THE MEKONG RIVER COMMISSION SECRETARIAT

Capacity Building and Training

The Flood Management and Mitigation Programme, Component 2: Structural Measures & Flood Proofing in the Lower Mekong Basin

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Draft Final Report

Deltares Enabling Delta Life Delft Hydraulics

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CHAPTER 1

INTRODUCTION

1 INTRODUCTION

The Component 2 of the Mekong River Commission (MRC) Flood Management and Mitigation (FMMP) programme aimed at:

- the reduction of the vulnerability of people living in the Lower Mekong Basin (LMB) to the negative impacts of floods and
- the establishment of sustainable flood risk management capacity in the MRC, MRCs, National Mekong Committees (NMCs) and national line agencies.

It attempted to achieve these goals by formulating answers to the following questions:

- What are actually the flood risks in the LMB?
- How can these risks best be managed?
- What structural and flood proofing measures can best be applied for the reduction of the flood risks?

The project efforts concentrated on a number of areas spread over the LMB. These areas are characterised by the different types of flooding and flood risks that occur in the LMB. Methodologies and practices used in the search for socio-economic and environmentally viable strategic directions for these areas were the basis for the respective Best Practice Guidelines for Integrated Flood Risk Management (IFRM) in the LMB.

The project involved also a programme of capacity building and training. Four training courses were organised:

1. Introduction Integrated Flood Risk Management Concepts and Planning in the Lower Mekong Basin (May 2008);
2. Best Practise Guidelines for Flood Risk Assessment in the Lower Mekong Basin (May 2009);
3. Best Practise Guidelines for Integrated Flood Risk Management Planning and Impact Evaluation in the Lower Mekong Basin (June 2009);
4. Best Practise Guidelines for Structural Measures and Flood Proofing in the Lower Mekong Basin (September 2009).

This document includes the four training reports, covering the above-mentioned Best Practise Guidelines, and describes for each of the courses:

- Context and objectives;
- Course development and implementation;
- Course participants;
- Course evaluation; and
- Lessons learned and suggestions.

The appendices of each of the four courses contain a course summary, the participating institutes and trainees, and the evaluation forms.

The detailed course content is in the four guidelines. Training materials and presentations are included on the project DVD handed over to the MRC.

This document may provide useful information on the set-up, organisation and content for future MRC training courses.

CHAPTER 2

TRAINING MAY 2008:

INTRODUCTION INTEGRATED FLOOD RISK MANAGEMENT CONCEPTS AND PLANNING IN THE LOWER MEKONG BASIN

2 TRAINING MAY 2008: INTRODUCTION INTEGRATED FLOOD RISK MANAGEMENT CONCEPTS AND PLANNING IN THE LOWER MEKONG BASIN

2.1 Context and objectives

Floods are a recurrent phenomenon in the Mekong basin that brings yearly risks and damages, as well as benefits in terms of e.g. fish habitat and nutrients. The challenge for the Lower Mekong Countries is to reduce risk and damage, while sustaining the benefits, for now and for future generations. Component 2 of the Flood Management and Mitigation Programme (FMMP) defines Integrated Flood Risk Management (IFRM) as applying the most attractive mix of all possible measures, hard and soft, for the reduction of flood damage risk. In the preparation of these concrete measures all steps should be followed that are crucial for a socio-economic and environmentally sound flood risk management. In FMMP Component 2, the preparation of concrete measures aiming at the reduction of people's suffering goes together with building capacity and preparing guidelines for sustainable flood risk management in the region.

The capacity building component of Component 2 aims at increasing sustainable flood risk management capacity in the Lower Mekong basin. It does this amongst others through a series of 4 training courses/ workshops:

- Introduction IFRM concepts and planning in the LMB
- Best Practice Guidelines flood damage assessment and evaluation of impacts of flood risk management measures
- Best Practice Guidelines design of flood risk management measures (structural and flood proofing)
- Best Practice Guidelines IFRM planning

The first training course is an introductory course on Integrated Flood Risk Management and the latter three training courses focus on the use of the guidelines to be developed under FMMP Component 2.

This report describes the development and implementation of the training course, including evaluation, and lessons learned for the upcoming courses.

2.2 Course development and implementation

2.2.1 Course development

Objectives training curriculum and course

The first training course focuses on floods and flood issues and IFRM concepts and its application to create a solid basis for the execution of FMMP-C2. The course, having duration of 1 day and a half, was developed to give an introduction to these subjects. The course intends to reach a broad group of professionals and decision-makers with the main focus on NMC's and national line agencies.

The following initial learning objectives were set. At the end of the course participants will be able to:

- Understand the potential role of IFRM in the LMB
- Explain the basic concepts of IFRM and its main approaches and methods
- Contribute to IFRM strategy development processes in LMB
- Reflect on the role the participant's organisation could play in implementing IFRM in LMB

Design training curriculum

Curriculum is designed for the 1 day and a half training course. The curriculum consists of a brief lecture note introducing the subjects, PowerPoints presentations used during the lectures and recommended reading. The lecture note and PowerPoints together form the so-called 'assigned

reading' part of the training. This is the material that is also covered during the training course. For those participants who want to go more into depth in the different subjects further reading is recommended. This 'recommended reading consists of information such as reports, presentations, and websites. The final lecture note is in Appendix 4.

The curriculum is divided into the following subject:
- Course introduction (Unit 1)
- Floods and flood issues in the LMB (Unit 2)
- Basic concepts of IFRM (Unit 3)
- Flood Risk Assessment (Unit 4)
- Environmental impacts of IFRM measures (Unit 5)
- Institutional aspects of IFRM (Unit 6)

The units mentioned between the brackets refer to the units in the lecture note were the respective subjects are addressed.

The training curriculum is developed by:
- Guus Sutmuller (Royal Haskoning)
- Peter Kerssens (Deltares/ Delft Hydraulics)
- Rinus Vis (Deltares/ Delft Hydraulics)
- Wim Douven (UNESCO-IHE)

I-Learning Environment

All training material is stored on the UNESCO-IHE I-Learning Environment. This web-based environment will be used to give participants access to training material and outcomes of the training, to share background docs and to interact also with the trainers. Before the start of the course participants will receive a login and password and explanation on how to use the platform. The I-Learning Environment can be accesses and used before, during and after the course.

Design training course

The course programme (below) starts with introduction of participants, trainers and the course programme. The course programme follows the different curriculum as listed above. The course combines various learning methods including interactive lectures, discussion and a role play. The role play Sama is a game on Integrated Flood Risk Management and participants will learn the need for integrated approaches and cooperation in managing floods and gives food for discussion.

Day 1 of the training course

08:00 – 08:30	Registration	
08:30 – 09:30	Opening	
	Introduction training course Introduction Component 2 and link to training course	Wim Douven and Guus Sutmuller
09.30 – 10:00	*Break*	
10:00 – 11:00	Floods and flood issues in the LMB, management of flood risks in the LMB	Guus Sutmuller
11.00 – 12.00	Basic concepts of IFRM and its main approaches and methods	Guus Sutmuller
Lunch		
13:00 – 15:00	Flood Management Simulation Game: The SAMA River Case	Peter Kerssens/ Wim Douven
15:00 – 15:30	*Break*	
15:30 – 17:00	Flood Management Simulation Game (continued)	Peter Kerssens/ Wim Douven
17:00 – 17:30	Reflection and wrap-up	

Day 2 of the training course

08:30 – 09:30	Flood Risk Assessment	Guus Sutmuller
09:30 – 10:30	Environmental and socio-economic impacts of IFRM measures and their evaluation	Wim Douven
10.30 – 11:00	*Break*	
11:00 – 12.00	Institutional aspects of IFRM	Peter Kerssens
12.00 – 13.00	Wrap-up, questions, follow-up, I-LE Closure and certificates	Guus Sutmuller, Wim Douven

2.2.2 Course implementation

Course dates and duration

The 'Introduction IFRM training' course has been implemented in each of the LMB countries according to the following schedule:

- 8 and 9 May 2008 Thailand
- 12 and 13 May 2008 Vietnam
- 15 and 16 May 2008 Lao PDR
- 20 and 21 May 2008 Cambodia

The course had duration of one and a half day. A Component 2 project meeting on the preparation of IFRM plans for the focal areas and of IFRM projects for ProDIP was held immediately after the training courses (except in Cambodia).

In Cambodia the training was given at the Regional Flood Management and Mitigation Centre in Phnom Penh. The Lao PDR, Thailand and Vietnam the training was held at the NMC offices.

Course preparation

The course was prepared by the C2-team under guidance of the training specialist. Course logistics were taken care of by the C2 secretariat and the NMCs.

Course announcement

The course programme was sent to the four NMCs for further distribution to the relevant line agencies 1 week before the start of the course. Participants were recruited by the NMCs based on the criteria as indicated in the distributed course programme.
About 1 week before the training course, the lecture note has been distributed to the participants through the NMCs. During the training course several PowerPoint presentations have been distributed on hardcopy.

Training course programme

The programme of the one day and a half training course as presented in Section 2.2.1 was implemented in all four countries. The start and end dates of the course and course subjects varied slightly in the four countries.

Translation

In Vietnam the lecture was given in English and the PowerPoints project in Vietnamese. In the other countries presentations were not in the local. In all four countries presentations were printed during the course to allow participants to read and write with the presenter.

Adjustment learning objectives

After the first implementation of the course (in Bangkok) it was decided to update the learning objectives as the original learning objectives (as described in the training programme distributed before the course; Appendix 1) included the Component 2 project meeting immediately held after the training courses (except in Cambodia). It was decided to focus the learning objectives on the 1 ½ day training course. The new learning objectives were:

The main objective of this course is acquiring a broad overview of the concepts and issues of IFRM.
At the end of the course participants will be able to:

- Explain the basic concepts and elements of IFRM;
- Describe IFRM measures targeting reduction of flood hazards, flood vulnerability and damage reduction;
- Understand the need for an integral (including social and environmental) assessment of IFRM measures; and
- Understand the need for institutional integration and coordination to implement IFRM.

The effect of this change is visible in the course evaluation. In Thailand only half of the participants indicated that objectives were met; in the other three courses the majority of the participants indicated that the course objectives were met.

Adjustments in training and teaching methods

Also based on the intermediate evaluations changes were made to the training and teaching methods. The main changes made during the training course were:

- In the flood risk assessment lecture: less sheets, less theory, more time for explanation;
- In the environmental impacts presentation; more focus on impacts, less on procedures, more examples;
- In the institutional lecture; more country specific information was added;

In general it was tried to lecture at a slower pace and take more time for interaction to give participants more time to digest and reflect, also considering language skills of the participants.

Course evaluation

In order to improve the course for future delivery in terms of training material and method of delivery the courses was evaluated by the participants. First individually, then followed by a plenary session. Evaluation results are presented in Section 2.4.

2.3 Course participants

2.3.1 Target organizations and participants

Based on the training plan developed at the start of Component 2, the target organisations identified were those who need capacity in the IFRM knowledge areas, including flood hazard, vulnerability, risk and damage assessment methods, structural flood risk measures, flood proofing measures, social and environmental impacts of IFRM measures, and IFRM planning. The target organisations of the introductory IFRM training course were:

- Line agencies working at national levels in the identified knowledge areas;
- NMC's and in particular coordinators who are responsible for MRC programmes that address flood related matters (FMMP), or should be able to include floods and related aspects in their work (BDP in particular to complete and evaluate the ProDIP, but also programmes like WUP and EP); and
- Staff of MRCS programmes working in the above-mentioned MRC programmes.

Within these organisations the course intended to target technical, social/ environmental and planning professionals that need upgrading of certain knowledge areas and skills to apply the knowledge learned, as well as decision-makers who manage these professionals and have large influence to change organisations and their operations needed to introduce IFRM and/ or to decide on or have on influence on the review or authorisation of guidelines.

Specific entry requirements set for the participants were:

- Participants are part of the above-identified target group of the IFRM training;
- The training fits in the career development path of the participant, hence they either work in the related IFRM knowledge area at professional or decision-making level (and stay involved) or will be involved in the near future;
- Participants have an academic background;
- Participants have sufficient English language skills.

The introductory training course was expected to have around 20 participants (each country) mainly coming from line agencies and NMC's. MRCS staff will be invited for the Lao PDR training and FMMP staff for the Phnom Penh training. In addition, staff of regional and national educational centers working in the identified knowledge areas will be offered places in the audience.

Appendix 1 gives for each country the list of institutions that are proposed to participate in this training course.

2.3.2 Participants present at the course

In total 84 participants participated in the four training courses and received a certificate. By country, participation was as follows:

- 22 participants in Bangkok, Thailand
- 20 participants in Hanoi, Vietnam
- 22 participants in Vientiane, Lao PDR
- 20 participants in Phnom Penh, Cambodia

In Phnom Penh 5 staff members working at the Regional Flood of Management and Mitigation Center, including ADPC participated. The FMMP programme coordinator and CTA participated in most of the trainings. Appendix 2 lists all participants that also received a certificate.

In general there was sufficient and good participation, both with regard to quantity and quality. In all 4 member countries there were around 20 to 25 participants, partly (≈ 50% on average) from the countries NMCs, and the remainder from line agencies and/or other related parties/institutions. There were not many real decision makers from line agencies, but that could be expected since for high level people it will be difficult to make themselves available for a 1,5 day training course.

Cambodia

Good and broad representation, about 50% from Cambodia NMC and the FMMP regional center and 50% from other institutions. From the line agencies MAFF (Min. of Agriculture, Forestry and Fisheries), Ministry of Environment, the Hydro Dept of MIME (Industry, Mines and Energy) and MPWT (Public Works and Transportation) were represented. From MPWT, however, there were 2 representatives from the Road Infrastructure Dept. but none from the water transport sector. The Tonle Sap Basin Authority also participated, as well as 2 staff members from the NCDM (National Committee for Disaster Management), and one from ADPC (Asian Disaster Prevention Center). Rural Development, Land management, urban planning and construction were not represented. In addition to the CNMC staff, MOWRAM was also represented by 3 staff members of the Dept. of Hydrology and River Works, i.e. the Research and Flood Forecasting Office.

Lao PDR

Similarly good and broad representation, with relatively more participants from line agencies and other institutions (60%). The following ministries were represented with one or more staff members: PM's Office/Land Use Planning & Development, Foreign Affairs, Agriculture and Forestry, Public Works and Transport, Energy and Mines, and several different departments from the Water Resources and Environment Administration. In addition the National Disaster Management Commission/Office sent a representative. The participation of MPWT with just one staff member was noticeable since they are responsible for various relevant activities, such as Public Works (drainage), River Works, Roads (Roads and Floods), and water supply. Nevertheless, there was active and enthusiastic participation in the training and in the simulation game.

Thailand

Relatively many participants from Thai NMC, Department of Water Resources, and other related departments within the Ministry of Natural Resources and Environment. Also several representatives from line agencies, such as RID (Royal Irrigation Dept., Min. of Agriculture and Cooperatives), LDD (Land Development Dept., also under Min. of Agriculture and Cooperatives), EGAT (Electricity Generating Authority Thailand). However, no representation of the water related transport (sub) sector. In addition, the absence of any representation from the Disaster Prevention and Mitigation Office was noticeable.

Vietnam

In general good and broad participation, but more at the level of institutes and university or academy, than from line agencies. There was only one (junior) staff member of the Dept. of Dikes and Flood & Storm Control of MARD, and there were two representatives of the hydro-meteo centers belonging to MoNRE. Despite the fact that MoNRE now has formal control over the Vietnam NMC, there surprisingly was no staff member of the Dept. of Water Resources Management from MoNRE in the training. Also the 'environment' sector, as well as the hydropower sector were not represented. The Agriculture and Transport/Navigation subsectors were represented through one of their respective research institutes. Consequently, there were no real decision makers in the IWRM and/or IFRM sector in the group of participants. Nevertheless, the training and simulation games were followed with much dedication and enthusiasm.

2.4 Course evaluation participants

This section will present the main results of the individual evaluation results. Details of the individual evaluations can be found in Appendix 3.

A. Theme and structure of the course

For my future career, I consider the training course to be:

Very important	35
Important	35
A little important	2
Not important	

The course included several subjects. Please rate them by order of importance for you.

	Very important	**Important**	**A little important**	**Not important**
Floods and flood issues in the LMB	35	27	6	
Basic concepts of IFRM	22	43	4	
Flood Risk Assessment	36	27	2	1
Environmental impacts of IFRM measures	26	36	8	
Institutional aspects of IFRM	18	44	8	3
Flood Management Simulation Game	31	30	4	1
Total				

The material covered in the module was:

Mostly new for me	23
Partly new	43
Presented little novelty	4
Not new at all	1

There was a regional difference in the response. Particularly in Thai participants indicated that the course presented partly or little novelty.

The sequence of topics presented in the module was:

Very Good	25
Good	35
Reasonable	5
Poor	

The work intensity during the module was:

Very high	12
High	39
Moderate	13
Low	

Regional difference. Lao high.

B. Quality of the course

How do you rate the quality of the lecturer in presenting and explaining?

	Very good	Good	Moderate	Poor	Very poor
Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	27	33	2		
Douven (Environmental impacts of IFRM measures)	24	34	4		
Kerssens (Institutional aspects of IFRM)	23	38	1		
Total					

How do you rate the quality of the written material?

	Very good	Good	Moderate	Poor	Very poor
Floods and flood issues in the LMB (Unit 2)	19	35	7		
Basic concepts of IFRM (Unit 3)	14	38	9		
Flood Risk Assessment (Unit 4)	20	35	6		
Environmental impacts of IFRM measures (Unit 5)	15	35	12		
Institutional aspects of IFRM (Unit 6)	17	3	10		
Total					

C. Overall evaluation of the course

What is your opinion about the general quality of the course:

Very high	13
High	48
Moderate	10
Low	1
Very low	

In your opinion, did the course meet the above-mentioned learning objectives?

Yes	53
Partly	19
Not at all	

D. Comments by the participants

Course subjects

- more training on the use of tools of the flood management
- if you have more experience in law cases, need to provide more
- more examples to analyse flood risk assessment curve in terms of non-structure measures
- Introduction of the course is a lot but time is too short. More practical examples should be exemplified
- I hope that we should have another training course on Flood Modelling

Local context

- try to tune to countries interest/needs particularly regarding environment/institutional
- The course should be help somewhere in mekong delta, be more practical
- Each topic should be given example/ case study of the country as well
- more examples from the region

Training methods

- Flood management simulation game is good understanding the flood protection control measure. The programme is edutainment
- take some examples in Lao P.D.R. to make in game, would be useful
- should have best practices and bad practices
- I think that the time for training, it should be extent or more longer and add more simulation game

Explanation

- the role of MRC in institutional analysis should be more clearly elaborated
- material and sample pictures have to be clearly

Language

- English (Vietnamese) local language should be given to participants at least 2 weeks
- I asked for explain slowly. (now it too fast)!!

Lecture notes/ hand-outs

- the presentation is easily to understand but lack of hand-out distribution
- add more training material

Duration training

- Should be spend more time for training
- Time: the course should be conducted 3 days more for more exercises and games
- longer time for training: around 3-4 days
- If possible for the next course should be take more time (days) to train participants more clearly with topics
- the course must be longer
- training course is too short
- the training course should be more longer
- If this kind of training course will happened again we should extend the duration more, it is possible
- the course should be longer so that the discussion and explanation will be broadly understood
- we need for long term (half month or one week to learn)

General

- I hope experts will bring back all good comments and suggestions
- good chance for me to participate on this training course, that is important point to improve any duty to modify your experience into my field activity in the future plan and suitable to solve actually problem happened in my home country
- this workshop makes me know widely about Introduction Flood risk Integrated with planning Lower Mekong basin, and its importance of Mekong river, and its + and - impact of Flood
- Second time I want this workshop again, it is very importance

Distribution material
Use of the SAMA case
More regional cases
Remarks lecture and lecture note contents

2.5 Lessons learned and suggestions

Course preparation
Distribute material two weeks before start course. The I-Learning Environment should be used for this purpose. So, new participants should get access to this platform before the course.

Selection participants
Involvement of consultant in selection process. E.g. NMCs pre-select based on criteria set, then consultants can give recommendations, e.g. in case representatives of a specific group or organization is missing

Course duration
The course was by many considered as too short. A longer course would allow for more interaction, group work (hands-on) and inclusion of participants' experiences.

Course design
Programming, subjects and order of subjects was good. Simulation game overall was highly appreciated. Inclusion of more practical examples and cases would be good. Also more links to local context. More time for reflection and discussion should be scheduled, but this is difficult for a course of 1 ½ day. More interaction during lecturing will be needed.

Translation
Powerpoints in local language works better. In general lecturing should be slower, less information, more time for participants to digest and reflect.

Training material
Training material is updated and finalized (Appendix 4) and made available on the I-LE. Lecture notes now better follow the sequence of the lectures (and PPTs). Self assignments and recommended reading is added to the units.

Course evaluation
Course evaluation overall very positive. Question for me is whether this is the right approach for evaluation, as it might be difficult for some to be critical. Alternative would be to have evaluation session by participants so they can discuss in own language and then feed-back to course leader.

APPENDIX 1 DESCRIPTION OF TRAINING COURSE

Institutions Cambodia
Cambodia National Mekong Committee
Ministry of Water Resources and Meteorology (MOWRAM)
Ministry of Industry, Mines and Energy (MIME)
Ministry of Rural Development (MRD)
Ministry of Public Works and Transport (MPWT)
Ministry of Environment (MoE)
Ministry of Agriculture, Fisheries and Forests (MAFF)
Ministry of Land Management, Urban Planning and Construction (MLMUDC)
National Committee on Disaster Management

Institutions Lao PDR
Lao National Mekong Committee
Water Resources and Environment Administration (WREA)
Water Resources Coordination Committee
Ministry of Energy and Mines (MEM)
Ministry of Public Works and Transport (MPWT), including
Ministry of Agriculture and Forestry (MAF)
National Land Management Authority
Ministry of Labour and Social Welfare/ National Disaster Management Commission/Office (NDMC/NDMO)

Institutions Thailand
Thai National Mekong Committee
Ministry of Natural Resources and Environment (MoNRE), including - Water Resources Department - Water Crisis Prevention Centre - Office of National Environmental. Planning - EIA Department
Ministry of Agriculture and Cooperatives, including: - Royal Irrigation Department - Dept. of Agricultural Extension - Dept. of Fisheries - Land Development Department
Ministry of Energy (MoE) and EGAT
Ministry of Transport and Communication (MoTC)
Min. of Interior, Department of Disaster Prevention & Mitigation
Ministry of Interior, Department of Public Works, Rural and Country Planning
Ministry of Interior, Department of Local Administration

Institutions Vietnam
Vietnam National Mekong Committee
Ministry of Agriculture and Rural Development (MARD), DDMFSC
Ministry of Natural Resources and Environment (MoNRE)
Ministry of Industry (MoI) and EVN
Ministry of Transport (MoT)
Ministry of Construction (MoC)

APPENDIX 2 LIST OF INVITED INSTITUTES AND ACTUAL PARTICIPANTS

Participants, Bangkok, Thailand (8 and 9 May 2008)

Thanphong Bunyaratapan	Director Bureau of International Cooperation	
Pakawan Chufamanee	Director Mekong Affair Branch	pchufamanee@yahoo.com
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Ruangwit Ngaosusit	Senior Hydrologist	
Sombat Chirdchoothum	Senior Engineer	panu649@hotmail.com
Waraporn Kanchanapiboon	Administrative/ Financial Assistant	pukuws@csloxinfo.com
Somchai Tasingsa	Director of Watershed Resources Management Sub-Division	s_tasingsa@hotmail.com
Suwit Thanopanuwat	Senior Specialist Civil Engineer (Planning)	thanopanuwat@yahoo.com
Ubolratana Suntornratana	Fisheries Biologist	ubolratana@yahoo.com
Amnat Phonmart	Senior Civil Engineer	amnat702@yahoo.com
Ekawit Theeraporn	Deputy Directors-General	supina_sri@yahoo.com
Chaiyuth Jarupattananon	Hydro Power Survey and Land Division	chaiyuth.ja@egat.co.th
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Sotharat Insawang	Chief of Hydrometeorological Group	sorat_i@yahoo.com
Chaiyuth Sukhsri	Dept. of Water Resources Engineering	chaiyuth_s@chula.ac.th
Tien, TRUONG HONG	RFMMC: Regional Flood of Management and Mitigation Center	tien@mrcmekong.ort
BAKKER, Nicolaas	RFMMC: Regional Flood of Management and Mitigation Center	bakker@mrcmekong.org

Participants, Hanoi, Vietnam (12 and 13 May 2008)

Name	Organization	Email
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Participants, Phnom Penh, Cambodia (20 and 21 May 2008)

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APPENDIX 3 EVALUATION FORM

Bangkok

'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin'

Evaluation results Bangkok 7 and 8 May 2008

15 respondents

Theme and structure of the module

1 For my future career, I consider the training course to be:

	Very important	1
	Important	13
	A little important	1
	Not important	

2 The course included several subjects. Please rate them by order of importance for you.
(**1** = very important, **2** = important, **3** = a little important, **4** = not important)

		1	**2**	**3**	**4**
	Floods and flood issues in the LMB	3	11	1	
	Basic concepts of IFRM	5	10		
	Flood Risk Assessment	10	4	1	
	Environmental impacts of IFRM measures	2	8	5	
	Institutional aspects of IFRM	2	9	4	
	Flood Management Simulation Game	3	10	1	
	Total	**25**	**52**	**12**	**0**

3 The material covered in the module was:

	Mostly new for me	
	Partly new	12
	Presented little novelty	2
	Not new at all	1

4 The sequence of topics presented in the module was:

	Very Good	2
	Good	10
	Reasonable	3
	Poor	

5 The work intensity during the module was:

	Very high	
	High	9
	Moderate	6
	Low	

Quality

6 How do you rate the quality of the lecturer in presenting and explaining?

(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

	1	**2**	**3**	**4**	**5**
Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	2	11	2		
Douven (Environmental impacts of IFRM measures)		12	3		
Kerssens (Institutional aspects of IFRM)	1	13	1		
Total	**3**	**36**	**6**	**0**	**0**

7 How was the contact between the students and the lecturer?

(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

	1	**2**	**3**	**4**	**5**
Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	2	9	4		
Douven (Environmental impacts of IFRM measures)	1	12	2		
Kerssens (Institutional aspects of IFRM)	6	6	3		
Total	**9**	**27**	**9**	**0**	**0**

8 How do you rate the quality of the written material?

(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

	1	**2**	**3**	**4**	**5**
Floods and flood issues in the LMB (Unit 2)		8	6		
Basic concepts of IFRM (Unit 3)		7	7		
Flood Risk Assessment (Unit 4)	2	7	5		
Environmental impacts of IFRM measures (Unit 5)		6	9		
Institutional aspects of IFRM (Unit 6)		8	7		
Total	**2**	**36**	**34**	**0**	**0**

9 What is your opinion about the general quality of the course:

Very high	
High	11
Moderate	4
Low	
Very low	

Overall evaluation

The learning objectives for the participants were the following:

- Understand the potential role of IFRM in the LMB
- Explain the basic concepts of IFRM and its main approaches and methods
- Contribute to IFRM strategy development processes in LMB
- Reflect on the role the participant's organisation could play in implementing IFRM in LMB

10	In your opinion, did the course meet the above-mentioned learning objectives?	
	Yes	8
	Partly	7
	Not at all	

Any specific comments on the course:

- the role of MRC in institutional analysis should be more clearly elaborated
- I hope experts will bring back all good comments and suggestions
- the presentation is easily to understand but lack of hand-out distribution
- try to tune to countries interest/needs particularly regarding environment/institutional
- Should be spend more time for training
- add more training material
- Flood management simulation game is good understanding the flood protection control measure. The programme is edutainment
- should have best practices and bad practices

Hanoi

'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin'

Evaluation results Hanoi 12 and 13 May 2008

20 respondents

Theme and structure of the module

1 For my future career, I consider the training course to be:

	Very important	9
	Important	11
	A little important	
	Not important	

2 The course included several subjects. Please rate them by order of importance for you.
(**1** = very important, **2** = important, **3** = a little important, **4** = not important)

		1	**2**	**3**	**4**
	Floods and flood issues in the LMB	11	7	1	
	Basic concepts of IFRM	6	12	1	
	Flood Risk Assessment	9	11		
	Environmental impacts of IFRM measures	8	11	1	
	Institutional aspects of IFRM	6	13	1	
	Flood Management Simulation Game	7	8	3	1
	Total	**47**	**62**	**7**	**1**

3 The material covered in the module was:

	Mostly new for me	7
	Partly new	10
	Presented little novelty	2
	Not new at all	

4 The sequence of topics presented in the module was:

	Very Good	8
	Good	11
	Reasonable	
	Poor	

5 The work intensity during the module was:

	Very high	1
	High	13
	Moderate	5
	Low	

Quality

6	How do you rate the quality of the lecturer in presenting and explaining?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	10	9			
	Douven (Environmental impacts of IFRM measures)	10	9			
	Kerssens (Institutional aspects of IFRM)	11	8			
	Total	**31**	**26**	**0**	**0**	**0**

7	How was the contact between the students and the lecturer?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	9	10			
	Douven (Environmental impacts of IFRM measures)	10	9			
	Kerssens (Institutional aspects of IFRM)	10	9			
	Total	**29**	**28**	**0**	**0**	**0**

8	How do you rate the quality of the written material?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Floods and flood issues in the LMB (Unit 2)	8	10	1		
	Basic concepts of IFRM (Unit 3)	7	11	1		
	Flood Risk Assessment (Unit 4)	7	11	1		
	Environmental impacts of IFRM measures (Unit 5)	8	10	1		
	Institutional aspects of IFRM (Unit 6)	9	9	1		
	Total	**39**	**51**	**5**	**0**	**0**

9	What is your opinion about the general quality of the course:	
	Very high	5
	High	13
	Moderate	2
	Low	
	Very low	

Overall evaluation

The learning objectives for the participants were the following:

- Explain the basic concepts and elements of IFRM;
- Describe IFRM measures targeting reduction of flood hazards, flood vulnerability and damage reduction;
- Understand the need for an integral (including social and environmental) assessment of IFRM measures; and
- Understand the need for institutional integration and coordination to implement IFRM.

In your opinion, did the course meet the above-mentioned learning objectives?

Yes	19
Partly	1
Not at all	

Any specific comments on the course:

- The course should be help somewhere in Mekong delta, be more practical
- Time: the course should be conducted 3 days more for more exercises and games
- should have field visit if possible
- longer time for training: around 3-4 days
- English (Vietnamese) local language should be given to participants at least 2 weeks

Vientiane

'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin'

Evaluation results Vientiane 15 and 16 May 2008

20 respondents

Theme and structure of the module

1	For my future career, I consider the training course to be:	
	Very important	16
	Important	3
	A little important	1
	Not important	

2	The course included several subjects. Please rate them by order of importance for you. (**1** = very important, **2** = important, **3** = a little important, **4** = not important)				
		1	**2**	**3**	**4**
	Floods and flood issues in the LMB	13	4	1	
	Basic concepts of IFRM	7	10	1	
	Flood Risk Assessment	11	4	1	
	Environmental impacts of IFRM measures	8	9	1	
	Institutional aspects of IFRM	5	11	2	
	Flood Management Simulation Game	10	7	1	
	Total	**54**	**45**	**7**	**0**

3	The material covered in the module was:	
	Mostly new for me	11
	Partly new	9
	Presented little novelty	
	Not new at all	

4	The sequence of topics presented in the module was:	
	Very Good	13
	Good	6
	Reasonable	1
	Poor	

5	The work intensity during the module was:	
	Very high	9
	High	9
	Moderate	1
	Low	

Quality

6	How do you rate the quality of the lecturer in presenting and explaining?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	11	9			
	Douven (Environmental impacts of IFRM measures)	11	9			
	Kerssens (Institutional aspects of IFRM)	8	12			
	Total	**30**	**30**	**0**	**0**	**0**

7	How was the contact between the students and the lecturer?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	8	11	1		
	Douven (Environmental impacts of IFRM measures)	7	12	1		
	Kerssens (Institutional aspects of IFRM)	8	11	1		
	Total	**23**	**34**	**3**	**0**	**0**

8	How do you rate the quality of the written material?					
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)					
		1	**2**	**3**	**4**	**5**
	Floods and flood issues in the LMB (Unit 2)	7	13			
	Basic concepts of IFRM (Unit 3)	6	13	1		
	Flood Risk Assessment (Unit 4)	9	11			
	Environmental impacts of IFRM measures (Unit 5)	5	14	1		
	Institutional aspects of IFRM (Unit 6)	6	13	1		
	Total	**33**	**64**	**3**	**0**	**0**

9	What is your opinion about the general quality of the course:	
	Very high	7
	High	13
	Moderate	
	Low	
	Very low	

Overall evaluation	
The learning objectives for the participants were the following:	
- Explain the basic concepts and elements of IFRM;	
- Describe IFRM measures targeting reduction of flood hazards, flood vulnerability and damage reduction;	
- Understand the need for an integral (including social and environmental) assessment of IFRM measures; and	
- Understand the need for institutional integration and coordination to implement IFRM.	
In your opinion, did the course meet the above-mentioned learning objectives?	
Yes	16
Partly	4
Not at all	
Any specific comments on the course:	
- If possible for the next course should be take more time (days) to train participants more clearly with topics	
- Each topic should be given example/ case study of the country as well	
- more training on the use of tools of the flood management	
- more examples from the region	
- if you have more experience in law cases, need to provide more	
- take some examples in Lao P.D.R. to make in game, would be useful	
- the course must be longer	
- material and sample pictures have to be clearly	
- training course is too short	
- good chance for me to participate on this training course, that is important point to improve any duty to modify your experience into my field activity in the future plan and suitable to solve actually problem happened in my home country	
- more examples to analyze flood risk assessment curve in terms of non-structure measures	

Phnom Penh

'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin'

Evaluation results Phnom Penh, 19 and 20 May 2008

17 respondents but in 6 forms the second page was missing (not copied),
and in 3 cases page 2 (Questions 6, 7, and 8) were not filled in

Theme and structure of the module

1 For my future career, I consider the training course to be:

Very important	9
Important	8
A little important	
Not important	

2 The course included several subjects. Please rate them by order of importance for you.
(**1** = very important, **2** = important, **3** = a little important, **4** = not important)

		1	**2**	**3**	**4**
Floods and flood issues in the LMB	1 missing	8	5	3	
Basic concepts of IFRM		4	11	2	
Flood Risk Assessment	2 missing	6	8	0	1
Environmental impacts of IFRM measures		8	8	1	
Institutional aspects of IFRM		2	11	1	3
Flood Management Simulation Game		11	5	1	
Total		**39**	**48**	**8**	**4**

3 The material covered in the module was:

Mostly new for me	5
Partly new	12
Presented little novelty	
Not new at all	

4 The sequence of topics presented in the module was:

Very Good	2
Good	8
Reasonable	1
Poor	
	6 missing

5 The work intensity during the module was:

Very high	2
High	7
Moderate	1
Low	
	6 missing, one empty

Quality

6	How do you rate the quality of the lecturer in presenting and explaining?						
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)						
			1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	6 missing, 3 empty	4	4			
	Vis (Environmental impacts of IFRM measures)	6 missing, 3 empty	3	4	1		
	Kerssens (Institutional aspects of IFRM)	6 missing, 3 empty	3	5			
	Total		**10**	**13**	**1**	**0**	**0**

7	How was the contact between the students and the lecturer?						
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)						
			1	**2**	**3**	**4**	**5**
	Sutmuller (Floods and flood issues in the LMB, Basic concepts of IFRM, Flood Risk Assessment)	6 missing, 3 empty	1	7			
	Vis (Environmental impacts of IFRM measures)	6 missing, 3 empty		6	2		
	Kerssens (Institutional aspects of IFRM)	6 missing, 3 empty	2	6			
	Total		**3**	**19**	**2**	**0**	**0**

8	How do you rate the quality of the written material?						
	(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)						
			1	**2**	**3**	**4**	**5**
	Floods and flood issues in the LMB (Unit 2)	6 missing, 3 empty	4	4			
	Basic concepts of IFRM (Unit 3)	6 missing, 3 empty	1	7			
	Flood Risk Assessment (Unit 4)	6 missing, 3 empty	2	6			
	Environmental impacts of IFRM measures (Unit 5)	6 missing, 3 empty	2	5	1		
	Institutional aspects of IFRM (Unit 6)	6 missing, 3 empty	2	5	1		
	Total		**11**	**27**	**2**	**0**	**0**

9	What is your opinion about the general quality of the course:		
	Very high	1	
	High	11	
	Moderate	4	
	Low	1	
	Very low		

Overall evaluation

The learning objectives for the participants were the following:

- Explain the basic concepts and elements of IFRM;
- Describe IFRM measures targeting reduction of flood hazards, flood vulnerability and damage reduction;
- Understand the need for an integral (including social and environmental) assessment of IFRM measures; and
- Understand the need for institutional integration and coordination to implement IFRM.

In your opinion, did the course meet the above-mentioned learning objectives?

Yes	10
Partly	7
Not at all	

Any specific comments on the course: (literally copied from the forms…)

- the training course should be more longer
- Introduction of the course is a lot but time is too short. More practical examples
- If this kind of training course will happen again we should extend the duration more, it is possible
- the course should be longer so that the discussion and explanation will be broadly understood
- no
- I think that the time for training, it should be extent or more longer and add more simulation game
- I asked for explain slowly. (now it too fast)!!
- we need for long term (half month or one week to learn)
- thank you
- I hope that we should have another training course on Flood Modelling
- this workshop makes me know widely about Introduction Flood risk Integrated with planning Lower Mekong basin, and its importance of Mekong river, and its + and - impact of Flood
- Second time I want this workshop again, it is very importance

CHAPTER 3

TRAINING MAY 2009:

BEST PRACTISE GUIDELINES FOR FLOOD RISK ASSESSMENT IN THE LOWER MEKONG BASIN

3 TRAINING MAY 2009: BEST PRACTISE GUIDELINES FOR FLOOD RISK ASSESSMENT IN THE LOWER MEKONG BASIN

3.1 Context and objectives

3.1.1 Context

Floods are a recurrent phenomenon in the Mekong basin that brings yearly risks and damages, as well as benefits in terms of e.g. fish habitat and nutrients. The challenge for the Lower Mekong Countries is to reduce risks and damages, while sustaining the benefits. Component 2 of the Flood Management and Mitigation Programme (FMMP) defines Integrated Flood Risk Management (IFRM) as applying the most attractive mix of all possible measures, hard and soft, for the reduction of flood damage risks. In the preparation of these concrete measures a stepwise approach should be followed that will lead to a socio-economic and environmentally sound flood risk management. This approach is put down in guidelines for sustainable flood risk management in the region.

In the context of the Component 2 activities and guidelines the following training courses are realised/ planned:

- National Courses 'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin' (8-20 may 2008);
- Regional Course on Best Practice Guidelines for Flood Risk Assessment (FRA; 27 April – 1 May 2009);
- Bi-National courses on Best practice guidelines for integrated flood risk management and impact evaluation: in Phnom Penh 2-5 June for Cambodia and Vietnam, and 8 – 11 June in Bangkok for Thailand and Lao PDR;
- Bi-National courses on Best practice guidelines for structural measure and flood proofing: in HCMC for Cambodia and Vietnam, and Vientiane for Thailand and Lao PDR, dates to be determined, likely in August;

This document reports the findings for the second training course on the use of the Best Practice Guidelines for Flood Risk Assessment (FRA).

3.1.2 Objectives and focus

The stage 2 implementation calls for the execution of the training course on Flood Risk Assessment (FRA). The course focuses on the use of the Best Practice Guidelines for FRA.

The FRA training course aims at increasing flood risk assessment capacity in the Lower Mekong Basin, covering the methodologies for hydrological and flood hazard assessments, vulnerability and damage assessment, flood risk assessment and mapping, and (limitedly) the evaluation of the impacts of flood risk management measures.

At the end of the training course the participants are supposed to be able to:
- Understand the BPG for FRA;
- Contribute to the development process of the BPG for FRA in the Lower Mekong Basin;
- Explain the concepts on FRA, its main approaches and methods; and
- Apply the appropriate FRA methodologies (by using the BPGs) in their country.

The structure of the training course is based on the outline of the flood risk assessment process as given by figure 1.

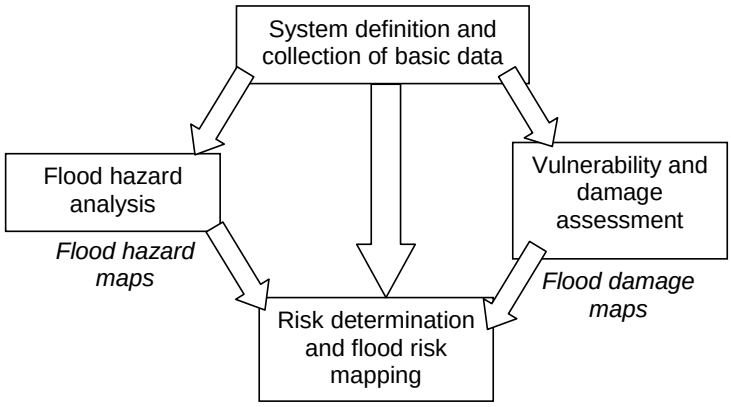


Figure 1 General scheme for flood risk assessment

The training course covered the following topics:

- Introduction to flood risk assessment
- Flood hazard analysis:
  - Identification of meteorological and hydrological hazards
  - Flood frequency and probabilistic analysis
  - Hydraulic analysis of flooding and creation of flood hazard maps
- Vulnerability and damage assessment and flood damage mapping
- Flood risk assessment and mapping

Based on the experiences from and feedback received during the training the BPG for FRA were updated after the training course.

3.1.3 Target group and users

The training course is intended for the direct users of BPG of FRA, particularly the technical professionals and senior engineering staff from the National Mekong Committees (Thailand, Lao PDR, Cambodia and Viet Nam), line agencies, institutes and/or universities. In addition, the course is relevant for policy makers, basin planners, practitioners involved in flood risk management related projects and those active in dialogues regarding transboundary impacts of projects.

In the course it was explained how to apply the guidelines for flood risk assessment. The audience (the participants) are professionals and technical staff who are supposed to train their staff, i.e. *"train the trainers".* Appendix 1 gives further information on objectives as well as competencies targeted by the training course.

3.2 Course development and implementation

3.2.1 Course development

Design of the training on Flood Risk Assessment

Following the general objectives of the training (see Section 3.1.2) a course design was chosen including both the theoretical and practical aspects of flood risk assessment. The course programme covered presentation sessions in the morning and exercises in the afternoon. Course materials were made available through internet (I-Learning) and hand-outs of the presentations and exercises were given each day.

The presentations in the morning covered FRA topics to provide a methodological background. These presentations illustrated how the theoretical concepts could be applied to the case study areas in the LMB. Results of stage 1 of FMMP-C2 were presented to bridge theory and practice.

The exercises in the afternoon were related to the theory of the morning. The questions to be answered by the participants covered different aspects of the presented theory. The exercises did not only focus on (quantitative) analysis skills, but also included broader questions on the more general application of the theory in flood risk management.

It was chosen to work in country groups. This enabled effective discussion and exchange between participants of different organizations. Cross-country groups were also considered, but in particular the language barriers would prevent effective communication.

A field visit was included on the first day (afternoon) that was intended to show the issues in the field and to provide an opportunity for informal interaction.

A special exercise was included for the final day of the training. The objective of this exercise for the country groups was to demonstrate their knowledge of the FRA process. They had to develop a FRA approach and action plan based on (fictive) cases for a region or location in their country. With this exercise they developed the skills for applying the FRA in their own country.

Organization and programme of the training course

The course was given and organised given by the following team (see also the presence list in Appendix 2):

Name	**Organization**	**Role**
Gert Sluimer Msc	Royal Haskoning	Team leader FMMP-C2
Bas Jonkman PhD	Royal Haskoning & TU Delft	Specialist flood risk assessment & training facilitator
Ferdinand Diermanse PhD	Deltares	Specialist flood hazard
Frank Keukelaar Msc	Royal Haskoning	Specialist data analysis and mapping
Tran Kim Thanh PhD	Vinamekong	Specialist flood damage assessment
Truong Tuan Duy Msc	Royal Haskoning	Course organization and I-learning
Sineth Heav	Royal Haskoning	Course organization and support

Training course schedule:

Day 1: Opening and introduction: overview of the best practice guidelines of flood risk assessment (BPG FRA) and field visit

08:30 - 09:00	Registration	
09:00 – 09:10	Opening Speech	MRC FMMP management
09:10 – 09:40	Introduction of trainers and participants, Introduction of training course and overview of training programme	Gert Sluimer
09:40 – 10:30	Flood Risk Assessment (FRA) concepts: ▪ Flood Risk Management in the Netherlands	Bas Jonkman
10:30 – 10:45	*Break*	
10:45 – 11:30	Flood risk assessment (FRA) concepts: • Film Netherlands Delta Committee • Introduction of Best Practice Guidelines on Flood risk Assessment in the Lower Mekong Basin, main steps to be carried out in implementation of FRA and definition of terminologies	Bas Jonkman
10:30 – 11:40	Introduction on Field Visit	Gert Sluimer
Lunch		
12.30 – 18.00	Field visit, flood plains in Takeo Province	All

Day 2: Flood hazard assessment

08.30 – 10:00	System definition and basic data collection ▪ Types of flooding in LMB ▪ Scale and scope of analysis ▪ Hydrological flood hazard	Ferdinand Diermanse
10.00 – 10:30	*Break*	
10:30 - 12:00	Hydraulic analysis of floods Flood frequency analysis	Ferdinand Diermanse (Tes Sopharit)
Lunch		
13:30 – 14:45	Exercise on flood hazard analysis	All
14.45 – 15.00	*Break*	
15:00 – 16:30	Exercise on flood hazard analysis (continued)	All
16.30 – 17.00	Q/A, Reflection and wrap-up	Bas Jonkman

Day 3: Flood damage assessment

08:30 - 10:00	Approaches to flood damage assessment, ▪ Approaches to estimation of direct economic damage ▪ Approaches to estimation of loss of life	Bas Jonkman
10.00 – 10:30	*Break*	
10:30 - 12:00	Flood Damage Assessment ▪ Classification of damage types ▪ Socio-economic surveys ▪ Damage curves	Tran Kim Thanh
Lunch		
13:30 – 14:30	Exercise on flood damage assessment	All
14.30 – 15.00	*Break*	
15:00 – 16:30	Exercise on flood damage assessment (continued)	All
16.30 – 17.00	Q/A, Reflection and wrap-up	Bas Jonkman

Day 4: Flood risk assessment

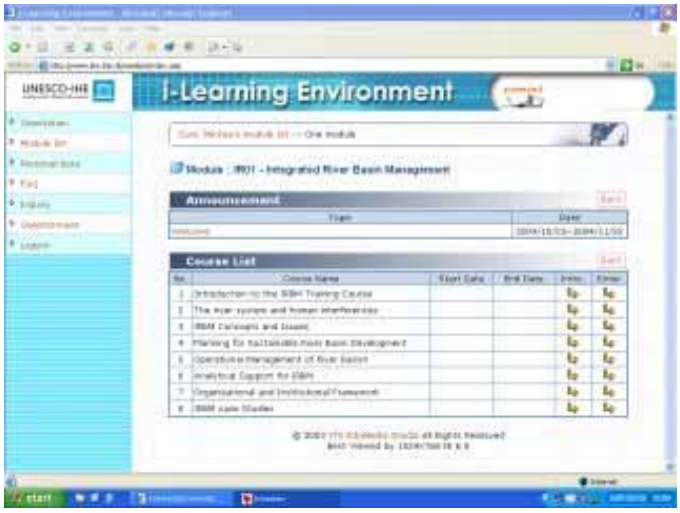
08:30 - 10:00	Conceptual approach for determination of flood risks ▪ Flood damage probability curves ▪ Total annual flood risk	Bas Jonkman
10.00 - 10:30	*Break*	
10:30 – 12.00	Creation of flood harzard, damage and risk maps	Frank Keukelaar
Lunch		
13:30 – 14:30	Exercise on flood mapping	All
14.30 – 15.00	*Break*	
15:00 – 16:30	Exercise on flood risk assessment	All
16:30 – 17:00	Q/A, Reflection and wrap-up	Bas Jonkman
19.00 – 21:00	Diner reception	

Day 5: Country specific exercises, wrap-up and closing

08:30 – 08.45	Instructions to Teams for preparing an FRA approach for a specific flood prone area in their country (four areas), by applying the BPG FRA	Gert Sluimer
08.45 – 11:30	*Teams prepare the stepwise FRA approach for a given flood prone area in their country, and prepare a short powerpoint presentation*	Trainers available for assistance
11:30 – 12.15	Presentations by the country teams to a "ad-hoc Flood Protection Committee".	Panel of trainers
12:15 – 12:30	Training course evaluation (form)	Truong Tuan Duy
12:30 - 13:00	Closure and course certificates	Gert Sluimer and Bas Jonkman
13:00 – 14:00	*Lunch*	

Use of I-Learning Environment

All the training material was stored on the UNESCO-IHE I-Learning Environment. This web-based environment gives participants access to training material and outcomes of the training, to share background docs and to interact also with the trainers. Before the start of the course participants received a login and password and explanation on how to use the platform. The I-Learning Environment can be accesses and used before, during and (limitedly) after the course.



During the course documents were updated when necessary. Also the results of the exercises and case studies were made available after the exercise on the I-learning environment.

3.2.2 Course implementation

In general, the course was implemented and completed as designed (see previous section). Below some particulars on the course implementation and execution are treated.

Course location and dates
The Regional Training Course was given in the Regional Flood Management and Mitigation Centre in Phnom Penh between April 27 and May 1. A conference room, which can accommodate 30 participants, was used for both the presentations and exercises.

Course announcement and registration
The relevant national institutes (see Appendix 2) were approached to propose seven suitable candidates for the training. Main requirements were sufficient English language skills and currently or in the near future working in the field of flood risk management. Based on the proposed candidates a final list was established (see also Section 3.3.1). The first morning of the training (27 April) all participants were registered.

Course preparation
Course materials were prepared by training staff and made available in the week before the course through the I-Learning environment.

Course programme
The course programme was completed as designed.

During the exercises in the afternoon a flexible schedule was used. The intended results of the exercises were presented by the trainers when all participants were finished and the results were discussed with the group.

FMMP management could unfortunately not attend the closing session on Friday May 1 due to the national holidays.

Course evaluation
On the final day participants were given an evaluation form and this was completed by all the (present) participants.

Important observations and lessons learned from the course, as well as suggestions for upcoming courses are included in Section 3.5.

3.3 Course participants

3.3.1 Target organisations and participants

The Consultant sent the four NMCs the list of proposed participating institutions (line agencies, institutes, education centers, etc.) together with the selection criteria (level of English, training relevancy for job) for the participants. The NMCs made a selection based on provided criteria and send the list of proposed participants to the Consultant for review. The final selection of the training course participants (about seven for each country) was then finalized in consultation with the MRC and countries' NMCs.

The target organisations are those who need capacity in the FRA knowledge areas, including flood hazard, vulnerability, risk and damage assessment methods, social and economic impacts of flood risk management measures. The target organisations of the training course were:

- **Line agencies** working at national levels in the identified knowledge areas;
- **NMC's** and in particular coordinators who are responsible for MRC programmes that address flood related matters (FMMP);
- **Educational centers** working in the identified knowledge area;
- Staff of **MRCS** programmes working in the above-mentioned MRC programmes.

Appendix 2 gives for each country the list of institutions that were proposed to participate in this training course.

Within the above-mentioned organisations the training on Flood Risk Assessment targeted technical professionals that needed upgrading on FRA knowledge and skills, as well as those who use the guidelines on FRA.

Criteria for selection of participants included:

- Participants are from the above-identified target groups of the FRA Training;
- The training fits in the career development path of the participants; hence they either work in the related flood risk assessment knowledge area at professional level (and stay involved) or will be involved in the near future;
- Participants have an academic background;
- Participants have sufficient English language skills.

3.3.2 Participants present at the course

In total 28 professionals participated in the course. By country, participation was as follows:

- Cambodia: 8 people from 6 institutes;
- Lao PDR: 7 people from 6 institutes;
- Thailand: 7 people from 2 institutes;
- Vietnam: 7 people from 3 institutes.

Details on the participants, their position, their employer, and their presence during the 5 days of training is presented in Appendix 2.

3.4 Course evaluation

3.4.1 Evaluation by participants

This section presents the aggregated results of the individual evaluations. The evaluation form is included in Appendix 3.

Theme and structure of the module

1. For my future career, I consider the training course to be:

Very important	13
Important	12
A little important	
Not important	

2. The course included several subjects. Please rate them by order of importance for you.

   (**1** = very important, **2** = important, **3** = a little important, **4** = not important)

	1	**2**	**3**	**4**
Basic concepts of FRA	12	12	2	
Flood hazard assessment	11	13	1	
Flood damage assessment	13	12		
Flood risk assessment	15	10		
Creation of flood map	12	10	3	
Exercises of case study	13	9	2	
Total	**76**	**66**	**8**	**0**

3. The material covered in the module was:

Mostly new for me	5
Partly new	16
Presented little novelty	3
Not new at all	1

4. The sequence of topics presented in the module was:

Very Good	9
Good	15
Reasonable	1
Poor	

5. The work intensity during the module was:

Very high	3
High	17
Moderate	4
Low	1

Quality

6. How do you rate the quality of the lecturer in presenting and explaining?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	2	3	4	5
Gert Sluimer (Introduction and demonstration for understanding FRA process	8	16			
Bas Jonkman (Basic FRA concepts Approaches to FDA and determination of flood risks	10	15			
Ferdinand Diermanse (Data collection, hydraulic modelling & frequencies analysis)	10	14	1		
Frank Keukelaar (creation of flood risk map)	6	16	3		
Tran Kim Thanh (Classification of damage types, socio-economic survey & damage curves)	9	15	2		
Total	**43**	**76**	**6**	**0**	**0**

7. How was the contact between the students and the lecturer?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	2	3	4	5
Gert Sluimer (Introduction and demonstration for understanding FRA process	8	17			
Bas Jonkman (Basic FRA concepts Approaches to FDA and determination of flood risks	11	15			
Ferdinand Diermanse (Data collection, hydraulic modelling & frequencies analysis)	9	15	1		
Frank Keukelaar (creation of flood risk map)	9	14	1		
Tran Kim Thanh (Classification of damage types, socio-economic survey & damage curves)	8	17			
Total	**45**	**78**	**2**	**0**	**0**

8. How do you rate the quality of the written material?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	2	3	4	5
Basic concepts of FRA (Day 1)	11	14			
System definition and data collection (Day 2)	10	15			
Hydraulic modelling and frequencies analysis (Day 2)	9	15			
Approaches to estimation of direct economic damages and loss of life (Day 3)	9	15	1		
Classification of damage types, socio-economic survey, damage curves (Day 3)	8	17	1		
Approaches for determination of flood risks (Day 4)	9	16			
Creation of flood risk map (Day 4)	7	17	1		
Total	**63**	**109**	**3**	**0**	**0**

9. What is your opinion about the general quality of the course:

Very high	6
High	15
Moderate	3
Low	1
Very low	
Total	**25**

Overall evaluation

The learning objectives for the participants were the following:

- Explain the basic concepts on FRA and its main approach and methodology;
- Describe main steps and the sequence on how to carry out main steps during the FRA process;
- Understand the Best Practice Guideline for FRA; and
- Apply the proper FRA approach for specific flood prone area in the country.

10. In your opinion, did the course meet the above-mentioned learning objectives?

Yes	17
Partly	8
Not at all	

Any specific comments on the course

- Time: for presentation on "Creation of flood risk map" should be longer with more practical (software).
- Per diem of participants are very low, not meet MRC standard and should be higher. Full MRC DSA rate shall be applied for next training course.
- It is proposed to include the topic on application of GIS and modelling for data analysis to allow the participants getting better understanding on how to estimate the damage cost of risk assessment.
- Duration of the course is quite long and covers the national holiday.
- The accommodation conditions are low, should be higher.
- All documents, data, information materials and case study (softcopies) related to BPG should be provided to participants.
- Additional methods and including software, practical training module should be provided.
- The field trip should not be carried out at the beginning of the course.
- It is proposed to repeat this course.

3.4.2 Evaluation by trainers

- General: good attendance and interest. Participants were always present before the official starting times.
- During the lectures it is difficult to get interaction and questions.
- Many questions (after the presentations) were country-specific.
- There was a very active participation in the exercises (some groups had to be forced to take their break).
- Exercises connecting the theory with practical experience from Stage 1 appeared to be very useful. Recognizable examples were available and the theory is connected to the practice.
- Trainers should pay attention to mixed use of terminology for the same thing (e.g. *risk* and *expected economic damage*). This can lead to confusion.
- Differences in levels in English and background knowledge existed and became specifically apparent during exercises.

- Some participants expect that the training would exactly tell them how to do flood risk assessment in their country. However, the training provided the general approach and steps and does not prescribe exactly which models to use for a specific region.
- The training emphasized the need of working in multi-disciplinary teams in flood risk assessments. Combined knowledge of hydrology, hydraulics, economic aspects and GIS is needed.

See Section 3.5 for a more elaborated overview of lessons learned and suggestions for the upcoming training courses.

3.5 Lessons learned and suggestions

Selection of participants

- A flood risk assessment is a multi-disciplinary activity that involves disciplines as hydrology, hydraulics, economics, GIS etc. Preferably the participants are selected in such a way that the different aspects of the FRA process are covered. The same holds for other aspects of flood risk management, such as basin planning, environmental impact assessment etc.
- There were differences in the knowledge levels between the different country groups. This became clear during the exercises with some groups being faster than others and with better outcomes. It is suggested to take this into account in the preparation of the exercises (see below).

Training materials

- Prepare supporting training materials (guidelines etc.) one or several weeks in advance. This will give participants the chance to read and study the materials beforehand.
- During the final day the participants were given (hypothetical) case studies/ exercises that focused on their country. The aim was that they would come up with a stepwise approach/ action plan for their case. For most of the groups it proved somewhat difficult to transfer the general knowledge of flood risk assessment to the specific situation. One option could be to ask the participants to prepare some general information on their case study beforehand.

Course duration

- The course lasted for five days, which is rather long. However, given the extensive amount of theory treated and the time needed for the exercises a full week was needed. For a “theory-only” course a shorter duration is recommended.

Course design

- The combination of presentations (morning) and exercises (afternoon) was very successful and well received. The aim was to combine theory and practice for the LMB region in both presentations and exercises. It is recommended to follow this structure in all FMMP-C2 courses. One of the success factors was that experiences/ results from earlier stages of the FMMP-C2 project could be included in the presentations and case studies.
- Some of the participants mentioned that they had expected to get an overview of exact models to apply for FRA’s for their country. It has to be made clear that is not the objective of the training course, but the role of the participants themselves. The country specific development of FRA models and tools for specific countries has to be done by participants in cooperation with local stakeholders.

Case studies and exercises

- Differences were observed between teams in the time that was needed to complete the exercises. It is suggested to prepare additional questions/ exercises for the faster groups.
- Selecting one case study area means that some of the characteristics (type of flooding, land use) are specific for the local situation and not necessarily representative for other regions. Although this is not a major problem it is suggested to address differences between situations in LMB countries in the case studies.

Field trip

- Although the field trip provided an interesting and relevant opportunity to see the situation in the field and to have informal exchange between participants it is suggested to prepare a next field visit in such a way that the FRA related aspects and local situation get more attention. This can also be done by preparing a short presentation on relevance regarding the visited area and provide this information before departure.

Course evaluation

- The course evaluation is (very) positive, reflecting the overall positive interaction during the course. The critical comments mainly focus on practical/ logistical issues (DSA, hotel, holidays). It is suggested to design the evaluation form in such a way that people are "forced" to give at least one or two critical recommendations for improvement of the contents of the course. Another option is to make room in the programme for a discussion session.

Practical/ logistical

- Select dates for course such that national holidays are minimally included (in this case all the participating countries had national holidays during the training week).
- Though financial arrangements (DSA) were made very clear before the course, and in accordance with MRCS regulations, the DSA was a frequent subject of discussion. NMC FMMP coordinators have to better explain the arrangement to the participants. This will prevent different expectations of participants and unnecessary discussion with the organizers during the course.

APPENDIX 1 DESCRIPTION OF TRAINING COURSE

Training Course	**Best Practice Guidelines for Flood Risk Assessment**
Description	A short course on BPG for Flood Risk Assessment and Evaluation of Impacts of Flood Risk Management Measures. It is Regional Training Course.
Period	April-May 2009
Duration (study load)	Five days (40 hours)
Target group	Professionals and Technical managers level MRC, line agencies, institutes, and universities. List of proposed participating institutions is given in Appendix 2.
Learning objectives	- Understand the BPG for Flood Risk Assessment (FRA); - Explain the concepts on FRA and its main approaches and methods; - Contribute to FRA guidelines development process; - Apply the proper FRA methodologies in the preparation of demonstration projects.
Modalities	Lectures, parallel sessions with exercises on use of guidelines for (international) case study, group discussions.
Subjects	- Meteorological and hydrological hazard; - Hydraulic analysis of flooding and flood hazard maps; - Approaches for vulnerability and damage assessment and flood damage maps; - Creation of flood risk mapping; - Flood risk assessment; - Use BPG for FRA; - Parallel sessions for exercises on use of guidelines to evaluate the impacts of flood risk management measures; - Site visit to West Bassac demonstration project.
Main competencies targeted	Professional knowledge: - Floods and flood risks, hydrological and hydraulic analysis, flood damage assessment and risk mapping; - Flood risk assessment. Skills and attitudes: - Knowledge application and dissemination; - Sufficient English language skills.
Development/ facilitation of training course	Gert Sluimer, TL/Senior Flood Management Specialist; Wim Douven, Senior Training Specialist; Bas Jonkman, Flood Risk Management Specialist; Truong Tuan Duy, National Training Specialist.

APPENDIX 2 LIST OF INVITED INSTITUTES AND ACTUAL PARTICIPANTS

Invited institutes:

Participants from LAs Vietnam	# of participants
- VNMC	1
- MARD (Dept. Of Dyke Management and Flood Control)	1
- Institute of Water Resources Planning in Hanoi	1
- Southern Institute of Water Resources in HCMC	1
- Southern Hydro-Meteo Station	1
- Sub-National Institute of Agriculture Planning and Projection	1
- MONRE (Dept. Of Water Resources Management)	1

Participants from LAs Thailand	
- TNMC	0
- Dept. Of Water Resources, MONRE	4
- Dept. of Disaster Prevention & Mitigation	3
- Minsitry of Agriculture and Cooperatives	0
- Hydro-Meteorological Dept.	0

Participants from LAs Laos	
- LNMC	1
- National Disaster Management Office	1
- Dept. Of Hydrologist and Meteorologist	1
- Water Resources and Environment Admistration	1
- Ministry of Agriculture and Forestry	2
- Dept. of Water Resources	1

Participants from LAs Cambodia	
- CNMC	2
- Ministry of Water Resources and Meteorology (MWRM)	1
- National Committee on Disaster Management	1
- Ministry of Land Management & Urban Planning & Construction	1
- Dpet. Of Hydrology and River Works	1
- Ministry of Agriculture, Forestry and Fisheries	1
- Ministry of Transport and Public Works	1

Participants from MRC	
- MRC/FMMP	2
- Regional FMM Center	
- Others	

Participants from Consultants (Trainers)	7
Total participants	38

Actual participants:

LIST OF PARTICIPANTS
Regional Training on BPG for FRA
From: April 27 to May 1, 2009
Venue: RFMMC, in Phnom Penh, Cambodia
Date: 27 April, 2009

No.	Names	Title	Agencies	Email address	Signature
A	**MRC-FMMP Management**				
1	Ms. Pham Thi Van Lan	Manager C2 & C3	MRC-FMMP	lan@mrcmekong.org	
2	Mr. Nico Bakke	Chief Technical Adviser	MRC-FMMP	bakker@mrcmekong.org	
B	**FMMP-C2 Consultants**				
3	Gert Sluimer	Consultant Team Leader	Royal Haskoning		
4	Frank Keukelaar	GIS & RS Specialist	Royal Haskoning		
5	Bas Jonkman	Advisor Flood Risk Magn't	Royal Haskoning		
6	Ferdinand Diermanse	Senior Consultant	Deltares		
7	Truong Tuan Duy	National Training Specialist	Royal Haskoning		
8	Tran Kim Thanh	Senior Economist	Royal Haskoning		
9	Tran Duc Dong	Hydraulic Modeller	Royal Haskoning		
A	**Laos participants**				
10	Mr. Khammai Vongsathiene	CIDDD	MOAF	Khammaivong@yahoo.com	
11	Mr. Dethkhamhane Inthisone	Deputy Head of LUPD	MOAF	INTHLSONE@Yahoo.com	
12	Ms. Soytavanh Mienmany	Technical Official	WREI	Soytavanhm@wrea.gov.la	
13	Mr. Khanmany Khounphonh	Head of Admin Division	DMH		
14	Ms. Vilaykham Lathsaath	Technical Official	NDMO	Noy_Lsa@Yahoo.com	
15	Ms.Sonephet Phosalath	DHWRMD	DWR		
16	Mr. Thongthip Chandalasane	Technical Official	LNMC	thongthip@lnmc.gov.la	

B	**Thailand participants**				
17	Mr. Burachat Buasuwan	National FMMP Coordinator	DWR	burachatster@gmail.com	
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21	Ms. Siriluksana Duangkeo	Chief, RDSB	DDPM	[illegible]	
22	Mr. Paitoon Naktae	Senior Pro. Civil Engineer	DDPM	paitoon-bk@yahoo.co.th	
23	Ms. Warisatha Janchoowong	Professional Scientist	DDPM	warisatha@hotmail.com	
C	**Cambodian participants**				
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29	Mr. Chhan Socheat		MLMUPC		
30	Ms Pot Paov		DHRW	tongseng999@yahoo.com	
31	Mr. Mak Visal		MAFF		
D	**Vietnam participants**				
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34	Mr. Dang Thanh Lam	Head of Division	SIWRP, MARD	dangthanhlamvn@yahoo.com	
35	Mr. To Quang Toan	Deputy Head of Division	SIWRR, MARD	Toan_siwrr@yahoo.com	
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38	Mr. Vu Minh Thien	Programme Officer	VNMC	vumthien@gmail.com	

LIST OF PARTICIPANTS
Regional Training on BPG for FRA
From: April 27 to May 1, 2009
Venue: RFMMC, in Phnom Penh, Cambodia
Date: 28 April, 2009

No.	Names	Title	Agencies	Email address	Signature
A	**MRC-FMMP Management**				
1	Ms. Pham Thi Van Lan	Manager C2 & C3	MRC-FMMP	lan@mrcmekong.org	
2	Mr. Nico Bakke	Chief Technical Adviser	MRC-FMMP	bakker@mrcmekong.org	
3	Mr. Khim Vandy	Secretary C2 x C3	MRC-FMMP	vandy.khim@mrcmekong.org	
B	**FMMP-C2 Consultants**				
3	Gert Sluimer	Consultant Team Leader	Royal Haskoning		
4	Frank Keukelaar	GIS & RS Specialist	Royal Haskoning		
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6	Ferdinand Diermanse	Senior Consultant	Deltares		
7	Truong Tuan Duy	National Training Specialist	Royal Haskoning		
8	Tran Kim Thanh	Senior Economist	Royal Haskoning		
9	Tran Duc Dong	Hydraulic Modeller	Royal Haskoning		
A	**Laos participants**				
10	Mr. Khammai Vongsathiene	CIDDD	MOAF	std159@hotmail.com or khammaivst@yahoo.com	
11	Mr. Dethkhamhane Inthisone	Deputy Head of LUPD	NLMA MOAF	INTHISONE1970@yahoo.com	
12	Ms. Soytavanh Mienmany	Technical Official	WREI	Soytavanh@yahoo.com	
13	Mr. Khanmany Khounphonh	Head of Admin Division	DMH	dmhotc@etllao.com	
14	Ms. Vilaykham Lathsaath	Technical Official	NDMO	Ndy_lsa@yahoo.com	
15	Ms.Sonephet Phosalath	DHWRMD	DWR		
16	Mr. Thongthip Chandalasane	Technical Official	LNMC	thongthipc@lnmc.gov.la	

B	**Thailand participants**				
17	Mr. Burachat Buasuwan	National FMMP Coordinator	DWR	burachatster@gmail.com	
18	Mr. Kunpote Buatone	Engineer	DWR	khunphot@gmail.com	
19	Mr. Winai Wangpimool	Civil Engineer	DWR	wangpimool@hotmail.com	
20	Mr. Buspakorn Khantithirakawee	Civil Engineer	DWR	buspakorn@hotmail.com	buspakorn
21	Ms. Siriluksana Duangkeo	Chief, RDSB	DDPM		
22	Mr. Paitoon Naktae	Senior Pro. Civil Engineer	DDPM	paitoon_bke@yahoo.co.th	
23	Ms. Warisatha Janchoowong	Professional Scientist	DDPM	warisatha@hotmail.com	
C	**Cambodian participants**				
24	Mr. Sok Bun Heng		CNMC-NFU		
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29	Mr. Chhan Socheat		MLMUPC		
30	Ms. Pot Paov PEOU		DHRW	tongseng999@yahoo.com	
31	Mr. Mak Visal		MAFF		
D	**Vietnam participants**				
32	Mr. Doan Thanh Chung	Senior Officer	DDMSC, MARD		
33	Dr. Le Minh Nhat	Disaster Management Spec.	DDMFSC, MARD		
34	Mr. Dang Thanh Lam	Head of Division	SIWRP, MARD	dangthanhlamvn@yahoo.com	
35	Mr. To Quang Toan	Deputy Head of Division	SIWRR, MARD		
36	Dr. Le Thi Viet Hoa	Deputy Head of Division	DWRM, MONRE		
37	Ms. Nguyen Thi Xuan Hong	Programme Officer	VNMC	nguyenthixuanhong70@yahoo.com	
38	Mr. Vu Minh Thien	Programme Officer	VNMC	vumthien@gmail.com	

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From: April 27 to May 1, 2009
Venue: RFMMC, in Phnom Penh, Cambodia
Date: 29 April, 2009

No.	Names	Title	Agencies	Email address	Signature
A	**MRC-FMMP Management**				
1	Ms. Pham Thi Van Lan	Manager C2 & C3	MRC-FMMP	lan@mrcmekong.org	
2	Mr. Nico Bakker	Chief Technical Adviser	MRC-FMMP	bakker@mrcmekong.org	
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20	Mr. Buspakorn Khantithirakawee	Civil Engineer	DWR	buspakorn@hotmail.com	buspakorn
21	Ms. Siriluksana Duangkeo	Chief, RDSB	DDPM	Siriluk_o@yahoo.com	Siriluksana
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35	Mr. To Quang Toan	Deputy Head of Division	SIWRR, MARD		
36	Dr. Le Thi Viet Hoa	Deputy Head of Division	DWRM, MONRE		
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16	Mr. Thongthip Chandalasane	Technical Official	LNMC		

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	B	**Thailand participants**				
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✓	18	Mr. Kunpote Buatone	Engineer	DWR		
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✓	20	Mr. Buspakorn Khantithirakawee	Civil Engineer	DWR		buspakorn
✓	21	Ms. Siriluksana Duangkeo	Chief, RDSB	DDPM		
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APPENDIX 3 EVALUATION FORM

Evaluation of the Training Course:

'Best Practice Guidelines for Flood Risk Assessment, FMMP-C2'

April - May 2009

The purpose of this evaluation is to receive feedback from the participants in order to further improve the course. Please answer the following questions giving your spontaneous opinion. The questionnaire is anonymous and will be treated in a confidential manner.

Theme and structure of the module

1. For my future career, I consider the training course to be:

   - Very important ☐
   - Important ☐
   - A little important ☐
   - Not important ☐

2. The course included several subjects. Please rate them by order of importance for you.

   (**1** = very important, **2** = important, **3** = a little important, **4** = not important)

	1	2	3	4
▪ Basic concepts of FRA	☐	☐	☐	☐
▪ Flood hazard assessment	☐	☐	☐	☐
▪ Flood damage assessment	☐	☐	☐	☐
▪ Flood risk assessment	☐	☐	☐	☐
▪ Creation of flood map	☐	☐	☐	☐
▪ Exercises of case study	☐	☐	☐	☐

3. The material covered in the module was:

   Mostly new for me ☐
   Partly new ☐
   Presented little novelty ☐
   Not new at all ☐

4. The sequence of topics presented in the module was:

Very Good	☐
Good	☐
Reasonable	☐
Poor	☐

5. The work intensity during the module was:

Very high	☐
High	☐
Moderate	☐
Low	☐

Quality

6. How do you rate the quality of the lecturer in presenting and explaining?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Gert Sluimer (Introduction demonstration for understanding of FRA Process) …
Bas Jonkman (Basic FRA concepts, Approaches to FDA and determination of flood risks) …
Ferdinand Diermanse (Data collection, hydraulic modelling, and frequencies analysis) …
Frank Keukelaar (creation of flood risk map) …
Tran Kim Thanh (Classification of damage types, socio-economic survey, Damage curves) …

7. How was the contact between the students and the lecturer?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Gert Sluimer (Introduction and demonstration for understanding of FRA Process) …
Bas Jonkman (Basic FRA concepts, Approaches to FDA and determination of flood risks) …
Ferdinand Diermanse (Data collection, hydraulic modelling, and frequencies analysis) …
Frank Keukelaar (creation of flood risk map) …
Tran Kim Thanh (Classification of damage types, socio-economic survey, damage curves) …

8. How do you rate the quality of the written material?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

- Basic concepts of FRA ...
- System definition and data collection ...
- Hydraulic modelling and frequencies analysis …
- Approaches to estimation of direct economic damages and loss of life ...
- Classification of damage types, socio-economic survey, damage curves ...
- Approaches for determination of flood risks ...
- Creation of flood risk map ...

9. What is your opinion about the general quality of the course:

Very high	☐
High	☐
Moderate	☐
Low	☐
Very low	☐

Overall evaluation

The learning objectives for the participants were the following:

- Explain the basic concepts on FRA and its main approach and methodology;
- Describe main steps and the sequence on how to carry out main steps during the FRA process;
- Understand the Best Practice Guideline for FRA; and
- Apply the proper FRA approach for specific flood prone area in the country.

11. In your opinion, did the course meet the above-mentioned learning objectives?

Yes	☐
Partly	☐
Not at all	☐

Any specific comments on the course:

……

…..

…

CHAPTER 4

TRAINING JUNE 2009:

BEST PRACTISE GUIDELINES FOR INTEGRATED FLOOD RISK MANAGEMENT PLANNING AND IMPACT EVALUATION IN THE LOWER MEKONG BASIN

4 TRAINING JUNE 2009: BEST PRACTISE GUIDELINES FOR INTEGRATED FLOOD RISK MANAGEMENT PLANNING AND IMPACT EVALUATION IN THE LOWER MEKONG BASIN

4.1 Context and objectives

4.1.1 Context

Floods are a recurrent phenomenon in the Mekong basin that brings yearly risks and damages, as well as benefits in terms of e.g. fish habitat and nutrients. The challenge for the Lower Mekong Countries is to reduce risks and damages, while sustaining the benefits. Component 2 of the Flood Management and Mitigation Programme (FMMP) defines Integrated Flood Risk Management (IFRM) as applying the most attractive mix of all possible measures, hard and soft, for the reduction of flood damage risks. In the preparation of these concrete measures a stepwise approach should be followed that will lead to a socio-economic and environmentally sound flood risk management. This approach is put down in guidelines for sustainable flood risk management in the region.

In the context of the Component 2 activities and guidelines the following training courses are realised/ planned:

- National Courses 'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin' (8-20 may 2008);
- Regional Course on Best Practice Guidelines for Flood Risk Assessment (FRA; 27 April – 1 May 2009);
- Bi-national Training Courses on Best Practice Guidelines on IFRM Planning and Impacts Evaluation:
  - Cambodia and Vietnam, 2 June till 5 June 2009, in Phnom Penh.
  - Lao PDR and Thailand, 8 to 11 June 2009, in Bangkok
- Bi-National training courses on Best Practice Guidelines for Structural Measure and Flood Proofing:
  - Cambodia and Vietnam, August (dates/ venue to be decided);
  - Lao PDR and Thailand, August (dates/ venue to be decided)

This document reports the findings for the third training course on the use of the Best Practice Guidelines for Integrated Flood Risk Management Planning and Impact Evaluation (IFRM P & IE).

4.1.2 Objectives and focus

The stage 2 implementation calls for the execution of the training course on IFRM planning and Impact Evaluation which is considered as a key course. The course is focused on the use of the Best Practice Guidelines for IFRM Planning and Impact Evaluation.

The objective of the IFRM Planning and Impact Evaluation training course is to increase sustainable flood risk assessment capacity in the Lower Mekong Basin, by teaching the proper methodologies for the implementation of Integrated Flood Risk Management in the Lower Mekong Basin, including planning of IFRM measures, stakeholder participation, and incorporation and evaluations of impacts of IFRM measures, like social, economic, environmental impacts.

Following the leaning objectives were set, at the end of training course the participants will be able to:

- Explain the basic concepts of IFRM and its main approaches and methods and understand the role of an IFRM approach in the LMB.
- Explain the planning phases of IFRM and what organizations are involved in this planning process, including the role of the participant's own organization.

- List environmental and socio-economic impacts of flood risk measures and measures to evaluate impacts.
- Analyse (in own field) impacts of flood risk measures by applying methods taught.
- Apply the guidelines to guide and implement an IFRM planning process and conduct impact evaluations and/ or to refine the ProDIP list of FMM projects.

In general, the training course will cover the following main topics:
- Introduction to IFRM.
- Identification IFRM measures.
- Stakeholder participation in IFRM.
- Social evaluation of IFRM measures.
- Environmental evaluation of IFRM measures.
- Economic evaluation of IFRM measures.
- Use of BPG for IFRM Planning and Impact Evaluation.
- Parallel sessions for exercises on the use of Best Practice Guidelines for Integrated Flood Risk Management Planning and Impact Evaluation with a case study.

4.1.3 Target group and users

The course duration is four (4) days (8:30 am to 5:00 pm) for 21 participants in the Phnom Penh course (12 and 9 participants from Cambodia and Vietnam respectively), and 20 participants in the Bangkok training course (10 participants from Lao PDR and Thailand respectively). In addition a national the course participants will be invited by MRCS via the country's NMCs.

The schedule for the course is as follows:
- 2-5 June 2009 in Phnom Penh at the RFMMC (for participants from Cambodia and Vietnam).
- 8-11 June 2009 in Bangkok at the Royal River Hotel (for participants from Lao PDR and Thailand).

The training course is intended for the direct users of the BPGs on IFRM Planning and Impact Evaluation, particularly professionals from NMCs, line agencies, institutes and/or universities involved in basin planning, particularly flood management planning, and impact evaluation.

Appendix 1 gives further information on objectives as well as competencies targeted by the training course.

It is noted that after the training course, the BPGs for IFRM Planning and Impact Evaluation will be updated based on the practical experiences gained during the training course.

4.2 Course development and implementation

4.2.1 Course development

Design of the training on Flood Risk Assessment

Following the general objectives of the training (see Section 4.1.2) a course design was chosen including both the theoretical and practical aspects of IFRM planning and impact evaluation. The course programme covered presentation sessions in the morning and exercises in the afternoon. Course materials were made available through web-based I-Learning Environment and hand-outs of the presentations and exercises were given each day.

The presentations in the morning covered the topics on IFRM planning and impact evaluation of IFRM measures, to provide a sound methodological background. These presentations illustrated how the theoretical concepts could be applied to the case study areas in the LMB. Results of stage 1 of FMMP-C2 were presented to bridge theory and practice.

The exercises in the afternoon were related to the theory presented in the morning sessions. The questions to be answered by the participants covered different aspects of the presented theory. The exercises did not only focus on (quantitative) analysis skills, but also included broader questions on the more general application of the theory in integrated flood risk management planning and impact evaluation.

It was chosen to work in country groups. This enabled effective discussion and exchange between participants of different organizations. Cross country groups were also made to do exercise for the Sama IFRM Simulation Game.

Two case studies for participant's exercise were included, i.e. West Bassac Demonstration project (Cambodia) and Lower Se Bang Fai Demonstration Project (Lao PDR) for the training courses in Phnom Penh and Bangkok respectively. The objective of these exercises for the country groups was to demonstrate their knowledge of the IFRM planning and impact evaluation process. They had to develop an IFRM Planning and Impact Evaluation approach and action plan for the case studies. With these exercises they developed the skills for applying the IFRM planning and impact evaluation in their own countries.

Organization and programme of the training courses

The courses were given/ organised by the following team (see also the presence list in Appendix 2):

Name	**Organization**	**Role**
Gert Sluimer Msc	Royal Haskoning	Team leader FMMP-C2
Wim Douven PhD	UNESCO-IHE	Specialist IFRM & training facilitator
Rinus Vis PhD	Deltares	Environmental Specialist
Dillip Chinnakonda Msc	CECI	Public Participation Specialist
Tran Kim Thanh Msc	Vinamekong	Senior Regional Economist
Truong Tuan Duy Msc	Royal Haskoning	Course organization and I-learning
Sineth Heav	Royal Haskoning	Course organization and support

Training course schedule:

Day 1: Opening/introduction, overview BPGs, Environmental Evaluation of IFRM Measures

08:30 – 09:00	Registration	
09:00 – 09:10	Opening Speech	MRC FMMP management
09:10 – 09:45	Introduction trainers and participants, Introduction training course and overview agenda	Wim Douven
09:45 – 10:30	Introduction IFRM planning and impact evaluation concepts Introduction BPG on IFRM planning and impact evaluation in the LMB	Gert Sluimer
10:30 – 11:00	*Break*	
11.00 – 12.00	Continued	Gert Sluimer
12.00 – 13.30	*Lunch*	
13.30 – 15.00	Environmental evaluation of IFRM measures: ▪ General EIA approach ▪ EIA steps and related methods ▪ IFRM case illustrations	Rinus Vis
15.00 – 15.30	*Break*	
15.30 – 16.30	Introduction case study exercise	Wim Douven/ Rinus Vis
16:30 – 17:00	Reflection and wrap-up	Wim Douven/ participant

Day 2: Sama IFRM Simulation Game/ Stakeholder participation

08:30 – 10:00	Sama IFRM Simulation Game	Wim Douven/ Rinus Vis
10.00 – 10:30	*Break*	
10:30 – 12:00	Sama IFRM Simulation Game	Wim Douven/ Rinus Vis
12.00 – 13.30	*Lunch*	
13:30 – 15:00	Stakeholder participation in IFRM ▪ Existing practice ▪ Public participation concepts and methods ▪ Stakeholder Participation Action Plan ▪ IFRM case illustrations	Dilip Chinnakonda
15.00 – 15.30	*Break*	
15:30 – 16:00	Parallel sessions case study exercise (continued)	All
16.30 – 17.00	Reflection and wrap-up	Wim Douven/ participant

Day 3: Social Evaluation/ Economic evaluation

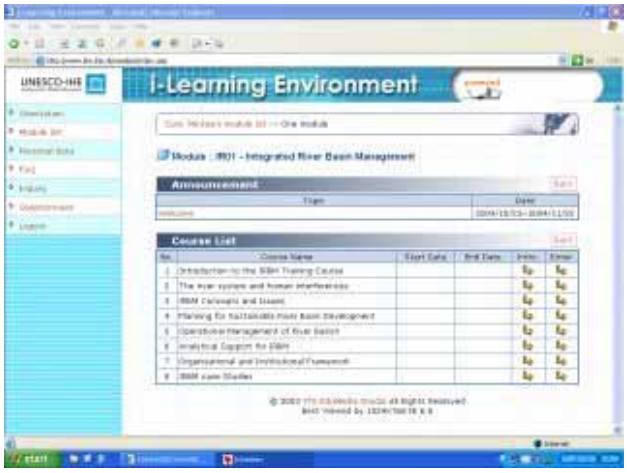
08.30 – 10:00	Social evaluation of IFRM measures: ▪ Role of socio-economic and other profiles ▪ Evaluation methods ▪ Institutional capacity assessment IFRM case illustrations	Dilip Chinnakonda
10.00 – 10:30	*Break*	
10:30 – 12:00	Parallel sessions case study exercise (continued)	All
12.00 – 13.30	*Lunch*	
13:30 – 15:00	Economic evaluation of IFRM measures: ▪ Benefits of measures ▪ Costs of measures ▪ Benefit cost analysis	Tran Kim Thanh
15.00 – 15.30	*Break*	
15:30 – 16:30	Parallel sessions case study exercise (continued)	All
16.30 – 17.00	Reflection and wrap-up	Wim Douven/ participant
19.00 – 21.00	Diner reception	

Day 4: Discussions, wrap-up and closing

08:30 – 09:30	Teams prepare for case presentation case study exercise	
09.30 – 10:00	*Break*	
10.00 – 12:00	Case Presentations by teams.	Gert Sluimer
12.00 – 13.30	*Lunch*	
13:00 – 15:00	Review and discussion on use of BPG for IFRM planning and impact evaluation.	All
15.00 – 15.30	*Break*	
15:30 – 16:30	Closure and certificates	Wim Douven (Gert Sluimer/ FMMP)

Use of I-Learning Environment

All the training material was stored on the UNESCO-IHE I-Learning Environment. This web-based environment gives participants access to training material and outcomes of the training, to share background docs and to interact also with the trainers. Before the start of the course participants received a login and password and explanation on how to use the platform. The I-Learning Environment can be accesses and used before, during and (limitedly) after the course.



During the course documents were updated when necessary. Also the results of the exercises and case studies were made available after the exercise on the I-learning environment.

4.2.2 Course implementation

In general, the course was implemented and completed as designed (see previous section). Below some particulars on the course implementation and execution are treated.

Course locations and dates
The bi-national training course for Cambodia and Vietnam was given in the Regional Flood Management and Mitigation Centre in Phnom Penh from 2 to 5 June 2009. A conference room, which can accommodate 30 participants, was used for both the presentations and exercises.

The second bi-national training course for Lao PDR and Thailand was given in the Royal River Hotel in Bangkok from 8 to 11 June 2009. A conference room, which can accommodate 30 participants, was used for both the presentations and exercises.

Course announcement and registration
The relevant national institutes (see Appendix 2) were approached to propose ten suitable candidates for the training. Main requirements were sufficient English language skills and currently or in the near future working in the field of integrated flood risk management planning and impact evaluation. Based on the proposed candidates a final list was established (see also Section 4.3.1). The first morning of the training day all participants were registered.

Course preparation
Course materials were prepared by Consultant Team and made available in the week before the course through the I-Learning environment and email.

Course programme
The course programmes were completed as designed.

During the exercises in the afternoon a flexible schedule was used. The intended results of the exercises were presented by the trainers when all participants were finished and the results were discussed with the group.

Course evaluation
On the final day participants were given an evaluation form and this was completed by all the (present) participants.

Important observations and lessons learned from the course, as well as suggestions for upcoming courses are included in Section 4.5.

Outcome of the final discussion session in Phnom Penh on the BPG:

- How will the process of impact evaluation be when more than one country is involved and what does integrated mean in this context? Gert Sluimer answers that the various aspects of a project have to be investigated/studied together, one aspect can have an influence on other. By taking all aspects into account, you can come to a better plan. Only looking at technical or economic aspects may lead to a sub-optimal solution. As far as transboundary aspects are involved, Gert Sluimer remarks that all countries have their own rules and regulations. The BPG is not replacing existing laws and regulations, but they are designed to assist line agencies and consultants to improve the process of project preparation. In transboundary projects, the national laws have to be adhered to. FMMP and MRC have to find ways on how these guidelines have to be used, and it is expected that it will be a difficult task for MRC to get these guidelines on the desks of the line agencies. The FMMP management is working on this issue: how to get the guidelines operational, since they are not formal documents but guidance only. FMMP and MRC can not impose them.
- How can we make use of these guidelines? Gert Sluimer remarks that consultation with the Ministry of Environment seems useful. They can use the guidelines to supplement what they already have. As far as design of measures, especially non-structural measures is concerned, the guidelines can be shared with the relevant line agencies.
- Comments to the guidelines are most welcome, they can be sent to the project, with a copy to the FMMP management. The Best Practice Guidelines will form an Appendix to the final Stage II report of the FMMP-C2 project.
- Could the Guidelines, or at least an extensive summary, be translated in the local languages. Gert Sluimer says this is a returning question, but the FMMP management prefers not to make translations. Translations have to be checked thoroughly and are very costly.

Outcome of the final discussion session in Bangkok on the BPG:

- The training helped very much in understanding the guidelines, now we can read them critically and provide comments later.
- A lot was learned, which is very much appreciated, however, it would be a very good idea to incorporate the Sama game in the guideline. Reaction Gert Sluimer: apparently the game is very much liked, but it will be difficult to incorporate it in the framework of the guideline, but reference could be made to it. Reaction Nico Bakker: very true, in all workshops and meetings the game is very much appreciated, MRC may try to develop a comparable game for the Mekong River Basin, to improve the understanding of how measures work.
- Guidelines should be linked to technical guidelines e.g. on hydraulic modelling and reservoir operation. Gert Sluimer agrees that there has to be a link with the technical tools. How to evaluate technical impacts will be explained in another guideline.
- Has there been any contact with the NTPC project, who did a lot of impact evaluations for the Nam Theung 2 reservoir? Gert Sluimer mentions that he will visit the NTPC next time he is in Lao, to look at the concession agreement. It is said that the diversion from NT2 will be stopped as soon as certain threshold water levels in Mahaxay are surpassed.
- FMMP-C2 Guidelines should be linked to the SEA for the BDP. Gert Sluimer says that the BDP scenarios will be assessed on their social, economic and environmental impacts and that the FMMP management will make sure that the guidelines are known by the BDP project. Besides the FMMP-C2 project will also work on guidelines for the BDP programme.

Some general remarks of Nico Bakker, CTA of the FMMP:

- FMMP has the strong intention to disseminate the knowledge gathered in the guidelines, they should not end up on the shelf. They should help in improving the national guidelines of the line agencies. This is also what the mid-term review commission concluded: products of the FMMP programme should be fit for use. A good step could be translation in the national languages, however this is very difficult and expensive. Advice of Mr Bakker: try to select the most important parts of the guidelines and translate those, while at the same time continue with the workshops for the local line agencies. Another question is related to the practicality of the guidelines: that could be improved by taking into account the whole project cycle and find out which parts of the guidelines fit in which part of the cycle.

4.3 Course participants

4.3.1 Target organisations and participants

The Consultant sent the four NMCs the list of proposed participating institutions (line agencies, institutes, education centers, etc.) together with the selection criteria (level of English, training relevancy for job) for the participants. The NMCs made a selection based on provided criteria and send the list of proposed participants to the Consultant for review. The final selection of the training course participants (about 10 for each country) was then finalized in consultation with the MRC and countries' NMCs.

The target organisations are those who need capacity in the IFRM planning and impact evaluation knowledge areas, including integrated flood risk management approaches, and the methods to evaluate the impacts of IFRM measures in terms of environmental assessment, stakeholder participation in IFRM planning, social and economic evaluations of IFRM measures. The target organisations of the training course were:

- **Line agencies** working at national levels in the identified knowledge areas;
- **NMC's** and in particular coordinators who are responsible for MRC programmes that address flood related matters (FMMP);
- **Educational centers** working in the identified knowledge area;
- Staff of **MRCS** programmes working in the above-mentioned MRC programmes.

Appendix 2 gives for each country the list of institutions that were proposed to participate in this training course.

Within the above-mentioned organisations the training on IFRM Planning and Impact Evaluation targeted technical professionals that needed upgrading on IFRM Planning knowledge and skills, as well as those who use the guidelines on IFRM Planning.

Criteria for selection of participants included:

- Participants are from the above-identified target groups of the IFRM Planning and Impact Evaluation Training;
- The training fits in the career development path of the participants; hence they either work in the related IFRM knowledge area at professional level (and stay involved) or will be involved in the near future;
- Participants have an academic background;
- Participants have sufficient English language skills.

4.3.2 Participants present at the course

In total 42 professionals participated in the courses. By country, participation was as follows:

- Lao PDR: 10 people from 10 agencies;
- Thailand: 10 people from 5 agencies; and one national consultant;
- Cambodia: 12 people from 6 agencies;
- Vietnam: 09 people from 6 agencies.

Details on the participants, their position, their employer, and their presence during the four days of training is presented in Appendix 2.

4.4 Course evaluation

4.4.1 Evaluation by participants

Appendix 3 presents the aggregated results of the individual evaluations of both courses separately. The evaluation form is given in Appendix 4. The filled-in forms are available in the Consultants' office at the RFMMC Phnom Penh. The courses have overall been evaluated as good to very good.

4.4.2 Evaluation by trainers

- General: good attendance and interest. In Phnom Penh participants were always present before the official starting times. This was a different in Bangkok, some participants had to travel for two hours and were sometimes late;
- In the Phnom Penh course it was rather difficult to get interaction and questions during the lectures and discussion sessions. This was not the case in the Bangkok course where interaction started from the beginning, partly due to a generally better command of English by most participants but also because the participants from the two countries speak more or less the same language which made it easier to mix and discuss between them;
- Many questions (after the presentations) were country-specific.
- There was a very active participation in the exercises.
- Exercises connecting the theory with practical experience from Stage 1 appeared to be very useful. Recognizable examples were available and the theory is connected to the practice.
- Differences in levels in English and background knowledge and between the country groups existed and became specifically apparent during exercises, this was especially the case in the Phnom Penh course.
- Some participants expect that the training would exactly tell them how to do IFRM Planning and impact evaluation in their country. However, the training provided the general approach and steps and does not prescribe exactly which format or process to use for a specific region.
- The training emphasized the need of working in multi-disciplinary teams in IFRM planning and impact evaluation. Combined knowledge of environmental assessment, stakeholder participation in IFRM planning, social and economic evaluations of IFRM measures is needed.

See Section 4.5 for a more elaborated overview of lessons learned and suggestions for the upcoming training courses.

4.5 Lessons learned and suggestions

Selection of participants

- An integrated flood risk management planning and impact evaluation is a multi-disciplinary activity that involves disciplines as basin and flood control planning, hydraulics, environmental assessment, stakeholder participation, social and economic evaluations, etc. Preferably the participants are selected in such a way that the different aspects of the IFRM planning and impact evaluation are covered.
- There were differences in the knowledge levels between the different country groups. This became clear during the exercises with some groups being faster than others and with better outcomes. It is suggested to take this into account in the preparation of the exercises.

Training materials

- Prepare supporting training materials (guidelines, etc.) one or several weeks in advance. This will give participants the chance to read and study the materials beforehand.
- During the courses the participants were given the case studies/ exercises for two demonstration project (West Bassac in Cambodia and Lower Se Bang Fai in Lao PDR). The aim was that they would come up with a stepwise approach/ action plan for their cases. For most of the groups it proved somewhat difficult to transfer the general knowledge of flood risk assessment to the specific situation. One option could be to ask the participants to prepare some general information on their case study beforehand.

Course duration

- The course lasted for four days, given the extensive amount of theory treated and the time needed for the exercises.

Course design

- The combination of presentations (morning) and exercises (afternoon) was very successful and well received. The aim was to combine theory and practice for the LMB region in both presentations and exercises. It is recommended to follow this structure in all FMMP-C2 courses. One of the success factors was that experiences/ results from earlier stages of the FMMP-C2 project could be included in the presentations and case studies.
- Some of the participants mentioned that they had expected to get an overview of exact models to apply for IFRM planning and impact evaluation in their country. It has to be made clear that is not the objective of the training course, but the role of the participants themselves. That was explained during the final discussion session the country specific development of appropriate models and tools for specific countries has to be done by participants in cooperation with local Line Agencies.

Case studies and exercises

- Differences were observed between country teams in the time that was needed to complete the exercises. The cross-country teams are proposed to compromise the issue.
- As a lesson learned from the FRA training course, now two demonstration projects were selected, i.e. West Bassac Demonstration project and Lower Se Bang Fai project for the training courses in Phnom Penh and Bangkok respectively, for case study exercises to address differences between situations in LMB countries.

Course evaluation

- The course evaluation is (very) positive, reflecting the overall positive interaction during the course.

Practical/ logistical

- The logistic arrangements are generally well organized that helped the training courses were successful. As a lesson learned from the FRA training, the participants were informed well in advance about the necessary logistic arrangements during the training courses. Still there were some complaints about the DSA provided, as per MRCS rules 39% of DSA was provided since the Consultant provided hotel accommodation), that was explained to the participants.

APPENDIX 1 DESCRIPTION OF TRAINING COURSE

Training Course	Best Practice Guidelines for IFRM Planning and Impact Evaluation
Description	A short course on BPG for Integrated Flood Risk Management (IFRM) Planning and Evaluation of Impacts of Flood Risk Management Measures.
Period	June 2009
Duration (study load)	Four days (32 hours)
Target group	Professionals and managers of MRC, line agencies and institutes involved in planning (basin, flood risk management) and impact evaluation. List of proposed participating institutions is given in Appendix 2.
Learning objectives	- Explain the basic concepts of IFRM and its main approaches and methods and understand the role of an IFRM approach in the LMB. - Explain the planning phases of IFRM and what organisations are involved in this planning process, incl. the role of the participant's own organisation. - List environmental and socio-economic impacts of flood risk measures and measures to evaluate impacts. - Analyse (in own field) impacts of flood risk measures by applying methods taught. - Apply the guidelines to guide and implement an IFRM planning process and conduct impact evaluations and/ or to refine the ProDIP list of FMM projects.
Modalities	Lectures, parallel sessions with exercises on use of guidelines for case studies, group discussions.
Subjects	- Introduction to IFRM. - Identification IFRM measures. - Stakeholder participation in IFRM. - Social evaluation of IFRM measures. - Environmental evaluation of IFRM measures. - Economic evaluation of IFRM measures. - Use of BPG for IFRM Planning and Impact Evaluation. - Parallel sessions for exercises on the use of Best Practice
Main competencies targeted	Professional knowledge: - IFRM concepts including link to IRBM. - IFRM planning incl. stakeholder participation. - Flood risk management measures. - Methods to evaluate social/ environmental/ economic impacts of IFRM measures. Skills and attitudes: - Knowledge application and dissemination - Sufficient English language skills
Development/ facilitation of training course	- Gert Sluimer (Royal Haskoning), FMMP-C2 Team Leader; - Wim Douven (UNESCO-IHE), Training facilitator; - Rinus Vis (Deltares), Environmentalist - Tran Kim Thanh; Water resources economist; - James Leten (Royal Haskoning), IWRM specialist; - Dilip Chinnakonda (CECI); Public Participation specialist; - Truong Tuan Duy (Royal Haskoning); Training specialist;

APPENDIX 2 LIST OF INVITED INSTITUTES AND ACTUAL PARTICIPANTS

Invited institutes for the training course Phnom Penh:

Participants from LAs Vietnam	# of participants
- VNMC	3
- Dept. Of Dyke Management and Flood Control, MARD	2
- Southern Institute of Water Resources Planning, MARD	1
- Southern Institure for Hydro-meteorology and Environment, MONRE	1
- Southern Institute of Water Resources Research, MARD	1
- Centre for WR Planning & Investigation, MONRE	1

Participants from LAs Cambodia	# of participants
- CNMC	2
- Ministry of Water Resources and Meteorology (MWRM)	2
- National Committee on Disaster Management	1
- Ministry of Agriculture, Forestry and Fisheries	1
- Ministry of Transport and Public Works	1
- Other LAs	3

Invited institutes for the training course Bangkok:

Proposed participants from LAs Thailand	# of participants
- TNMC	2
- MONRE (WR Dept., Water Crisis Prevention Center)	2
- Ministry of Interior (Dept. of Disaster Prevention & Mitigation	2
- Minsitry of Agriculture and Cooperatives	2
- Hydro-Meteorological Dept.	2

Participants from LAs Lao PDR	# of participants
- LNMC	2
- National Disaster Management Office	1
- Dept. Of Hydrologist and Meteorologist	1
- Water Resources and Environment Administration	1
- Ministry of Agriculture and Forestry	1
- Ministry of Energy and Mines	1

Phnom Penh

LIST OF PARTICIPANTS
Regional Training on BPG for IFRM & Impact Evaluation
Date: 02-05 June 2009
Venue: RFMMC, in Phnom Penh, Cambodia
Date: 02 June 2009

No.	Names	Title	Agencies	Email address	Signature
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B	FMMP-C2 Consultants				
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4	Rinus Vis		Royal Haskoning		
5	Wim Douven				
6	Dilip Chinnakonda				
7	Truong Tuan Duy	National Training Specialist	Royal Haskoning		
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12	Mr. Tong Seng		MLMUPC DHRW		
13	Mr. Plang Ponleurath		NCDM		
14	Mr. Chhan Socheat		MLMUPC		
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16	Mr. Mak Visal		MAFF		
17	Mr. Yin Savuth		DHRW		
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LIST OF PARTICIPANTS
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Date: 02-05 June 2009
Venue: RFMMC, in Phnom Penh, Cambodia
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28	Mr. Vu Minh Thien	Program Officer	VNMC		
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LIST OF PARTICIPANTS
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Date: 02-05 June 2009
Venue: RFMMC, in Phnom Penh, Cambodia
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17	Mr. Mak Visal		MAFF		
18	Mr. Yin Savuth		DHRW		
19	Mr. Preap Sameng		DHRW		
20	Miss Peng Davuth Marakath		DHRW		
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26	Ms. Nguyen Thi Xuan Hong	Program Officer	VNMC		
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LIST OF PARTICIPANTS
Regional Training on BPG for IFRM & Impact Evaluation, Cambodia & Vietnam
Date: 02-05 June 2009
Venue: RFMMC, in Phnom Penh, Cambodia
Date: 05 June 2009

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B	FMMP-C2 Consultants				
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Bangkok

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Regional Training on BPG for IFRM & Impact [illegible]aluation, Lao PDR & Thailand
Date: 08-11 June 2009
Venue: Royal River Hotel, Bangkok, Thailand
Date: 11 June 2009

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Regional Training on BPG for IFRM & Impact Evaluation, Lao PDR & Thailand
Date: 08-11 June 2009
Venue: The Royal River Hotel, Bangkok, Thailand
Date: 08 June 2009

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B	FMMP-C2 Consultants				
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4	Rinus Vis	Environmental Specialist	Deltares		
5	Wim Douven	Inter Training Specialist	UNESCO-IHE		
6	Dilip Chinnakonda	Public Participation Specialist	CECI		
7	Tran Kim Thanh	Senior Economist	Royal Haskoning		
	Khamphèng SIXAYA	coordinator, Irrigation Eng	LCG (Lao PDR)	Khamsixaya@yahoo.com.	
C	Lao PDR participants				
8	Ms. Sonephet Phosalath	DCWRMD	DWR	sonephet@lnmc.gov.la	
9	Mr. Thongthip Chandalasane	TOLNMC	LNMC	thongthip@lnmc.gov.la	
10	Ms. Soytavanh Mianmany	Technical Official	WRERI	Soytavan@yahoo.com	
11	Mr. Khammai Vongsathiane	CIDDD	DOI	std159@hotmail.com	
12	Mr. Khanmany Khounphonh	HAD	DOMH	Dethkhamhane1990@Yahoo.com	
13	Mr. Dethkhamhane Inthisone	DCOLUPD	DLPD	voy_ISA@YaHoo.com	
14	Ms. Vilaykham Lathsaath	Technical Official	NDM	[illegible]@etllao.com	
15	Mr. Seumkham Thoummavongsa	DCSEMD	DOE	nnrmrbm@laotel.com	
16	Mr. Xaysongkham Soukhathammavong	Technical official	DOP,MPI	Xayroses@yahoo.com	
	Mr Kham Seng ALY	Civil Engineer	Dow	Aly_Seng@yahoo.com	
D	Thailand participants				
17	Ms. Nuanlaor Wongpinitwarodom	Senior Professional	DWR	w_nuanlaor@hotmail.com	
18	Mr. Suchart Sirijungsakul	Civil Engineer	DWR	suchart.s@dwr.mail.go.th	
19	Mrs. Ruamporn Ngamborlruk	PPA	DWR	-	
20	Mr. Kunpote Buatone	Civil Engineer	DWR	khunphot@gmail.com	
21	Mr. Winai Wangpimool	Civil Engineer	DWR	wangpimool@hotmail.com	
22	Mr. Aekkapol Aekakkararungroj	Scientist Oper. Level	DWR		
23	Mr. Paitoon Naktae	Civil Engineer	DDPM	paitoon_bk@yahoo.co.th	
24	Dr. Pichaid Varoonchotikul	Civil Engineer	DDPM	-	
25	Mr. Banyat ~~Yaingooluam~~ Yai-ngooleuam	Civil Engineer	DDPM	Banyat_yai@yahoo.com	
26	Ms. Ms. Saowanee Prachansri	Agronomist	LDD	Saowanee@ldd.go.th	
27	Ms. Khanittha Poothong	PPA	DWR	-	
	Mrs. Panadda Pucharoensilp	Scientist, Senior Proff. Level.	DDPM	panadda_kk@hotmail.com	

LIST OF PARTICIPANTS
Regional Training on BPG for IFRM & Impact Evaluation, Lao PDR & Thailand
Date: 08-11 June 2009
Venue: Royal River Hotel, Bangkok, Thailand
Date: 09 June 2009

No.	Names	Title	Agencies	Email address	Signature
A	MRC-FMMP Management				
1	Ms. Pham Thi Van Lan	Manager C2 & C3	MRC-FMMP		
2	Mr. Nico Bakke	Chief Technical Adviser	MRC-FMMP		
B	FMMP-C2 Consultants				
3	Gert Sluimer	Consultant Team Leader	Royal Haskoning		
4	Rinus Vis	Environmental Specialist	Deltares		
5	Wim Douven	Inter Training Specialist	UNESCO-IHE		
6	Dilip Chinnakonda	Public Participation Specialist	CECI		
7	Tran Kim Thanh	Senior Economist	Royal Haskoning		
8	Khampheng Sixaya	Coordinator, Irrigation Engineer	LCG	Khamsixaya@yahoo.com.	
C	Lao PDR participants				
9	Ms. Sonephet Phosalath	DCWRMD	DWR	sonephet@lnmc.gov.la	
10	Mr. Thongthip Chandalasane	TOLNMC	LNMC		
11	Ms. Soytavanh Mianmany	Technical Official	WRERI		
12	Mr. Khammai Vongsathiane	CIDDD	DOI		
13	Mr. Khanmany Khounphonh	HAD	DOMH		
14	Mr. Dethkhamhane Inthisone	DCOLUPD	DLPD		
15	Ms. Vilaykham Lathsaath	Technical Official	NDM		
16	Mr. Seumkham Thoummavongsa	DCSEMD	DOE		
17	Mr. Xaysongkham Soukhathammavong	Technical Official	DOP,MPI		
18	Mr. Khamseng Aly	Civil Engineer	DOW		
D	Thailand participants				
19	Ms. Nuanlaor Wongpinitwarodom	Senior Professional	DWR		
20	Mr. Suchart Sirijungsakul	Civil Engineer	DWR		
21	Mrs. Ruamporn Ngamborlruk	PPA	DWR		
22	Mr. Kunpote Buatone	Civil Engineer	DWR		
23	Mr. Winai Wangpimool	Civil Engineer	DWR		
24	Mr. Aekkapol Aekakkararungroj	Scientist Oper. Level	DWR		
25	Mr. Paitoon Naktae	Civil Engineer	DDPM		
26	Mrs. Panadda Pucharoensilp	Scientist, Senior Proff. Level	DDPM		
27	Mr. Banyat ~~Yaingooluam~~ Yi-ngooleuam	Civil Engineer	DDPM		
28	Ms.Saowanee Prachansri	Agronomist	LDD		
29	Ms. Khanittha Poothong	PPA	DWR		

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Regional Training on BPG for IFRM & Impact Evaluation, Lao PDR & Thailand
Date: 08-11 June 2009
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No.	Names	Title	Agencies	Email address	Signature
A	MRC-FMMP Management				
1	Ms. Pham Thi Van Lan	Manager C2 & C3	MRC-FMMP		
2	Mr. Nico Bakke	Chief Technical Adviser	MRC-FMMP		
B	FMMP-C2 Consultants				
3	Gert Sluimer	Consultant Team Leader	Royal Haskoning		
4	Rinus Vis	Environmental Specialist	Deltares		
5	Wim Douven	Inter Training Specialist	UNESCO-IHE		
6	Dilip Chinnakonda	Public Participation Specialist	CECI		
7	Tran Kim Thanh	Senior Economist	Royal Haskoning		
8	Khampheng Sixaya	Coordinator, Irrigation Engineer	LCG	Khamsixaya@yahoo.com.	
C	Lao PDR participants				
9	Ms. Sonephet Phosalath	DCWRMD	DWR		
10	Mr. Thongthip Chandalasane	TOLNMC	LNMC	thongthip@lnmc.gov.la	
11	Ms. Soytavanh Mianmany	Technical Official	WRERI		
12	Mr. Khammai Vongsathiane	CIDDD	DOI		
13	Mr. Khanmany Khounphonh	HAD	DOMH		
14	Mr. Dethkhamhane Inthisone	DCOLUPD	DLPD		
15	Ms. Vilaykham Lathsaath	Technical Official	NDM		
16	Mr. Seumkham Thoummavongsa	DCSEMD	DOE		
17	Mr. Xaysongkham Soukhathammavong	Technical Official	DOP,MPI	Xayroses@yahoo.com	
18	Mr. Khamseng Aly	Civil Engineer	DOW	Aly_Seng@yahoo.com	
D	Thailand participants				
19	Ms. Nuanlaor Wongpinitwarodom	Senior Professional	DWR		
20	Mr. Suchart Sirijungsakul	Civil Engineer	DWR		
21	Mrs. Ruamporn Ngamborlruk	PPA	DWR		
22	Mr. Kunpote Buatone	Civil Engineer	DWR		
23	Mr. Winai Wangpimool	Civil Engineer	DWR		
24	Mr. Aekkapol Aekakkararungroj	Scientist Oper. Level	DWR	aek_envi@hotmail.com	
25	Mr. Paitoon Naktae	Civil Engineer	DDPM		
26	Mrs. Panadda Pucharoensilp	Scientist, Senior Proff. Level	DDPM		
27	Mr. Banyat ~~Yaingooluam~~ Yi-ngoo leuam	Civil Engineer	DDPM	Banyat_yi@yahoo.com	
28	Ms.Saowanee Prachansri	Agronomist	LDD	saowanee@ldd.go.th	
29	Ms. Khanittha Poothong	PPA	DWR	Pkhanitthanis@gmail.com	

APPENDIX 3 EVALUATION FORM

Evaluation of the Training Course:

'Best Practice Guidelines for IFRM Planning and Impact Evaluation, FMMP-C2'
Cambodia and Vietnam

The purpose of this evaluation is to receive feedback from the participants in order to further improve the course. Please answer the following questions giving your spontaneous opinion. The questionnaire is anonymous and will be treated in a confidential manner.

Theme and structure of the module

1. For my future career, I consider the training course to be:

   - Very important ☐
   - Important ☐
   - A little important ☐
   - Not important ☐

2. The course included several subjects. Please rate them by order of importance for you.

   (**1** = very important, **2** = important, **3** = a little important, **4** = not important)

	1	2	3	4
▪ Basic concepts of IFRM Planning & Impact Evaluation	☐	☐	☐	☐
▪ Identification of IFRM Measures	☐	☐	☐	☐
▪ Environmental Evaluation of IFRM Measures	☐	☐	☐	☐
▪ Stakeholder participation in IFRM	☐	☐	☐	☐
▪ Social Evaluation of IFRM Measures	☐	☐	☐	☐
▪ Economic Evaluation of IFRM Measures	☐	☐	☐	☐
▪ Sama IFRM Simulation Game and Exercise	☐	☐	☐	☐

3. The material covered in the module was:

   Mostly new for me ☐
   Partly new ☐
   Presented little novelty ☐
   Not new at all ☐

4. The sequence of topics presented in the module was:

   Very Good ☐
   Good ☐
   Reasonable ☐
   Poor ☐

5. The work intensity during the module was:

Very high	☐
High	☐
Moderate	☐
Low	☐

Quality

6. How do you rate the quality of the lecturer in presenting and explaining?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Gert Sluimer (Introduction IFRM Planning & Impact Evaluation Concepts and Best Practice Guidelines)	…
Wim Douven (Course overview and Sama IFRM Simulation Game & exercises)	…
Rinus Vis (Environmental Evaluation of IFRM Measures)	…
Dillip Chinnakonda (Stakeholder participation and Social Evaluation of IFRM Measures)	…
Tran Kim Thanh (Economic Evaluation of IFRM Measures)	…

7. How was the contact between the students and the lecturer?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Gert Sluimer (Introduction IFRM Planning & Impact Evaluation Concepts and Best Practice Guidelines)	…
Wim Douven (Course overview and Sama IFRM Simulation Game & exercises)	…
Rinus Vis (Environmental Evaluation of IFRM Measures)	…
Dillip Chinnakonda (Stakeholder participation and Social Evaluation of IFRM Measures)	…
Tran Kim Thanh (Economic Evaluation of IFRM Measures)	…

8. How do you rate the quality of the written material (PP presentations and BPG on IFRM Planning and Impact Evaluation) ?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

- Basic concepts of IFRM Planning & Impact Evaluation ...
- Identification of IFRM Measures ...
- Environmental Evaluation of IFRM Measures ...
- Stakeholder participation in IFRM ...
- Social Evaluation of IFRM Measures ...
- Economic Evaluation of IFRM Measures ...
- Sama IFRM Simulation Game and exercise case study ...

9. What is your opinion about the general quality of the course:

Very high	☐
High	☐
Moderate	☐
Low	☐
Very low	☐

Overall evaluation

The learning objectives for the participants were the following:

- Explain the basic concepts on IFRM Planning and Impact evaluation;
- Understand main steps and the sequence on how to carry out main steps during the impact evaluations (environmental, social and economic evaluations) of IFRM Measures;
- Understand stakeholder participation concepts and methods in IFRM Planning
- Understand the Best Practice Guideline for IFRM Planning and Impact Evaluation; and
- Apply the proper IFRM Planning and impact evaluation approach for specific flood prone area in the country.

12. In your opinion, did the course meet the above-mentioned learning objectives?

Yes ☐
Partly ☐
Not at all ☐

Any specific comments on the course:

……..

…..

…

CHAPTER 5

TRAINING SEPTEMBER 2009:

BEST PRACTISE GUIDELINES FOR STRUCTURAL MEASURES AND FLOOD PROOFING IN THE LOWER MEKONG BASIN

5 TRAINING SEPTEMBER 2009: BEST PRACTISE GUIDELINES FOR STRUCTURAL MEASURES AND FLOOD PROOFING IN THE LOWER MEKONG BASIN

5.1 Context and objectives

5.1.1 Context

Floods are a recurrent phenomenon in the Mekong basin that brings yearly risks and damages, as well as benefits in terms of e.g. fish habitat and nutrients. The challenge for the Lower Mekong Countries is to reduce risks and damages, while sustaining the benefits. Component 2 of the Flood Management and Mitigation Programme (FMMP) defines Integrated Flood Risk Management (IFRM) as applying the most attractive mix of all possible measures, hard and soft, for the reduction of flood damage risks. In the preparation of these concrete measures a stepwise approach should be followed that will lead to a socio-economic and environmentally sound flood risk management. This approach is put down in guidelines for sustainable flood risk management in the region.

In the context of the Component 2 activities and guidelines the following training courses are realised:

- National Courses 'Introduction Integrated Flood Risk Management concepts and planning in the Lower Mekong Basin' (8-20 may 2008);
- Regional Course on Best Practice Guidelines for Flood Risk Assessment (FRA; 27 April – 1 May 2009);
- Bi-national Training Courses on Best Practice Guidelines on IFRM Planning and Impacts Evaluation:
  - Cambodia and Vietnam, 2 June till 5 June 2009, in Phnom Penh.
  - Lao PDR and Thailand, 8 to 11 June 2009, in Bangkok
- Regional training course on Best Practice Guidelines for Structural Measure and Flood Proofing (8 – 11 September 2009) in Vientiane, Lao PDR.

This document reports the findings for the fourth training course on the use of the Best Practice Guidelines for Structural Measures and Flood Proofing (BPG SM & FP).

5.1.2 Objectives and focus

The stage 2 implementation calls for the execution of the training course on planning and design of the structural measures and flood proofing which is considered as a key course. The course is focused on the use of the Best Practice Guidelines for structural measures and flood proofing.

The objective of the BPG for SM & FP training course aims at increasing sustainable flood risk reduction and management capacity in the Lower Mekong Basin, by using the proper methodologies and approach, including planning and design of the structural measures for river stabilization, river bank protection works, flood proofing measures and dykes, roads and flood embankments.

The following leaning objectives were set: at the end of training course the participants will be able to:

- Understand the BPG for Structural Measures, Flood Proofing & Roads/Flood Embankments;
- Explain the basic concepts on structural measures and flood proofing and its main approaches and methods;
- Contribute to improve structural measures and flood proofing guidelines development process, and
- Apply the proper methodologies in the preparation of demonstration projects on structural measures and flood proofing.

In general, the training course will cover the following main topics:

- Introduction to Structural Measures, Flood Proofing & Roads/Flood Embankments, scope and key concepts
- Description of the Mekong river characteristics and classification
- Planning of Structural Measures, Flood Proofing & Roads/Flood Embankments
- Options for Structural Measures, Flood Proofing & Roads/Flood Embankments
- Preparing design of Structural Measures, Flood Proofing & Roads/Flood Embankments
- Parallel sessions for exercises on use of guidelines to formulate plans, prepare alternative options and design Structural Measures, Flood Proofing & Roads/Flood Embankments.

5.1.3 Target group and users

The course duration is four (4) days (8:30 am to 5:00 pm) for 28 participants (7 participants from each of countries Laos, Thailand, Cambodia and Vietnam). The course participants will be invited by MRCS via the country's NMCs.

The schedule for the regional training course is as follows:

- 8-11 September 2009 in Vientiane, Lao PDR at the Lao Plaza Hotel.

The training course is intended for the direct users of BPG for structural measures and flood proofing, particularly the professionals, technical managers, senior engineering and technical department heads from NMCs, line agencies, institutes and universities.

Appendix 1 gives further information on objectives as well as competencies targeted.

It is anticipated that after the training course, BPG for structural measures and flood proofing may be updated based on the practical experiences gained from the Countries during the training course.

5.2 Course development and implementation

5.2.1 Course development

Design of the training on BPG for structural measures and flood proofing

Following the general objectives of the training (see Section 5.1.2) a course design was chosen including both the theoretical and practical aspects of structural measures and flood proofing. The course programme covered presentation sessions in the morning and exercises in the afternoon. Course materials were made available through web-based I-Learning Environment and hand-outs of the presentations and exercises were given on the first day of the training course.

In the first day of training the site visit was made to the bank erosion prone areas where river training works have been implemented under JICA funded projects.

The presentations in the morning covered the topics on scope and key concepts of guidelines for structural measures and flood proofing, including the planning and design of river training works, river bank protection works, flood proofing works, dikes, roads and flood embankments, to provide a sound methodological background. These presentations illustrated how the theoretical concepts could be applied to the case study areas in the LMB. Results of stage 1 of FMMP-C2 were presented to bridge theory and practice.

The exercises in the afternoon were related to the theory of the morning. The questions to be answered by the participants covered different aspects of the presented theory. The exercises did not only focus on (quantitative) analysis skills, but also included broader questions on the general application of the theory in planning and design of the structural measures and flood proofing.

It was chosen to work in country groups. This enabled effective discussion and exchange between participants of different organizations.

Two case studies for participant's exercises were included, i.e. Focal Area Kratie Province (Cambodia) and Focal Area Bokeo Province (Lao PDR) for the exercises on river bank protection measures. The objective of these exercises for the country groups was to demonstrate their knowledge on the planning and design process of the structural measures and flood proofing. With these exercises they developed the skills for using the proper methodologies and approach in their own countries.

Organization and programme of the training courses

The courses were given and organised by the following team (see also the presence list in Appendix 2):

Name	**Organization**	**Role**
Fortunato Carvajal Monar MSc	Royal Haskoning	Civil Engineer & training facilitator
Paul Abbey MSc	Royal Haskoning	Senior Civil Engineer Flood proofing
Truong Tuan Duy MSc	Royal Haskoning	Course organization and I-learning
Mok Sopanha	MRC-FMMP	Course organization and support
Bounsanong Aphay	LNMC	Course organization and support

Training course schedule:

Day 1: Opening/introduction, and guidelines for structural measures

08:30 - 09:00	Registration	
09:00 – 09:10	Opening Speech	MRC FMMP management
09:10 – 09:40	Introduction trainers and participants, Introduction training course and overview training programme on Structural Measures, Flood Proofing & Roads/Flood Embankments	F Carvajal Monar
09:40 – 10:20	Introduction on scope of the guidelines for structural measures and key concepts. The Mekong River in the Lower Basin ▪ Geological characteristics ▪ River geomorphology Classification of river stretches along the Mekong in the LMB	F Carvajal Monar
10:20 – 10:30	Planning of structural measures & design process Part 1	F Carvajal Monar
10:30 – 10:45	*Break*	
10:45 – 11:30	Planning of structural measures & design process Part 2	F Carvajal Monar
Lunch		
12.30 – 18.00	Field visit (to bank erosion prone areas and where river training works have been implemented.	All

Day 2: Design guidelines structural measures

08.30:00 – 10:00	Structural measures for river stabilization: ▪ Data collection ▪ Rate of erosion/accretion. Analysis and correlation with morphology and flood events. ▪ Prediction of erosion and consequences on flood events ▪ Alternative solutions (conceptual and feasibility)	F Carvajal Monar

	▪ geometrical design/layouts	
10.00 – 10:30	*Break*	
10:30 - 12:00	Preparing design of river bank protection works: ▪ Options ▪ Design criteria, water levels, Q_d, scour depth, flow velocity, geo-technical parameters ▪ Design process (structural) ▪ Multi-criteria-Analysis ▪ Risk analysis ▪ Materials, construction considerations, specifications, monitoring and maintenance.	F Carvajal Monar
Lunch		
13:30 – 14:45	Parallel sessions exercise of case study.	All
14.45 – 15.00	*Break*	
15:00 – 16:30	Parallel sessions exercise of case study.	All
16.30 – 17.00	Q/A, Reflection and wrap-up	F Carvajal Monar

Day 3: Flood proofing

08:30 - 10:00	Purpose and scope of the guidelines Types of flood proofing measures: ▪ Flood proofing in buildings ▪ Flood proofing of infrastructure ▪ Permanent flood proofing ▪ Contingent flood proofing measures ▪ Emergency flood proofing measures	Paul Abbey
10.00 – 10:30	*Break*	
10:30 - 12:00	Approaches to flood proofing: ▪ Infrastructure ▪ Flood Hazard boundaries ▪ Depth ▪ Velocity ▪ Rate of water rise ▪ Duration ▪ Frequency ▪ Site Specific factors, Geology, Ground water, and soil conditions, physiographic characteristics of the area(s) Functional, operational and economic factors General Cautions Applicable to Flood proofing	Paul Abbey
Lunch		
13:30 – 14:30	Parallel sessions exercises of case study	All
14.30 – 15.00	*Break*	
15:00 – 16:30	Parallel sessions exercises of case study (continued)	All
16.30 – 17.00	Q/A, Reflection and wrap-up	Paul Abbey

Day 4: Dikes, roads and flood embankments

08:30 - 10:00	Key concepts, Purpose and scope of the guidelines ▪ Planning stages ▪ Legislation and Regulatory Controls ▪ Obtaining background Data ▪ Pre-design study, functional requirements ▪ Road and flood embankments ▪ Design high flood level, Flow impingement, Free	Paul Abbey

	board, Top width ▪ Flood mapping, Alignment and spacing ▪ Land acquisition and borrow areas	
10.00 - 10:30	*Break*	
10:30 – 12.00	▪ Structural design Criteria for flood and road embankments ▪ Fill Settlement ▪ Sudden drawdown ▪ Hydraulic gradient ▪ Side slope, erosion Protection ▪ Dike Access ▪ Confirm Design Criteria ▪ Prepare Project Documents ▪ Monitoring and maintenance	F Carvajal Monar
Lunch		
13:30 – 14:30	Parallel sessions exercises of case study	All
14.30 – 15.00	*Break*	
15:00 – 16:30	Parallel sessions exercises of case study (continued)	All
16.30 – 17.00	Q/A, Reflection and wrap-up	F Carvajal Monar, Paul Abbey

Use of I-Learning Environment

All the training material was stored on the UNESCO-IHE I-Learning Environment. This web-based environment gives participants access to training material and outcomes of the training, to share background docs and to interact also with the trainers. Before the start of the course participants received a login and password and explanation on how to use the platform. The I-Learning Environment can be accesses and used before, during and (limitedly) after the course.

During the course documents were updated when necessary. Also the results of the exercises and case studies were made available after the exercise on the I-learning environment.

5.2.2 Course implementation

In general, the course was implemented and completed as designed (see previous section). Below some particulars on the course implementation and execution are treated.

Course locations and dates
This regional training course was given in the Lao Plaza Hotel in Vientiane, Lao PDR from 8 to 11 September 2009. A conference room, which can accommodate 30 participants, was used for both the presentations and exercises.

Course announcement and registration
The relevant national institutes (see Appendix 2) were approached to propose seven suitable candidates for the training. Main requirements were sufficient English language skills and currently or in the near future working in the field of integrated flood risk management, planning and design of structural measures and flood proofing works. Based on the proposed candidates a final list was established (see also Section 5.3.1). The first morning of the training day all participants were registered.

Course preparation
Course materials were prepared by Consultant Team and made available in the week before the course through the I-Learning environment.

Course programme
The course programmes were completed as designed.

During the exercises in the afternoon a flexible schedule was used. The intended results of the exercises were presented by the trainers when all participants were finished and the results were discussed with the group.

Course evaluation
On the final day participants were given an evaluation form and this was completed by all the (present) participants.

Important observations and lessons learned from the course, as well as suggestions for upcoming courses are included in Section 5.5.

5.3 Course participants

5.3.1 Target organisations and participants

The Consultant sent the four NMCs the list of proposed participating institutions (line agencies, institutes, education centers, etc.) together with the selection criteria (level of English, training relevancy for job) for the participants. The NMCs made a selection based on provided criteria and send the list of proposed participants to the Consultant for review. The final selection of the training course participants (maximum 7 for each country) was then finalized in consultation with the MRC and countries' NMCs.

The target organisations are those who need capacity in the IFRM knowledge areas, including flood hazard, vulnerability, risk and damage assessment methods, structural flood risk measures, flood proofing measures, roads/flood embankments, social and environmental impacts of IFRM measures, and IFRM planning. The target organisations of the training course were:

- **Line agencies** working at national levels in the identified knowledge areas;
- **NMC**'s and in particular coordinators who are responsible for MRC programmes that address flood related matters (FMMP), or should be able to include floods and related structural aspects in their work (BDP in particular to complete and evaluate the ProDIP, but also programmes like WUP and EP);
- Staff of **educational centers** working in the identified knowledge area (Appendix 1); and
- Staff of **MRCS** programmes working in the above-mentioned MRC programmes.

Appendix 2 gives for each country the institutions that were proposed to participate in this course.

Within the mentioned organisations the training on BPG for structural measures and flood proofing targeted technical professionals that needed upgrading on knowledge and skills of structural flood risk measures, flood proofing measures, roads/flood embankments, social/ environmental impacts of IFRM measures, as well as those who use the guidelines on structural measures and flood proofing.

Criteria for selection of participants included:

- Participants are part of the above-identified target group engaged in planning and design of structural measures, flood proofing and roads/flood embankments;
- The training fits in the career development path of the participant, hence they either work in the related planning and design of structural measures, flood proofing, roads/flood embankments and flood risk assessment knowledge area at professional or decision-making level (and stay involved) or will be involved in the near future;
- Participants have an academic background;
- Participants have sufficient English language skills.

5.3.2 Participants present at the course

In total 28 professionals participated in the courses. By country, participation was as follows:

- Lao PDR: 7 people from 7 agencies;
- Thailand: 7 people from 3 agencies;
- Cambodia: 7 people from 7 agencies;
- Vietnam: 7 people from 5 agencies.

Details on the participants, their position, their employer, and their presence during the 5 days of training are presented in Appendix 2.

5.4 Course evaluation

5.4.1 Evaluation by participants

This section presents the aggregated results of the individual evaluations. The evaluation form is included in Appendix 3.

(1) Training course in Phnom Penh:

23 responses are received.

Theme and structure of the module

1. For my future career, I consider the training course to be:

Very important	9
Important	14
A little important	-
Not important	-

2. The course included several subjects. Please rate them by order of importance for you.

   (**1** = very important, **2** = important, **3** = a little important, **4** = not important)

	1	**2**	**3**	**4**
Basic concepts of BPG structural measures and flood proofing	17	6		
Planning & design structural measures for river stabilization	9	13	1	
Planning & design of river bank protection works	11	11	1	
Planning & design of flood proofing measures	14	8	1	
Planning & design of dikes, roads and flood embankments	12	9	2	
Exercise of case studies	7	12	4	
Total	**70**	**59**	**9**	**0**

3. The material covered in the module was:

Mostly new for me	4
Partly new	17
Presented little novelty	2
Not new at all	

4. The sequence of topics presented in the module was:

Very Good	7
Good	11
Reasonable	5
Poor	

5. The work intensity during the module was:

Very high	4
High	12
Moderate	7
Low	

Quality

6. How do you rate the quality of the lecturer in presenting and explaining?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	**2**	**3**	**4**	**5**
Fortunato Carvajal Monar (Introduction Best Practice Guidelines on structural measures and flood proofing)	11	11	1		
Fortunato Carvajal Monar (design guidelines of structural measures for river stabilization and river bank protection works)	12	11			
Paul Abbey (Planning and design of flood proofing measures)	10	13			
Paul Abbey (Planning and design of dykes, roads and flood embankments)	8	15			
	41	**50**	**1**	**0**	**0**

7. How was the contact between the students and the lecturer?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	**2**	**3**	**4**	**5**
Fortunato Carvajal Monar (Introduction Best Practice Guidelines on structural measures and flood proofing)	8	11	4		
Fortunato Carvajal Monar (design guidelines of structural measures for river stabilization and river bank protection works)	8	14	1		
Paul Abbey (Planning and design of flood proofing measures)	8	12	3		
Paul Abbey (Planning and design of dykes, roads and flood embankments)	10	13			
Total	**34**	**50**	**8**	**0**	**0**

8. How do you rate the quality of the written material?
(**1** = very good, **2** = good, **3** = moderate, **4** = poor, **5** = very poor)

	1	**2**	**3**	**4**	**5**
Basic concepts of BPG structural measures and flood proofing	9	14			
Planning & design structural measures for river stabilization	11	12			
Planning & design of river bank protection works	10	13			
Planning & design of flood proofing measures	10	13			
Planning & design of dikes, roads and flood embankments	11	12			
Exercise of case studies	7	14	2		
Total	**58**	**78**	**2**	**0**	**0**

9. What is your opinion about the general quality of the course:

Very high	3
High	16
Moderate	4
Low	
Very low	
Total	**23**

Overall evaluation

The learning objectives for the participants were the following:

▪ Understanding the key concepts on BPG for structural measures & flood proofing
▪ Understanding the planning and design process of structural measures for river stabilization and river bank protection works
▪ Understanding the planning and design process for flood proofing measures and dikes, roads and flood embankments; and
▪ Apply the proper methodologies in the preparation of the structural measures and flood proofing demonstration projects in the country

13. In your opinion, did the course meet the above-mentioned learning objectives?

Yes	17
Partly	6
Not at all	

11. Any specific comments on the contents of the BPGs presented in the course

- It would be better if the exercise could consist of more specific data so that participants would have better understanding
- The specific examples for each country would be needed
- More time for exercises would be needed.
- Design criteria for dikes would be more preferable
- the Draft BPG should be circulated to the country's relevant agencies a.s.a.p.

14. Any specific comments on the contents of the BPGs presented in the course

- The logistic arrangements are generally good
- The participants should be informed well in advance on the logistic arrangements
- It is very good to have internet in the meeting room
- Some participants proposed to let participants to arrange the logistics by themselves

5.4.2 Evaluation by trainers

- General: good attendance and interest. Participants were always present before the official starting times.
- During the lectures it is difficult to get interaction and questions.
- Some questions (after the presentations) were country-specific.
- There was a very active participation in the exercises (some groups had to be forced to take their break).
- Exercises connecting the theory with practical experience appeared to be very useful. Recognizable examples were available and the theory is connected to the practice.
- Differences in levels in English and background knowledge and between the country groups existed and became specifically apparent during exercises.
- Some participants expect that the training would exactly tell them how to do planning and design of structural measures and flood proofing in their country. However, the training provided the general approach and steps and does not prescribe exactly which models to use for a specific region.
- The training emphasized the need of working in multi-disciplinary teams. Combined knowledge of environmental assessment, stakeholder participation in planning and design of structural measures and flood proofing measures are needed.

See Section 5.5 for a more elaborated overview of lessons learned and suggestions for the upcoming training courses.

5.5 Lessons learned and suggestions

Selection of participants

- The planning and design of structural measures and flood proofing require a multi-disciplinary activity that involves disciplines as flood control planning, hydraulics, environmental assessment, stakeholder participation, social and economic evaluations, etc. Preferably the participants are selected in such a way that the different aspects of the planning and design of structural measures and flood proofing are covered.

- There were differences in the knowledge levels between the different country groups. This became clear during the exercises with some groups being faster than others and with better outcomes. It is suggested to take this into account in the preparation of the exercises (see below).

Training materials

- Prepare supporting training materials (guidelines, etc.) one or several weeks in advance. This will give participants the chance to read and study the materials beforehand.
- During the courses the participants were given the case studies/ exercises for focal Area Kratie Province (Cambodia) and Focal Area Bokeo Province (Lao PDR). The aim was that they would come up with a stepwise approach/ action plan for their cases. For most of the groups it proved somewhat difficult to transfer the general knowledge of planning and design of structural measures and flood proofing to the specific situation. One option could be to ask the participants to prepare some general information on their case study beforehand.

Course duration

- The course lasted for four days, given the extensive amount of theory treated and the time needed for the exercises.

Course design

- The combination of presentations (morning) and exercises (afternoon) was very successful and well received. The aim was to combine theory and practice for the LMB region in both presentations and exercises. It is recommended to follow this structure in all FMMP-C2 courses. One of the success factors was that experiences/ results from earlier stages of the FMMP-C2 project could be included in the presentations and case studies.
- Some of the participants mentioned that they had expected to have of specific examples to apply for planning and design process of structural measures and flood proofing for each of the countries. It has to be made clear that is not the objective of the training course, but the role of the participants themselves. The country specific development of appropriate models and tools for specific countries has to be done by participants in cooperation with local stakeholders.

Case studies and exercises

- Differences were observed between country teams in the time that was needed to complete the exercises.
- As lesson learned from last training two focal areas are selected, i.e. focal Area Kratie Province (Cambodia) and Focal Area Bokeo Province (Lao PDR), for case study exercises to address differences between situations in LMB countries.

Course evaluation

- The course evaluation is (very) positive, reflecting the overall positive interaction during the course.

Practical/ logistical

- The logistic arrangements are generally well organized that help the training courses were successful. As lesson learned from last training, the participants are informed well in advance about the necessary logistic arrangements during the training courses.

APPENDIX 1 DESCRIPTION OF TRAINING COURSE

Training Course	**Use of BPG for Structural Measures, Flood Proofing & Roads/Flood Embankments**
Description	A short training course on BPG for structural measures, flood proofing and roads/flood embankments. It is a Regional Training Course.
Period	8 - 11 (Tuesday – Friday) September (Vientiane)
Duration (study load)	Four days (32 hours)
Target group	Professionals and Technical managers level MRC, line agencies, institutes, and universities. List of proposed participating institutions is given in Appendix 2.
Learning objectives (At the end of the course participants will be able to)	▪ Understand the BPG for structural and flood proofing measures; ▪ Explain the basic concepts on planning and design of structural and flood proofing measures and its main approaches and methods; ▪ Contribute to improvement of the BPG guidelines development process, and; ▪ Apply the proper methodologies in the preparation of structural and flood proofing demonstration projects.
Modalities:	Lectures, parallel sessions with exercises on use of guidelines for (international) case study, group discussions.
Subjects:	Structural measures, riverbank erosion control, flood proofing & roads/flood embankments: ▪ Approaches to planning and design of structural measures ▪ Approaches to planning and design of flood proofing measures ▪ Approaches to planning and design of road and flood embankments ▪ Geo-morphological characteristics of the Mekong River ▪ Data collection and surveys ▪ Rate of erosion/accretion. Analysis and correlation with morphology and flood events. Demarcation of erosion risk areas. ▪ Prediction of erosion and consequences on flood events ▪ Geometrical design and structural design of measures ▪ Design of riverbank protection works, flood proofing and road/flood embankments; ▪ Options, revetments, groynes, embankments, dikes, flood proofing ▪ Design criteria, water levels, Q, scour depth, flow velocity, geo-technical ▪ Design process ▪ Parallel session's exercises on structural measures and flood proofing.
Main competencies targeted	Professional knowledge: ▪ Floods and flood risks, hydrological and hydraulic analysis, river engineering, designers of hydraulic structures to control erosion; ▪ Hydraulics and water resources engineering ▪ Flood proofing Skills and attitudes: ▪ Knowledge application and dissemination ▪ Sufficient English language skills
Development/ facilitation/ training	Fortunato Carvajal Monar (Royal Haskoning) Paul Abbey (Royal Haskoning) Truong Tuan Duy (Royal Haskoning)

APPENDIX 2 LIST OF INVITED INSTITUTES AND ACTUAL PARTICIPANTS

Invited institutes for the regional training course:

Participants from LAs Vietnam	# of participants
- VNMC	2
- Dept. Of Dyke Management and Flood Control, MARD	2
- Dept. of Water Resources Management, MONRE	1
- Southern Institute of Water Resources Planning, MARD	1
- Southern Institute of Water Resources Research, MARD	1

Participants from LAs Cambodia	# of participants
- CNMC	2
- Ministry of Water Resources and Meteorology (MWRM)	1
- National Committee on Disaster Management	1
- Ministry of Agriculture, Forestry and Fisheries	1
- Ministry of Transport and Public Works	1
- Ministry of Energy	3

Proposed participants from LAs Thailand	# of participants
- TNMC	1
- Dept. of Water Resources, MONRE	3
- Dept. of Disaster Prevention & Mitigation, Ministry of Interior	2
- Dept. of Land Development	1

Participants from LAs Lao PDR	# of participants
- Ministry of Public Works and Transport	1
- National Disaster Management Office	1
- Dept. Of Hydrologist and Meteorologist	1
- Water Resources and Environment Administration	1
- Dept of Irrigation, Ministry of Agriculture and Forestry	1
- Ministry of Energy and Mines	1
- - Water Resources and Environmental Institute	1

Actual participants in the regional training course:

LIST OF PARTICIPANTS
Regional Training on BPG on Structural Measures and Flood Proofing
From: 08-11 Sept, 2009
Venue: Lao Plaza Hotel, Vientian, Lao PDR
Date: 08 Sept, 2009

No.	Names	Title	Agencies	Email address	Signature
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2	Ms. Mok Sopanha	Senior Secretary	MRC-FMMP		
3					
B	**FMMP-C2 Consultants**				
4	Gert Sluimer	Consultant Team Leader	Royal Haskoning		X
5	Fortunato Carvajal	Senior River/Hydraulics Spec.	Royal Haskoning		
6	Paul Abbey	Senior Civil Engineer	"		
7	T. T. Duy	" " "	"		
A	**Laos participants**				
7	Mr. Khammai Vongsathiene	Chief of Irrigation and Devel.	DOIMAF		
8	Ms. Soytavanh Mianmany	Technical Officer	WRERI		
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18	Mr. Kunpote Buatone	Engineer	DOWR	khunphot@gmail.com	
19	Mr. Winai Wangpimool	Civil Engineer	DOWR	winai.w@dwr.mail.co.th	
20	Mr. Paitoon Naktae	Senior Civil Engineer	DDPM	paitoon_bk@yahoo.co.th	
21	Mr. Banyat Yaingooluam	Civil Engineer	DDPM	banyat_yai@yahoo.com	
22	Ms. Saowance Prachansri	Agronomist	LDD	saowanee@idd.go.th	
E	**Cambodian participants**				
23	Mr. Ros Sophornna	Acting Director of WD	MPWT	sophornnar@yahoo.co.uk	

24	Mr. Nhar Heng	Deputy Director of RRD	MRD	hengsan@hotmail.com	
25	Mr. Tong Seng	Chief of Research & Flood Fore. Officer	MOWRAM	tongseng999@yahoo.com	
26	Mr. Chheng Phen	Vice Chief of Biological Division	MAFF	chhengp@yahoo.com	
27	Mr. Suos Bunthan	Vice Chief of DIMO	CNMC	bunthan@cnmc.gov.kh	
28	Ms. Nop Navy	Senior Technical Officer	MOE	navy_nop@yahoo.com	
29	Mr. Sok Bun Heng	National Flood Expert	CNMC-NFU	bunheng67@yahoo.com	
F	**Vietnam participants**				
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APPENDIX 3 EVALUATION FORM

Evaluation of the Regional Training Course:

'Best Practice Guidelines for Structural Measures and Flood Proofing, FMMP-C2'
Laos, Thailand, Cambodia and Vietnam

8 – 11 September 2009 in Vientiane, Lao PDR

The purpose of this evaluation is to receive feedback from the participants in order to improve the presentation and contents of future courses relating to FMMP-C2. Please answer the following questions giving your spontaneous opinion. The questionnaire is anonymous and will be treated in a confidential manner.

Theme and structure of the module

1. For my future career, I consider the training course to be:

   - Very important ☐
   - Important ☐
   - A little important ☐
   - Not important ☐

2. The course included several subjects. Please rate them by order of importance for you.

   (**1** = very important, **2** = important, **3** = a little important, **4** = not important)

	1	2	3	4
▪ Basic concepts of BPG structural measures and flood proofing	☐	☐	☐	☐
▪ Planning & design structural measures for river stabilization	☐	☐	☐	☐
▪ Planning & design of river bank protection works	☐	☐	☐	☐
▪ Planning & design of flood proofing measures	☐	☐	☐	☐
▪ Planning & design of dikes, roads and flood embankments	☐	☐	☐	☐
▪ Exercise of case studies	☐	☐	☐	☐

3. The material covered in the module was:

   Mostly new for me ☐
   Partly new ☐
   Presented little novelty ☐
   Not new at all ☐

4. The sequence of topics presented in the module was:

   Very Good ☐
   Good ☐
   Reasonable ☐
   Poor ☐

5. The work intensity during the module was:

Very high	☐
High	☐
Moderate	☐
Low	☐

Quality

6. How do you rate the quality of the lecturer in presenting and explaining?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Fortunato Carvajal Monar (Introduction Best Practice Guidelines on structural measures and flood proofing) …
Fortunato Carvajal Monar (design guidelines of structural measures for river stabilization and river bank protection works) …
Paul Abbey (Planning and design of flood proofing measures) …
Paul Abbey (Planning and design of dykes, roads and flood embankments) …

7. How was the contact between the students and the lecturer?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

Fortunato Carvajal Monar (Introduction Best Practice Guidelines on structural measures and flood proofing) …
Fortunato Carvajal Monar (design guidelines of structural measures for river stabilization and river bank protection works) …
Paul Abbey (Planning and design of flood proofing measures) …
Paul Abbey (Planning and design of dykes, roads and flood embankments) …

8. How do you rate the quality of the written material (PP presentations and BPG on Structural Measures and Flood Proofing) ?
(**1=**very good, **2=**good, **3=**moderate, **4=**poor, **5=**very poor)

- Basic concepts of BPG structural measures and flood proofing ...
- Planning & design structural measures for river stabilization ...
- Planning & design of river bank protection works ...
- Planning & design of flood proofing measures ...
- Planning & design of dikes, roads and flood embankments ...
- Exercise of case studies ...

9. What is your opinion about the general quality of the course:

Very high	☐
High	☐
Moderate	☐
Low	☐
Very low	☐

Overall evaluation

The learning objectives for the participants were the following:

- Understanding the key concepts on BPG for structural measures & flood proofing;
- Understanding the planning and design process of structural measures for river stabilization and river bank protection works;
- Understanding the planning and design process for flood proofing measures and dikes, roads and flood embankments; and
- Apply the proper methodologies in the preparation of the structural measures and flood proofing demonstration projects in the country.

10. In your opinion, did the course meet the above-mentioned learning objectives?

Yes ☐
Partly ☐
Not at all ☐

11. Any specific comments on the contents of the BPGs presented in this course:

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12. Any specific comments on the logistic arrangements of this course:

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