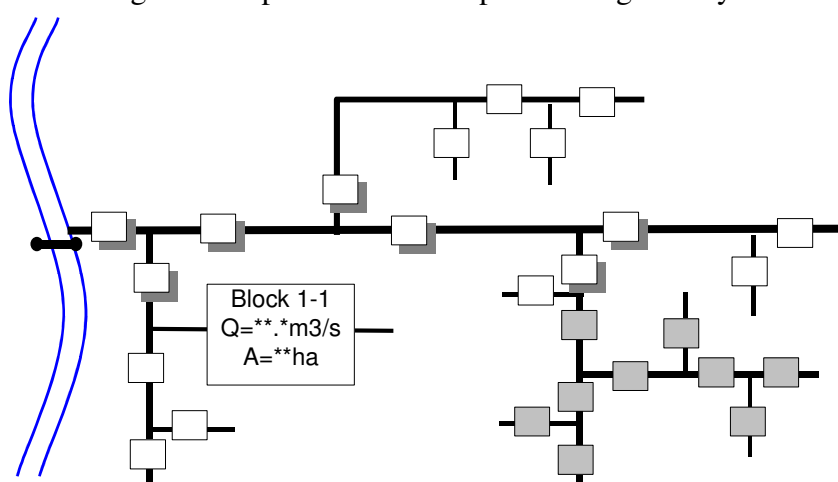
If existing one is available and effective for the purpose described below, this existing one should be used. Otherwise schematic plan should be drawn based on existing topographic map or other relevant information. In case of no data available to draw schematic plan, primitive topographic survey should be conducted under this project.

Schematic plan of irrigation system will be used to identify the points for current speed measurement.

Schematic plan includes items below:

- Alignment of irrigation canals and diversion works
- Command area under each diversion work and planned water allocation, if any

Fig.1. Example of schematic plan of irrigation system



[3 Schematic ground plan of irrigation scheme]

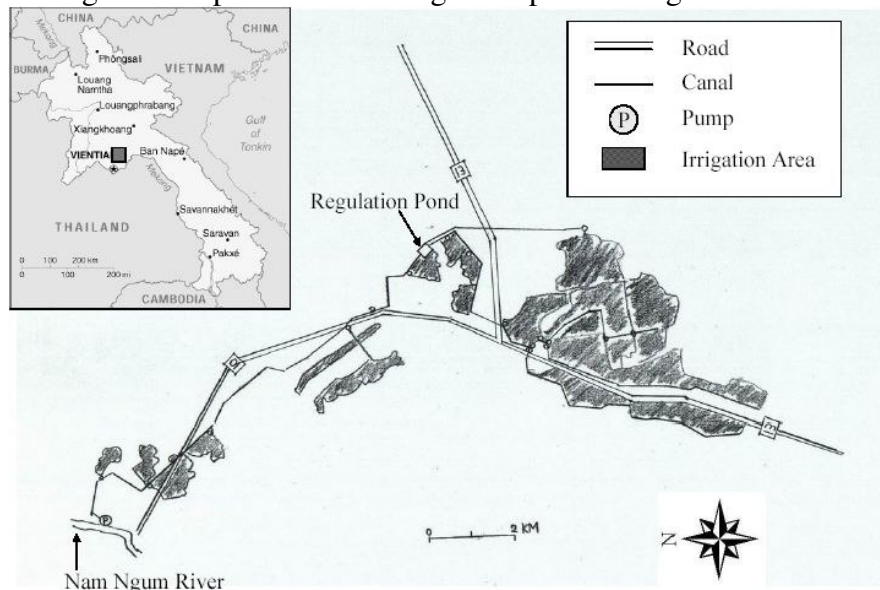
If existing one is available and effective for the purpose described below, this existing one should be used. Otherwise schematic ground plan should be drawn based on existing topographic map or other relevant information. In case of no data available to draw schematic plan, primitive topographic survey should be conducted under this project.

Compilation of schematic ground plan has two purposes. One is to draw schematic plan of irrigation system described above 2. The other purpose is to identify actual irrigated area described below 8.

For the first purpose, canal alignment and connection with diversion work are only needed. However for the second purpose, command area with appropriate scale should be identified in addition to canal alignment. Elevation information is not needed for this purpose.

Appropriate scale depends on the size of irrigation scheme and its complexity of canal and command area alignment. Scale should be decided through consultation with MRCS.

Fig.2. Example of schematic ground plan of irrigation scheme



[4 Identification of measurement points]

This activity includes two works. One is for planning level, and the other is for practical level on site.

If all the points after water diversion (those points are represented by BOX shape mark on Fig. 1) can be measured, it is ideal for detailed analysis, but in many cases it is unrealistic because of numerous points of diversion within canal system. Therefore appropriate points should be selected.

In principle, all the potential measurement points along main and secondary canals (shown as BOX with grey shade on Fig.1.) should be selected. For secondary and lower canal system up to field level, one or more sub-systems should be selected and all the points within these sub-systems should be measured. (i.e. grey BOX on Fig.1.) Number of points and its accessibility should be taken into account for this selection.

For practical level on the field, selection criteria of measurement point are

- Stable flow without turbulence,
- Stable cross section and
- Easy access both to the point and into the canal.

Cross section of each selected point should be measured and drawn for water quantity calculation described below 6.

[5 Current speed measurement]

(Number of measurement)

Measurement should be conducted once a week. All the points should be measured in the same day.

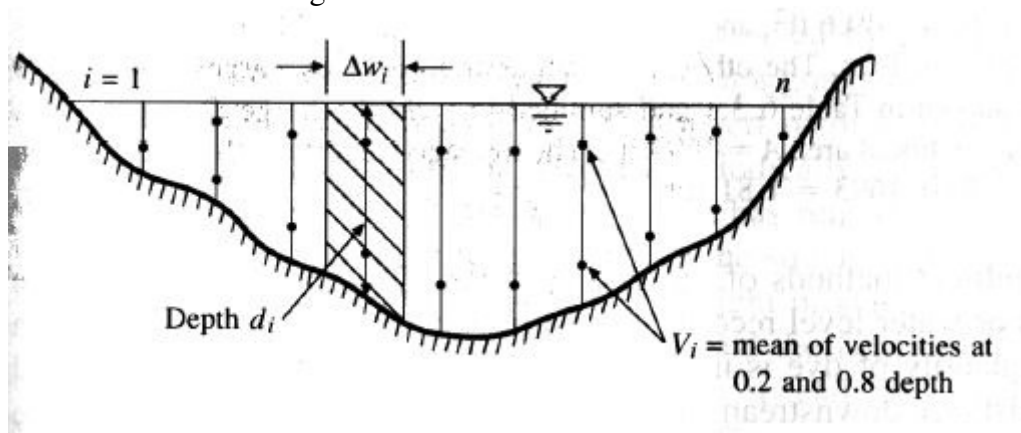
(Measurement period)

Measurement should start as soon as preparation is done and continue until the end of December 2007. This period should be at least twelve (12) months including one whole dry season.

(Measurement procedure)

Cross section of measurement point is divided into sub segment (hatched part of Fig.3.) with 2 meters width (Δw_i in Fig.3.) Number of sub segment depends on whole width of canal at measurement point but minimum number is three (3.)

Fig.3. Cross section of measurement



Measurement should be conducted 0.2 and 0.8 depth along centre vertical line of each sub segment.

Measurement should be conducted twice consecutively on each depth (0.2. or 0.8) with longer than twenty (20) seconds. If observed values extremely differ (more than 10% of difference) each other, one more measurement should be conducted for confirmation. Otherwise, simple average of two measurements should be recorded as observed value of each depth.

[5.6 Calculation of flow quantity]

Water flow quantity is calculated as follows,

$$V_i = 1/2 \times (V_{i0.2} + V_{i0.8})$$

$$A_i = d_i \times \Delta w_i$$

$$Q = \sum A_i \times V_i$$

V_i is mean velocity of selected sub segment (i),

A_i is area of selected sub segment (i), and

$A_i \times V_i$ shows flow quantity of selected sub segment (i).

Result of calculation on each measurement point should be recorded in time series into EXCEL worksheet for analysis described below 9.

[7 Water requirement measurement]

(Purpose)

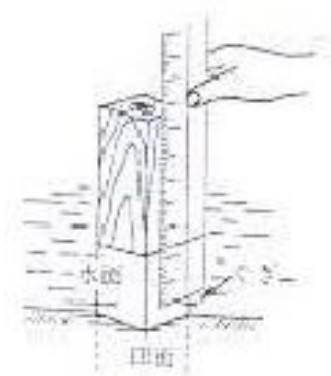
Observed water requirement will be used to estimate V_m (i.e. volume of water needed and made available for evapo-transpiration by the crop to avoid undesirable water stress in plants through the growing cycle) described 9 below.

(Method)

Precise identification of water requirement needs to measure rainfall, evaporation, transpiration, percolation and seepage, and it needs complicated measurement system composed of combination of water level gauge, rain gauge and other special apparatus for each items. Avoiding undesirable result caused by this complicated operation, this project simplifies measurement method described below.

Measurement should be conducted to measure daily change of water depth at the selected points of paddy fields as follows.

- Install wood pole with stopper vertically on the paddy field
- Measure and record water depth from stopper to water surface by putting gauge along the pole
- Measure and record again after 24 hours from the previous measurement



Obtained value is a combination of evapo-transpiration and infiltration.

(Selection of measurement point)

Since infiltration (percolation plus seepage) widely depends on soil condition and field layout, measurement point selection should be conducted carefully. Ideally under all the combinations of soil classification and ground water level (high, middle or low), each paddy field of the selected sub system (i.e. grey BOX on Fig.1.) should have one measurement point.

(Frequency)

Measurement should be conducted twice a month. Avoiding influence of rainfall and irrigation, measurement should be conducted the day with neither rainfall nor irrigation water supply.

[8 Identification of irrigated area]

(Purpose)

This activity aims to identify the gap, if any, between planned and actual irrigated area. For example, Diversion work #1 has 1000ha of command area with 1.5 m³/s of planned water flow. Even if exact 1.5 m³/s is diverted to the command area under the said diversion work, it does not guarantee whole 1000 ha are securely irrigated. Actual irrigated area should be used to double check irrigation system

efficiency (combination of conveyance and distribution efficiency) observed and analyzed through water quantity measurement and its analysis described in 5, 6 and 9.

(Method)

- Under the selected sub system (i.e. grey BOX on Fig.1.), ground truth should be conducted to identify limit of irrigated area by manual observation and through interview to farmers.
- Collected information of limit should be plotted into schematic ground plan of irrigation scheme.
- Measurement on the ground plan should be conducted to calculate the area.

(Frequency)

This measurement should be conducted, in principle, once a month, but additional measurement is required when water distribution is largely changed (i.e. transition between rainy and dry season, stage of crop growing cycle.)

[9 Analysis of irrigation efficiency]

As actual analysis work varies depending on structure of irrigation system, whether focus is on whole irrigation system or some sub system, etc. Here general information of irrigation efficiency is described and detail should be determined country (scheme) by country by further discussion with MRCS.

Irrigation efficiency can be calculated as follows. (c.f. Fig.4.)

Conveyance efficiency = $\Sigma V_d \div V_c$

Distribution efficiency = $\Sigma V_f \div V_d$

Field application efficiency = $V_m \div V_f$

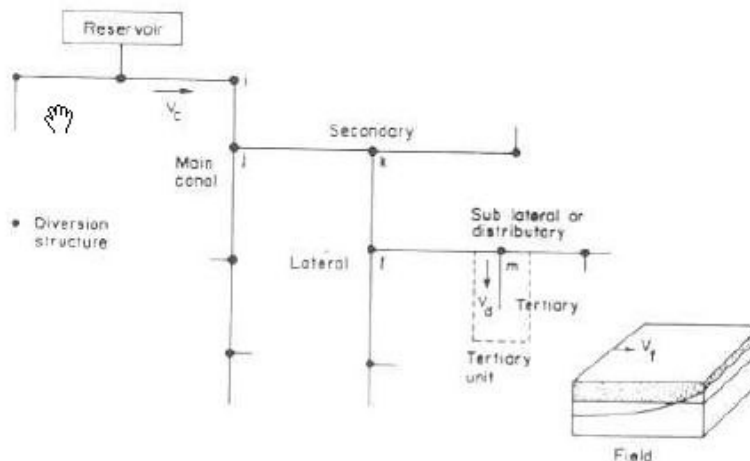
V_c is volume of water diverted to the system,

V_d is volume of water delivered by the system,

V_f is volume of water furnished to the fields, and

V_m is volume of water needed by the crop without water stress
(approximated by evapo-transpiration plus infiltration)

Fig.4. Irrigation system and Water volume



Analysis of each efficiency and combination of them will be useful indicator to examine the function of irrigation system and its operation and management. For example, excessive seepage losses in a canal will lead low conveyance efficiency and will indicate the need for lining. Low distribution efficiency will indicate the need to improve water distribution management through canal system. Low field application efficiency will be caused by the gap between demand and supply and indicate the need of better management of operation.

If planned value of efficiencies (either conveyance, distribution, field application or any of them) is available, comparison of planned and observed value will show some implication. However, analysis should be conducted through a trial and error process and it is difficult to show uniform method or procedure to analyse it. Therefore detail of analysis should be determined by further discussion through the process of data collection and analysis.

[10 Identification of stakeholders]

In order to distribute irrigation water from such as reservoir or diversion work to paddy fields through canal system, a lot of individual persons and organizations (regardless of whether they are formal or informal) are related to, in terms of both decision making process of water allocation and practical operation of irrigation facilities.

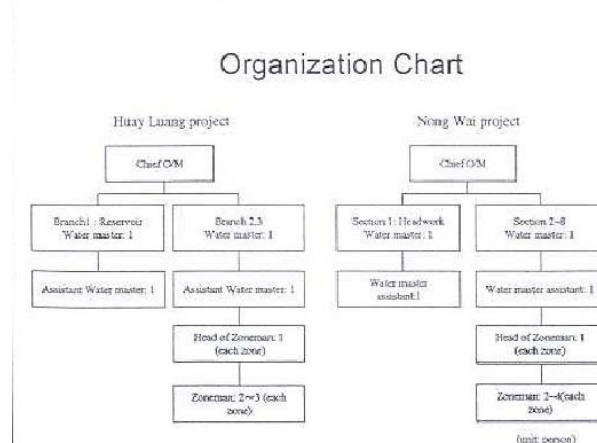
All the relating bodies (stakeholders) under the selected site should be identified. If identification through whole irrigation scheme is unrealistic, emphasize could be put on both along the main and secondary canal system (represented by BOX with grey shade on Fig.1.) and through selected sub-system (represented by grey BOX on Fig.1.)

[11 Diagram of stakeholders]

Identified stakeholders should be shown on the diagram based on their relationship among them, such as hierarchy within the organization, command system, etc.

A simplified example of this diagram is show on Fig.5.

Fig.5. Example of Stakeholders' diagram (simplified)



[12 Water allocation]

In order to determine water volume of diversion from reservoir and diversion works on the river and along the canal system, there must be some regulations, guidelines, procedures or any other kind of rules agreed among stakeholders, which decision making process should refer to. This sometimes is not documented but agreed among stakeholders in their minds.

It is requested to retrieve this kind of agreement from stakeholders and document it. Collection and compilation of existing document can replace this work.

[13 Water distribution practice]

There must also be some kind of guidelines, manuals or any kind of instructions, which define how to operate irrigation facilities and who conduct this operation on each facility, in order to ensure water distribution decided. This sometimes is documented with or without official authorization, and sometimes is not documented but commonly recognized among stakeholders.

Collection and compilation (through retrieval if needed) of this kind of instructions should be conducted.

Annex 5

Consultation meeting with FAO Regional Office
for Asia and the Pacific

Meeting with FAO

1. Date, Time 20th Jan. 2006 8:55-11:45
2. Venue FAO RAPA Meeting room (1 floor)
3. Participants Mr. Thierry Facon, Dr. Zhijun Chen, Okudaira
4. Summary

[Project content]

- Project concept is allowable, but in terms of technical aspect, it seems to be old-fashioned.
- Support document of TOR needs more improvement for modernizing (or updating) activities under the project. Completion level of support document can be said 80%, 20% improvement to put some ingredient will make project into appropriate level.
- International consultant will help this improvement. Mr. Facon promised to introduce appropriate consultant in consultation with Mr. Renault. (This has done.)

[Possible contribution by FAO]

- Rapid appraisal of irrigation scheme will be useful to grasp actual condition. Rapid appraisal should be conducted prior to water quantity measurement as a part of field activities under the project.
- FAO RAPA can help to organize workshop for line agencies of four countries to provide Rapid appraisal training (3 to 4 days.)
- FAO RAPA can also help to conduct Rapid appraisal together with line agencies in four countries. (e.g. 4 days for each scheme.)

[Modality of collaboration]

- DSA and travel cost only will be charged to MRC project, if FAO RAPA will contribute to. No time-sharing cost will be requested by FAO.
- FAO RAPA welcomes if MRC and FAO H.Q. will conclude MOU, which covers comprehensive collaboration between two organizations. (Collaboration under this project will be a part of, but not all of, this comprehensive collaboration.)
- FAO RAPA needs to conclude "letter of agreement" with MRC, which stipulates collaboration under only this project.
- Occasion by occasion arrangement, such as invitation letter and payment of DSA etc. is NOT welcomed (agreed) by FAO RAPA.

[Technical issues]

- Rainfall and ETo should be observed.
- If observation of those two items are restricted by such as security reasons for equipment, existing data observed by nearest meteo-stations should be referred.

[Further comments by Mr. Facon]

- Essentially, the main problem is with your definition of irrigation efficiency as the product of conveyance, distribution and application efficiencies, which you propose to then estimate by measuring flow rates at various points in your system.

- This is the "old fashioned" approach to irrigation efficiency, which among others does not take into account re-circulation of drainage and re-use of seepage by tube wells or interception etc. and therefore can give quite erroneous results for system-level efficiencies, especially for rice, for both traditional and modern systems.
- Modern definitions of efficiency are more based on a system water balance and look at use of water by crops / irrigation supply. You can find these definitions in IWMI literature, in the IPTRID documents on indicators for benchmarking of performance of irrigation systems, or on the manual of the Rapid Appraisal, where a water balance is used to estimate what are now classical efficiency and other indicators, including the IPTRID indicators.
- Some countries in the region, including Thailand and Vietnam, already have experts from Gvt agencies who use new understanding of efficiencies to assess the performance of their systems.
- Our recommendation is therefore that your project promotes up-to-date concepts of efficiency, with simple protocols to estimate efficiencies, with the idea that it is better to be roughly correct than accurately wrong, and to have proper definitions for efficiencies at various scales.

Annex 6

Improvement of the Project concept

Terms of Reference For Detail design of Field Observation and Data Analysis under IIEPF

1. Project Title

Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)

2. Title of Consultancy Service

Detail design of Field Observation and Data Analysis under IIEPF

3. Duty Station

MRCS, Vientiane, Lao PDR

4. Duration

20 working days starting middle of February 2006

5. Backgrounds and Objective of the Consultancy Service

The Mekong River Commission (MRC) is implementing Improvement of Irrigation Efficiency in Paddy Fields in the Lower Mekong Basin project (IIEPF) in order to contribute improvement of irrigation efficiency basinwide through introduction of guidelines covering institutional, managerial and technical aspect of irrigation facilities operation. In this line, the MRC is going to entrust “field observation and data analysis work” to National Mekong Committee (and/or Line Agencies) of each member country.

IIEPF is collaborating with the Japanese funded FAO project: “Evaluation study of Paddy irrigation under Monsoon regime” (ESPIM). ESPIM seeks to contribute to enhanced food security and socio-economic development, reduced poverty and more sustainable agricultural systems through the integrated and equitable management of water resources.

To further enhance this collaboration the current consultancy service is jointly undertaken with ESPIM project and will contribute to one of the outputs: “performance assessments of paddy irrigation systems in the Asian Monsoon Region”. This output is planned to meet the immediate objective: “promoting and developing improved monitoring capacities regarding irrigation and drainage”.

This consultancy service mainly aims to establish detail design of field observation and data analysis work and coordinate between FAO/ESPIM and MRC/IIEPF to develop an acceptable working agreement.

6. Expected Outputs

The following are anticipated to deliver by this consultancy service.

1. Revised project document;
2. Revised Terms of Reference for field observation and data analysis work;
3. Technical backstopping note on ToR for field observation and data analysis work;
4. Power point presentation to outline field observation and data analysis work;
5. Outlines of guidelines (or manuals) to contribute to improve irrigation efficiency on institutional, managerial and technical aspects;
6. Revised time frame of project implementation;
7. Outlines of the working agreement between FAO/ESPIM and MRC/IIEPF

The MRCS reserves the right to reject any delivered products that does not comply with the specified outputs.

7. Responsibilities and Tasks of Consultant

Under a special service agreement (SSA) to be concluded with the MRCS, the consultant shall perform the following tasks with close consultation with Senior Advisor and Programme Officer, AIFP of the MRCS.

- To review present draft project document and its annex
- To review present draft ToR for field observation and data analysis and its technical backstopping note
- To review the records of discussions with member countries and FAO RAP
- To conduct one day site survey on candidate pilot project site proposed by LNMC
- To provide inputs in improving draft project document and its annex including time frame of project implementation
- To improve ToR for field observation and data analysis
- To produce technical backstopping note on ToR for field observation and data analysis work based on existing technical backstopping note and other relevant existing documents
- To provide inputs to Power Point Presentation to introduce outline of field observation and data analysis work
- To identify appropriate structure of final output of the project, i.e. guidelines (or manuals) to contribute to improve irrigation efficiency on institutional, managerial and technical aspects
- To co-ordinate working agreement between FAO/ESPIM and MRC/IIEPF

8. Working Principles

The consultants will work under supervision of Senior Advisor and Programme Officer of AIFP.

9. Qualifications

The consultant should hold at least a master degree in Irrigation and/or Water resource management or related fields. She/he should have comprehensive practical experience in study and analysis for irrigation water use especially paddy rice farming at least 7

years. Experience in monsoon Asia region, especially in the Lower Mekong Basin, is advantageous.

10. Budget

To be charged to the following budget line;

1.1/24/05/JPN/A BL-11

11. Special remark

Consultancy service fee is covered by FAO project namely “Evaluation Study of Paddy Irrigation under Monsoon Regime” as a part of collaboration work between FAO and MRC under the common funding from the Ministry of Agriculture, Forestry and Fisheries Japan.

MRC provides DSA and travel cost only for this consultancy service.

Initial discussion note

1. Principle

Simplified as much as possible

Capacity of LA is limited

Lessons from previous project (See. Uchiumi's final report.)

Avoiding wide changes and utilizing the present documents as much as possible

Especially on project document

Consultation meetings made based on the preset documents

2. Priority order

1. Technical backstopping note on ToR for field observation and data analysis work
2. Appropriate structure of final output of the project, i.e. guidelines (or manuals)
3. Annex of draft project document including time frame of project implementation
4. ToR for field observation and data analysis
5. Draft project document
6. Power Point Presentation to introduce outline of field observation and data analysis work

Note: Amendments on 3, 4 & 5 are made reflecting to the improvement on 1.

Project period up to July 2008.

2-1. Confirmation needed

- Working agreement between FAO/ESPIM and MRC/IIEPF
- What does FAO HQ side think on this point or expect to MRC/IIEPF?

3. Issues taken into account

[From NMCs]

- Put "water productivity analysis" into field observation item. (By Lao and VN.)
- Consider irrigation efficiency either conveyance or field application or both. → linked to ET measurement. (Thai)
- Consider realistic level of output, either guideline or manual, training kit for farmers, etc.
- Consider structure of guideline. One example is to be composed of 1) general part and 2) technical guidance covering both 1) water management aspect and 2) agricultural extension. → same as expected outputs
- Consider which aspects are covered by the guideline, institutional, managerial and/or technical. → same as expected outputs
- Trial application of draft guideline should be held within the project. → difficult within three years term?
- Selection criteria of the pilot site should cover features of entire basin.
- Items of selection criteria should include 1) cropping pattern and 2) soil type.

[From FAO RAP]

- Attachment of TOR needs to be modernized, because definition of irrigation efficiency does not take into account hydrological cycle system of irrigation water
- Major missing pieces are re-circulation of drainage and re-use of seepage.
- Rainfall and ET should be observed. → protecting from vandalism, equipment installation had better be avoided, utilizing existing station records.

4. Issues to be clarified

- Reasonable method to identify ET_{crop} or ET_o (linked to ToR item 7)
Here re-use of infiltration is neglected, but infiltration itself is counted as water requirement.
- Reasonable method to identify actual irrigated area (ToR item 8)
- Definition of three types of irrigation efficiency (ToR item 9)
- Activities to grasp water distribution practice (ToR item 10 to 13) → need more improvement

Annex 7

Collaboration with FAO

No. L0306/06

26 April 2006

Dear Dr. He,

Subject: Letter of Agreement between the Food and Agricultural Organization of the United Nations, Regional Office for Asia and the Pacific (FAO-RAP) and the Mekong River Commission (MRC)

I have the honour on behalf of the MRC to propose the following arrangement, concerning "Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)" conducted by MRC, be concluded between FAO-RAP and MRC as partner agency.

This arrangement is a reflection of the initiative of the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan, the donor, to strengthen both the FAO and MRC's work in the field of irrigation. The two organizations shall cooperate and support each other to achieve the objectives of IIEPF, which are under the framework of "Programme to analyze and evaluate water and ecosystem in Asian paddy fields" supported by MAFF.

Through this arrangement, MRC expects FAO-RAP to contribute to improve the output of IIEPF based on its expertise on agricultural and irrigation development. FAO-RAP expects the recollection of irrigation data in the Mekong Region.

Present version of the draft project document is attached herewith. Final version of the project document will constitute a reference document to this agreement, once finalized at the inception workshop.

1. FAO-RAP as the partner agency shall facilitate the implementation of IIEPF within the technical advisory function. Specific inputs by FAO-RAP, as described in the section 7.5 of Project Document, are to:
 - 1) Dispatch one resource person to the inception workshop in order to provide comments and other related information to reinforce project concept
 - 2) Dispatch two resource persons as lecturers to the approximately 4-day workshop on Rapid Appraisal Process (RAP) in order to contribute to capacity building of Line Agency staff
 - 3) Dispatch one resource person for each of the four RAPs of approximately 5 days each in the MRC member countries and collaborate with MRC and Line Agency staff in order to assess the irrigation scheme performance
 - 4) Identify an appropriate consultant to draft guideline to improve irrigation efficiency
 - 5) Dispatch one resource person to the closing regional workshop and to each of the four closing national workshops in order to support the conclusion of the project including the comments on draft guideline

2. MRC as the partner agency shall provide to FAO-RAP the result of RAPs and other assessed data at the selected irrigation schemes in the MRC member countries conducted by IIEPF.
3. For item 1.1) to 3) and 5), MRC shall cover for FAO-RAP the cost of travel for FAO-RAP staff only, which includes airfare, DSA and other relevant eligible expenditures as per MRC administrative and financial regulations which correspond to FAO regulations. For terminals, however FAO regulations will be applied.
4. For item 1. 1) to 5), FAO-RAP shall provide staff contribution time for those inputs.

If FAO-RAP agrees to the proposals contained on paragraphs 1 to 4 above, this letter and the reply thereto expressing the agreement of FAO-RAP shall constitute an Arrangement between MRC and FAO-RAP, which shall enter into force on the date of your reply.

Thank you for your cooperation in this matter.

Yours Sincerely,



Dr. Olivier Cogels
Chief Executive Officer
Mekong River Commission

Dr. He Changchui
Assistant Director-General and
FAO Regional Representative
For Asia and the Pacific
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Bangkok 10200, Thailand

Annex 8

First regional workshop

REPORT OF FIRST REGIONAL WORKSHOP

Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)

(3-4 May 2006, Mekong River Commission Secretariat, Vientiane, Lao PDR)

1. Background

The Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF) aims to improve irrigation efficiency through the introduction of guidelines which cover technical, institutional and managerial aspects of irrigation scheme and facilities operation.

This project is funded by the Ministry of Agriculture, Forestry and Fisheries, Japan under the framework of “Programme to analyse and evaluate water and ecosystems in Asian paddy fields”. The project is implemented by the Mekong River Commission Secretariat (MRCS) in close consultation and cooperation with the National Mekong Committees (NMCs) and their relevant Line Agencies.

The project funding was made in June 2005 based on the submission of the project document. However the present version of the project document covers only the outline of the project concept and leaves the formulation of a detailed action plan as the major activity at the initial stage of the project implementation.

The second half of 2005 was spent restructuring the project concept and logical framework and identifying detailed activities under the project. Based on the first draft of the amended project document, national consultation meetings with four member countries were conducted from December 2005 to January 2006, followed by another consultation meeting with the Food and Agriculture Organization Regional Office for Asia and the Pacific (FAO-RAP).

Further improvement of the project document was made in order to incorporate the inputs made through the above consultations. The FAO consultant supported this improvement.

This first regional workshop was organised in order to

- Finalise the project document, and
- Discuss the outline of the forthcoming activities under the project.

The Workshop Programme is attached as Annex 1.

The following documents were made available in advance to participants of the Workshop.

- (Draft) Project document
- Annex-1 (1) Detailed work plan
 (2) Breakdown of activities
- Annex-2 DRAFT outlines of the Guideline

- (Working draft of) Terms of Reference
- Technical guidance for implementation of the field programme (first draft)¹

These documents are attached as Annex 3.

2. Organisation

2.1 Participants

A total of 31 participants attended the Workshop. These included five (5) participants each from Cambodia and Vietnam, seven (7) participants from Lao PDR, six (6) participants from Thailand, one (1) resource person from FAO-RAP, one (1) diplomat from the Embassy of Japan, Lao PDR and five (5) professional staff and one (1) support staff from the MRC secretariat.

List of the participants is given in Annex 2.

2.2 Opening Remarks

The Workshop started at 9:00 on Wednesday, 3 May 2006, in the MRC conference room, Vientiane, Lao PDR with an opening address by Dr Dao Trong Tu, OPD Director of the MRC followed by an address by Mr Nakamura Ken, second secretary of the Embassy of Japan to Lao PDR

These speeches by Dr Tu and Mr Nakamura are in Annex 4.

The statements made by Dr Tu and Mr Nakamura emphasised the importance of efficient water use for paddy cultivation in the basin.

Dr Tu stressed that enhancement of irrigated agriculture is the key factor of the regional development, and pointed out that low performance of irrigation schemes caused by deterioration and poor management leads to inefficient water use and becomes an obstacle for timely water supply and equitable allocation. He followed by stating that the project was aiming to improve irrigation efficiency by the introduction of some guidelines to improve irrigation scheme management. Dr Tu emphasised that involvement of National Mekong Committees and relevant Line Agencies was essential for smooth implementation of projects. He also expressed his appreciation to the FAO for its collaboration and said he expected this collaboration to be fruitful and bring about good results. Dr Tu closed his speech with thanks to all those present for their participation in the Workshop.

Mr Nakamura emphasised Japan's continuous support in the field of agriculture and rural development through the MRC's Agriculture, Irrigation and Forestry Programme

¹ Written by Dr Robina Wahaj, Consultant, Water Management, with Agriculture Land and Water Management Divisions (AGL) and Investment Center (TCI), FAO

and other international initiatives such as the International Network for Water and Ecosystem in Paddy Fields (INWEPF). Mr Nakamura also supported the idea that collaboration between FAO and MRC will lead to fruitful results from the project and will become pave the way for further cooperation between the two organisations in the future.

3. Presentations and discussions

3.1 Project concept and Project document

Mr Okudaira Hiroshi, Senior Advisor, AIFP/OPD presented the outline of the final draft of the project document. His presentation covered:

1. The review of comments made at national consultation meetings; and
2. The clarification on how the inputs from the said meetings were reflected in the final draft of the project document.

His presentation put emphasis on the changes between the previous version and the final version of the project document.

Responding to very active discussion on the project document, Mr Okudaira provided a supplementary presentation on the morning of Day 2 followed by further discussion with the Workshop participants. His second presentation covered:

1. The proposed changes on the project document reflecting the first day's discussion; and
2. The project budget plan.

Presentation handouts by Mr Okudaira are attached as Annex 5.

A summary of the discussion, which is composed of recommendations, questions and clarifications by the Workshop participants and their responses by the MRCS, is as follows.

Recommendations, questions and clarifications

The following recommendations were made in order to improve the project document.

1. ***Justification needs to be improved.***
Even though the project incorporates a modern concept of water balance, the project concept to focus on irrigation efficiency improvement is not new. Thus emphasis should be put on why irrigation efficiency needs to be improved. Justification should refer to the severe droughts experienced in the past and also refer to the attempt to formulate a Drought Management Programme under the

MRC. There was a recommendation to link the project with the MRC Strategic Plan 2006-2010 and other MRC Programmes.

2. ***Beneficiaries should be clearly stated in the document.***
Who will benefit from the project and its product – the guidelines – is also an important part of justification.
3. ***The guidelines should be suitable for regional projects.***
As this project is a regional project covering the four member countries, guidelines produced must have some added value which can reflect the outcomes of a regional project rather than a project conducted within only one country.
4. ***Immediate objectives No. 2 and No. 4 are overlapping***
Both immediate objectives No. 2 and No. 4 are focusing on capacity building issues, this structure is misleading and needs to be reconsidered.

Many questions and suggestions were made on the budget allocation. Below is the summary of them.

5. Compared with the complexity of the fieldwork and its vast workload, the allocated budget for the sub-contracts with line agencies seems to be too limited.
6. Local or regional consultants can take over the tasks assigned to international consultants.
7. What kind of equipment will be procured by the project?

Other issues need to be clarified on the project document were as follows:

8. As line agencies are the part of (or members of) the National Mekong Committees, the terminology of “line agency (agencies)” should be used carefully.
9. Lao PDR has already started water balance analysis at country scale, so there needs to be clarification on what kind of water balance assessment the project will conduct.
10. The tasks of the programme officer and line agencies seem to be overlapping. Both the programme officer and line agencies are responsible for field observation, according to section 7 of the project document; however field observation can be conducted by line agencies but not by the programme officer.

Responses

Responses to each suggestion, question, clarification etc. are as follows:

(For 1 and 2) The three items below will be added as a part of the justification of the project document.

- Related activities done in the past including the MRC Strategic Plan 2006-2010, other MRC programme such as Project to Demonstrate the Multifunctionality of the Paddy Fields, Water Utilisation Programme, Environment Programme and the formulation of the Drought Management Programme

- References to past experience, such as the severe drought in 2004
- Beneficiaries the project is targeting both direct and indirect

(For 3) The two options below will be kept in mind for the structure of the guidelines.

- One common guideline for general use, or
- Four sets of guidelines based on the observations from four different schemes, which are applicable to similar types of irrigation schemes

Choices will be made when the project is implemented.

Once the guidelines are completed, AIFP will consider whether to submit them to the Joint Committee (JC) for their approval.

(For 4) The immediate objective #4 “to identify capacity development requirement...” will be deleted. Output and activities under objective #4 will be merged under objective #2.

(For 5) AIFP requests NMCs/LAs to keep to the required fieldwork tasks and budget limits for this work and carefully prepare their work plan based on these two conditions. On the other hand, even though the budget allocation plan has been based on firm estimation and there little space to reconsider, AIFP promised to review the estimates and current status of expenditure and make as many adjustments for sub-contracts as possible.

Apart from the overall budget allocation through the entire project period, AIFP also explained how budget allocation within each fiscal year was adjusted annually to minimise over-spending (and under-spending) on each budget line.

(For 6) Consultancy services to draft the guidelines are not limited to international consultants only. Any suitably qualified local (regional) consultants are welcome to apply.

(For 7) Only the equipment needed for fieldwork (and not available in line agencies) will be provided by the project. For example, current meters are one of the high priorities as line agencies cannot conduct the fieldwork without them. But the project does not plan to procure any computers under the project, because they are already available in most line agency offices and are not considered as special equipment for the fieldwork the project requires.

(For 8) Since the structure of National Mekong Committees and the relationship with NMCs and line agencies varies among the countries, uniform expression for NMCs and line agencies is sometimes not appropriate. AIFP will once again review the description of the project document and use “relevant line agency (ies)” if needed.

(For 9) The water balance analysis to be conducted under the project is irrigation scheme water level accounting. This analysis will reveal irrigation efficiency at scheme level, but does not directly link to water resources potential analysis at national level.

(For 10) Fieldwork is the responsibility of line agencies. The task of the programme officer on fieldwork is technical backstopping. This means the programme officer visits the field from time to time with line agency staff and provides support through fieldwork. Thus there is no overlapping of the two groups' tasks.

3.2 Rapid appraisal process and FAO's collaboration

Mr Thierry Facon, Senior Water Management Officer, FAO-RAP, gave a presentation on how to assess the performance of irrigation schemes by using a Rapid Appraisal Process (RAP). He also explained FAO's collaboration with MRC under the project. His presentation covered:

- 1) Changes of surrounding circumstances on water management services
- 2) Analysis of the past failures
- 3) The necessity of irrigation scheme appraisal
- 4) FAO's approach
- 5) A detailed explanation of Rapid appraisal process.

Mr Facon's presentation handout is attached as Annex 6.

Clarifications by the Workshop participants and their responses are as follows.

Clarifications

Clarification on two minor points below was requested after the presentation.

1. The presentation showed RAP training has been conducted in various countries including Vietnam and Thailand. Why has RAP training not been done in Lao PDR?
2. Is the irrigation scheme diagnosis shown in the diagram on page 11 applicable to every developing country?
Countries have different constraints depending on their own development levels. Application of uniform diagnosis tool is questionable.

Responses

AIFP/MRC and FAO replied jointly to the questions:

(For 1) As RAP is developed to assess large-scale irrigation schemes, priority has been put on the countries with large-scale schemes. In this sense Lao PDR does not have such a need to conduct RAP training. The project plans to conduct a RAP training workshop for the four member countries as a part of its project activities in Vientiane.

(For 2) Diagnosis will be made based on “ranking criteria” on page 12. Application of these criteria can realise neutral assessment which is unaffected by the stage of a country’s development.

3.3 Field observation and Analysis work and its Working Agreement

Mr Fongsamuth Phengphaengsy, Programme officer, AIFP/OPD explained in detail what tasks were expected of the relevant line agencies under the working agreement, followed by a quick review of the Terms of Reference (TOR) of the working agreement. His presentation covered:

- 1) the concept of water balance;
- 2) definition of inflow and outflow;
- 3) practical method of flow measurement;
- 4) analysis of crop water requirement; and,
- 5) irrigation efficiency assessment.

Mr Fongsamuth’s presentation handout is attached as Annex 7.

Questions and answers for this session are summarised below.

Questions

Questions and clarifications raised relating to the fieldwork and its TOR are as follows.

1. Does observation work cover the whole scheme or a selected area?
If a selected area, how should the area be selected? Does MRCS have some criteria? Since the TOR requires a vast workload, covering the whole scheme might be impossible if the scheme covers a huge command area.
2. How frequently should measurements be made?
3. Does MRCS provide a standard format for data collection?
If the format is not unified, data collected from four different countries will not be compatible.
4. What kind of equipment will be provided by the project?
The TOR requests measurements of ETo (evapotranspiration). This requires appropriate equipment.
5. What kind of formula will be used to analyse water requirement?
There are various formulae and theories to analyse water requirement.
6. The time the project proposes to start observation, from October, is not appropriate. In Cambodia, transplanting starts in May. This means October is too late. In Vietnam, cropping in autumn is from November to April.

Answers

Responses to each question, clarification etc are as follows:

(For 1) Observation of the entire scheme only can identify the efficiency of an irrigation scheme and its management. Using a selected area cannot guarantee representation of the whole scheme. This could mean a selection will mislead the scheme assessment. Observation and measurement throughout the whole scheme does not bring with it a huge amount of work according to FAO.

(For 2) Appropriate frequency of observation varies as it is dependent on the features of the scheme. Thus it will be determined through further discussion with AIFP and line agencies after the site is selected.

(For 3) As the format of data collection sheet will vary depending on the features of the scheme, a uniform format cannot be provided at this stage. However the AIFP promises to provide an appropriate format or support its creation if line agencies need this.

(For 4) As mentioned above, a current meter is one item on the short list. For ETo, the project does not provide equipment but suggests referring to existing meteorology data from the nearest station.

(For 5) FAO's formula is recommended by technical backstopping note.

(For 6) The project expects observation will commence from the coming dry season. "October" provides uniform guidance for all four countries, but exact timing should be decided based on actual cropping practice in the field.

3.4 Introduction of candidate pilot project sites

Representatives from the four MRC member countries presented the outlines of their own candidate pilot project sites respectively. Presenters were Dr Theng Tara from Cambodia, Mr Somnuck Chathaseth from Lao PDR, Mr Suvech Kitchakarn from Thailand and Mr Nguyen Ngoc Anh from Viet Nam. The presentation by Mr Somnuck was made on Day 1 of the workshop, prior to the field visit, and the remainder of the presentations were made on Day 2.

These presentation handouts are made available in Annex 8.

3.5 Working session on the Terms of Reference

The second half of Day 2 was spent discussing the Terms of Reference following detailed explanation. After individual discussion with each National Mekong Committee and relevant Line Agency(ies) and the MRCS, each NMC and LA(s) agreed

to the Terms of Reference and confirmed they would accept invitation letters to call for the working agreement for the field work.

3.6 Preparation of the RAP Workshop

As the last activity of the Workshop, Mr Okudaira made a short presentation outlining the RAP Workshop and facilitated consultation to fix arrangements for this workshop. After the consultation, the venue, date and participants' qualification were confirmed as below.

Date;	18 to 21 July 2006
Venue:	MRC Conference Room
Participants:	Leader of the fieldwork team One or two other team members One engineer who has already received RAP training is also welcome

Mr Okudaira's presentation handout is attached as Annex 9.

4. Conclusions

Mr Okudaira wrapped up the one-and-a-half-day Workshop, followed by a closing address from Dr Tu.

According to Mr Okudaira's summary:

1. the project document would be submitted to the donor after clarification and amendment of the points raised during discussions (described 3.1 above);
2. terms of reference confirmed by both sides and would be sent to NMCs soon together with an invitation letter calling for contract procedures; and,
3. an RAP workshop would be conducted as agreed.

Dr Tu appreciated the active participation through discussion by the member countries' delegates. He expressed his appreciation for the substantial contribution made by Mr Facon of FAO-RAP. He concluded by encouraging further effort by AIFP staff for smooth implementation of the project.

Dr Tu's address is contained in Annex 10.

5. Social activity

A dinner to honour the participants was hosted by the MRCS on the evening of 3 May 2006, at the Don Chanh restaurant in Vientiane. This gave the workshop participants the opportunity for informal discussion and an exchange of views on various aspects of the basin development.

Annex 9

Submission of the revised project document



Mekong River Commission

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Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF-AEWEPF)

Project document

This project is funded by the Ministry of Agriculture, Forestry and Fisheries of Japan under the framework of “Programme to analyze and evaluate water and ecosystem in Asian paddy fields (AEWEPF).” AEWEPF has two components; 1) “Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF-AEWEPF or simply IIEPF)” which is carried out by the MRC and 2) “Evaluation Study of Paddy Irrigation under Monsoon regime (ESPIM)” that is carried out by FAO.

1. Background and Justification

The Mekong River is the biggest international river in Southeast Asia. The Mekong River Basin has high development potential because of its ecological diversity such as climate, land, flora and fauna, soil and water resources. Water resources are widely used for agriculture, hydropower generation, navigation, fisheries, industries, tourism, domestic use, etc. and contribute to economic development and well-being of the population in the region.

Agriculture is the predominant economic sector of the Lower Mekong Basin (LMB), which employs 85% of the population of about 60 million. Further agricultural development is required to feed rapidly growing population of the region. Therefore agriculture sector is high on the agenda of each riparian country's development strategy.

With the growing population and industry in the region, the competition for water between different sectors (domestic, industrial, agriculture) and even among different crops (rice versus industrial crops) is also growing and the situation calls for Integrated Water Resources Management (IWRM) at the irrigation system, national and basin levels.

Rice is dominant crop of the Lower Mekong Basin. As it allows short-term inundation caused by intensive rainfall, it suits the climate of the region. Inundation on paddy fields prevents soil erosion and replants failure, and contributes to removing salinity. In addition it also plays an important role in the maintenance of rural traditions and communities. There is a growing realization of the multi-functionality of the paddy rice systems.

On the other hand, rice is the single biggest user of fresh water in the region, although lack of rainfall in the dry season and dry spells in the rainy season are among

the major constraints to rice production, particularly in rainfed areas, and water productivity in paddy fields remains low in both rainfed and irrigated rice. For further development of water resources in the region and investments in irrigation, it is important to increase efficient use of water in paddy fields.

MRC strategic plan 2006-2010 also puts emphasis on “improving efficiency of water use” as one of the development needs of the basin. BDP (Basin Development Plan) phase I endorses these needs with several priority projects focusing on water use efficiency improvement. Another evidence can be observed on the needs of drought management. Mekong river basin has frequently suffered from drought. Drought in 2004 affected vast area of the Mekong delta and North-east Thailand raised this issue as another core issue of the region and MRC has started to formulate drought management programme. This fact also calls for efficient water use in the basin.

Not many irrigation schemes in the LMB countries shows high performance in terms of efficient water use. Irrigation efficiency, which is an indicator of effective water resources management, of these schemes varies between countries but is low in general. These low efficiencies lead to water shortages within the command area of irrigation schemes particularly in the dry season or dry spells during the rainy season.

Improvements in irrigation efficiency will lead to improved equity in water distribution and minimize the gap between potential crop water requirement and actual water use. One effective approach to achieve these improvements is a good guidance for irrigation facilities operation in institutional, managerial and technical aspects. This guidance will benefit farmers and other water users and persons/organizations in charge of water management (i.e. water users groups, water management authorities, etc.) directly. If efficient and equitable water use is realized, this makes positive impact on water resources management at from sub-basin, national to basinwide level.

There is not enough information available in the region on reliable estimates of irrigation efficiencies and actual water use. Previous studies that provide some kind of estimates mainly analyze field level efficiencies and lack the use of modern and up-to-date concepts of irrigation efficiencies and water balance.

Assessment of irrigation efficiencies alone does not provide insights into how these could be improved. An appraisal of selected paddy field irrigation scheme as a whole and at different levels: main system level, distributional level, tertiary level, and field level; and assessment of different components of irrigation system management will provide insights into the constraints causing the low efficiency levels. These components include: water delivery at different levels, water requirement, allocation and distribution practices, operation of the scheme, physical infrastructure (this includes efficiencies) and stakeholders’ participation into the decision making. Furthermore irrigation schemes, that are predominantly designed and constructed for rice paddy irrigation, provide water also for other uses, such as fish farming, domestic water supply, etc. Hence, while considering water requirements for multiple uses of the scheme, their requirements should also be considered. Once the constraints and the bottlenecks are known only then the improvements for increasing water use efficiency could be identified.

Rigorous analysis of water use situation in an irrigation system using up-to-date concepts and tools will allow the managers and decision makers to plan targeted improvements in order to improve irrigation efficiencies, which is the main goal of this project. Modern methodologies to appraise irrigation projects provide insights in the bottlenecks and help to identify potentials for improvements and must be used in order to successfully embark upon the improvements. One such methodology is Rapid Appraisal Process (RAP), which has been widely used by Food and Agriculture Organization of the United Nations (FAO) and the World Bank for evaluating irrigation system performance and prioritizing improvements for modern management of the systems.

The use of modern concepts in assessing the current situation and introduction of improved and modern techniques to manage water resources efficiently are vital for improving irrigation efficiencies, sustainability and productivity of irrigated agriculture in the LMB countries.

2. Objectives

As described in the background, improvement in irrigation efficiency is one of the key factors in optimizing water use at the basin level and to utilize limited water resources effectively. In this context, IIEPF sets overall objectives as below:

Overall objective:

To improve irrigation efficiency on paddy fields in the Lower Mekong Basin

Immediate objectives:

1. to appraise irrigation efficiencies and the irrigation system based on the modern concepts in the selected irrigation schemes;
2. to enhance capacity of all the stakeholders in using up-to-date concepts of irrigation efficiencies and water balance and modern tools and procedures for their assessment; and
3. to produce guidelines for improving irrigation efficiency on paddy field based on actual water use conditions in the member countries:

3. Outputs and activities

- 3.1 To meet the objective 1:** to appraise irrigation efficiencies and the irrigation system based on the modern concepts in the selected irrigation schemes, the following outputs are planned;

Output 1.1: Establishment of minimum set of data to evaluate irrigation efficiencies and irrigation system

Activity 1.1.1: Identifying and selecting the main diversion structures and canal sections for flow measurement, calibration, and monitoring

Activity 1.1.2: Measuring and monitoring flows at the selected points

Output 1.2: Assessment of water balance, irrigation efficiencies and water productivity

- Activity 1.2.1: Measuring conveyance efficiencies
- Activity 1.2.2: Gathering information and conducting measurements on parameters required to assess water balance and crop water requirement – ETo, Rainfall, Deep percolation of rice;
- Activity 1.2.3: Calculating crop water requirement
- Activity 1.2.4: Conducting water balance analysis based on the modern concepts
- Activity 1.2.5: Assessing irrigation efficiencies on the modern concepts
- Activity 1.2.6: Assessing crop water productivity (yield per unit of water consumed, and yield per unit of water diverted)

Output 1.3: Appraisal of scheme management

- Activity 1.3.1: Reviewing official and actual rules, principles and practices of water allocation, distribution and operation
- Activity 1.3.2: Reviewing stakeholders' participation in decision-making regarding the water allocation and distribution

Output 1.4: Rapid Appraisal Process

- Activity 1.4.1: Organizing data required to conduct RAP
- Activity 1.4.2: Conducting RAPs in the selected irrigation schemes

- 3.2 To meet the objective 2:** to enhance capacity of all the stakeholders in using up-to-date concepts of irrigation efficiencies and water balance and modern tools and procedures for their assessment, the following outputs are planned;

Output 2.1: Backstopping note for the implementing agencies

- Activity 2.1.1: Drafting the backstopping note including an overview of the modern concepts, and notes on field and secondary data collection and analysis
- Activity 2.1.2: Backstopping the implementing agencies during the entire project implementation period, particularly during the data collection and analysis phase.

Output 2.2: Training workshop on RAP

- Activity 2.2.1: Organizing and conducting RAP workshop

Output 2.3: National workshops in the project countries

- Activity 2.3.1: Organizing national workshops in the member countries to discuss the outcomes of the data analysis

Output 2.4: Report on assessment of existing capacity and recommendations for capacity development training of the line agency staff

- Activity 2.4.1: Reviewing the guidelines, backstopping and other relevant reports
- Activity 2.4.2: Interviewing the line agency personnel
- Activity 2.4.3: Consulting with the relevant national and international organizations

- 3.3 To meet the objective 3:** to produce guidelines for improving irrigation efficiency based on actual water use conditions in the member countries

Output 3.1: Guidelines to improve irrigation efficiency

Activity 3.1.1: Reviewing the analysis data and relevant documents

Activity 3.1.2: Consulting with the relevant national and international organizations

Activity 3.1.3: Drafting the guidelines

Activity 3.1.4: Regional workshop to discuss and introduce the guidelines

4. Implementation arrangement

4.1 Under the framework of the MRC

The project and MRC's vision

IIEPF is implemented under the framework of the MRC, more specifically IIEPF manages a part of Sub-component #1 "Water Use Efficiency in Paddy Irrigation System" of the Agriculture, Irrigation and Forestry Programme (AIFP) (2001-2005) of the MRC. IIEPF will contribute the Mission of the MRC, that is "To promote and coordinate sustainable management and development of water and related resources," through achieving immediate and overall objectives.

MRC Secretariat

Senior advisor on Irrigation/AIFP is responsible for day-to-day management of project implementation under the supervision on the AIFP Programme Coordinator and the OPD Director. Programme officer is recruited to support Senior advisor mainly on field observation and related activities.

National Mekong Committees & Line agencies

Involvement of NMCs as representatives of its member countries is the essential approach of the MRC activity. Through utilization of knowledge and experience of member countries, this approach is advantageous in some aspects such as 1) smooth coordination of the project implementation, 2) prioritization of specific subjects to be analyzed through the project and 3) implementation of practical activities.

Moreover, involvement of relevant line agencies responsible for water issues, such as irrigation planning and/or water resources management is crucial to conduct field observation and to finalize guidelines on effective water use appropriately, reflecting real needs of each country.

This project also provides some opportunities for capacity building of the relevant officers in the related fields. In other word, roles and responsibilities of relevant line agencies should be carefully determined in accordance with their existing capabilities and target level of capacity building.

4.2 Collaboration with the Food and Agricultural Organization of the United Nations

Collaboration with international organizations specialized in agriculture and irrigation will contribute to reinforce outputs of this project. Among UN agencies,

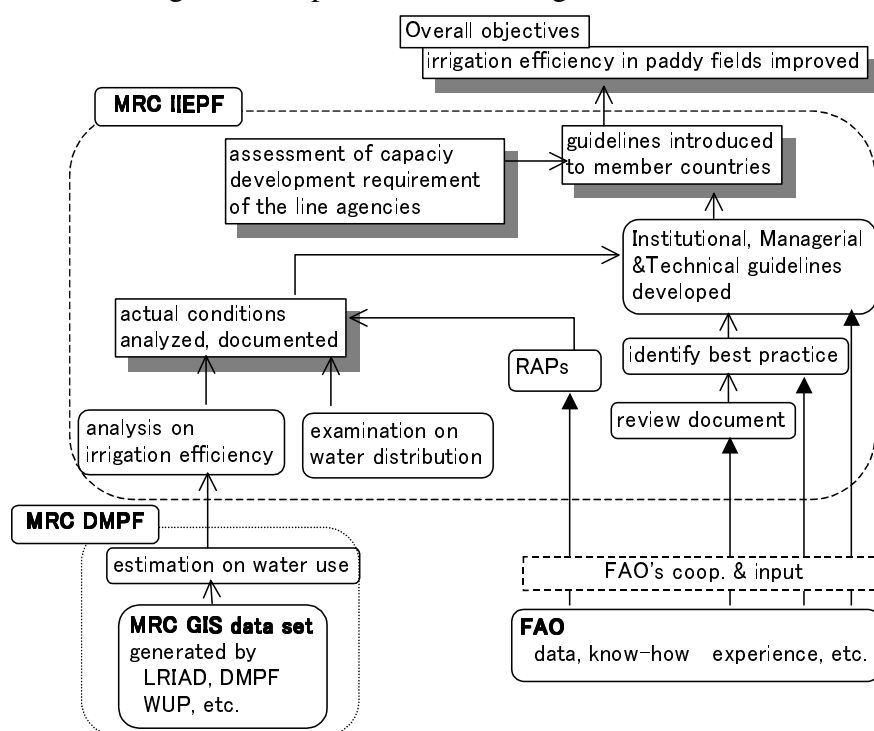
with the reasons below, FAO is one of the most significant organizations to collaborate for implementation of this project.

- FAO is the only UN technical organization specialized in agriculture development including irrigation
- FAO has broad knowledge, experience, know-how and remarkable history on agricultural and irrigation development all over the world
- FAO is implementing the project “the Evaluation Study for Paddy Irrigation in Monsoon areas (ESPIM)” which is funded by the Government of Japan

Thus IIEPF will be implemented by the MRC in close collaboration with FAO. ESPIM/FAO provides technical advice on drafting and finalizing the project document to improve its quality. Furthermore Outputs 1.4, 2.1, 2.2, 3.1, and 4.1 of the project, in particular, will benefit from collaboration and input from FAO.

FAO will make available to MRC relevant data and documents to identify best practices for improving water management. FAO will also help the project to conduct RAPs. In addition FAO will provide feedback on the draft of the guidelines.

Schematic diagram of implementation arrangement is shown below:



Rapid Appraisal Process

The Rapid Appraisal Process (RAP) was jointly developed by the Irrigation Training and Research Centre (ITRC) of California Polytechnic University and FAO in late 90's and since then has been successfully used by FAO and the World Bank in various Asian countries to appraise several irrigation projects.

The methodology uses modern concepts of canal operation and water use efficiencies and is based on the understanding that the irrigation systems operate under a set of physical and institutional constraints and with a certain resource base. The systems are analyzed as a series of management levels, each level providing

water delivery service through the system's internal management and control processes to the next lower level, from the bulk water supply to the main canals down to the individual farm or field.

With the service quality delivered to the farm and under economic, agronomic constraints, system and farmers' management produces results (crops yields, irrigation intensity, water use efficiency etc.), while symptoms of poor system performance and institutional constraints are manifested as social chaos (water thefts, vandalism), poor condition of infrastructure, poor cost recovery and weak water users associations.

The RAP allows qualified personnel to systematically and quickly determine key indicators of irrigation projects. The RAP can generally be completed with two weeks or less of field and office work provided that some readily available data on the project have been organized by the project authorities in advance.

Key performance indicators from RAP help to organize perceptions and facts, hence facilitate informed decision regarding

- The potential for water conservation within a project
- Specific weakness in project operation, management, resources, and hardware
- Specific modernization actions that can be taken to improve project performance

Furthermore, it also provides initial indicators that could be used as benchmarks in order to compare the improvements in the performance of the system once the modernization plans are implemented. A good assessment of the current situation gives a clear idea on where situation must be improved and helps in prioritizing the areas for improvements. The RAP could also be used to compare the performance of the different projects.

The RAP is considered useful for IIEPF as it provides good indication, in relatively short time, of the constraints and bottlenecks in the system and thus helps in identifying options for improvements at different levels of the irrigation system. Among other things, it gives information on the following:

- water allocation and distribution practices;
- operation rules and procedures;
- irrigation efficiencies (conveyance, field, overall project efficiencies);
- physical infrastructure (hardware) of the system;
- involvement of water users in the decision making process (stakeholders involvement);

All the above mentioned information is part of the detailed data collection work of IIEPF, thus the information from RAP will compliment the data collection and measurement work of IIEPF. RAPs will be conducted in each selected irrigation scheme twice during the project's life.

- once at the beginning of the project, before the field data measurement work starts; and

- second time when field data measurement work ends.

5. Work plan

Project period is three (3) years, commencing in June 2005 and to be completed in June 2008.

Work plan will be revised yearly responding to the progress of the project. This work plan shows outline of year-by-year schedule for project implementation at the beginning stage. Detail time frame for each activity is shown as Annex-1.

5.1 Activities planned in the 1st year (June 2005 to June 2006)

Most of the time of the year 1 is spent in preparation. There is a gap between the funding and implementation of the project. The project started in the June 2005, when budget was transferred from the donor to the MRC bank account, and officer in charge of the project implementation assigned to the MRCS in the middle of July 2005. Then the project document was revised. This revised project document will now be shared by the four member countries and will be submitted to the donor for approval.

Planned major activities in this period are as below:

1. Discussion with the FAO for collaboration
2. Series of discussions and national consultation meetings with four National Mekong Committees and other relevant line agencies to reach consensus on content of the project
3. Revision of the project document
4. Drafting backstopping note for field observation and analysis work of the project
5. Regional workshop to officially inaugurate the project
6. Preparation of sub-contract with line agencies

5.2 Activities planned in the 2nd year (June 2006 to June 2007)

Field observation will start in the year 2 of the project implementation and will continue to the third year. Work for drafting guidelines to improve irrigation efficiency will be sub-contracted in the second half of the year 2.

Planned major activities in this period are as below:

1. Preparation of detail work plan for field observation
2. RAP training workshop
3. RAPs in the member countries
4. Measurements, data collection and analysis

5.3 Activities planned in the 3rd year (June 2007 to June 2008)

Field observation will continue in the first half of year 3. An international consultant will be hired to review existing documents, identify best practices for improved water management, and draft institutional, managerial and technical guidelines for efficient water use. A regional workshop will be organized to propose draft guidelines. Final report will be produced based on the result of all the activities. Major activities planned for the last year of the project are:

1. RAPs by the implementing agencies
2. Drafting the guidelines

3. Assessment of the capacity building requirement of the relevant line agencies
4. National workshops to discuss results of the analysis
5. Regional workshop to introduce the draft guidelines
6. Final report of the project

6. Cost breakdown

Total budget is approximately one (1) million USD. Details with breakdown are described below.

BL	Item	1st Year	2nd Year	3rd Year	Total
12	International staff	135,000	120,000	125,000	380,000
15	Official travels	14,350	16,600	26,200	57,150
11	Consultant	6,000		82,000	88,000
18	Riparian Professional staff	17,200	35,000	40,000	92,200
21	Sub-contract with line agencies	75,000	105,000		180,000
30	Workshop	23,800	22,900	21,800	68,500
42	Equipment	28,500	500	500	29,500
52	Reporting cost	1,000	1,000	2,000	4,000
53	Miscellaneous	1,453	1,303	4,803	7,559
70	Secretariat support cost	39,299	39,299	39,299	117,897
	Total	341,602	341,602	341,602	1,024,806

7. Roles and responsibilities

The project implementation is managed by MRC (i.e. by MRCS in close cooperation with NMCs/relevant Line agencies.) In addition involvement of FAO as a collaboration partner is expected. Roles and responsibilities of related persons are as follows.

7.1 Senior advisor

Senior advisor has overall responsibility for project implementation in cooperation with Programme officer, Consultant and NMCs/relevant Line agencies. Roles are shown below.

- Overall management of the project
- Coordination with NMCs/relevant Line agencies
- Organizing collaboration with the FAO
- Organizing national and regional workshops
- Making sub-contract with NMCs/relevant Line agencies and Consultant
- Managing consultancy services
- Conducting supplement backstopping to NMCs/relevant Line agencies
- Reporting to AIFP coordinator/OPD director and the donor

7.2 Programme officer

Programme officer is mainly responsible for monitoring and technical backstopping of field observation and related activities conducted by NMCs/relevant Line agencies.

Specific items for technical backstopping are as below.

- Introduction of modern and up-to-date concepts of irrigation efficiencies and water balance to relevant line agency staff

- Establishment of detailed work plan for field observation including preparation of quotation
- Selection of measurement points within the irrigation scheme
- Field observation on
flow measurement,
identification of actual irrigated area,
water requirement measurement and other relevant data collection
water allocation and distribution practices
- Assessment of water balance, irrigation efficiencies and water productivity
- RAPs conducted at the end of the data collection period
- Finalization of country reports

Other roles of Programme officer are to assist Senior advisor's task in particular items listed below.

- Organizing national and regional workshops
- Managing consultancy services
- Reporting to the MRCS and the donor

In addition the Programme Officer will participate in the following:

- Training workshop on RAP, and
- RAPs conducted by FAO in the member countries

7.3 Consultant

Consultant will mainly be responsible to draft institutional, managerial and technical guidelines for efficient water use and to assess capacity development requirement of the stakeholders in order to effectively utilize these guidelines. These activities are undertaken in close collaboration with and input from FAO. In order to achieve this purpose, the consultant will be expected to undertake activities mentioned below.

- Review of existing documents
- Identify best practices
- Drafting institutional, managerial and technical guidelines
- Capacity development requirement assessment of the managers in order to be able to use the guidelines
- Presentation of draft guidelines at regional workshop
- Finalization of guidelines
- Reporting to AIFP

7.4 NMCs & relevant Line agencies

NMCs/relevant Line agencies are responsible for data collection in the fields and other related activities with technical backstopping by Programme officer on their demand. Items responsible for are below.

- Selection of the pilot project site
- Measurement and calculation of in flow and out flow of the selected site over time
- Assessment of water balance
- Identification of actual irrigated area over time
- Assessment of water requirement including the measurement and/or collection of necessary data and parameters

- Calculation and analysis of irrigation efficiency
- Assessment of water productivity
- Analysis and documentation of water allocation and distribution practices
- Participation of selected members in the training workshop on RAP
- Conducting RAP at the end of the data collection period
- Taking part in national and regional workshops organized by MRC
- Reporting to AIFP

7.5 FAO

In addition to the said framework of MRC, FAO is expected to be involved in project implementation as a collaboration partner. Expecting collaboration partners are the Land and Water Management Division of the FAO headquarters and the FAO Regional Office for Asia and the Pacific (FAO-RAP). Expected contributions made by the FAO are as below.

- Providing existing information, knowledge, know-how and other resources including human resources related to water management and its best practices in order to improve project document and to enhance project outputs
- Participating in the inception workshop to provide comment to update project concept including the introduction of FAO's input to IIEPF
- Conducting training workshop on RAP in order to contribute to capacity building of relevant line agencies
- Conducting RAPs in the project countries in order to contribute to assess irrigation system performance
- Participating in the national and regional workshops organized by MRC to 1) discuss results from the field data analysis and 2) introducing the guidelines to the project countries in order to review and provide feedback on draft guidelines

8. Other relevant information

8.1 Achievements under AIFP and others

Through past activities including LRIAD¹, the MRC has generated and stores various GIS data sets. Data sets relevant to water use are as follows:

- Topography
- District boundary
- Catchment boundary
- River Network
- Soil (by LRIAD)
- Population density
- Irrigation Scheme (by LRIAD)
- Isohyets
- Maximum flood extend (by LRIAD)
- Forest cover

¹ LRIAD is "Land Resources Inventory for Agricultural Development project" conducted from 1998 to 2001 as one of AIFP projects.

Through implementation of DMPF², the MRC has also produced supplementary GIS data sets related to paddy rice farming and rainfall. Details are as follows:

- Rice farming statistics at district, which are composed of
1) planted area, 2) harvested area, 3) production and 4) yield of rainy and dry seasons respectively,
6) planted area, 7) production, 8) yield of whole year, and
9) population, 10) per capita production.
- Rice cropping area in each month
- Fertilizer use
- Rainfall in time series, which are composed of
1) monthly, 2) rainy and dry season, 3) annual of average of 1985 to 2000.
- Land use map, which reclassifies agricultural land and focuses on paddy field.

DMPF also estimated actual condition of water use. The output is estimation of irrigation water use, which is mapped in GIS data sets and is composed of

- Rainfed and irrigated paddy rice areas
- Monthly water requirement and estimated water use

Since this work was conducted based on existing data, result is based on a lot of approximations and assumptions.

8.2 Linkage with DMPF

IIEPF and DMPF cover some part of sub-component #1 and #4 of AIFP (2001-2005) respectively. In this sense, IIEPF is positioned parallel with DMPF under AIFP framework.

DMPF is conducting estimation of irrigation water use based on dataset presently available at the MRC. In this process, DMPF pointed out that the reliability of some data needed to be improved for more accurate estimation. Irrigation efficiency is one of those data. Unlike other data needed reliability improvement, irrigation efficiency is a factor, which is affected by aspects on structure and management. This means improvement of irrigation efficiency can be expected by counter-measures on structure or management and leads to effective water use. In this context, awareness of the issues for IIEPF comes up from DMPF.

Furthermore DMPF produced vast data of both basinwide and one plot of paddy field level. IIEPF reviews those and identifies effective or useful data for IIEPF implementation, if any, and utilizes or incorporates those as reference

8.3 Multi-functionality

Multi functional roles are secondary functions, which are generated naturally and additionally in process of water use for agricultural production. In this sense, aiming to generate multi functional roles cannot be principle objective of water use. Thus, proposed guidelines consider improvement of irrigation efficiency as priority objective and also pay maximum attention to maintain multi functional roles, especially multiple use of irrigation water such as for fish farming, domestic water supply etc.

² DMPF is another AIFP project, namely "Project to Demonstrate the Multi-functionality of the Paddy Fields over the Mekong River Basin."

Detailed work plan

[illegible]

ANNEX-1 (2)

Breakdown of activities

This section provides a brief explanation of the activities and events that are presented in the detailed work plan in Page 1 of Annex 1. The number in the brackets corresponds to the number given to the activity in the work plan.

Regional workshop [1]

Senior advisor introduces tentative concept and time frame of IIEPF to member countries on the occasion of the 3rd DMPF regional workshop. Purpose of this activity is to share basic concept of the project with member countries, to retrieve ideas, demands, comments and expectations etc. on the project in order to reflect those into draft project document.

Internal discussion [2]

Senior advisor prepares a concept note of the project and organizes a series of discussions among AIFP team, with OPD director and with CEO to share common understanding and to establish basic concept of the project.

Discussions with FAO [3]

Based on drafted concept note, Senior advisor discusses with FAO potential collaboration between IIEPF and FAO. A letter of agreement will later be signed between FAO and MRC for this collaboration.

Drafting project document [4]

Senior advisor drafts project document. Project document includes basic concept, detail work plan, implementation arrangement, budget allocation and agreed collaboration with the FAO.

The Project document is improved to incorporate comments from the national consultation meetings [6] and FAO [3]. This work is undertaken with the input from FAO.

Circulating project document [5]

MRCS distributes draft project document to relevant authorities of member countries prior to the national consultation meetings.

National consultation meeting [6]

Senior advisor holds national consultation meeting in each member country respectively. Purpose of the meeting is to get feedback on the project concept. Comments are used to improve project document.

Preparation for the workshop and Inception workshop [7& 8]

The AIFP organizes inception workshop to officially commence the project. Member countries participate in the workshop. FAO is also invited to participate.

At workshop, Senior advisor reviews draft project document, addresses member countries' comments made through national consultation meetings and their reflections and/or reactions into project document and its implementation. Agenda of the workshop includes field trip followed by the discussion on site selection.

Forthcoming activities and their necessary arrangement are to be discussed at this workshop in detail. Roles and responsibilities with time frame of NMCs/Line agencies are one of the most important issues to be clarified at the workshop.

Submission of revised project document [9]

The MRCS submits revised project document to the donor for the approval.

***Drafting TOR for NMCs/Line agencies and
Sub-contract procedure with NMCs/Line agencies [10 & 11]***

Senior advisor prepares TOR for subcontract with NMCs/Line agencies. TOR is finalized reflecting on outputs of the workshop [8]. Contracts need to be made at the end of 1st year of the project (by June 2006) or the early beginning stage of the 2nd year.

***Drafting TOR for Programme officer and
Recruitment of Programme officer [12 & 13]***

Programme officer, who is mainly responsible for technical backstopping to NMCs/Line agencies, is recruited.

Equipment procurement [14]

Based on comments from national consultation meetings, Senior advisor procure the necessary equipment following the regulation of MRC. Four sets of electromagnetic current meter are on the short list.

Drafting TOR for sub-contract and Selection of International consultant [15 & 16]

Senior advisor prepares TOR of international consultant, and recruits him/her in cooperation with FAO. Contract needs to be made before the end of the 2nd year of the project (April 2007).

Reporting [17]

Senior advisor prepares project's yearly progress and final reports. The final report covers field observation activities, analysis of observations and proposed guideline for efficient water use. The deadlines for the yearly progress reports are June 2006 and June 2007 and the one for the final report is June 2008.

Pilot project site selection [18]

NMC/Line agencies of each country determine one (1) appropriate pilot project site (irrigation scheme) to conduct field observation respectively with close consultation with the MRCS. Senior advisor and Programme officer are to be involved in this activity.

Tentative criteria of selection are 1) representativity of agro-ecosystem and irrigation typology of the basin, 2) accessibility, 3) appropriate size, 4) availability of relevant information. Expected representativity for each site of the country is as follows.

Lao	paddy field in hilly area, pump irrigation
Thailand	gravity irrigation, with PIM approach
Cambodia	wet low land around the Great Lake or other sub-basin
Vietnam	irrigation in low land delta, tidal irrigation

Another set of criteria for the representativity that could be used for selecting project sites is to select only gravity irrigation systems (with or without reservoir) with different management strategies, e.g. Public managed, Jointly managed, etc.

Intensive discussions for detail work plan [19]

A series of discussion sessions is to be held to support NMCs/Line agencies in establishing their detailed work plan including quotation. Senior advisor and Programme officer provide necessary backstopping for this activity, if required.

Preparation of maps [20]

NMC/Line agencies of each country prepare schematic plan of irrigation system and appropriate scaled command area map of the selected pilot project.

Examining irrigation system [21]

NMC/Line agencies of each country examines irrigation system of the pilot project site and draw schematic plan of irrigation system, which includes command area and planed water quantity of each secondary canal. This activity is conducted with backstopping by Programme officer on their demand.

Selection of measurement points [22]

NMC/Line agencies of each country determine measurement points for both current speed and water requirement with close consultation with Senior advisor and Programme officer.

Number of measurement points for current speed is determined according to the size of the pilot project site, but measurement points should basically cover from intake to paddy fields.

Measurement points for water requirement are determined by representing water use of the pilot project site and to try to cover all the classification of soil in the pilot project site. Outputs of [20] and [21] are referred for this activity.

Water quantity measurement [23]

NMC/Line agencies of each country measure water flow at selected points. The detailed information on how to conduct these measurements is explained in the backstopping note. Programme officer provides technical backstopping for discharge measurement on their demand.

Identification of irrigated area [24]

NMC/Line agencies of each country identify actually irrigated area. A combination of interviews with water users and members of water users association and observation will be used to collect this information. Programme officer provides technical backstopping for this activity on their demand.

Water use monitoring [25]

NMC/Line agencies of each country monitor water use in paddy fields at the selected points of the pilot project site. Programme officer provides technical backstopping for this activity on their demand.

Interim and final analysis [26]

NMC/Line agencies of each country conduct analysis and draft an interim report. The deadline for the report is May 2007.

At the end of field observation (planned for January 2008), NMC/Line agencies of each country perform final analysis of irrigation efficiencies and submit

the draft report to the MRCS. Programme officer provides technical backstopping on their demand.

Examining water management practices [27]

NMC/Line agencies of each country examine actual water management procedure at the pilot project site from head works, main to tertiary canals up to paddy fields. Field observations and interviews with farmers are used to collect the information. Programme officer provides technical backstopping for this activity on their demand.

Documentation of collected information [28]

NMC/Line agencies of each country document information regarding water management practices at the pilot project site. Programme officer provides technical backstopping for this activity on their demand.

RAPs [29 & 30]

The information from RAP will compliment the data collection and measurement work of IIEPF. RAPs will be conducted in each selected irrigation scheme twice during the project's life.

- once at the beginning of the project, before the field data measurement work starts; and
- second time when field data measurement work ends.

The first set of RAPs will be conducted by FAO Office for Asia and the Pacific (FAO-RAP), Bangkok and the second by the NMCs/Line agencies. A 4-5 days training workshop will be organized in collaboration with FAO-RAP to train the line agencies in conducting RAPs and to introduce to them the concepts on which RAP is based on.

The Programme officer of the project, who is responsible for backstopping the NMCs/Line agencies in data collection, will also join the training and the RAP exercises. The Programme officer together with the NMCs/Line agencies will be responsible for organizing the required data before the exercise will begin. FAO-RAP will provide a list of the data requirement well in advance to allow the Programme officer and NMCs/Line agencies to gather the relevant documents and data.

National Workshops [31]

To discuss the results of data collection, analysis and RAPs and to introduce the new concepts for assessing irrigation efficiencies, 1-2 days workshops will be organized in each member country after the analysis is completed. Managers from different irrigation schemes will participate in the workshop. The methodology used for the data collection and analysis and the results of the analysis will be presented and discussed during the workshop.

Reviewing project reports, other documents and identifying best practices [32 & 33]

International consultant reviews project reports (including project data analysis, and RAP), other existing documents and relevant information and identifies best practices related to efficient water use and irrigation management. Inputs from FAO headquarters and FAO-RAP are taken into account.

Drafting guidelines [34]

International consultant drafts institutional, managerial and technical guidelines, which aims at improving irrigation efficiency and to enhance multi-function of rice cultivation and paddy field irrigation.

On the occasion of drafting, consultant examines observed and analyzed irrigation efficiency of the pilot project sites obtained through [23] to [26], analyzes relationship between irrigation efficiency and water distribution practices obtained through [26] to [28] and takes that information into account. This activity is also reinforced by inputs from the FAO.

Capacity Requirement Assessment of the line agencies [35]

Capacity building and training requirement of the line agencies are assessed to investigate their ability to effectively use the proposed guidelines. The international consultant will be responsible for this activity.

Regional workshop [36]

The MRCS organizes regional workshop to discuss institutional, managerial and technical guidelines for efficient water use and management. Relevant staff of MRC, NMCs/Line agencies from its member countries and relevant international organization will participate in the workshop.

Consultant presents draft guidelines with their process of drafting and expected benefits.

The MRC invites official(s) from Headquarters and/or FAO-RAP as resource person(s). The FAO official(s) is (are) expected to provide recommendations based on their output of Japanese funded project (ESPIM) and other existing knowledge and experience, etc.

Finalizing guidelines [37]

International consultant finalizes the guidelines, in close cooperation MRCS, taking into account recommendations made at the regional workshop [36].

Annex 10

Pilot site selection

Back - Office - Report

(Field Visit- Irrigation Project in Mekong Delta)

To : Dao Trong Tu - Director, AIFP/OPD

CC : Dr. Vitoon Viriyasakultorn - Program coordinator, AIFP/OPD
Mr. OKUDAIRA Hiroshi - Senior Advisor, AIFP/OPD

By: Mr. Fongsamuth Phengphaengsy - P.O, AIFP/OPD

Introduction

Further to discussion on pilot project selection at the first regional workshop on 3-4 May 2006, AIFP-IIEPF team: Mr. Okudaira Hiroshi (senior advisor) and Mr. Fongsamuth Phengphaengsy (Programme Officer) were invited to visit 2 proposed pilot project sites in Mekong delta areas in order to make final decision to select an appropriate site for IIEPF implementation. The field trip was conducted with collaboration of VNMC and relevant line agencies in Vietnam.

The objectives of the field visit are

- to visit 2 candidate irrigation project sites in Mekong delta areas
- to have discussion with VNMC and line agencies in order to make final decision of selecting one appropriate pilot project site
- to let MRCS team have idea of understanding irrigation system operation in the pilot site

Report

The itinerary and activity of the field visit is shown in attached Annex. The outputs of field trip are as follows.

[Meeting with VNMC & Line Agency]

- Date and time : 23 May 2006, 14:30-16:30
- Venue : VNMC Representative office, Ho Chi Minh City, Vietnam
- Participants: Mr. Do Manh Hung VNMC
Mr. Nguyen Ngoc Anh Southern Institute Water Resource Planning (SIWRP)
Mr. Dao Hoang Kein VNMC Representative Office
Mr. To Quang Toan Southern Institute Water Resource Research (SIWRR)
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS

- General information of irrigation system in Mekong delta was presented by Mr. Toan (Line Agency). According to presentation, the Mekong delta contributes large number (40%) of agriculture production and half of rice production in the country. One reason of the successes is because of improvement of water system management. There are total 11 irrigation projects in Mekong delta areas. Go Cong project is one of the most successful irrigation projects in this region.
- Major constraints related to scheme operation and maintenance are: old technology for regulation and monitoring system, poor maintenance of facilities such as gates, flood, acidity pollution and salinity intrusion, conflict between farmers with paddy cultivation and with salty water shrimp cultivation etc.
- Two candidate project sites: Go cong and Tam Phoung irrigation projects were proposed for IIEPF implementation. These 2 projects were then compared, particularly in terms of their locations, accessibility, irrigation type, command areas, present physical conditions, their operation and available equipments. The SIWRR proposed one station or sub-command area within either Go Cong or Tam Phoung projects as candidate plot to conduct field activity and data analysis for IIEPF implementation. The outputs of this station/sub- command area is proposed to apply for the analysis of whole project area. Many questions were raised by MRCS regarding the system operation, the appropriateness to conduct field work, and whether the outputs of the sub-project areas will be able to present the whole system performance.
- The schedule of field visit from the next day were confirmed and the meeting was closed by Mr. Hung (VNMC)

[Field visit at Go Cong Irrigation Project]

Meeting at Tiengiang IMC:

- Date and time : 24 May 2006, 10:00- 12:00
- Venue : Tiengiang IMC, Tiengiang province
- Participants : Mr. Hung VNMC
Mr. Sen and the team Tiengiang IMC office
Mr. Toan SIWRR
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS
- The background and the situation of Go Cong irrigation project was briefly presented by the head of the company. Two sub-command areas under the stations in Go Cong project were proposed as candidate for IIEPF implementation. After discussion in detail, it was found that these 2 proposed stations are not suitable for conducting field work since the system is opened. There are many link points and it is difficult to conduct flow monitoring.
- As an alternative, sub area “Long Hai station” was then proposed because of its closed system, and the field visit was planed to observe this area.

Site visit:

- Time: 13: 00 -17:00
- Visited Long Hai station, irrigated areas of 700 ha with 3-rice crops per year. The canal system is operated both irrigation and drainage purposes. The hydrological data is collected monthly by local Long Hai station.
- Visited Gate (sluice) at Tien River. According to gate operators at Tien River, gate (sluice) is opened for intake water for 4 months during the year, from August to November. During this operation period, irrigation interval is set for 5 days. During irrigation interval days, 1 day is for intake water into system, 3 days is for keeping water in the system, and 1 day is for drainage or for releasing salinity out of the system. During the dry period of December to July, gate is opened once a week for flood out salinity.

- The team then observed along main canal from down- to the up-stream areas of the station and stopped at the main gate (another sluice) which is usually operated for intake water from other sources /canals in upper areas.
- The team finally visited Long Hai station Office. Most of discussions were concerned appropriateness of conducting field work and data analysis for the Long Hai station. The head of the station and staff were interviewed about system operation and management activities.
- Because of its closed system with 2 main gates controlling inflow and out flow, the system is proposed to select as appropriateness system for IIEPF implementation.
- Due to high water fluctuation in the rivers outside boundary areas, inflow and outflow can be easily occurred during gate operation time. Water Data Loggers are proposed by SIWRR to install for intensive monitoring flow at the gates.
- Within irrigation system of Long Hai station, there are canal systems without lining, but no water gates or any controlling structures were observed. When water is stored within the system, farmers usually take water from canal by their own portable pump for their plots. There is no water use group within the station. Head of each village is informed in case of communication between Station Office and local farmers.

[Field visit at Tamphuong Irrigation Project]

Meeting at Travinh IMC:

- Date and time : 25 May 2006, 8:00-9:30
- Venue : Tamphuong Station Office, Travinh province
- Participants : Mr. Hung VNMC
Head of Travinh IMC
Head of Tamphuong Station
Mr. Toan SIWRR
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS
- The back ground of Tamphuong project was briefly outlined by the head of the station. The project consists of 6,000 ha, with 2-3 rice crops in a year, and the yield is average of 5 T/ha (1.5 T/ha before constructing irrigation system).
- The layout of system is clearly organized, especially canal alignments, natural stream lines etc. The command project areas are not too large to consider for field work for IIEPF implementation. According the project head, the system is ranged as the 2nd best after Go cong project in terms of performance and management in the Mekong delta region. Deep discussion revealed the difficulty to conduct flow monitoring (inflow and out flow measurement) in the project due to the difficulty of classifying boundary. Many canals are connected /linked to others canals and natural streams outside boundary command areas and also water fluctuation is around 1.5-3m during the day.

Site visit:

- Time: 9:30 -12:30
- The team observed along boundary command areas from up-to down stream of the system. Many link points were found, some were not shown in the map. These link points are usually controlled by gate; however they are permanently opened during the year. Many canals are linked to natural streams without any control structure. If flow measurement will be conducted, it needs intensive monitoring every hour during by installing Water Data Logger. There is no structure control in natural streams; the flow cannot be calculated by installing Water Data Logger. Flow meter cannot be used in this condition, but gate calibration will be useful.
- Some main gates could not be reached by walk or by car. The local people/farmers are using their own boat for traveling.

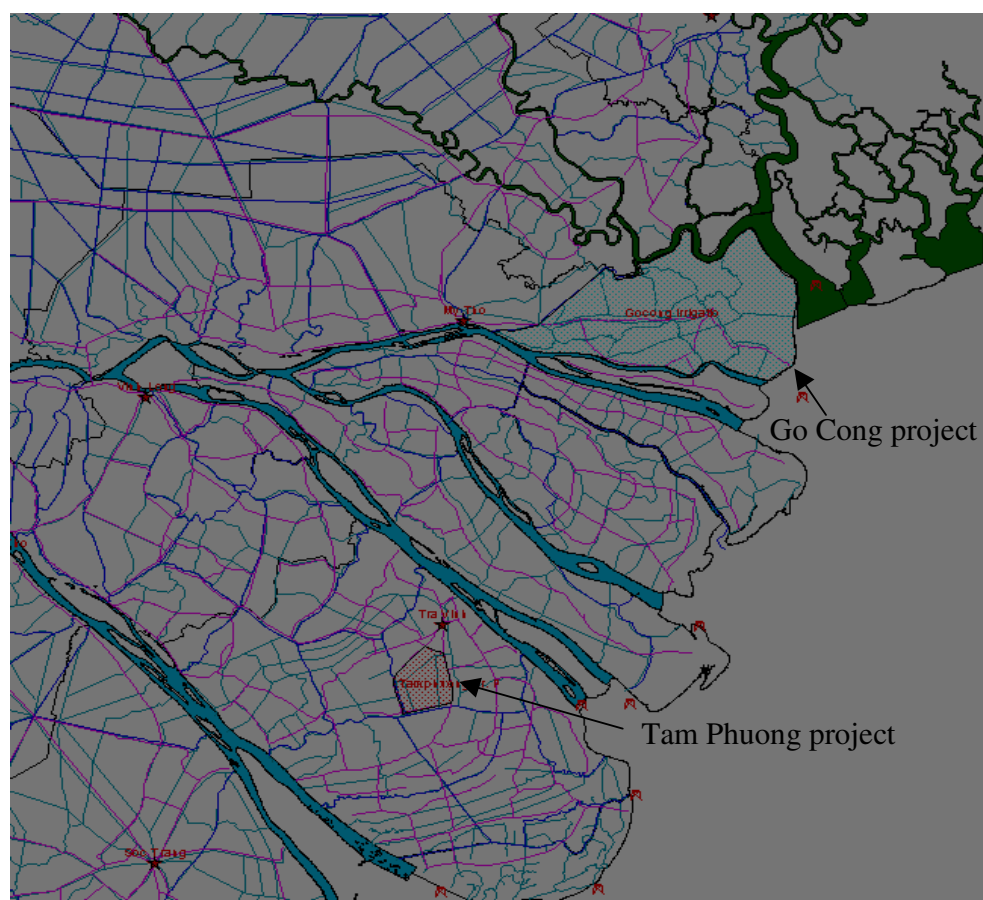
[Wrap-Up]

- The site of Long Hai station in Go Cong project was selected for IIEPF implementation.
- Potential member of conducting field work were unofficially discussed. Mr. Toan (SIWRR) will be the key person responsible for field activity and data analysis.

Annex 1: Field Trip Itinerary

Date	Place	Activities
23-May	VNMC HCM Representative Office	Meeting with VNMC & line agencies
24-May	Tiengiang Province	- Visited Tiengiang Irrigation Management Company - Visited Go Cong irrigation project – Long Hai Irrigation Station - Visited Long Hai irrigation Office
25-May	Travinh province	- Visited Travinh Irrigation Management Company - Visited Tamphuong Project Office - Visited Tamphuong irrigation system
26-May	-	Returned to Vientiane

Annex 2: Location





Mekong River Commission

BACK-TO-OFFICE REPORT **Travel to visit irrigation projects in (Cambodia)** **(5-8 June 2006)**

1. Travellers:

- Mr. OKUDAIRA Hiroshi, Senior Advisor, AIFP
- Mr. Fongsamuth Phengphaengsy, Programme Officer, AIFP

2. Itinerary:

<u>Date</u>	<u>Place</u>	<u>Activities</u>
05 -June	MOWRAM Office	Meeting with MOWRAM officer
06 - June	Battambang province	Phnom Penh to Battambang province - Field visit at Komping Pouy project
07- June	Battambang & Pursat provinces	- Continued field visit at Komping Pouy project Battambang to Pursat - Visit O rokar irrigation project - Visit Boeung Kanthor irrigation project Pursat to Phnom Penh
08 - June	MOWRAM	Meeting with MOWRAM officers

3. Objectives:

The field trip has objectives as follows

- To visit one candidate irrigation project sites in Battambang province and two candidate project sites in Phuthisak province
- To discuss with line agencies to select one appropriateness pilot project site
- To discuss with line agencies regarding their preparation for project proposal and establishing working team for field activity and data analysis of IIEPF
- To let AIFP team understand the practical situation of irrigation system management in the pilot project

4. Report:

Because field trip in Mekong Delta provided good results and good progress for IIEPF implementation, AIFP team proposed the same kind of field trip to line agency in Cambodia. The field trip was organized by MOWRAM to visit candidate project sites in Battambang and Pursat provinces, from 5-8 June 2006.



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The location and layout/schematic pilot project site is shown in Annex 2. The outputs of field trip are as follows.

(1) Meeting with Line Agency

- Date and time : 5 June 2006, 14:30-16:30
- Venue : MOWRAM, Phnom Penh, Cambodia
- Participants: Dr. Theng Tara MOWRAM
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS
- Schedule of site visit was confirmed by Dr. Tara
- General background of irrigation project in Cambodia was shortly briefed by MOWRAM that most irrigation schemes have poor physical condition and incomplete system because many of them have been constructed since long time ago and without any rehabilitation since then. Komping Pouy irrigation project, one of the candidate projects, is now the best condition because it was just rehabilitated in 2002 and the system is now completed. Irrigation facilities are also still in good condition. Some feasibility studies have been conducted for this project and these studies produced schematic plan and layout of the scheme which are good information for IIEPF team. Typical irrigation systems of Cambodia now are incomplete system such as some schemes have reservoir, but not canal system.
- MOWRAM confirmed about 2 sets of flow meters are available, but one has problem.
- A lot of discussion was concerned field activities and budget. The MOWRAM seemed not interested in participating project because they understood 3 years activity for the budget of only US\$10,000 which is too small for them to conduct field work. The MRCS have confirmed again that sub contract with line agency is approximately 1 year with budget amount of around US\$40,000. MOWRAM reviewed again IIEPF documents which distributed on the first regional workshop.

(2) Visit Komping Pouy irrigation project in Battambang province

[Meeting with irrigation provincial staff in Battambang]

- Date and time : 6 June 2006, 13:00 - 14:30
- Venue : Hotel in Battambang town
- Participants : Dr. Theng Tara MOWRAM
Mr. Hor Kimsan DWRM, Battambang
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS
- General information of the Komping Pouy project was explained by Mr. Hor Kimsan that the project was constructed in 1975 with 110MCM of reservoir capacity and supplying water by 2 main canals. In present condition, only right main canal which just has been rehabilitated in 2002 is operated, while the left main canal is permanently closed. The rehabilitation of canal system of right main canal was



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divided into 3 zones: up-stream zone (700ha) and middle-stream zone (1,200ha) by supporting of Australian government, and down-stream zone (950ha) was supported by Japanese government. The end of right main canal will be extended more for 9km with command areas of 2,200 ha in the future.

- Although project currently has total command of 2,850, only 800ha could be irrigated in dry season last year due to less capacity of water storing in reservoir. This year, diversion canal of 13 km long from Mongkol Borey River to reservoir was completed. The larger capacity of water will be in stored and full command areas are expected to irrigate in this dry season.
- The maps of system layout were shown by Mr. Hor Kimsan and field observation points were planed. According to system layout shown by drawing map, the system has clear canal alignment and drainage lines. Boundary line seems to be opened, but not many link points were found, which is suitable to be considered as pilot project for IIEPF implementation.

[Site visit]

Date 6 June 2006; Time: 14:30-17: 30

- The observation started from down-stream areas to up-stream areas by checking link points along boundary areas and stopping at canal diversion point like gates between main and secondary canals and join points between natural river from outside and inside command areas. This day of observation covered only middle-stream zone.
- It was observed that the middle-stream zone is suitable for IIEPF as not so many link flows between inside and outside command areas were observed. Gates and canal alignments are well organized. Roads are still in good condition which will be advantages when conducting field activity.
- After field observation, AIFP team explained TOR of IIEPF to MOWRAM and provincial staff again in order to make clear understanding, especially for field activity, budget and duration of sub contract. MOWRAM and provincial staff had clearer understanding and had more motivation to participate in IIEPF activity.

Date: 7 June 2006; Time: 7: 30 - 10: 30:

- The field observation was continued to observe reservoir, up-stream zone, and down-stream zone. The observation started from interviewing head of Farmer Water User Community (FEUC) regarding project management and coordination between project level and provincial level.
- The head of FEUC explained that the community responsible for whole project management activity with collaboration of provincial level. Before every cultivation season, provincial staff has meeting with community and the head of WUG to make plan on structure maintenance and water distribution.
- The schedule for operating main gate is planed on community meeting by agreement among provincial staff, community and farmers. The FEUC has 3 main activities: operating main gate according to planed schedule, coordination with provincial level, and monitoring water distribution. The lower system managements including

operating gate along main canals are done by the head of each WUG. Head of each WUG collects water fee from members and submits to FEUC for system maintenance.

- Project faces of shortage irrigation water in dry season resulting to less amount of water fee collected. Only 50% of total areas were collected in last the dry season due to insufficient and non- timely irrigation water distribution at the areas located far from main canal, especially at down-stream end.
- It was learnt that the management procedure is quite similar to Lao and Thai irrigation systems. Although the project has clear plan of management, actual practice maybe not followed the plan.
- The team then moved to reservoir site, checking head regulators and observed along main canal by stopping at control structures: gates and siphon, checking on farm turnouts at on farm level. There was a dike along drainage canals which can be good boundary line for project. The team finally observe down-stream zone to check the link points of drainage canals with outside command areas, but it was difficult to access because the road was not good condition.
- It was judged by the team that the project has great potential to consider as pilot project site. The boundary line is clearly organized, although some flow points are linked to out side command areas, but there are not so many. The measurement of flow can be covered to these points. The system design including canal alignment, drainage canal, and command areas are well organized. The hydrological data is available in the Battambang station. Provincial officer has good background of irrigation and management which will be advantage for IIEPF implementation.
- However, the scheme was not selected yet because MOWRAM prefers to select scheme which is closer to Phnom Penh and has smaller command areas in order to reduce traveling time and field activity during field implantation.
- Flow-measurement points were suggested by program officer, MRCS according to the actual boundary and scheme condition. The points were roughly drawn in schematic map and submitted to DWRM staff for their reference when producing proposal.

(3) Visit O rokar irrigation project in Phuthisak province

- Date: 7 June 2006; time: 13: 00 - 14:00
- Venue : O rokar project, Phuthisak province
- Participants: Dr. Theng Tara MOWRAM
Director of irrigation projects and the team from Phuthisak province
Mr. Okudaira MRCS
Mr. Fongsamuth MRCS
- The observation started at the diversion gate of O rokar reservoir. After discussing with the team of provincial staff, it was found that the system had neither schematic map nor command areas map. The system is also too small, only 80 ha, to consider as pilot project site. The areas are also located in inundated areas which will be difficult to set boundary line. Therefore the team agreed not to select the site IIEPF.



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(4) Visit Boeung irrigation project in Phuthisak province

- Date: 7 June 2006; time: 14: 00 - 16: 00
- Venue : O rokar project, Phuthisak province
- Participants: Dr. Theng Tara MOWRAM
 Director of irrigation projects and the team from Phuthisak province
 Mr. Okudaira MRCS
 Mr. Fongsamuth MRCS
- The basic information was explained by provincial staff that the scheme has total command areas of 200 ha, but only 80 ha were irrigated in last dry season due to water problem. The scheme is now under rehabilitation of diversion dam and canals. In this year, the total potential command areas will be around 550 ha for wet season and 250ha for dry season.
- The water is diverted from big gate where is 2 km far from command areas. Water is stored by diversion dam which has not much capacity before delivery to command areas. The diversion dam is also performed as main canal because it supplies water to 8 secondary canals.
- Although there is gate controlling water for each secondary intake, farmers operate gate by themselves. This means to be difficult to set schedule of monitoring flow. Along secondary canals, water is supplied freely without any control.
- The team decided not to select this scheme for IIEPF implementation.

(5) Conclusion

- Selecting Komping Pouy irrigation project in Battambang province as pilot site in Cambodia for IIEPF implementation
- MRCS explained the next expectation from MOWRAM which included:
 - Established the working team and submit the member list to MRCS through CNMC as soon as possible
 - Setting up work plan and preparing project proposal and send draft to MRCS by the end of June 2006 for checking before officially submitted
- Equipments (flow meters): MOWRAM promised to fix the existing one, and there will be two set available during field activity. MRCS plan to buy one set since the working group may be divided into 2-3 teams.
- MRCS suggested to select appropriate members for participating RAP training workshop on 18-21 July 2006.

5. Follow-up:

- MOWRAM expect to submit list of participants for RAP training workshop on 19-21 July within the 3rd week of June,2006
- Draft project proposal are expected to submit to MRCS by the end of June,2006
- Flow meter equipments will be fix by MOWRAM and there will be 2 set available for IIEPF implementation plus 1 set provided by MRCS

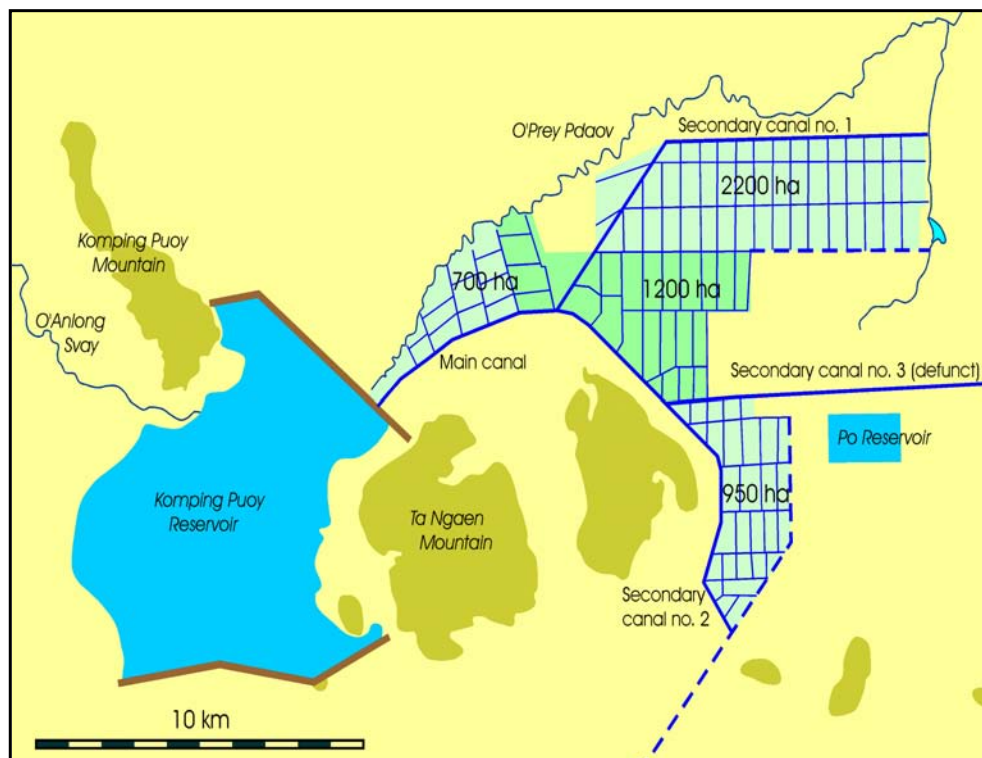
6. List of people contacted:

- (1) Dr. Theng Tara (MOWRAM); Tel : (855) 012 970232;
Email: thengtara@yahoo.com
- (2) Mr. Thach Sovanna (WRD)
- (3) Mr. Hor Kimsan (B.B irrigation project)
- (4) Mr. Soun Sam Aun (MOWRAM)

Annex 1: LIST OF PARTICIPANTS (if applicable)

Included with report in each activity

Annex 2: LOCATION OF COMPING POUY IRRIGATION PROJECT







Mekong River Commission

Mr. Satit	(TNMC)
Mr. Pramote	RID (Huay Luang project)
Mr. Fongsamuth	MRCS

- The concept of data analysis and field work including water balance was reviewed and explained by AIFP
- In order to conduct water balance, all inflows and outflows needed to be measured and monitored for 1 year according to TOR. However, the project's staff reported that natural inflows and outflows of command areas are difficult to measure because they are too many points and needs intensive monitoring with a huge budget to cover these activities.
- After discussion, field observation was planned to confirm inflow - outflows situation.

(2) Site visit

- Date and time : 6 July 2006, 13:00 -17:00
- Venue : Huay Luang Project, Udone, Thailand
- Participants: Mr. Satit WR
Mr. Pramote RID (Huay Luang project)
Mr. Fongsamuth MRCS
- Site observation started from the main intake of the left main canal and along boundary of command areas.
- It was found that there were more than 20 points of natural flows enter command areas along the left side of boundary-command areas. According to project staff, the water level of these natural flows is fluctuated during a day. That means it is needed intensive monitors if measurements will be conducted.
- Most streams are large and without control structures at entering boundary points. The flows enter command areas at the left side and flow out at the right side within one day, and these natural flows are not used for irrigation.
- AIFP/IIEPF found that it is unrealizable to include these natural flows into working proposal because it is difficult to conduct monitoring and the flows are not use for irrigation.
- AIFP/IIEPF noted down situation and will be consulted with senior advisor of AIFP and FAO.

(3) Meeting with IIEPF-potential working team

- Date and time : 7 July 2006, 14:00 -16:30
- Venue : Bangkok, Thailand
- Participants: Mr. Chatchai RID (Bangkok)
Mr. Satit WR
Mr. Somesak RID (Bangkok)
Mr. Pramote RID (Huay Luang project)
Mr. Fongsamuth MRCS
- The TOR was presented by AIFP again for reviewing activities un the TOR

- First draft of proposal agreement was discussed. The AIFP comments mainly on the working plan and activities that they should be written and organized following with TOR items. Some activities such as monitoring of percolation in paddy field and collecting agriculture production were not mentioned in the 1st draft of proposal. The conducting RAP in the final stage was also not included in the work plan. The second comments were mainly about explanation of each activity in technical report of proposal. Cost estimation is needed to be breakdown for detail with clear explanation.
- Potential working team responded they had no format of working proposal, it is therefore difficult to prepare and to meet the requirement of AIFP. The team also complained of too much detail for explanation. However, the teams agreed to revise proposal according to the comments by AIFP.
- The team promised to submit the 2nd draft of proposal on the RAP workshop date on 18 July 2006. If AIFP have some more comments on the 2nd draft, the team requested to discuss again during the RAP workshop in Vientiane.
- Advance data input for RAP was informed by AIFP and Mr. Pramote (Houy Laung project's staff) will be a key person for inputting data prior to join RAP workshop in Vientiane on 18-21 July 2006.
- Members of RAP conducting were discussed and AIFP advised to submit the list to MRC at soonest for earlier arrangement.

(5) Conclusion

- The inflows and out flows of command areas on the left main canal were observed. AIFP agreed with the project staff that it is not necessary to count these inflows as irrigation water because they are not used or recharged to paddy fields.
- The points of measurement were discussed and agreed to be 22 points for IIEPF implementation.
- The TOR was reviewed and explained in detail for IIEPF activities
- The 1st draft of proposal was commented by AIFP and the potential team agreed to revise and to have discussion again during the work shop in Vientiane.
- Preparation of data input for RAP was discussed and the team agreed to fill out data before join RAP workshop in Vientiane.

5. Follow-up:

- 2nd draft of working proposal is expected to be submitted on 18 July 2006, during RAP workshop in Vientiane.
- Advance RAP data input of year 1, 2 and 3 will be submitted on the RAP workshop on 18-21 July 2006.
- Official letter confirming the RAP conducting participants is expected to send to MRC on 14 July 2006.

6. List of people contacted:

- (1) Mr. Satit (TNMC) ; email: konbannork@yahoo.com
- (2) Mr. Pramote (Project staff); email: water3hl@yahoo.com.

Annex 11

Sub-contract for Fieldwork

Evaluation report on the first submission of the proposal from TNMC
Okudaira

[General]

Proposal (mainly technical proposal) should provide clear, concrete and detail plan how to achieve “7. Expected Outputs” stipulated in TOR.

In other word, how to conduct each specific items stipulated in “10. Responsibilities and Tasks of Implementing Agency under this agreement” of TOR should be described in.

If description or explanation in the proposal refers to or is categorized in specific item in TOR accordingly, it is helpful to evaluate the proposal.

This means, for example for flow measurement,

- Points of measurement (number of the measurement points)
- Frequency (How often measured, such as once a day, once a week, etc.)
- Who conducts? (Number of human resources input and their technical level)
- Method (e.g. current meter, rating curve, etc.) and necessary equipment

Some items are not suitable for all those break down above. But at least

- Who conducts? (Number of input and their technical level), and
- How to conduct? should be minimum requirement for each item.

These detailed descriptions will provide enough information to the evaluator (MRCS) to judge both feasibility of the proposed plan and appropriateness of quotation.

[Technical proposal]

In the sense above, submitted technical proposal has just trace the TOR and does not include any idea, plan, method, etc, which are produced by the implementing agencies in order to fulfil the tasks required by the TOR.

MRCS needs the background information, how does TNMC (or RID) estimate the human resources inputs as stated in the financial proposal.

[Financial proposal]

Please indicate the corresponding between the proposed tasks and tasks required in the TOR.

Please divide the tasks as time frame bar chart does.

Cost estimation to facilitate MRCS backstopping stipulated as 10.6. (22) of TOR is missing.

[Time frame]

Timing for RAP is incorrect. Under subcontract work, RAP is requested at the end of the data collection period.

Evaluation report on the third submission of the proposal from TNMC

Okudaira

This is a comment on financial proposal (3rd version received on 10 Aug.) only.

In general, this version is well improved in terms of its structure and easier to understand than other two versions. However it still contains some unclear or questionable points as below.

Is unit cost per day (e.g. 800B/day) remuneration for one full day (i.e. 8 hours) work?

Some of the works (2.4 2.5 2.10 2.12 3.2 4.1 4.2 4.3) are conducted by a team with a team leader, one engineer from H.Q., one other engineer from the project. This combination is acceptable for the works required high engineering skill.

However total number of the trip counts 12 times within 11 months.

(4 for 2.4&2.5, 2 for 2.10&2.12, 2 for 3.2, 2 for 4.1&4.2 and 2 for 4.3)

This seems to be too much especially for team leader, who is busy in general, and seems not to be realized.

2.1 civil work preparations needs more detail explanation. This should be described in the technical proposal.

22 points of measurement should be shown on the map attached with the technical proposal.

For 2.2 “conduct measurement” frequency of measurement should be clarified. (either 2 times or 3 times per week.)

Is all 22 measurement points covered by one full day?

Total duration of measurement is 40 weeks within 11 months?

Does 4 month of Labour cover whole duration of measurement, i.e. 40 weeks?

For 2.4 “ETo & Kc,” 14 days per crop seems to be too much input.

As 4 trips are counted, this means that this work is conducted by 7 days/time * 4 times?

Why do you divide this 4 times (or 2 times each crop)?

For 2.7 “record multiple use,” how many points will be measured?

Does 2 days per month mean that measured twice a month for each point?

2.8 civil work also needs more detail explanation.

For 2.9 “record water level change,” how many points will be measured?

If 4 different persons cover 4 points only (one point each), one full day remuneration (250B/day) is overestimation.

For 3.1 “yield of paddy” how many plots or samples will be picked up?

[other]

Please revise the time frame bar chart accordingly to the financial proposal.

Please also reset activities starting from September.

Evaluation report on the first submission of the proposal from VNMC

Okudaira

[General]

Proposal (mainly technical proposal) should provide clear, concrete and detail plan how to achieve “7. Expected Outputs” stipulated in TOR.

In other word, how to conduct each specific items stipulated in “10. Responsibilities and Tasks of Implementing Agency under this agreement” of TOR should be described in.

If description or explanation in the proposal refers to or is categorized in specific item in TOR accordingly, it is helpful to evaluate the proposal.

This means, for example for flow measurement,

- Points of measurement (number of the measurement points)
- Frequency (How often measured, such as once a day, once a week, etc.)
- Who conducts? (Number of human resources input and their technical level)
- Method (e.g. current meter, rating curve, etc.) and necessary equipment

Some items are not suitable for all those break down above. But at least

- Who conducts? (Number of input and their technical level), and
- How to conduct? should be minimum requirement for each item.

These detailed descriptions will provide enough information to the evaluator (MRCS) to judge both feasibility of the proposed plan and appropriateness of quotation.

[Technical proposal]

Specific comments to the submitted proposal are as follows.

“7. General introduction ...” and “8. Irrigation practice ...” are written well and no need to improve. “10. Introduction to Long Hai irrigation system” is also good enough for the technical proposal and should be incorporated to the report with more improvement if possible.

“11. Methodologies” and “13. Data collection and analysis” are the main parts of the technical proposal but too weak and need significant improvement as the proposal.

First three paragraphs of “11. Methodologies” are very good justification to lead the proposed methods described by bullet points (i.e. “Data loggers..” “Additional current monitoring ...” to “Water balance...”), each method should be detailed as explained in [general] above.

For example, “additional current monitoring” should be explained its frequency and measurement location. For percolation, infiltration, ground water table, as well.

“11. Methodologies” describes the methods for water balance analysis only, which is stipulated in “10.2 assessment of irrigation efficiency (4) inflow and outflow

measurements” of TOR. Rest of the specific tasks in 10 of TOR is not mentioned its methods but only itemized in “13. Data collection and analysis.”

All the items described in “13. Data collection and analysis” should be detailed one by one as explained in [general] above, and should cover all the tasks stipulated in “10. Responsibilities ...” of TOR.

“16. Staffing” is well explained but brief CV (not more than half page) of each engineer (i.e #1 to #5) should be attached.

Please draw time frame of each task as bar chart and indicate the timing SIWRR staff visits the project site (15 times for whole period as the financial proposal mentions.)

{Clarification}

For “12. Equipment requirements”

- MRCS is requested to provide one current meter for this work.
- SIWRR uses their own data loggers for this work.
- What does “additional tools for percolation, ... will be made” mean?

For “14. Training”

SIWRR will provide necessary training to local staff and farmers involved in the fieldwork, and its cost is estimated and appropriated in the financial proposal.

[Financial proposal]

(For 3. Bases for financial estimation)

“3. Bases for financial estimation” gives a good structure of this proposal. But even written as “quantities based on technical proposal” technical proposal does not mention quantities of input referred in the financial proposal. To show quantities of input of each specific task is one of the points emphasized in the above part (i.e. [Technical proposal]).

For the unit cost for “flow monitoring” please indicate the frequency of measurement within one month. How many times a day and how many days a month?

For transportation between HCM city and project site, please provide the breakdown of 200USD per time, i.e. unit cost per distance multiplied by the distance (***VND/km × ** km) or any other appropriate basis.

Please indicate which base salary (1,200USD and 600USD per month) is applied for each staff mentioned in “16. Staffing” of the technical proposal.

Please also indicate base salary for the farmers.

(For 5. Breakdown)

TOR requests interim and final report only. Please delete progress report and its cost.

As Go Cong project has plenty of geographical information available, 0.25 M/M for schematic plan and 0.5 M/M for scaled map are overestimated.

All the tasks under “conducting water balance” need detailed explanation of the method for the basis of coefficient, otherwise hard to evaluate.

For “identify actual irrigated area ...”, the note “20ha/day and 3 crops/year” is not understandable, and 3 M/M input for this tasks needs basis.

Cost estimation to facilitate MRCS backstopping stipulated as 10.6. (22) of TOR is missing.

[Request for re-consideration]

700 ha of levelling (elevation survey) is proposed in 13 of the technical proposal and 5,847 USD is estimated for this cost in the financial proposal. Purpose of this work is only to identify the area of either gravity or pump irrigation. Only for this purpose, levelling is too much workload and cost is too expensive. MRCS requests to VNMC to reconsider the method for this purpose and propose alternative method, such as basing on information from farmers by interview.

Evaluation report on the submission of the proposal on 7 Sept. from VNMC

Okudaira

This evaluation is made based on the draft proposal submitted on 7th September.

[Base salary]

(1) Team member

member	post	birth	education
Vo Khac Tri	Head of Dpt. SIWRR	1956	Phd 2002
To Quang Toan	S-researcher SIWRR	1970	Msc 1998 Bsc 1993
Pham Duc Ngia	SIWRR	1973	Msc 2004 Bsc 1995
Ung Hong Nghi	V-Director IWC	1962	Msc 2006 Bsc 1996
Do Than Son	IWC	1967	Bsc 1988

(2) MRC's estimation

Engineering fee in Vietnam varies 800USD to 1,500USD par month. (by interview)

Average working day a month is approx. 22 days.

Total days a year	365
Day off	104 = 52 weeks * 2 days (Sat.& Sun.)
Holiday	10 (estimated)
Working day a year	246
Par month	21 = 251 / 12

Daily engineering fee is in a range below.

Monthly	800	1,000	1,200	1,500
Daily	38	48	57	71

(3) Proposal

SIWRR office work	70
SIWRR field work	60
IMC office & field work	36

Staffs from SIWRR considered as official staffs and staffs from IMC considered as field staffs and based salary for each staff is on the agreement, it was calculated by 60% MRCS' DSA rate in the location. If the staffs from SIWRR go to the field work will get full DSA in the location

(4) Observation

Even the basis of proposal (i.e. based on MRC DSA rate) is not acceptable, the range of proposed base salary seems reasonable. However application of uniform base salary for all the labour input cannot be accepted. CONSIDER requirement of each work and assign appropriate level of engineering service with its base salary.

c.f.

According to the technical proposal, staffing is,

- 1 staff from SIWRR responsible for data monitoring, data analysis (Nghia)*
- 1 staff from SIWRR responsible for water balance, data analysis (Toan)*
- 1 staff from SIWRR responsible for project coordination (Tri)*
- 2 staff from IMC responsible for field and crop surveys*

(5) Suggestion

MRC suggest applying as below.

Overall coordination work by Dr. Tri	70USD
Analysis work mainly by Mr. Toan	50 to 60 USD
Monitoring and supervision of data collection by Mr. Nghiha	40 to 50 USD
Date collection by IMC	36 USD or less

Evaluation report on the submission of the proposal on 22 Sept. from VNMC
Okudaira

First of all, I highly appreciate the effort made by Mr. Toan to reduce total amount of contract value fitting within our budget limitation. However I should make some more comments as below to conclude our preliminary negotiation and to reach final agreement of the subcontract. Please read carefully below and try to take them into account.

1. Total budget

Total budget now proposed is 53,448 USD, much less than previously proposed 83,001USD. However our total budget for subcontract is only 180,000USD for all four countries. I understand average does not make sense but it is 45,000USD. This means this 45,000USD must be something standard for each country. As I understand the complexity of Mekong delta irrigation, I agree to put more budget than average for VNMC, but it cannot exceed 50,000USD. Let me once again emphasize to compress your proposal contract value within 50,000USD.

I understand that according to the discussion with you and Fongsamuth in Phnom Penh, Mr. Fongsamuth proposed you to review necessary working days for each activity. But I find that the difference between 83,001 and 53,448 is only to add “inflow outflow measurement for HL6 & Longhai” with working days of 30, 45, 30 and 6, 6, 6.

I would like to propose to consider two amendments.

(1) Reduction of unit cost for “person day” (in other word the cost for engineer etc.)

As explained by the previous evaluation report “on the submission of the proposal on 7 Sept.”, I would like to propose the person day unit cost as below. The reason of this proposal was explained by the previous evaluation report.

<i>Overall coordination work by Dr. Tri</i>	<i>70USD</i>
<i>Analysis work mainly by Mr. Toan</i>	<i>50 to 60 USD</i>
<i>Monitoring and supervision of data collection by Mr. Nghiha</i>	<i>40 to 50 USD</i>
<i>Date collection by IMC</i>	<i>36 USD or less</i>

(2) Reduction of input working days for each activity

This request is a repeated request, which Fongsamuth has already explained. Please once again review all the activities and their proposed working day input. Please scrutinize the workload of the activities and reconsider minimum input.

Both #6 calculation of ETo and #7 calculation of ETc add up 10+2 days office work respectively, but as these two activities are quite overlapping, you may reduce input for these two activities.

For #8 to #11, figures below are proposed.

	SIWRR		IMC	
	Field	office	Field	office
#8 identification of irrigated area	5	5	30	5
#9 recording cropping pattern	5	5	30	5
#10 recording multiple use	5	5	30	5
#11 recording water level change	5	10	10	10

For all the activities above, these works are more field-oriented work. You may reduce working days in the office (especially 10 days each for #11.)

All these works (especially #9 and #10 or #10 and #11) can be done at the same time. If you add up working days separately for each activity, there might be duplication between them. Please reconsider and try to reduce working days.

2. Proposal format

I understand Excel worksheet is convenient to calculate budget proposal as trial and error basis, but hard to understand the relationship between proposed fieldwork and its man month input. This means only Excel worksheet is difficult to evaluate the appropriateness of your proposal from both technical and financial aspects.

Therefore I would strongly suggest you to put the figures (working days) into the form of financial proposal, which you submitted on 7 Sept, after you compress total amount within 50,000USD.

3. Facilitation of MRCS technical backstopping

Technical proposal mentions that for item 23 to 25 of “13. workload and work plan” expenditure related is not estimated and proposed to pay DSA basis. I agree on this proposal. On the other hand the proposal does not mention #22 facilitation of MRCS backstopping. I cannot accept no proposal on this item. As Fongsamuth agreed verbally with you, please assume 6 times backstopping (2times/crop by 3 crops) and put some explanation to commit VNMC or SIWRR to facilitate our technical backstopping.

However I do not expect you to put some additional cost for technical backstopping facilitation. MRCS will visit the field when SIWRR is planning to visit there. (I mean MRCS will contact SIWRR in advance and adjust our schedule with you.) SIWRR or IMC staff goes to the field following their schedule and let us to join this field visit to share the car. In this arrangement, SIWRR need not to provide either extra staff accompanying MRCS or additional transportation means.

Please accept this arrangement and just put your commitment to take care MRC’s visit.

Evaluation report on the first submission of the proposal from LNMC

Okudaira

This evaluation is for the proposal preliminarily submitted from LNMC by email dated 1 Sept. This evaluation is to be used for the discussion with LNMC and Lao Team for the reference.

Overall Structure of the proposal is well organized. Even technical and financial parts are combined as one proposal, this is acceptable.

The major missing documents as a complete set of the proposal are 1) CV (Curriculum Vitae) of the team members covered by the list of members and 2) a map (a schematic plan of canal layout) showing the points of measurement.

Linkage between each part of the proposal should make clearer, i.e. items listed under “V. Activities” “work plan” and “breakdown prices” should be linked with same numbering for easier understanding.

Further explanation for each item under “V. Activities” is required.

For example, “1. Consultation meeting” has enough explanation, which includes the purpose and number (or quantity) of the activity. For other items, the technical proposal is required to explain the purpose, method, specification and number, amount or quantity of activity. Other better example is the description of measurement with 60 points. Except these two items, “V. Activities” does not show any specific number for each activity and is not good enough as a proposal.

Breakdown should show the basis of “unit price” and “quantity (shown as “value” in the proposal).” Basis of quantity is usually shown in the description of each activity. Basis of unit price is usually composed of necessary resource inputs, such as labour input multiplied by days etc.

Note: Submitted proposal has not yet been reviewed in detail because clearance of above-mentioned points is prerequisite for detail consideration. However some points mentioned below are the comments at this moment. These comments never guarantees “no more comment in the future.”

- RAP is requested to conduct ONE time ONLY under the subcontract at the end of field observation. (→ 5.1 of work plan & I & VIII of breakdown)
- “Consultation meeting” covers only the meetings with farmers but not about RAP meeting and national consultation meeting. (→ 6.3 & 6.4 of work plan and I of break down)
- 144 samples for water productivity do not make sense. Need explanation and background of estimation.
- 3 times & 3 sets for each activity for scheme management appraisal do not make sense. Each activity needs ONLY ONE time.
- Monthly progress report is not required. (→ 3. Reporting & II. 2. of break down.)

Evaluation report on the proposal from LNMC

Okudaira

This is an evaluation of the submitted proposal in the middle of September.

This submission was widely improved from the previous version, but still needs some clarifications etc as follows.

1. CV

CV is still missing. Proposal should not only include the list of team member but also CV attached with.

2. Financial proposal

(1) Report cost

TOR requires two kinds of report, one is interim and the other is final. Draft final report is a kind of working document but not a final product. Therefore, you may charge some cost for draft final report but we cannot accept the same cost (300USD) as the others. Please reconsider and propose lower cost for draft final report than 300USD.

(2) Items to facilitate technical backstopping

50USD/day x 4 days is itemized. We need explanation on this, otherwise we cannot accept it.

(3) Transportation

Firstly we would request to specify what kind of transportation cost is this. From where to where, for example to access the field. This is the basis to judge the appropriateness of 30USD/day.

Then almost all the items include transportation cost with mostly the same number of “working days.” There seems to be duplication within items each other, if this is a cost to access the field. Some work can be done with other work at the same day. In this case number to access the field should be less than total working days in the field.

[Incorrect calculation]

Items below include incorrect calculation. Please correct them.

2.5 Calculation of Etc

Engineer 2 persons x 30USD/day x 14 days should be 840USD instead of 1260.

2.9 Record water level change

2 persons x 100USD/month x 10 months should be 2,000 USD instead of 3,000.

2.12 Calculate command area efficiency

Engineer 2 persons x 30 USD/day x 7 days should be 420 USD instead of 630.

3.2 Crop water productivity

Engineer 2 persons x 30 USD/day x 6 days should be 360USD instead of 540.

4.1 Identify stakeholders

Engineer 2 persons x 30 USD/day x 6 days should be 360USD instead of 540.
(and unit cost 30 USD is missing.)

4.5 Facilitate MRC backstopping

50USD/day x 4 days should be 200USD instead of 400.

After making correction of all items above, grand total should be 44,800USD instead of 46,990.

Evaluation report on the submission of the proposal on 15 Sept. from CNMC
Okudaira

Three major problems are observed on submitted proposal by CNMC.

[Technical description]

The first one is too weak technical description on “7 Research Methodology.”

Firstly MRCS requests CNMC to follow the itemized tasks of CMNC described in “10 Responsibility and Tasks” of the TOR. Expected tasks are not limited only “map preparation” and “field data collection.” Tasks under this working agreement also include analysis work, irrigation scheme appraisal on management aspect, etc. (Please once again carefully review the TOR.)

Then MRCS requests CNMC to propose how to conduct each task. Only the number of measurement points is not enough to meet our requirement as technical proposal.

Our requirement to the proposal is not difficult work. CNMC has completed cost estimation. During this estimation, CNMC should have considered how to conduct the fieldwork. This idea should be a basis of estimation. What MRCS is requesting is to write down the idea in your mind how to conduct the work only.

[Time frame]

According to the proposed time frame, most of the fieldworks are planned from March to June. However we are requesting field observation covers one dry season and one rainy season. This means field observation should start some time in late December to cover one dry season and another observation should start in June to cover rainy season. Please reconsider time frame and reflect it into annex 2.

[Man month input]

The third issue is labour input for the work.

Proposal calculates necessary working day for each task (e.g. 8days for dry season inflow measurement, 2days for irrigation area identification, etc.) and then obtains 39 working days for dry season fieldwork and 34 working days for rainy season.

For cost estimation, these figures (39 and 34 days) are multiplied by “one engineer, two technical staff and four labour” respectively. This means that all the fieldwork will be conducted by a uniform team composed by one engineer, two technical staff and four labours. This assumption does not make sense, because some work needs such a big working team, but some does not.

Tasks requires relatively heavy workload are, for example, #3 scaled map, #4 flow measurement, #13 conveyance loss test. Tasks with light workload are #9 cropping pattern and #11 water level change in paddy field. Rest of them can be said intermediate workload.

Please consider the nature of each task and its workload and assign appropriate level and number of labour for each task.

[Number of transportation]

Number of transportation between Phnom Penh and Battambang is counted as 39 times in dry season work and 34 times in rainy season, which are same figure as fieldwork working days. But staff from Phnom Penh travels to Battambang to join the provincial team and spend a few days to conduct fieldwork together and then goes back to Phnom Penh, I understand. In this case travel time never accords with working days. This estimation is wrong and need to be corrected.

Number of transportation between Battambang and the field is fine, because the team goes to the field every working day.

[Measurement points]

Measurement points were originally proposed by MRC, when pilot site was firstly visited. After conducting RAP, we recognized some points seem to be useless to meet the objectives of the project. Additionally too much measurement points will cause the difficulty of the fieldwork. To meet project objectives with minimum input and to avoid future difficulty, we would like to propose to change and reduce the number of the measurement points. For this amendment we need further discussion with Cambodian side.

[Additional information]

In addition to the above major points, next submission of the proposal is required to include information below.

[Team member]

List of team member and CV for each member should be attached with.

**Terms of Reference
for the Working Agreement
between IIEPF and -----
for the Field Observation and Data Analysis for Irrigation Efficiency
on IIEPF**

1. Project Title

Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin project (IIEPF)

2. Title of the Working Agreement

Field Observation and Data Analysis for Irrigation Efficiency on IIEPF

3. Implementing Agency (tentative)

Ministry of Water Resources and Meteorology, Phnom Penh, Cambodia,
Ministry of Agriculture and Forestry, Vientiane, Lao PDR,
Royal Irrigation Department, Bangkok, Thailand, or
Ministry of Agriculture and Rural Development, Hanoi, Vietnam

4. Duty Station (tentative)

*****, Cambodia
Nam Houm project, Lao PDR,
Huay Loung project, Thailand, or
*****, Vietnam

5. Duration

The tasks under this working agreement are expected to be conducted from the beginning of August 2006 to the end of January 2008 with the following deadlines:

- Preparation to start field work should be completed not later than the middle of October 2006.
- Measurements and field observation for irrigation efficiency should start following the preparation and continue until the end of December 2007.
- Water distribution practice should be monitored and examined following the preparation and continued for 12 months from the starting date.
- Rapid Appraisal Process should be completed not later than 15 January 2008.

6. Background and Objective of the Working Agreement

The Mekong River Commission (MRC) is implementing the project “Improvement of Irrigation Efficiency on Paddy Fields in the Lower Mekong Basin” (IIEPF) in order to contribute to improvements in irrigation efficiencies in the irrigation schemes through

introduction of guidelines covering institutional, managerial and technical aspects of irrigation facilities operation.

In this regard, the MRC Secretariat (MRCS) is entrusting “field observation and data analysis work” to National Mekong Committee (and/or Line Agencies) of each member country. This work aims to analyze and document actual conditions regarding water use in selected irrigation schemes representing irrigation typology of the basin.

7. Expected Outputs

Three major outputs below are expected through implementation of this working agreement.

1. Assessment of irrigation efficiencies of the selected irrigation schemes
2. Scheme management appraisal
3. Scheme appraisal by Rapid Appraisal Process

For irrigation efficiencies, items below shall be included as a part of output 1.

- i. Detailed map of the irrigation system with the selected locations for measurements
- ii. Water flow quantity at selected points over time
- iii. Infiltration/Seepage/Percolation rate at selected points over time
- iv. Irrigation efficiencies based on above observation
- v. Cropping pattern and crop calendars
- vi. Water requirement for different water uses within the command area of the selected irrigation scheme
- vii. Precipitation and Evapotranspiration (either measured or obtained from the closest meteorological station) over time (this must correspond with the time period of field data collection)
- viii. Crop water productivity (yield per cubic meter of water diverted) values of rice paddy

For scheme management appraisal, the documented output shall include items below.

- ix. Organizational structure (be it formal or informal) of the different stakeholders (for example Department of Irrigation and Water Users Association)
- x. A document describing users and other stake holders’ participation in the decision making of water allocation and distribution
- xi. Mechanism to decide water allocation and to put it into practice
- xii. Procedures and rules for operating the system

For Scheme appraisal by RAP, the output shall include the following items:

- xiii. Filled RAP sheets

8. Links of the Expected Outputs of this working agreement with the Expected output of the project

The outputs of this working agreement will directly contribute to the immediate objective 1 of the project, i.e.: “to appraise irrigation efficiencies and the irrigation system based on the modern concepts in the selected irrigation schemes” and planned outputs to achieve the objective. The following four outputs are planned under the objective 1 of the project:

- Output 1.1: Establishment of minimum set of data to evaluate irrigation efficiencies and irrigation system
- Output 1.2: Assessment of water balance, irrigation efficiencies and water productivity
- Output 1.3: Appraisal of scheme management
- Output 1.4: Rapid Appraisal Process

The expected outputs of this working agreement will mainly be related to the Output 1.1 to 1.3 and to a lesser extent to the output 1.4.

9 Reporting

The implementing agency will submit to the MRCS through relevant NMC an interim and a final report. The interim report should be submitted no later than May 2007 and the final report should be submitted no later than 31 January 2008.

All the above mentioned outputs (see section 7) should be part of the Interim and Final reports.

10. Responsibilities and Tasks of Implementing Agency under this working agreement.

The concerned Implementing Agency shall perform the tasks listed below in close consultation with the Senior Advisor and Programme Officer, AIFP of the MRCS. The specific tasks will include;

10.1. Preparation for data collection

- (1) identify appropriate pilot project sites (irrigation schemes)
- (2) prepare schematic plan of irrigation system
- (3) prepare scaled command area map of the irrigation scheme

10.2. Assessment of Irrigation Efficiencies

Conducting Water Balance:

- (4) inflow and outflow measurements:
 - identify flow measurement points covering all inflows and outflows for selected command area
 - conduct measurement and calculate flow quantity based on selected points

Assessment of Water Requirement:

- (5) obtain rainfall and other climate data from the nearest meteorological station
- (6) calculate or obtain potential (reference) evapotranspiration (ET_o) and crop coefficient values (K_c) for paddy, fishponds, and other crops
- (7) calculate crop evapotranspiration (ET_c) based on (ET_o) and (K_c) obtained
- (8) identify actual irrigated areas
- (9) record cropping pattern and crop calendar for different crops
- (10) record multiple use of irrigation water quantity (e.g. water use for fishpond etc.)
- (11) record water level changed in paddy fields and fishponds
- (12) calculate total scheme water requirement

Calculate Irrigation Efficiencies:

- (13) conduct conveyance losses test and calculate conveyance efficiency
- (14) calculate command areas efficiency based on water balance concept

10.3. Assessment of water productivity

- (15) obtain yield of paddy
- (16) calculate crop water productivity (yield per cubic meter of water diverted, and water consumption)

10.4. Scheme management appraisal

- (17) identify stakeholders for decision making on distribution of irrigation water within the scheme
- (18) draw organisational charts of stakeholders (irrigation managers, water users, others) involved in the decision making of the scheme management
- (19) document procedure of decision making for water allocation and distribution
- (20) document operational rules and actual practices to ensure delivery of the above allocated and planned water to the users

10.5. RAPs

- (21) conduct RAP, at the end of data collection period, based on the training provided by IIEPF during the field data collection period

10.6. Others

- (22) facilitate technical backstopping by the MRCS made on demand by implementing agency
- (23) take part in the training workshops organized by MRCS within the framework of IIEPF
- (24) assist Programme Officer in collecting any other information required for analysis within the framework of IIEPF

- (25) assist MRCS in organizing national workshops planned to be conducted in January 2008.

11. Itinerary

Commencement of field observation: October 2006

Submission of Interim report: May 2007

Submission of Draft Final report: November 2007

Submission of Final report: January 2008

12. Working Principles

The team of the Implementing agency will work under supervision of MRCS (Senior Advisor and Programme Officer of AIFP) and relevant NMC.

13. Composition of Implementing Agency teams

The team of the implementing agency that will implement this field data collection and analysis work should be composed of minimum 3 and maximum 5 members depending on the size of the selected irrigation scheme.

14. Qualifications

Team members should be willing to work in the field for long hours, and must be willing to learn new concepts and tools.

Head of the Implementing Agency's team should hold master degree or equivalent with minimum 7 years of experience in irrigation planning, water resources development or other relevant fields.

Other team members should have educational and practical background of at least one of the following:

- water resources development and management,
- irrigation project appraisal and survey,
- irrigation or water resources development project planning,
- hydrological observation and analysis.

The team as a whole should cover all the above mentioned expertise.

15. Condition of Payment

Payment is made in three parts.

- (1) 40% of the Contract value, after signing of the Agreement.
- (2) 30% of the Contract value, upon submission and acceptance of the Interim report.
- (3) 30% of the Contract value, upon submission and acceptance of the Final report.

