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Consulting Services for Community Based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC) Support

INCEPTION REPORT

Prepared for
Ministry of Water Resources and Meteorology
Royal Government of Cambodia

by
Agrifood Consulting International

Agrifood Consulting International

in association with

International Centre for Environmental Management (ICEM)

PREFACE

This document[1] is the Inception Report for the assignment *Community-based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC) Support*, a component of the ADB No: 40190 - Greater Mekong Sub-region Flood and Drought Risk Management and Mitigation Project (GMS-FDRMMP). The report has been prepared under the guidance of the Central Project Management Unit (CPMU) of the Ministry of Water Resources and Meteorology (MOWRAM) of the Royal Government of Cambodia. Earlier drafts were submitted on 30 November 2015 and 24 December 2015. The current document is a revision of the earlier drafts based on the comments received by the CPMU and Asian Development Bank (ADB). The Consultant's Team would like to thank the guidance of H.E. Dr. Ponh Sachak, Project Director, Mr. Bak Bunna, Project Manager, and Dr. Divas Basnyat, Team Leader of the Project Implementation Consultants Team. The Consultant Team is grateful to the numerous persons met in Phnom Penh and in Pursat province for sharing their ideas and generously giving their time. The views in the report are those of the Consultant's Team and do not necessarily reflect the views of MOWRAM.

Francesco Goletti
President, Agrifood Consulting International (ACI)

Laurel, 24 January 2016

[1] To be referred to as ACI 2016, Inception Report. Community-based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC) Support. Agrifood Consulting International, Laurel, Maryland, US, 24 January 2016.

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ABBREVIATIONS

ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
AUSAID	Australian Agency for International Development
CBDRM	Community-based Disaster Risk Management
CAG	CBDRM Advisory Group
CBO	Community based organization
CC	Coordination Committee
CCAP	Climate Change Adaptation Plan
CCCSP	Cambodia Climate Change Strategic Plan
CCDM	Commune Committee of Disaster Management
CCWC	Commune Councils for Women and Children
CDRI	Cambodia Development Research Institute
CIP	Commune Investment Plan
CNCW	Cambodian National Council for Women
CPMU	Central Project Management Unit
CRC	Cambodia Red Cross
CWS	Church World Service
DCDM	District Committee of Disaster Management
DIPECHO	Disaster Preparedness European Union Commission, Humanitarian Aid Office
DMF	Design and Monitoring Framework
DMP	Disaster Management Plan
DOM	Department of Meteorology
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EPRP	Emergency Preparedness and Response Plans
EU	European Union
FAO	Food and Agriculture Organization
FDRMMP	Flood and Drought Risk Management and Mitigation Project
FWUC	Farmer Water Users Communities
FWUG	Farmer Water Users Group
GCCC	Gender Climate Change Committee
GCM	General Circulation Model
GDTA	General Directorate of Technical Affairs (of MOWRAM)
GMS	Greater Mekong Subregion
GTZ	Gesellschaft fur Technische Zusammenarbeit, GmbH
HANET	Humanitarian Accountability Network
HFA	Hyogo Framework for Action
HVCA	Hazard, Vulnerability and Capacity Assessment
IEC	Information, Education, Communication
IFRC	International Federation of Red Cross
INGO	International Non-Government Organization
MAFF	Ministry of Agriculture, Forestry, and Fisheries
MOH	Ministry of Health
MOP	Ministry of Planning
MoU	Memorandum of Understanding
MOWA	Ministry of Women's Affairs
MOWRAM	Ministry of Water Resources and Meteorology
MRC	Mekong River Commission
NCDM	National Committee for Disaster Management
NFFEWC	National Flood Forecasting Center and Early Earning Center (NFFEWC)
NGO	Non-Governmental Organization
OGA	Organizational Gender Assessment

OVI	Objectively Verifiable Indicators
PAM	Project Administration Manual
PCDM	Province Committee of Disaster Management
PDWRAM	Provincial Department of Water Resources and Meteorology
PIC	Project Implementation Consultant
PIN	People in Need (International NGO)
PIU	Project Implementation Unit
PPMS	Project Performance Monitoring System
QQT	Quantity, Quality And Time
SCCSP	Sectoral Climate Change Strategy Plan
SNAP	Strategic National Action Plan
TA	Technical Assistance
TNA	Training Needs Assessment
TOR	Terms of Reference
UN ISDR	United Nations International Strategy for Disaster Reduction
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WFP	World Food Program
WHO	World Health Organization

SUMMARY

1. The *Community-based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC) Support* (henceforth the CBDRM-FWUC) is a consulting assignment corresponding to Component 3 of the *Greater Mekong Subregion: Flood and Drought Risk Management and Mitigation Project (GMS-FDRMMP).*

2. The Consultant's Team is highly aware of the ultimate goal for the accomplishment of the CBDRM-FWUC: to reduce future social, economic and environmental losses from the impacts of hazards causing disaster events, especially floods and droughts. We pursue this goal through designing and developing CBDRM processes for Villages and Communes in the Pursat province within the 16,100 hectares of the Command Area.

3. The new 2015 Government Sub-decree on Farmer Water User Communities (FWUCs) will provide the CBDRM-FWUC with a firm basis upon which we can build some new groups (and strengthen existing ones) at District, Commune, and Village levels. The intention is to ensure the management and use of the irrigation systems in an effective and sustainable manner in Pursat province and later to be followed as best practiced model in Cambodia.

4. Most significantly, it will be the community-based disaster risk management processes (e.g. risk reduction and management plans) that will provide an opportunity to enhance the GMS-FDRMMP Project structural investments and improved flood warnings.

5. The main purpose is to enable the communities to obtain the full benefit of the improved water resources control infrastructure of the GMS-FDRMMP project.

6. The CBDRM-FWUC has the following seven outputs:

Output 1. Provincial, District, Commune and Village level participants from selected areas trained in flood and drought risk assessment and analysis, prioritization, definition and implementation of locally appropriate flood and drought risk management measures.
Output 2. Safer Village and Commune Plans developed, utilized and updated
Output 3. Community-driven flood and drought risk reduction measures implemented in all selected communes
Output 4. Local level Coordinating Committees organized and managing the CBDRM implementation
Output 5. Technical Support and services available to provide technical assistance to the coordinating Communities
Output 6. Local facilitators recruited and trained to support village and commune planning and implementing risk reduction strategies in participating communes
Output 7. A CBDRM model formulated and implemented in the project area

7. The main activities to achieve this goal within the assignment's timeframe of two years, include:

- Building and strengthening the capacity to implement CBDRM processes of communities;
- Strengthening the Emergency Preparedness and Response Plans (EPRP) at Village and Commune level;

- Building village-based flood and drought preparedness plans based on the results of the Hazard, Vulnerability and Capacity Assessment (HVCA) that will be undertaken in the target Villages;
- Providing technical services to Farmer Water User Community/Farmer Water User Groups (FWUC/FWUGs) to enable them to implement CBDRM processes;
- Assisting with the development of early warning systems by the National Flood Forecasting Centre (NFFC) in close collaboration with Component 1 of Greater Mekong Subregion: Flood and Drought Risk Management and Mitigation Project (GMS-FDRMMP);
- Developing both flood and drought mitigation and management Guidelines.
- Enabling Communes to include CBDRM measures in the formulation of Commune Investment Plans (CIPs).
- Ensuring Gender Mainstreaming and Female Empowerment in the design, plan, and implementation of the CBDRM-FWUC assignment.
- Designing and implementing a CBDRM model in the command area, which has the potential of being replicable in other provinces of Cambodia.

8. The Inception Report discusses several key issues for implementation in Pursat province. Crucial to the success of the assignment will be the establishment of a Farmer Water Users Community (FWUC) in the command area and Coordination Structures, which allow the CBDRM-FWUC consultants to provide technical services to incorporate best practices of CBDRM in the Farmer Water User Community (FWUC) and Farmer Water User Groups (FWUGs) and Subgroups at the village level. The Consultant's Team jointly with the Central Project Management Unit (CPMU) based in Phnom Penh at MOWRAM and the Project Implementation Unit (PIU) based in Pursat at the PDWRAM will assist in the formation of FWUC and associated coordination structures, including the Commune Coordination Committee (CCC). These structures (the FWUC together with the FWUGs and the CCC) will be the focal point for the capacity building activities of the Consultant's Team.

9. One of the major initial activities of the Consultant's Team will be conducting a Hazard, Vulnerability, and Capacity Assessment (HVCA) at the village and commune level in the command area. This will involve an intense data and information gathering process in which our experts will interact with communities and establish the basis for subsequent meaningful and effective capacity building activities, including training of trainers (TOR) and training of all the villages in the command area selected by the CPMU and PIU.

10. The capacity building process will not be limited to training in CBDRM tools and processes. It will also include the preparation of CBDRM guidelines, assistance in the preparation of Commune and Village Emergence Preparedness and Response Plans (EPRPs) and Commune Investment Plans (CIPs) which incorporate both structural and non-structural measures to build resilient communities able to prepare and respond effectively to hazards such as floods and droughts.

11. The mainstreaming of CBDRM tools and processes in the planning of villages and communes is expected to strengthen the sustainability of the capacity building activities pursued by the Consultant's Team and the resilience of communities to climate change events.

12. Given the disproportion impact of disasters on women and the crucial role of women in agriculture and water management, Gender Mainstreaming and Female's Empowering approach will be actively embedded in all activities of the CBDRM-FWUC assignment.

13. The Inception Report includes a detailed methodology and work plan of how our team will implement the activities leading to the achievement of the outputs of the CBDRM-FWUC assignment

and contribute to the ultimate goal of realizing the full benefit of the improved water resources control infrastructure of the GMS-FDRMMP project.

14. The Inception Report makes a number of recommendations:

i. **Target Area Communes and Villages.** Focus CBDRM activities on 42 villages and 5 communes indicated in the project command area map.

ii. **Adoption of Hazard, Vulnerability and Capacity Assessment (HVCA) methodology** in the preparation of Village and Risk Profiles for individual villages.

iii. **'Value for money' Methods applied to Training and Capacity Building.** The training delivered in the project should be of value to its stakeholders. The training must show that it will improve the skills and knowledge of the target group (mainly commune and village level stakeholders) and the performance of commune and village level organizations. Also, the training delivered should be efficient and show the monetary value of the inputs provided. We propose that a '*value for money*' method will be adopted for the training delivery.

iv. **Monitoring and Evaluation (M&E) for the CBDRM-FWUC.** The Project Performance and Management System (PPMS) will be used to monitor the outputs/outcomes of the Project by CPMU and Project Implementation Consultants (PIC). PIC and CPMU will work with CBDRM team to monitor the key indicators under CBDRM component of the DMF. Some indicators may also be added in consultations with CBDRM.

v. **Establishment of a CBDRM Advisory Group (CAG).** The Consultant's Team will establish a CBDRM Advisory Group that could meet periodically with our team to exchange experiences on tools, methodologies, and innovations in the field of CBDRM.

vi. **Conference on CBDRM Workshop.** The CBDRM approach is gaining popularity in Cambodia and in addition to key players such as National Committee on Disaster Management (NCDM) and Cambodia Red Cross (CRC), other organizations including NGOs are currently working on this field. The GMS-FDRMMP is among the most important ongoing projects that has greater focus on CBDRM in Cambodia. It is therefore a great opportunity to organize a highly visible conference on CBDRM in order to disseminate the achievements of the project and establish partnerships with organizations working in this field both in Cambodia and in the region.

1 INTRODUCTION

15. The Consultant's Team is highly aware of the ultimate goal for the accomplishment of the Community-based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC) assignment: to reduce future social, economic and environmental losses from the impacts of hazards causing disaster events, especially floods and droughts. We pursue this goal through designing and developing community-based disaster risk management (CBDRM) processes for Villages and Communes in the Pursat province within the 16,100 hectares of the Command Area.

16. The main activities to achieve this goal within the project timeframe of two years, include:

- Building and strengthening the capacity of communities to implement CBDRM processes;
- Strengthening the Emergency Preparedness and Response Plans (EPRP[2]) at Village and Commune levels;
- Building village-based flood and drought preparedness plans based on the results of the Hazard, Vulnerability and Capacity Assessment (HVCA)to be undertaken in the target Villages;
- Providing technical services to Farmer Water User Community/Farmer Water User Groups (FWUC/FWUGs) to enable them to implement CBDRM processes;
- Assisting with the development of early warning systems by the National Flood Forecasting Centre (NFFC) in close collaboration with Component 1 of Greater Mekong Subregion: Flood and Drought Risk Management and Mitigation Project (GMS-FDRMMP)[3];
- Developing both flood and drought mitigation and management Guidelines.
- Enabling Communes to include CBDRM measures in the formulation of Commune Investment Plans (CIPs).
- Ensuring Gender Mainstreaming and Female Empowerment in the design, plan, and implementation of the CBDRM-FWUC assignment.
- Designing and implementing a CBDRM model in the command area, which has the potential of being replicable in other provinces of Cambodia.

17. The Law on Disaster Management (June 2015) and the March 2015 Government Sub-decree on Farmer Water User Communities (FWUCs) provide the project with a firm basis upon which we can mainstream CBDRM in existing institutions (eg the subnational levels of committees on disaster management) and build some new groups (and strengthen the existing ones) at District, Commune, and Village levels (see Appendix 16 for a review of the regulations). The intention is to ensure the management and use of the irrigation systems in an effective and sustainable manner in Pursat province and later to be followed as best practiced model in Cambodia.

[2] It should be noted that the Project Terms of Reference refer to "Safer Village and Safer Commune Plans". The plans are sometimes termed Emergency Preparedness and Response Plans (EPRP) in Cambodia. Many such plans already exist for villages in Cambodia however they are not in place in all our target Villages. They already exist in the four communes we are targeting. Another term sometimes used for the same plans is "Contingency Plan for Disaster Risk Reduction". In this report we will use the three terms "Safer Village and Safer Commune Plans", "Emergency Preparedness and Response Plans", and "Contingency Plans for Disaster Risk Reduction" interchangeably.

[3] The Greater Mekong Subregion: Flood and Drought Risk Management and Mitigation Project (GMS-FDRMMP) has four components (outputs), namely: Component 1: Enhanced regional data, information, and knowledge base for the management of floods and droughts; Component 2: Upgraded water management infrastructure; Component 3: Enhanced capacity for community-based disaster risk management; and Component 4: Effective project implementation

18. Most significantly, it will be the community-based disaster risk management processes (e.g. risk reduction and management plans) that will provide an opportunity to enhance the GMS-FDRMMP Project structural investments.

19. The main purpose is to enable the communities to obtain the full benefit of the improved water resources control infrastructure of the GMS-FDRMMP project and improved flood warnings.

20. The development of Disaster Risk Management at the community level consists in building resilient communities, supporting the rural population and assisting in coping with increased climate change challenges. Soft measures, such as increasing flood preparedness, flood proofing on a household level, flood defense measures, early flood warning can significantly decrease damages and losses during extreme flood events. Over the span of 24 months for the assignment the team is working closely with the communities in 42 villages and government officials to improve their skills in flood and drought preparedness and defense to help improve the livelihood of the mostly underprivileged farmers. We will need the close cooperation and inputs from the local stakeholders to determine the most effective, efficient and gender balanced means to ensure the success of the project.

21. The current situation in the project area with respect to flood and drought and possible effects of climate change will be thoroughly investigated and will serve also as a baseline to be able to evaluate the success of the project at a later time. Through capacity building and training the trainees will enhance their understanding of flood and drought effects (from occurrence to damages and defense) and learn skills to improve their and the villagers livelihood in case of extreme events. It is expected that by the end of the project individuals and teams in villages and communes are trained in disaster risk reduction and management in such a way that they feel comfortable to act decisively when the next extreme event occurs.

22. Parallel to the project an Early Warning System will be installed on the Pursat River which will form an integral part of the CBDRM activities by incorporating the flood warning procedures in the line of command.

1.1 Outputs of the Assignment

23. The assignment is to provide support for Community-based Disaster Risk Management (CBDRM) and Farmer Water Users Community (FWUC). The assignment has the following seven outputs:

- **Output 1.** Provincial, District, Commune and Village level participants from selected areas trained in flood and drought risk assessment and analysis, prioritization, definition and implementation of locally appropriate flood and drought risk management measures.
- **Output 2.** Safer Village and Commune Plans developed, utilized and updated
- **Output 3.** Community-driven flood and drought risk reduction measures implemented in all selected communes
- **Output 4.** Local level Coordinating Committees organized and managing the CBDRM implementation
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- **Output 7.** A CBDRM model formulated and implemented in the project area

1.2 Organization of the Inception Report

24. The Inception Report is organized into 7 chapters and 15 Appendices.

Chapter 1. **Introduction**.
It provides an overview of main activities and outputs of the CBDRM-FWUC assignment.

Chapter 2. **Community Based Disaster Risk Management in Pursat.**
It recognizes the importance of flood and drought risk management to effective CBDRM with the support of FWUC and FWUG. The chapter illustrates the proposed coordination structure for the project, which builds on existing structures and the inclusion of FWUG together with the Commune and Village level Disaster Management Committees.

Chapter 3. **Expected Outputs and Methodology.**
It describes the details to achieve the seven outputs with the proposed methodology.

Chapter 4. **Comments to the TOR and Risk Matrix**
The chapter clarifies the TOR of individual consultants and updates the Risk Matrix for the assignment.

Chapter 5. **Progress to Date.**
It lists the main achievements of the team since mobilization.

Chapter 6. **Work Plan, Deliverables, and Staff Schedule.**
It lists the deliverables and provides the work plan for the overall assignment, including deliverables, scheduling of activities and consultants' input.

Chapter 7. **Recommendations.**
The concluding chapter provides suggestions to the CPMU based on the analysis of previous chapters' analysis.

25. The Appendices are enclosed to provide support to the discussion in the main text.

Appendix 1. List of Target Villages
Appendix 2. TOR of Consultants
Appendix 3. Climate Change Projection for Pursat Province
Appendix 4. Draft Questionnaire for Village Risk Profile
Appendix 5. Development of a Model CBDRM Process
Appendix 6. Flood Management in the CBDRM-FWUC assignment
Appendix 7. Training in the CBDRM-FWUC assignment
Appendix 8. Concept Note for Inception Workshops
Appendix 9. Collaboration of CBDRM-FWUC assignment with NGOs
Appendix 10. Map Resources
Appendix 11. Structure of NCDM
Appendix 12. Hazard, Vulnerability, and Capacity Assessment
Appendix 13. Communication Material for O&M
Appendix 14. Gender Strategy and Action Plan
Appendix 15. List of Persons Met
Appendix 16. Law on Disaster Management and Subdecree on FWUC

2 COMMUNITY BASED DISASTER RISK MANAGEMEN IN PURSAT

2.1 General Background

26. Pursat province is located in the western part of the country and borders clockwise from the north with Battambang Province, the Tonle Sap, Kampong Chhnang Province, Kampong Speu Province, Koh Kong Province, and Thailand. It is located between the Tonle Sap and the eastern slopes of the Cardamom Mountains. The Pursat River bisects the province, running from the Cardamoms in the west to the Tonle Sap in the east.

27. Pursat province is the fourth largest province of Cambodia in area, and ranks only 14th in population (450,000). The region is accessible by National Highway 5, by boat, rail and by numerous smaller roads. The capital, Pursat town, lies 174 kilometers North West of Phnom Penh by road and 106 kilometers south east of Battambang.

28. The physical geography of Pursat encompasses many bioregions ranging from densely forested mountains to fertile plains to the Tonle Sap basin. Forests cover approximately 58% of the province. The mountains of the Kravanh range rise high in the west and southwest of the province along the coast. The land slopes toward the northeast, opening up into the fertile plains that continue into Battambang and from which much of Cambodia's rice crop is harvested. The Pursat River follows this orientation and drains into the Tonle Sap which forms Pursat's northeastern boundary. Pursat is one of the nine provinces that are part of the Tonle Sap Biosphere Reserve. The Disaster and Loss database (CamDi) indicates some 421,000 persons in Pursat Province between 1996 and 2013have been affected by disaster impacts and it is often affected by agricultural drought and flooding due to its proximity to the Tonle Sap Lake and the Pursat River. In October 2012 some 13,000 persons were evacuated in Pursat after the Pursat River burst out of its banks and the worst-hit district was Kandieng.

29. Cambodia faces high levels of risks associated with multiple natural hazards and experiences flooding anddroughtalmosteveryyear.Ruralcommunitieshavebornetheimpactsofsuchnaturalhazards consisting primarily of floods followed by drought, and intermittent epidemics and storms. In certain years, flooding becomes excessive and results in the loss of human life, destruction of crops and livestock, damaging homes and the prevailing network of community infrastructure (e.g. schools, health centers, irrigation canals, local roads and bridges).Typhoon Ketsana in September 2009 resulted in damage and losses estimatedat$131millioninCambodia.

30. The latest flood in 2013 was highly devastating. The National Committee for Disaster Management (NCDM) reported that the floods affected around 377,354 households and 1.8 million individuals living in twenty provinces and caused the death of 168 people majority of whom were children. The Post-Flood Early Recovery Needs Assessment (PFERNA) estimated total damages and losses of USD$356 million of which USD$153 million represented the destruction of physical assets (damage) in the affected areas, and USD$203 million of estimated losses in production and economic flows.

31. Although floods are the more intense and visible disaster, droughts have a serious potential to affect more people and cover relatively a larger geographical area. Over the past years, Cambodia has increasingly been affected mostly by widespread localized agricultural droughts. There are four characteristics of agricultural drought in the country that have been identified and listed below.

- Unpredictable delays in rainfall onset in the early wet season;
- Erratic variations in wet season rainfall onset, amount, and duration across different areas;

- Shortening of rainfall duration during the wet season;
- Occurrence of mini-droughts of three weeks or more during the wet season, which can damage or destroy rice crops without irrigation.

32. Pursat Province is prone to natural and human-made disasters, including flood, drought, typhoon, lightening, river bank erosion, fire and epidemics, landslides, wild fire, animal and insect infection, incidents, landmines and force eviction. The most vulnerable during disaster occurrence includes the poor, women headed households, children, old people, and the disabled.

33. Major flooding events have been significant in the last 52 years, i.e. 1961, 1966, 1978, 1984, 1991, 1996, 2000, 2001, 2002 and 2011. The floods of 1996, 2000 and 2011 hit Pursat Town severely. During the above disaster times, the Provincial Red Cross Branch and Cambodian Red Cross played an important role during relief operation and food distribution, while the PCDM played an important role in coordination. Another important role was also contributed by the Disaster Management Team's in conducting the need assessment in term of loss and damage to mobilize resources for rehabilitation and reconstruction though the responsibility for rehabilitation and reconstruction lies with different government line ministries.

2.2 The CBDRM-FWUC Subproject and the GMS-FDRMMP Project

34. The ADB No: 40190 - Greater Mekong Sub-region Flood and Drought Risk Management and Mitigation Project(GMS-FDRMMP)consists of 3 sub-projects:

i. Establishment of National Flood Forecasting and Early Earning Center (NFFEWC)
ii. Rehabilitation of Damnak Chheukrom Irrigation Project in Pursat Province
iii. Community Based Disaster Risk Management (CBDRM) and Farmer Users Community (FWUC)

35. The establishment of a **National Flood Forecasting and Early Earning Center (NFFEWC)** is of a high priority for the Cambodian Government to be able to forecast floods and droughts in particular on the tributaries. One of the objectives is to incorporate the tracking and forecasting of extreme meteorological events such as tropical cyclones which may cause large scale flooding but also flash floods. The forecast time interval for floods and droughts on tributaries may be quite different, shorter for floods -hours to days, and for droughts - weeks to months, hence an array of forecasting models may be implemented. The NFFEWC will be established within MOWRAM in Phnom Penh.

36. The main investment project is the **Damnak Chheukrom Irrigation Project** which provides irrigation water to approximately 60.000 people in 42 villages to guarantee and enhance their livelihood which is mainly based on agricultural production. The project is multifunctional and is also aimed to reduce effects of floods and droughts by improving water management infrastructure such as water storage reservoirs, diversion weirs, water diversion canals and related water control infrastructure. Key parameters of the project are listed below:

Reactivation or construction of new irrigation infrastructure:

Main Canal (Dhamnak Choeukrom Irrigation Canal)	30 km
4 Secondary Canals with a total length of	51.5 km
Large number of Tertiary Canals	
Reactivation/utilization of a natural reservoir (Phteng Roung) within the command area	

Number of new structures:

Pursat River barrage (to divert irrigation and flood water)	1
Double gates for off-takes and check structures:	9
Single gate off-takes and check structures:	10
Tertiary canal off-takes:	38
Bridges over the secondary canals (span 8, 10, and 13 m)	10

37. The **CBDRM and FWUC Support** of the overall project forms the main part of non-structural measures to support the communities in the command area to become more flood and drought resilient, but also enhancing the capacity in irrigation system O&M by strengthening the activities of the FWUC/FWUGs. The main effort of our team is to achieve this objective and is described in detail in this Inception Report. The links to the other sub-projects are outlined and coordination needs are addressed.

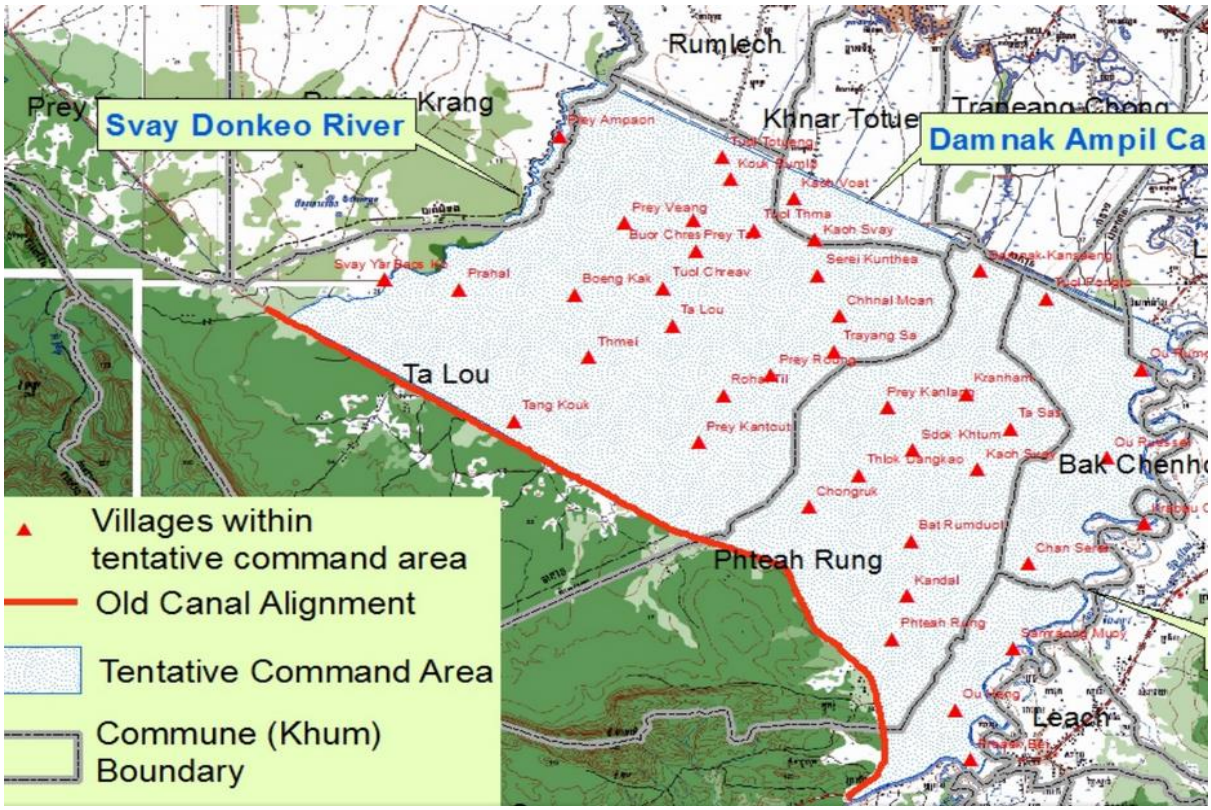
2.3 Flood and Drought Risk in Pursat

38. Almost every year during the monsoon season flooding and flash floods cause significant losses to lives, injury, causing injuries, loss of livestock, and damages to housing, crops and community infrastructures. On the other hand, droughts also affect the existing food security of the local rural population, as it either destroys or damages crop production and livestock. Droughts does not only occur during the dry season, but also within the wet season when the time lag of precipitation events exceeds more than 2-3 weeks.

39. Drought can also cause a significant shift of the monsoon onset, and hence disturb the predicted cropping cycle and patterns. The Royal Government of Cambodia (RGC) has taken the decision to provide support to irrigation schemes by adopting Community-based Disaster Risk Management (CBDRM) process to reduce future losses, especially for the most vulnerable areas and populations. This approach will assist the rural population by enhancing their preparedness and resilience against the main hazards of flooding and drought.

40. The aim of the Ministry of Water Resources and Meteorology (MOWRAM) is to improve the living conditions of the rural population, who is frequently affected by floods and droughts and whose livelihood is additionally under stress due to exacerbating climate change effects. Therefore emphasis is given to irrigation scheme development in order to reduce the level of dependency on rain-fed farming and to strengthen the resilience of poor communities, food-insecure farmers, including their ability to cope with natural disasters such as floods, droughts, and increasing rainfall variability.

41. The Flood and Drought Risk Management and Mitigation Project (FDRMMP) **will provide irrigation services through a system of canals to 16,100 ha of command area,** which lies to the west of the Pursat River. During wet season supplementary irrigation will be provided to the entire command area, while during dry season the command areas will face reduced flows due to limited upstream storage in dams. To ensure the long-term sustainability of this major investment are the new irrigation infrastructures of the project, which will be accompanied by a multifaceted community based approach to risk management.



Source: PIC

Figure 1 Tentative Map of Command Area and Villages[4]

42. Community based decentralized disaster risk measures and activities have proven effective in many parts of the world (International Federation of Red Cross and Red Crescent, 2010)[5]. The CBDRM approach implies solving problems at the source (the flood and drought affected areas) while ensuring sufficient know-how of the population to cope with extreme events, by enhancing skills and providing means for flood security and providing capacity in adaptation, drought mitigation and preparedness.

43. The FDRMMP is expected to create multipurpose infrastructure through a network of canals and diversion weirs that provide irrigation water during the dry spells but also can be used during flood events to divert excess water, facilitate accelerated drainage during and after the event, and drain more rapidly rain water runoff during and after a storm (e.g. typhoon). To make optimal use of this canal system and keep the system well operated and maintained, the **Consultant's Team will support the Farmer Water Users Community (FWUC)** through capacity building and training activities (see Appendix 7 for discussion of training; Appendix 12 for discussion of Hazard, Vulnerability, and Capacity Assessment tools; and Appendix 13 for awareness material). The Consultant's team will assist in the formation of the FWUC and the FWUC will become a focal point for the implementation of the CBDRM approach.

[4]The command area map shows 42 villages in 5 communes.

[5] In Cambodia the Cambodia Red Cross (CRC) has been implementing the Community Base Disaster Preparedness in 1997 – 2000 and then extended the project until 2006 with the new title of Community Based Disaster Risk Reduction funded by Danish Red Cross; it then implemented the Early Warning System Project (EWS) until 2014 with funding by the French Red Cross. The international NGO People in Need (PIN) has been implementing Community-based Disaster Risk Reduction (CBDRR) in Pursat since 2012.

44. The flood and drought mitigation and management aspects will be covered through structural and non-structural measures at the community level, as well as knowledge on flood and drought preparedness and building resilience form a significant part of the capacity building efforts.

45. The flood and drought mitigation and management aspects will be covered through structural and non-structural measures at the community level. Well-conceived information and knowledge on flood and drought conditions of the command area will be essential before proposing flood and drought mitigation and preparedness plans. Building resilience among the communities will a significant part of the capacity building efforts.

46. *Structural measures*, such as dikes, diversions, spurs, studs, etc. may have immediate visible effects in the event of flooding. However, without the introduction of*non-structural measures* based on community support and participation, such as Early Warning Systems (EWS) and Emergency Preparedness and Response Plans (EPRP), the structural and non-structural measures are generally not sustainable over time. **It is important to impart information, knowledge and ownership within the community**. Hence above interventions have been planned through capacity building measures such as training, public discussions, and fostering transparency and motivation of the community.

47. The project is facilitated by MOWRAM and the PIC and through **collaboration** between the CBADRM-FWUC Consultant's Team and other teams involved in the design and implementation of the Damnak Chheukrom Irrigation Project and the Early Warning Flood Forecasting System.

48. Based on the analysis of flood and drought risk assessment, the Consultant's team will outline and suggest prioritization, definition and implementation of locally appropriate structural and non-structural measures for flood and drought risk management.

49. The Consultant's Team will provide technical and advisory service to incorporate CBDRM measures in the **Commune Investment Plans** (CIP). We will draw on an array of feasible, affordable and efficient measures and propose an arrangement of optimal measures to ensure disaster risk reduction, preparedness and management at the village and commune level.

50. The aim of the proposed teamwork across the project components is to maximize the overall benefits and ensure future sustainability of the entire project.

2.4 Village Hazards, Vulnerabilities, & Capacities Assessment

51. Hazard, Vulnerability, and Capacity Assessment (HVCA) at the village level will form an integral part of the Consultant's approach CBDRM. The main objectives of a HVCA is to anticipate potential vulnerabilities, to help identify measures and solutions to enable people to reduce loss and damage, and to facilitate quick recovery. HVCA also will help to increase community preparedness, mitigate effects of hazards, address vulnerabilities, and be prepared for speedy response and recovery in case of an extreme event. The planned activities will be undertaken in close collaboration with the local Commune Disaster Management Committees (CDMCs) and the FWUC.

52. The Consultant's Team plans to conduct HVCA in **42 villages** selected by the CPMU in the command area and situated in 5 communes within 2 districts of the province of Pursat (Appendix 1 reports the list of villages and Figure 1 shows their location). The selected villages represent a cross-section with respect to the anticipated hazards and possible different vulnerabilities. It has been established that NGOs and INGOs are active in CBDRM within the province[6].

[6] The Consultant's Team has established contact with the main INGO People in Need (PIN) working in Pursat on CBDRM.

53. The HVCAs activities will consist of collection of **qualitative and quantitative information** and will lead to the preparation of Emergency Preparedness and Response Plans (EPRPs), and the assembling of relevant and useful disaster risk management tools.

54. The Village Profile will provide structured information on the needs and interest of the community in risk reduction and will include an initial survey of hazards, risks, capacity, and needs. The basis for these profiles includes available data on demographics, income and livelihood, literacy, schooling, environment, access to water (drinking water, irrigated / rain-fed agriculture, as well as provision of proteins through fishing) and sanitation, and availability of services (e.g. health centers and financial institutions). Additionally it is planned to use **semi-structured interviews** in the form of focus group discussions (FGD) with key informants such as local authorities and communities.

55. The team will also initiate a process of **participatory risk assessments** by assisting the community to provide information on the main hazards to establish a HVCA. The main focus will however be on the identification of both structural and non-structural risk reduction measures, and the prioritization of these measures based on the community's experience. In the course of this community based activities hazard maps, vulnerability maps, and other practical mapping of village zones or specific areas eligible for e.g. evacuation or community meetings during disasters, or escape routes towards other high grounds will be established. Examples of these tools are provided in Appendix 13.

56. A **survey** on existing disaster risk management tools used at successful CBDRM projects will be conducted; based on the results of the survey, locally adapted tools will be develop which specifically fit the demands of Pursat Province.

57. It is also planned to undertake **technical workshops** with villages to agree on priority needs and the availability of the desirable tools. Emphasis will be given to capacity building and training on CBDRM principles and irrigation system operation and maintenance (O&M) at the local level incorporating also the FWUC. Through this process, the Consultant's Team will determine what type of training is required and what resources are needed to sustain the use of tools for disaster preparedness, response and recovery processes.

58. The Consultant's Team is also seeking **collaboration with NGOs** who have worked for considerable time in the province on similar community-based topics to generate synergies and avoiding duplication. An international NGO People in Need (PIN) has been managing a multi-year project funded by the EU's Disaster Preparedness ECHO (DIPECHO) program in Pursat. The program focuses on preparedness for risks of natural disasters and uses a rapid early-warning and intervention system to protect communities that are threatened by natural disasters; PIN has already established a good working relationship in the province.

59. The PIN teams have been working throughout in 140 villages of Pursat Province including in 17 villages in Kravanh District. PIN has undertaken district and village needs assessments, commune capacity assessments, training, village level hazard, vulnerability and capacity assessments, early warning system establishment and other related activities, all focusing on Community-based Disaster Risk Reduction (CBDRR).

60. **Our team would not wish to confuse** the Communes and Villages by the application of possibly different approaches, methods and tools. PIN associated with four local NGOs as partners to work on site and linked closely to the villages and communes. Through PIN we could utilize this locally well established and trusted valuable local resources given their CBDRM experience over the last three

years. The Local NGOs which worked in our command area that could be potential partners (to be discussed with CPMU) are Anakot Kumar (AK), and Ponleu Kumar (PK).

61. To enhance the overall and specific project outputs we propose to collaborate with PIN to gain access to their experiences, their databases, their methodologies, templates, modules, publications etc. and review, select and adapt the best of these to our needs. The key differences from PINs program are that our focus will be on Farmer Water User Community (FUWC) and Farmer Water User Groups (FWUGs) and the link to sustainable infrastructure investments for irrigation, drought and flood mitigation and management.

2.5 CBDRM & FWUC Coordination Structure

62. The Central Project Management Unit (CPMU), the Project Implementation Consultant (PIC), and the CBDRM Consultant will **provide technical support** to the Project Implementation Unit (PIU) and FWUCs Support Team, including the District Resource Persons (assigned by PDWRAM), Provincial Committee of Disaster Management (PCDM), District Committee of Disaster Management (DCDM), and Commune Committee of Disaster Management (CCDM).

63. The aim is to help farmer groups become **self-reliant in managing their irrigation systems**. This implies for the FWUC and PIU/PDWRAM to manage and control the reservoirs, main canals, and secondary canals; and to carry out operation and maintenance and its cost estimate and design drawing.

64. PDWRAM/PIU and FUWC as the water service provider will assure accountability and transparency, so that all stakeholders feel that management of irrigation system is done correctly, and funds are used properly. Coordination and consultation meetings need to clearly define the roles and responsibilities including who is responsible for reservoir management and control, water management and distribution, main canal and gates control, service fees, service plans for average year and in cases of drought and flood management, accounting, management of funds, and monitoring and evaluation.

65. As the FWUC is based on the command area and not on administrative boundaries (in fact the tentative map of the command area already includes two districts and five communes), the coordination will be required among districts and communes.

66. In order to deal with these complexities, the Consultant's Team, jointly with other technical services of MOWRAM and PDWRAM, will provide technical and advisory services to the FWUC and be part of a FWUC Support Team including the District Governor, District Water Resource Person, Commune Council persons. The support team will relate to farmers not in the position of government supervisor but as partner and facilitator.

67. The aim is to help FWUCs to become self-reliant in managing their irrigation systems and **give responsibility to farmers who will take control** over their irrigation system. Through group identification of irrigation service objectives and establishment of new rules and enforcement mechanisms, FWUC will be in a better position to reduce the number of water related disputes and promote the decentralization process.

68. The Consultant's Team will then **facilitate the design and implementation of a Coordination Structure** that helps FWUC achieve their objectives. At the same time, we will promote CBDRM approach and measures into the coordination structure. Our team will facilitate communication with stakeholders and assist in managing workshops and meetings.

69. FWUC and their associated subgroups FWUGs have the right to take control of the transferred operational irrigation scheme and related infrastructure[7]. The responsibilities of the FWUC are stipulated and recognized by the government. After the scheme has been transferred the Department of Irrigated Agriculture of the Ministry of Water Resources and Meteorology shall conclude necessary agreements with the FWUC for proper utilization of irrigation facilities and related infrastructures.

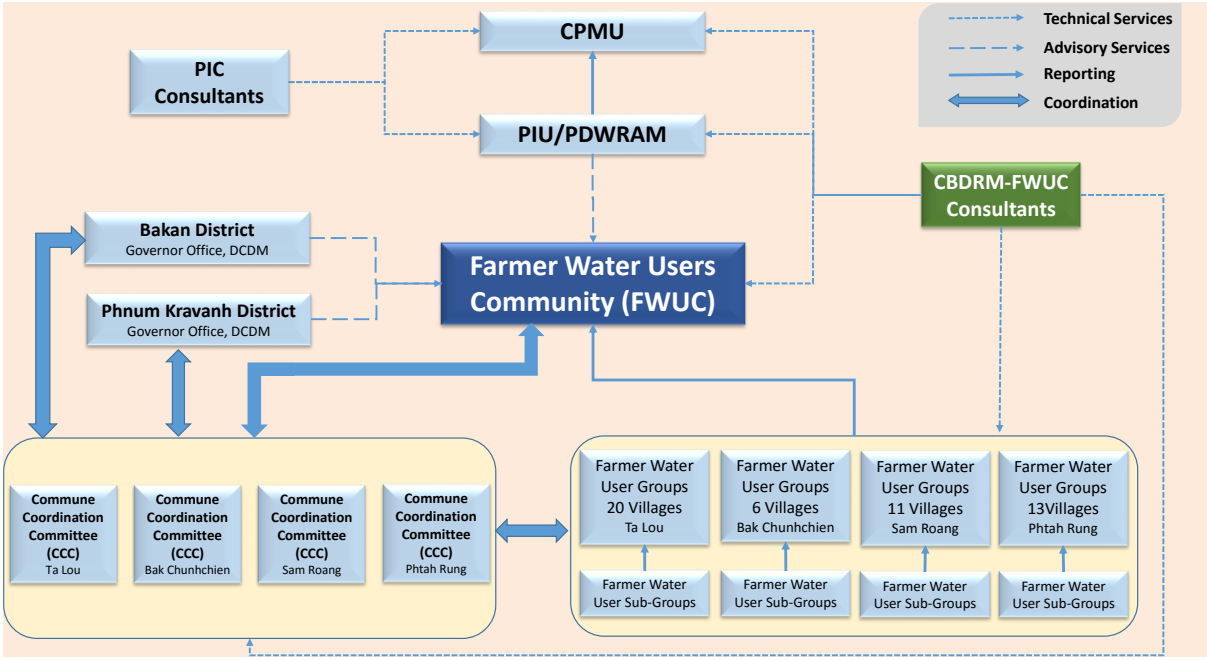


Figure 2 CBDRM and FWUC Coordination Structure.

2.6 Climate Change and Climate Resilience

70. The Royal Government of Cambodia has established the Cambodia Climate Change Strategic Plan (CCCSP) which became effective in late 2013. The CCCSP is designed to be consistent with other policies and plans such as the Strategic National Action Plan (SNAP) for disaster risk reduction (DRR). MOWRAM has developed and completed Sectoral Climate Change Strategy Plan (SCCSP) and Climate Change Adaptation Plan (CCAP) for water resources and meteorology sector since 2014. SCCSP of MOWRAM focuses on four major strategies which also include improvement of flood and drought management against risk and vulnerability and development of capacity for ministry technical staff and farmers (FWUC).

71. The climate change adaptation experts in the CBDRM team will develop approaches to reduce risks and climate hazards of communities and assist in introducing measures minimizing impacts of flood and drought. The experts will provide assistance to communes and villages for assessing the increased risk of floods and droughts in the project area. As part of an earlier ADB project with MOWRAM[8], a database of climate change parameters was developed with a series of maps and overlays to help predict the ranges of climate change.

[7] According to sub-decree 31 on 12 March 2015.

[8] Water Resources Management Sector Development Program TA-7610-CAM

72. **The MOWRAM Climate Change Database and GIS Toolkit** was developed with the GIS application - DIVA-GIS[9]. Through this GIS toolkit the experts in the team were able to compile a range of base maps such as administrative boundaries, hydrological and river system, delineated water resources regions, elevation, ecological and natural resources zones (including protected areas), geological features and soil types, agricultural land and productions, infrastructure and population.

73. As part of the USAID Mekong ARCC project which also covers Cambodia it was determined that by 2050 the Pursat province shows a projected increase of 2.3 – 2.6 °C rise in temperature during the dry season and a 2.9 – 3.2 °C rise in maximum daily temperature during the wet season. Trends in rainfall are also expected to change over the coming decades which also includes changes of the seasonal variability in rainfall patterns. The model predicts that **the wet seasons become wetter and the dry seasons become drier**.

74. In Pursat province, rainfall in the wet season may increase by about 80 – 100 mm or a 6 – 8 % increase (see Appendix 3). While it is projected that average rainfall will increase in the Mekong Basin, periods of annual agricultural drought are expected to lengthen significantly; particularly in the Mekong floodplain of Cambodia. Cambodia also stands out as a hot spot with up to 30% increase in the number of drought days each year in some provinces. In Pursat province the increase in the number of drought months seems less intense, with projections of up to 0.5 month by 2050.

75. In summary, the **Pursat Province** shows a 7- 7.5% increase in wet season rainfall in the mountainous areas of the Pursat river catchment and a 7.5 – 8% increase in the lowland areas of the catchment down to the Tonle Sap. In the dry season, the percentage change in rainfall patterns in Pursat is projected to decrease by 2 – 4 %. When combined with an increase in average maximum temperatures of 2 – 3.5 °C in the dry season, the **potential for dry season drought conditions is likely to increase**. On the other hand, the increases and more intensive rainfall events will lead **to increases in the extent, depth and duration of flooding** throughout Cambodia. It is predicted that the Tonle Sap and Cambodian Mekong floodplains may experience significant increases of extreme floods with depths of up to 2.0 m.

76. Further indications of risks of flooding in the Pursat province can be obtained from the flood risk maps recently prepared within the ADB project with the Ministry of Public Works and Transport[10] which identified roads at risk of different types of flood damage – large drainage area flooding, flash floods and lowland flood damage (see Figure 26 - Figure 28 in Appendix 3). All modelling results indicate **an increase in the risk of flood damage to** roads in the Pursat province, and this can be taken as indicative of the overall risk of flooding of the areas around these roads; this is especially acute for lowland roads being damaged by floods.

77. Although an array of climate predictions are available based on downscaled Global General Circulation Models (GCM), historic climate data will be collected from MoWRAM with a focus on hydrological/meteorological station in the Pursat River Basin. In addition, historical flood and drought and climate patterns leading to historic extreme flood and drought events will be investigated. The available datasets will assist in developing maps of possibly increased extent of flood and drought in the command area.

78. It is foreseen that for a selected number of representative villages **Village Climate Hazard Maps** will be developed with respect to the main climate hazards: flood and drought. The maps will

[9] DIVA-GIS, was used to process the preliminary climate database for Cambodia, and to plot climate parameters for visualization and comparison of the present and future climate change.

[10] Provincial Roads Improvement Project (PRIP) ADB Loan NO. 2839-CAM (SF) \ No.8254-CAM

be developed based on climate change projection maps for Pursat River Basin, analyzing climate patterns leading to historic flood and drought sensitive areas, collected records from MoWRAM and through a process of interviews and focus group discussions with the farmers.

79. In cooperation with the communes and villages a **Vulnerability Assessment of Priority Assets of Communities** will be undertaken to identify assets of the village such as infrastructure, natural system support livelihood, cultural and traditional assets, and livelihood. The identified assets will be ranked in terms of their importance and potential risk from flood and drought.

80. The development of **Climate Change Adaptation Measures** fosters a prevention approach within the community against climate change. Appropriate adaptation measures for the prioritized assets will be identified and developed. These measures need to be affordable, acceptable and in line with demands of the local population and meet availability of local resources.

81. The **Development of Guidelines on improving Climate Resilience** for community is also one of the target activities of the Consultant's team. These guidelines will cover early warning, preparedness and protection for flood and drought. In order to produce practical guidelines for the community, examples of adaptation, protection, preparedness, and community early warning systems will be reviewed. In addition to weather forecasting and early warning systems by MoWRAM, the team may need to develop **a simple tool for district officials and villagers to interpret** these official information.

82. **Capacity Building and Training of the Community and Government officials** on climate change adaptation forms an integral part of the project. The team will provide training modules to the community, provincial and district officials to carry out straightforward vulnerability assessments, identification of adaptation measures, local interpretation of weather forecasts and results from early warning systems.

3 EXPECTED OUTPUT AND METHODOLOGY

83. This chapter presents the methodology of the Consultant's Team to implement the outputs of the Assignment listed in Chapter 1. For each output we discuss the approach and the activities that will form the part of the work plan presented in Chapter 6. Some cross-cutting methodological issues (gender, M&E, and training and capacity building) are presented in the last section.

84. Throughout the implementation of the activities and the methodology to achieve the outputs of the project, the CBDRM team of consultants will coordinate closely with other teams of the Project including the design team, the national flood forecasting team, and the Project Implementation Consultants (PIC) team in order to maximize information sharing and identification of solutions.

3.1 OUTPUT 1: Provincial, District, Commune and Village level participants from selected areas trained in DRM

85. Disaster risk reduction (DRR) has been increasingly integrated into development efforts in Cambodia over the last half-a-decade. At the same time funding agencies/ODA, including ADB, have been promoting mainstreaming climate resilience into development planning. DRR tools have been developed, tested and in cases applied, and include, among others, early warning systems, guidelines, and SOPs for community-based disaster risk management.

86. Yet, these tools have not yet been mainstreamed into the Pursat Province, though important actions have been taken by MOWRAM and the local authorities, i.e. the Province, districts, communes and villages, in collaboration with local and international NGOs. MOWRM entities, such as the Technical Services Center (TSC) and the Working Group 5 (ADB Capacity Development Technical Assistant), have addressed capacity enhancement and training issues related to disaster risk management of floods and drought and FWUC. As regards NGOs DRR activities have been carried out by Anakoth Kumar (AK) in Phnum Kravanh District and by Ponleu Kumar (PK) in Bakan District, both supported strongly by the INGO People in Need (PIN). Other local NGOs have been engaged in similar work across the Province, including Environmental Protection and Development Organization (EPDO), the Support Organization for Rural Farmers (SORF) and the Irrigation Service Center (ISC), the latter particularly focusing on FWUC network support.

87. Supplementary data are available from secondary sources (studies, research) and relevant databases, for example, CamDi, and databases under the National Committee for Disaster Management (NCDM) and MRC. Additional information may be identified from other sources, such as the Asian Disaster Preparedness Center.

88. The Consultants' Team will work closely with the above organizations and draw on their experiences and results from disaster risk management activities to design and implement training and capacity building and learning. Combined with our own capacity analysis (needs assessment) we aim to ***design tailor-made and practically oriented risk management training*****.** Our needs assessment will be based on a representative selection of stakeholders in the Province, two districts, four communes, and 50 villages that will be interviewed to arrive at a solid database from the village and risk profiles.

89. Data will be gathered on a broad range of issues related to disaster risk management and will include hazard and hazard impact information, recent risk assessment, and capacity assessment of

key stakeholders at district, commune and village levels (i.e. previous risk management training, including disaster preparedness, response and recovery responses, climate resilience, etc.).

90. Most important we will pay particular attention to the concern, experience and suggestions coming from villagers – the target group that will be immediately exposed when disaster hits. Also, training needs will be identified for institutional issues, related to the safer village and commune plans (Output 2) and coordinating committees (Output 4).

91. Important performance indicators for the risk management training will be developed when the needs assessment have been carried out and the training design has been completed. These will then be included in the training evaluation. This will enable project management to control the progress and achievement of outputs and the final goal, e.g. to ensure reduction in loss of lives and livelihoods and damage to assets.

92. We propose to focus training on commune and village level participants. Based on preliminary investigation, both in the proposal preparation and during the inception period, the risk management training will comprise three modules as outlined below (Table 1). These modules are only suggestions at this stage, and could be a useful framework for the overall training delivery – yet, the details and specific contents and curricula will be developed based on the needs assessment to be undertaken in the target area.

Table 1 Possible Modules for Risk Management Training

Module 1	Module 2	Module 3
Introduction to CBDRM	Prevention, Disaster Response, Recovery and Reconstruction	Introduction to plans, management and tools
• Basic Concepts • Persons • Groups • Terminology	From vulnerability and risk assessment to damage and loss needs assessment	• Safer commune plans • Safer village plans • CBDR management • Best available tools to enhance sustainability, and built resilience

93. For each of the modules a *training data collection and evaluation plan* will be drafted. The purpose will be to ensure that we can measure the impact that training will have on institutions and stakeholders and their response to disaster in the future.

94. The evaluation of the training will be based on a '*value for money*'approach. This approach is described in Appendix 7.

95. The risk management training modules will be delivered by a selected group of facilitators who will be subject to a 'training-of-facilitators' training. This training is described in Output 6 and its successful implementation is considered crucial for effective learning during the risk management training.

3.1.1 Activities under Output 1

1) **Ascertain the current situation, knowledge and capacity**. Carry out needs assessment, including reviewing some previously conducted needs assessment in the target area, as well as design and apply suitable tools for data gathering. These data collection tools are currently being discussed and we foresee that they will be ready for *testing* during December 2015 and

fully implemented in the period late December 2015 - March 2016. All levels of government will be targeted but commune and village level will be prioritized.

2) **Design and Planning for DRM Training for Drought and Flood Hazards**. Based on the needs assessment a risk management training program will be designed. Then the Consultant's tam will prepare training materials, plans and schedules.
3) **Roll-out DRM Training for Drought and Flood Hazards**. Initially the training will involve only the facilitators (training of trainers, see output 6 and will then involve villages, communes, districts, and communes)
4) **Evaluate training** based on a value-for-money approach, according to methodology presented in Appendix 7. Record all reports and data for future reference for training design, plan, curriculum, and materials.

3.2 OUTPUT 2: Safer Village and Commune Plans developed, utilized, and updated

96. The Safer Village and Commune Plans will be developed, utilized and updated for selected communities to reduce risk and minimize future damage and loss from droughts and floods.

97. The overriding goal of the Safer Village and Commune Plans is to save lives, reduce vulnerability, protect economic assets, and ensure rapid recovery of poor communities living in hazard prone areas. To achieve this goal, two specific objectives will guide the preparation of these Plans: (i) to reduce risk and vulnerability to flood and drought hazards in project areas; (ii) to develop stronger village and commune disaster risk management capacity (see Output 1).

98. These objectives can be achieved through the provision of: (i) structural and nonstructural investments to mitigate the impact of recurring natural disasters; (ii) design and development of village and commune plans that provide guidance on managing risk and minimizing damage and loss; and (iii) capacity building for local government institutions and villagers in the disaster management phases of preparedness, response, and long-term recovery. The plans will be prepared in close collaboration with Commune Disaster Management Committees (CDMCs).

99. The objective of the *non-structural* investments is to set up the basis for a system of flood and drought risk management in priority disaster-prone areas. This will include investigating flood, drought and hazard mapping, flood forecasting and modeling systems, restoration of environment and ecological systems, review of building codes and design standards, weather forecasting, early warning and response systems.

100. Contingency planning for provincial level disaster risk management may include aspects of this community-level planning. The Commune Chief will be able to verify the extent to which these plans have been developed at the commencement of the project.

101. The content for the Safer Communes and Safer Villages Plans must and will be developed specifically for each commune or village. There are however, some components that will be a solid basis for all community-based planning (the process will be similar for village and commune-level planning). Under this output a hazard, vulnerability and capacity assessment will be undertaken.

3.2.1 Adoption of Hazard, Vulnerability and Capacity Assessment (HVCA) Methodology

102. During the inception phase the Consultant's Team learned that the HVCA methodology has already been successfully implemented in Cambodia. While the content may not differ significantly from the proposed village and risk profiles it provides a more comprehensive and connected way of data gathering. The use of the HVCA will determine the interest and demand for risk reduction in the

village or commune, identify leadership, initial survey of needs, capacities, hazards and risks, include preparation of a Concept Note on Safer Village and Commune Plans for approval, and complete a thorough HVCA analysis.

103. The HVCA will include the preparation of an outline of demographics, history, livelihoods/income, and leadership, accessibility, environment, and water access, physical mapping, plotting the cycle of floods/droughts and mapping locations in the affected communes, critical infrastructure, and relevant legislative controls, Village Investment Plans/Development Plans, services availability and existing response SOPs. All data collected will subsequently be summarized into HVCA designed templates.

104. Also the HVCA activities will initiate participatory risk assessments, assist the community with the identification of risk reduction measures, both structural and non-structural, and prioritize these ideas with the community. Furthermore, the HVCA will include the preparation of hazard maps, vulnerability maps, and other practical mapping of village zones or specific use areas, such as evacuation and community meeting areas. Also, the work will include summarized disaster impact records, loss and damage records (and mapping where possible), rapidly assess capacity to manage risk, resources and investment in prior structural measures; prepare an outline of non-structural measures attempted, evaluations or monitoring reports; and summarize all information into relevant HVCA templates.

105. In addition, collection of data will include all known early warning systems, local knowledge on seasonal changes, and identification of possible flood and drought consequences, such as diminished crop growth or yield productions and carrying capacity for livestock; famine due to lack of water for irrigation; habitat damage, affecting terrestrial and aquatic wildlife; and mass migration resulting in internal displacement.

106. Appendix 12 presents some tools used in HVCA.

3.2.2 Activities under Output 2

(1) **Prepare Village and Risk profile**. This will follow the HVCA methodology.
(2) **Prepare Capacity Assessment** to manage risk, resources and investment in prior structural measure and an outline of non-structural measures attempted.
(3) **Assemble necessary disaster risk management tools**including early warning systems, local knowledge system, and identification of flood and drought consequences.
(4) **Prepare Safer Village and Safer Commune Plantemplates**
(5) **Support the development of Village-specific Safer Commune and Village Plans**
(6) **Review of implemented Plans**, revise templates and finalize planning guidelines

3.3 OUTPUT 3: Community-driven Flood and Drought Risk Reduction Measures implemented in all selected Communes

107. The PCDM of Pursat is looking for the strategy of how to prevent the flood and drought in the command area. The prevention measure will reduce economic losses resulting from floods and droughts and other risks in the Pursat province.

108. With the technical guideline of the NCDM, the PCDM has prepared the Provincial Contingency Plan on DRR, which is updated every year. As a result, the PCDM has its Provincial Contingency Plan on DRR in 2015, which will be reviewed and updated by 2016. In order to assure sustainability of the

plans, CBDRM needs to be integrated into Commune Investment Plan (CIP) and needs the support from the National Committee for Sub-National Decentralization & Deconcentration to integrate CBDRM into the CIP. The CBDRM Team needs to prepare **the guideline for integrating the CBDRM into CIP**.

109. Together with the Meteorology Department in MOWRAM, the Consultants' team will analyze and discuss opportunities for improvement as regards the disaster early-warning and forecasting capacity in the Province. Based on these analyses and discussions we will make best use of resources within MOWRAM and the FWUCs from the target districts and communes

3.3.1 Activities under Output 3

110. The activities required to address risk reduction will include the following:

(1) **Identify all available flood and drought records**, summarize for all selected communes (including mapping, quantitative data, qualitative descriptions, extent of damage and loss etc.);
(2) **Plot the cycle of floods/droughts and map locations** in the affected Communes (include also all known early warnings, local knowledge on seasonal change etc.);
(3) **Draft priorities for flood and drought preparedness** planning including both social and emergency components)consider early warning systems improvement);
(4) Prepare an agreed set of **operating procedures (SOPs)** for flood and drought response that incorporates the risk reduction measures as the first stage of the risk management cycle;
(5) **Identify likely flood and drought impacts** under two or three likely scenarios to generate possible drought extent and flood inundation extent under specific possible future conditions;
(6) **Identify key flood and drought consequences**;
(7) **Facilitate implementation** of all recommended flood/drought risk management measures.

3.4 OUTPUT 4: Local level Coordinating Committees organized and coordinating CBDRM implementation

111. At local levels there are several Community Based Organizations (CBO), including Commune Committee for Disaster Management (CCDM), Commune Councils for Women and Children (CCWC) and the Farmer Water Users Community (FWUC). These three organizations are playing an important role in mitigating the impacts of disasters like floods and droughts in the target areas. The Royal Government of Cambodia has issued the sub-decrees that recognize these committees. As part of the CBDRM component, we will attempt to build and increase the capacity of these CBOs by providing regular support information, training, knowledge materials, and facilitating interactions with other CCDMs; we will also build capacity to work with other development partners, including local and international NGOs, to design, prepare, and implement the Emergency Preparedness and Response Plans (EPRP).

112. We propose to establish a **Commune Coordination Committee (CCC)** for the project to support the Damnak Chherkrom Irrigation Scheme. The CBDRM team will provide advisory and capacity building to the CCC.

113. During the field mission in October 2015 the CBDRM Team and the design team jointly with CPMU and PIU staff held consultation meetings with districts and communes to discuss about establishment of the CCC to support the Damnak Chheukrom Irrigation Scheme. During the consultation it was suggested that the CCC members should include representatives from the DCDM,

CCDM, CCWC and FWUC, as they are perceived to be knowledgeable and committed to serve the CBDRM-FWUC assignment in our selected districts and communes.

114. In addition to the suggested organizations, the Consultant's Team will propose to include other key stakeholders such as the Commune-level Chiefs of the Cambodia Red Cross (CRC), Police, Health Center, Animal Health, and Schools.

115. CRC role in disaster response is crucial; the Police is essential to maintain law and order during disasters; health officials need to be well versed in CBDRM measures particularly to contain disease, provide first aid, and to take care of the welfare of animals which provide essential livelihood to the rural population. Schools can also play an important role in awareness and preparedness. Pupils/students in schools are often excellent conduits to raise awareness and build capacity on daily concerns (e.g. WASH, solid waste collection/separation), and may be incorporated in the CBDRM approach by building household, village and community resilience with respect to flood and drought risks.

116. The CCC might also include representatives of the community elders as they provide wisdom, knowledge and guidance, particularly with respect to building resilience on flood and drought. Elders often are the only ones in the house throughout the day and they can act in case of emergencies. However, elders may also have physical difficulties and hence special emphasis has to be given in evacuation procedures providing for their needs. Similarly, special evaluation procedures for other vulnerable segments of the communities should be prepared, e.g. for the poor, the disabled, such as the deaf, the blind, etc. A possibility is to include representative of Local Pagoda Committees.

117. Figure 3showsa tentative structure of the CCC to be further discussed with CPMU and stakeholders.

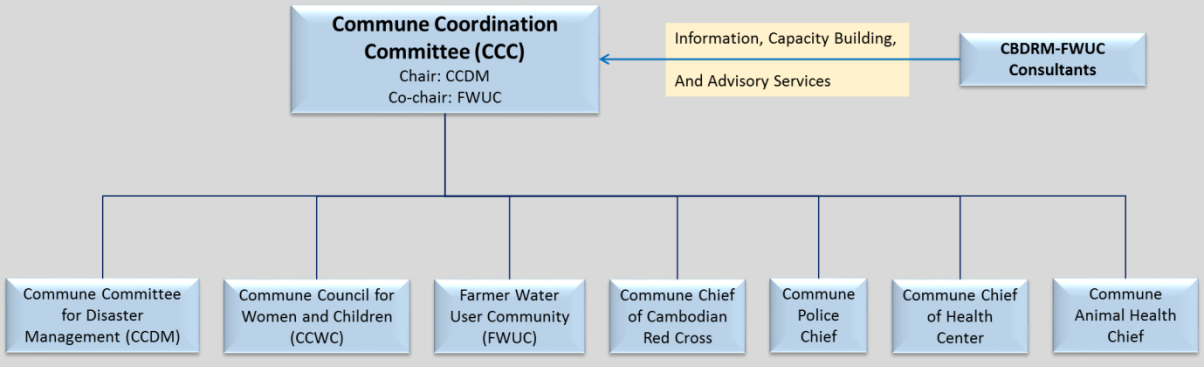


Figure 3 Organization Structure of Commune Coordinating Committee (CCC)

118. In order to identify and select the members of the CCC the CBDRM team will conduct consultations with CPMU, PIC, PIU and other design teams, as well as district stakeholders, including district governors, commune councilors, CBOs, CCDMs, CCWCs and FWUC and other relevant stakeholders, such as international and national NGOs.

119. During the initial consultation of the CBDRM team to the communes in the target areas the following main roles and responsibilities of the CCC were suggested:

- Coordinate and undertake monitoring and evaluation of the CBDRM assignment;

- Manage project implementation of disaster risk reduction activities, particularly for flood and droughts;
- Communicate and facilitate the resolution of disputes related to the CBDRM assignment;
- Establish clear communication lines with national, provincial, district, communes, and line departments;
- Prepare disaster work plan and integrated CBDRM into commune investment plan (CIP).

3.4.1 Activities under Output 4

(1) **Undertake rapid basic needs assessment** for Coordinating Committee members in the selected areas;
(2) **Brainstorm the 'opportunities and constraints'** that may be relevant to Coordinating Committee members' responsibilities towards CBDRM implementation;
(3) **Prepare a shared responsibility structure** for CBDRM with Coordinating Committee members taking a lead role;
(4) **Identify specific capacity building needs** of Coordinating Committee members, prepare a Concept Note on this training and link it to the training in Output 1.
(5) **Selecting a realistic number of communes** and villages in which CBDRM can be effectively tested under the auspices of this Assignment;
(6) **Prepare a Concept Note on the implementation** of CBDRM for this Assignment, outlining opportunities, limits/constraints and priorities for supporting the development of the model or the *Cambodian CBDRM Template*;
(7) **Draft and discuss with all key stakeholders a Plan of Acton** for Implementing CBDRM in the selected communities.

3.5 OUTPUT 5: Technical Support and Services available to provide technical Assistance to the Coordinating Communities (FWUC/FWUGs, CCDM, and CCWC)

120. The technical support and services provided by the project will be applied at different levels – at national, provincial, district, commune and village levels. The principal focus of the technical support services of the Consultant's Team will be at the commune and village levels, through the Farm Water User Groups (FWUGs) and Commune Committees for Disaster Management (CCDMs) in each of the four target communes. The scope and content of these technical services will be dependent upon the needs and priorities of these four communes and their associated villages.

121. At the district, provincial and national levels, the technical services to be provided would essentially take the form of strengthening processes and delivering training for these agencies to be able to provide such technical services to the communes and villages in the future.

122. We will prepare a concept note in discussion with both MOWRAM and the FWUC to identify the type of technical services to be provided and on how, when and what technical support and other technical service will be most appropriate for the team to provide to the FWUGs and CCDMs. It is envisaged that these technical services and support at this level will include some of the following aspects of flood and drought disaster risk management, the details of which will be identified as the project develops:

- Use and interpretation of early warning systems at the commune and village level
- Development of hazard maps to identify the geographic areas at risk
- Identification of village assets at risk and their vulnerabilities
- Identification of protection and climate resilience requirements for village assets most at risk

- Development of adaptation measures that can be implemented by the FWUGs and CCDMs themselves and those that will require additional assistance from national and provincial levels
- Identification of emergency procedures to be undertaken at village and commune level, including communication and safety precautions.
- Identification of measures to be put in place to enhance recovery after future floods and droughts

123. Some of these technical services will relate to the processes as these tasks are carried out, and would be part of the training programs. Other technical services will relate to specific protection and resilience measures that need to be put in place and the technical advice would be geared to ensuring that the measures are appropriate, affordable and implementable.

124. Following the initial concept note, we will develop a basic set of inquiries for initial interviews with FWUGs and CCDMs to identify details of the technical support that they may require. This will be applied in an initial collective brainstorming of what technical services may be required by each FWUG and CCDM to be undertaken as part of the initial interactions with these commune groups. This will provide a needs analysis and prioritization for ongoing technical support. It is probable that the team will not be able to provide all of the technical advice required and in such cases, it may be necessary to develop the assistance required in consultation with other technical departments of MOWRAM.

125. As these technical services are provided, they will be documented, so that they can be described and used either to specify the types of service required in a CBDRM model, or to provide case studies of technical measures developed for implementation. For the latter, where such measures have actually been implemented by the FWUGs and CCDMs, these would be monitored and their effectiveness in providing protection or resilience recorded. In brief the *key activities* for achieving this output will include the following:

3.5.1 Activities under Output 5

(1) **Prepare a basic set of inquiries for initial interviews** with Commune Coordinating Committees (CCC) to gather possible of likely priority technical support that they may require;
(2) With an outline of possible actions and priorities, **undertake brainstorming with CCCs** to gain consensus on what is feasible, affordable and appropriate for the Team to provide over the course of the Assignment;
(3) Together with MOWRAM and FWUCs, **formulate a Concept Note** on how, when and what technical support and other technical services will be most appropriate for the Team to provide to the Commune Coordinating Committees;
(4) **Document these technical services** and support tools and include within the CBDRM Model, the Safer Communes and Safer Villages Plans and other reporting.
(5) **Make technical services available** to target communities as far as possible, throughout the project duration

3.6 OUTPUT 6: Local Facilitators recruited and trained to Support Village and Commune planning and implementing Risk Reduction Strategies in participating Communes

126. Local facilitators will be recruited to train commune and village stakeholders in risk management and related training (see Output 1).

127. The challenges of this output will be to (i) identify the best persons to become facilitators and (ii) provide them with sufficient incentive to continue to develop as facilitators. This group of facilitators (the number is yet to be identified) must be experienced, knowledgeable and responsible persons who will be accepted and trusted by the communities involved in the training.

128. To achieve output 6, training will provide a toolkit containing a basic introduction to facilitation, rules for effective training, guidelines and checklists for course preparations, course delivery, venue set-up, presentation skills, training materials, design and delivery and training evaluation. The content of the toolkit will cover the following issues:

- Principle of adult learning and facilitating effective learning;
- Guidance on preparing for training;
- Guidance on how to use participatory methods;
- Guidance on the writing and production and handouts and slides/overhead projections;
- Guidance for how to apply evaluation tools of training impact and for improving training methods and delivery.

129. Over time new trainers and facilitators will use the toolkit as a reference tool or as supporting material that can be easily updated to include changes to the risk environment and current practice in Cambodia of CBDRM. The guidelines and tools will need to be flexible to suit the Cambodian context.

130. In fact, the design of the toolkit (and the supporting documents/guidelines) will provide a basic structure to assist the team in planning and carrying out our training. The risk-based approach will be the basis of both the toolkit and the facilitation of the training modules. This implies that the facilitators will be able to communicate a clear understanding of the need and value of reducing risk in order to minimize future loss and damage to crops, livelihoods, community infrastructure and other investments that are important to the community.

131. Selection criteria of facilitators will include the following: facilitators that are experienced and trusted by the communities, and comprise both men and women; preferably also with some teaching experience. Each trainer will be tested, evaluated and certified by the CBDRM team as a competent trainer.

3.6.1 Activities under Output 6

(1) **Develop the TOR** for recruiting local facilitators
(2) **Prepare training** materials including a toolkit for facilitators
(3) **Conduct training** of local facilitators
(4) **Evaluate** training of facilitators
(5) **Certify facilitators** based on testing and field observations by the CBDRM team

3.7 OUTPUT 7: A CBDRM Model formulated and implemented in the Project Area

132. The Cambodian Red Cross piloted their first Community-based Disaster Preparedness Programme in 1998 just after the extensive flooding of 1996. Since 2008, NCDM has led the national efforts to use the key concepts of community-based disaster risk management[11], with support from

[11] "MONITORING AND REPORTING PROGRESS ON COMMUNITY-BASED DISASTER RISK MANAGEMENT IN CAMBODIA", Partnerships for Disaster Reduction-South East Asia, Phase 4, April 2008, EU, UNESCAP, ADPC and others.

leading NGOs. In 2013, an NGO consortium was formed to cooperatively develop a unified approach to CBDRM, the first national-level initiative of its kind in Cambodia.

133. Given that there exists significant interest in the development of CBDRM in Cambodia, it would seem both logical and appropriate that our project makes best use of all that information gained in recent years to ensure any model developed for Pursat is able to also contribute to the broader CBDRM activities already ongoing. In order to have access to organizations and resources on the subject, we need to also join that ongoing dialogue.

134. In order to further promote this dialogue, the Consultant Team proposes two activities:

a. **The organization of a CBDRM Conference in Phnom Penh** to be held over the course of the project. In case such a Conference is of interest to the CPMU, the Consultant's will prepare a concept note. The objective is to ensure that the CBDRM-FWUC gets highest visibility in Cambodia and strengthen relationships with professionals in the same field in Cambodia and the region.
b. **Establishment of a Project Advisory Group (PAG)** comprising key organizations in Cambodia who have worked on the issues relevant to the project. An initial list of these organizations include the National Committee for Disaster Management (NCDM), Cambodia Red Cross (CRC), the Mekong River Commission (MRC), People in Need (PIN), and Cambodia Development Research Institute (CDRI). If the CPMU is interested in this idea, the Consultant's Team will prepare a concept note.

135. We know that effective disaster management involves working closely with stakeholders, especially the most vulnerable groups, and strengthening local-level capacity for preparedness, mitigation and emergency response. Our approach therefore recognizes at least the following concepts and basic needs:

- There exists a valuable body of knowledge and experience on CBDRM in Cambodia that we can build on for our project;
- CBDRM is a process in which at-risk communities are actively engaged in decision making;
- CBDRM contributes to addressing the root causes of vulnerabilities and can reduce potential future losses of life, livelihood and assets;
- CBDRM is about reducing disaster risk for families and communities;
- Local communities themselves are generally the first responders to disaster events and are best equipped to understand local opportunities and constraints to designing and implementing disaster risk management measures at Village and Commune level;
- There are some basic steps in the CBDRM process, a basic set of procedures that can provide a logical path to minimizing future disaster loss. The sequence in the application of these steps might differ depending upon the social, economic, political and organizational situation of that Village or Commune. This is the model we will be working towards.

136. The two diagrams below illustrate our proposed model development process, inclusive of other CBDRM stakeholders in Cambodia, which will ensure the sustainability of our ideas and actions. We hope that in combination with the FWUCs, our model will be sustainable, and the persons trained and taking responsibility for water management will assist their communities with disaster risk management.

3.7.1 Activities under Output 7

(1) **Design of the model**, conduct needs analysis, and assess opportunities and constraints
(2) **Compile tools into asuccessful CBDRM Model** for Cambodia

Assumptions:

1. CBDRM has been recognized a valuable, valid and appropriate method to provide flood- and drought-vulnerable communities with the necessary skills and knowledge to reduce and minimize future loss and damage from floods and droughts and other hazards.
2. The proposed investments in community infrastructure need to be, and will be protected by the communities that will benefit from the investments.

Overview:

A concept paper will be prepared to outline the intentions, basic needs and likely format options for the 'model'. The model itself will be developed based on; i) practical working situations in the project areas; ii) the best examples from the GMS region adapted to Cambodian conditions; and iii) the specific needs of the communities in the project areas.

The intention of the model is to provide a template or prototype of community-based disaster risk management in Cambodia (plans, guidelines, case studies, graphics, training, M+E) that can be adapted and implemented across other regions in the country. Templates for the Safer Communes / Safer Villages Plans will be part of the model.

The model will be made up of five main elements as follows:

1. Introductory information (concepts, terms, rationale, history)
2. A template for the Safer Communes / Safer Villages Plans
3. A resource booklet with basic risk management working tools (e.g. risk assessments etc.)
4. Specific CBDRM Resources (Step-by-Step Process, priorities, documentation, case studies)
5. CBDRM Guidelines for Cambodia (possible National/Regional Conference on this topic)

Figure 4 Assumptions and Overview of the CBDRM Model

Outline of CBDRM Model

- introduction, definitions, basic principles
- CBDRM in Cambodia
- Step-by-Step Process
- Outline design for Safer Communes / Safer Villages Plans
- Needs assessments
- Setting priorities
- Knowing options and alternatives
- Participatory plan preparation
- Templates
- Resources
- Training / Trainers
- Review and evaluate
- Revise and Reformat

Key Terms and Concepts (Khmer)

Hazard, Disaster Risk, Capacity, Vulnerability Mitigation, Preparedness, Response, Recovery Climate Change, Adaptation, Resilience, Community, CBDRM, Exposure, Risk Environment

Step-by-Step CBDRM Process

Step 1. **Know and understand what is needed**

(community profile, communities identify risks, hazards, vulnerability and exposure, undertake risk assessments, establish priorities, risk reduction needs, risk reduction goals, consider options and opportunities/resources to treat priority risks, document, present), review early warning system needs.

Step 2. **Planning, designing testing the risk management plan**

(map priority risks and hazards by season, severity, and location, extent of past damage etc.; create hazard and vulnerability maps, reassess priorities, reassess options and opportunities/resources to treat priority risks, prepare draft risk management plan, test by/with the community, document, present, review).

Step 3. **Implementing what has been developed**

(determine resource availability, affordability of risk reduction options/measures, funding for mitigation options, community contributions, Government support / donor support, field testing, Integrate and mainstream CBDRM into commune/district plans

Step 4. **Monitor plan implementation – success or not?**

(reconsider risk reduction goals, monitor and quantify achievements – damage and loss reduction, monitoring tools adapted, developed and tested, emergency response needs - evacuation, health care, environment, recovery needs- basic services restoration, infrastructure repair, communications strengthened).

Disaster Risk Reduction Measures are commonly divided into three groups: before, during and after disasters.

Figure 5 Outline of the CBDRM Model and Process

3.8 Gender

137. The Ministry of Women's Affairs (MoWA) and the Cambodian National Council for Women (CNCW) are the national agencies for the promotion of gender equality and women's empowerment in Cambodia. Cambodia has been making significant progress on gender concerns across the country since the CNCW was established in 2001 and the subsequent formation of the Ministry of Women's Affairs.

138. In late 2013, the National Climate Change Committee approved the Cambodia Climate Change Strategic Plan (CCCSP) in order to provide guidance for Climate Change implementation in the country. The CCCSP recognizes the importance of both Climate Change and Gender mainstreaming into the sectoral strategic plans and action plans. Under the CCCSP framework, MoWA developed and approved a Gender and Climate Change Strategic Plan and Action Plan, and integrated the corresponding priorities in the National Strategy on Gender (2014-2018). Under the Climate Investment Fund through the World Bank and ADB, a Master Plan on Gender and Climate Change 2013-2022 has been adopted by the MoWA.

139. The key gender impacts that the Consultant's Team will strive to support in this assignment include increased women's engagement in (i) management of data and information on floods and droughts; (ii) local level disaster risk management activities; and (iii) employment generated through civil works and other project related activities. The Team will support implementing the Project's Gender Action Plan (GAP) by including the gender design features and activities in all CBDRM activities. In addition, the team will prepare specific action plans based on a gender assessment, and contain gender design features and gender related performance indicators which could then be included in the CBDRM component monitoring and evaluation framework

140. A mounting body of evidence in Cambodia and in the region confirms the following:

- There is a strong relationship between climate change and gender: (1) climate change tends to exacerbate existing gender inequalities; (2) gender inequalities lead women to face larger negative impacts;
- Women are not just victims but active agents of change and possess unique knowledge and skills related to climate change;
- Understanding the risks and different impacts of climate change on men and women is key in achieving sustainable development and establish durable risk management processes.

141. The Consultant's Team will ensure that its work is effective and in line with current MOWA policies and practices and the Project's Gender Action Plan (GAP. Furthermore, the Team will ensure that:

a) We identify gender issues and needs in CBDRM and integrate gender considerations into all stages of CBDRM component's design, implementation activities, monitoring and evaluation, including in the implementation of policy recommendations implementation, and in the preparation of guidelines, checklists, information education communication (IEC) materials and training materials;

b) When conducting initial research and preliminary assessments, we will ensure that building gender capacity is inclusive for CBDRM component relevant people such as consultants, gender representative persons, target members of the community, especially women, youth, children and those less able to actively participate;

c) We assess seemingly gender-neutral problems, policies, and programs to determine their possible differential impacts on women and men;

d) We strive to enhance voice and recognition of women and under represented groups in the works of community-based water management and climate change and disaster risk management;

e) We actively encourage, recruit and mobilize local leaders, especially children and youth, and women and men to participate in programs and become change agents in their communities, their voice is integrated into community development plans in addressing climate change issues;

f) We promote gender awareness and learning through CBDRM's implementation, monitoring and evaluation including disaggregating data by gender and recording gender good practices; and

g) Improve partnership and gender networks in promoting gender equality in community-based water management and disaster risk management.

142. We are of the view that well planned and executed gender-sensitive policies and programmes can contribute positively to program efficacy by directly addressing the differing needs, roles, and constraints of the end users and potential beneficiaries, both women and men.

143. We will make use of the Organizational Gender Assessment (OGA) tools. This is an institutional assessment and action planning process designed to help development organizations move from gender blind to gender responsive organizations ensuring that the organizations reflect a concern for gender equality in their own structure and processes as much as in the results of their program and policy interventions. An adapted version of the OGA will be a very useful tool to identify gaps and priorities in community-level organizations – a task we need to undertake as soon as possible after project commencement.

144. The team will work closely with Gender and Climate Change Committee (GCCC) and Climate Change Technical Advisory Group of MoWA, and Gender Mainstreaming Action Group of MoWRAM (see section 3.7). We will work in collaboration with women's institutions and organizations, civil society organizations and community based organizations (CBOs) to build on gender awareness and address it into relevant community development plan. Those organizations will be the project counter-part to address gender issues and needs at their project location level, and they will be able to respond in time as community-based organizations who witness and quickly observe those concerns, needs, gaps directly or through informed mechanisms.

145. Appendix 14 elaborates some aspect of the Gender Strategy and Action Plan in the CBDRM component. The Gender Specialist in the CBDRM-FWUC team will work closely with the Gender expert in the CPMU and the PIC team to ensure that the gender and social dimensions of the PAM are taken into account in the implementation of the CBDRM activities, and overall alignment with the Gender Action Plan of the project is achieved. The key activities in the Gender Action Plan and their expected achievement is summarized as follows:

Table 2 Summary Gender Plan in CBDRM

Objectives	Gender Design Features/Activities	Due Date
Promoting Gender Equality in Planning and Management.	Mainstreaming in TOR of consultants and work plans.	Inception Report, Quarterly Reports, Interim Report, Draft Final Report, Final Report delivery dates.

Objectives	Gender Design Features/Activities	Due Date
Capacity Building.	Community assessment and awareness. Design and implementation of training. Evaluation of training and capacity building at the community level.	HVCA – March 2016 Training design – May 2016 Training of trainers – August 2016. Training in communities – September 2016 to August 2017.
Ensuring that women actively participate in Project related technical training events, consultation in project design and resettlement arrangement .	Ensure at least 40% of participants in all public consultations for the development of safer village and commune plans are women Schedule of CBDRM training for community should be conducted to fit the schedules of both men and women in the community schedule to ensure effective participation of both Ensure CBDRM training modules are gender sensitive and address the needs of women Ensure at least 30% of members of the farmer water user community are women Ensure at least 40% of women in project communes participate in the formulation, implementation and training on CBDRM Ensure at least 30% of CBDRM group members are women Gender sensitive awareness material for CBDRM prepared (Gender sensitive materials for CBDRM will be tested with communities ensuring they, especially women clearly understand.	Throughout implementation of the assignment.

3.9 Monitoring and Evaluation

146. In order for the CBDRM assignment to measure its performance during the project lifetime and beyond, it needs a **Monitoring and Evaluation (M&E) framework**. The Project Performance and Management System (PPMS) will be used to monitor the outputs/outcomes of the Project by CMPU and Project Implementation Consultants (PIC). PIC and CPMU will work with CBDRM team to monitor the key indicators under CBDRM component of the design and monitoring framework (DMF). Some indicators may also be added with consultations with CBDRM.

147. We suggest that resources be allocated to develop a straightforward framework for M&E for project management to assess CBDRM progress of outputs and achievement of outcomes. The existing Design and Monitoring Framework (DMF) in the Project Administration Manual (PAM) does not seem to adequately reflect the needs for more in depth monitoring of the CBDRM component.

148. The outputs in the CBDRM component aim to further develop capacity for **sustainable community based disaster risk management** with a focus on (i) reducing vulnerability to flood and drought and storm hazards and (ii) increase the efficiency and community capabilities to improve disaster preparedness and post disaster recovery. The most important outcome relates to limit injury, loss of life and livelihoods and asset damage in the target area.

149. The CBDRM component will apply a **simplified M&E system** using the logical framework, also called a 'results matrix' as the main tool for project management to track the advancement of outputs and outcomes.

150. Each output is proposed to identify a number of important objectively verifiable indicators (OVIs) for which we will be able to assess progress. Each OVI will be based on three features: quantity, quality and time (QQT).

151. The project team is in the process to develop a manageable and useful result matrix and then assemble for a one-day session in which important outputs are defined and indicators developed for each output.

152. When designing the result matrix we will review the current outputs and outlined activities presented in the work plan. The result matrix will include an on-going risk assessment of drivers and constraints for the project to move forward, also called a 'theory of change' approach. The result matrix will be a 'living' document that will be reviewed on an on-going basis (every quarter) throughout the project lifetime.

153. The result matrix does not measure activities, only outputs and outcomes – activities are inputs to ensure that the outputs are achieved.

Table 3 Draft Result Matrix – a simplified example of an outcome and output

Narrative	*Baseline (where data exist)*	*OVIs*	*Means of verification*
Outcomes: Reduced number of injuries, loss of life and livelihoods and asset damage	Provincial / district data from the period 2002-2013	Reduced number of injuries, loss of life and livelihoods and asset damage based on drills and/or disaster occurrence as *compared with baseline*	Loss and damage reports
Outputs (*example*) Facilitators trained	n.a.	1. Job interview format developed according to standard 2. 20 potential candidates selected by end January 2016 for interviews based on their experience and trustworthiness by commune and villagers 3. Conduct of interviews by mid-March 2016 4. Ten facilitators selected and recruited based on review of assessment reports and selection criteria by early-April 2016 5. Training delivered to facilitators 6. Facilitators capacity measured before and after the training 7. Facilitators passed a test of competence	Interview question format Advertisement List of candidates Assessment reports Contracts Training courses Evaluation of training Evaluation of facilitators capacity after training

3.10 Training and Capacity Development

154. The training and capacity development is divided into three interlinked components. The first two components include (1) Training needs assessment and training delivery plan, and (2) Training of facilitators that will deliver the training to course participants. The two components will deliver outputs that aim to achieve the training objectives, namely improved capability and capacity of those trained to address disaster events effectively and as such reduce loss of lives and damage to

community assets. A third and most essential component will comprise a monitoring and evaluation framework for reporting on the training delivered, including assessment of the *value for money* of training delivered (see Appendix 7).

Component 1

- Training needs assessment, described in a training needs assessment (TNA) summary report, covering training gaps based on current situation as regards CBDRM in the target area in the two districts and the future need for effectively addressing disaster risks and the management of these risks;
- Training Plan developed, comprising design of course/module contents and outline of curricula for training of commune and village end-beneficiaries in CBDRM related subjects; and a time schedule for implementation.

Components 2

- Selection and recruitment of experienced, knowledgeable and responsible facilitators – accepted and trusted by the communities involved – to execute training in disaster risk cycle management for commune and village participants in the target area in Pursat Province;
- Design of course/module contents and outline of curricula for training of facilitators comprising at the minimum (i) basic adult learning principles and (ii) how to deliver effectively the CBDRM related courses designed under Component 1;
- Prepare a time scheduling;
- Carry out a number of training of trainers courses for the facilitators.

Component 3

- Monitoring and evaluation of the training conducted relying on the five levels of training evaluation for accomplishing value for money of training invested, i.e. Reaction, Learning, Application, Impact and Value for money;
- For each training course and for each level the following will be identified: (i) program objectives, (ii) the scale of measurement for success/failure, (iii) data collection method, (iv) data source, (v) timing, and (vi) who is responsible;
- Continuous M&E applying selected tools.

4 COMMENTS TO THE TOR AND RISK MATRIX

4.1 Proposed Revision to Team and Consultant TOR

155. The Consultant's Team would like to propose some modifications of the individual consultants' Terms of Reference (TOR) to ensure that the TOR contribute to the outputs and deliverables of the project more effectively. Table 4below presents the proposed modifications of the TOR with a justification. The original TOR are included in Appendix 2.

Table 4Suggested Revisions of the TOR of Experts and Justification

No	Position of Consultant	Modified TOR	Justification of modified TOR
1	International Disaster Risk Management Specialist/Team Leader	Same as original TOR	
2	National Disaster Risk Management Specialist/Deputy Team Leader	Same as original TOR	
3	International Institution/Social Development Specialist	In addition to the original TOR include: • Evaluating training	Evaluation of training is crucial to assess impact.
4	National Institution/Social Development Specialist	Same as original TOR	
5	International Flood Management Specialist	In addition to original TOR, the flood specialists will: • Provide input to the Design Team on aspects of flood mitigation and management using irrigation infrastructure • Support Training and Capacity building for the FWUC and provide guidance materials	• The irrigation infrastructure may be used also to improve flood mitigation • One of the main project focus are the FWUC and FWUG
6	National Flood Management Specialist		
7	International Drought Management Specialist	Same as original TOR	
8	National drought management specialist	Same as original TOR	
9	International Climate Change Adaptation Specialist	In addition to their original TOR, the specialists will include: • Conduct community based vulnerability assessment of priority assets of community; • Conduct preliminary study to assess the practicality and viability of developed adaptation measures; • Develop guidelines on climate resilience for the communities covering early warning, preparedness and protection for flood and drought together with flood and drought specialists.	To address climate change adaptation more effectively for the community, the specific tasks including assessment of practical and viability of identified adaptation measures, development of climate resilience guidelines covering early warning, preparedness, and projection for flood and drought, and conducting vulnerability assessment on identified priority community assets should be important to include.
10	National Climate Change Adaptation Specialist		
11	National Capacity Building Specialist	In addition to original TOR, the capacity building specialist will: Jointly with other team members: • Carrying out training need assessment (TNA), analyzing and reporting results from TNA • Developing training materials, plans/schedules and modules • imparting trainings • Developing Model CBDRM Program for Cambodia • Monitoring and evaluating training	The additional tasks clarify the TOR making them more relevant to the position.
12	National Social Mobilization Specialist-1	Same as original TOR	
13	National Social Mobilization Specialist -2	Same as original TOR	
14	National Gender Specialist	In addition to the original TOR, the consultant will:	

No	Position of Consultant	Modified TOR	Justification of modified TOR
		• Contribute to the approach and methodology, and share lessons learned throughout the CBDRM assignment with government counterparts and relevant stakeholders. • Review ADB's guidelines and toolkits for gender mainstreaming in ADB projects; • Develop gender elements for relevant CBDRM activities (Key finding on Gender in CBDRM, Gender Strategy and Action Plan, Gender Implementation Plan, Gender Indicators); • Incorporate gender elements into the CBDRM activities according to ADB's guidelines and toolkits; and work in collaboration with CBDRM's team and M &E experts to monitor and evaluate the progress and results related to gender implications of CBDRM assignment.	

4.2 Comments on the Risk Matrix[12]

156. The Technical Proposal of the Consultants (TECH-4) contained an assessment of risks and mitigation measures that the Consultant had identified during proposal preparation. In this Inception Phase, the Consultant's Team has reassessed the risk matrix in light of the progress made and knowledge gained over the first two months of implementation. The outcome of this reassessment is illustrated in the following updated risk matrix. Overall, previously identified risks are being mitigated or do not yet pose a threat.

Table 5 Update of the Project Implementation Risk and Mitigation Measures

#	Risk	Mitigation Measures identified during Proposal Preparation	Update of Mitigation Measures during Inception Phase (Nov 27, 2015, 2.5 months after mobilization)	Risk Level (Low, Medium, High, Extreme)
1.	Delineation of the selected Communes, Villages and the project area is not well defined in the early stages of the project	Ensure Inception phase includes full agreement with the Client on the extent and limit to numbers of designated Communes and Villages.	Identified 42 villages in 5 communes of the command area.	No more a risk.
2.	Lack of time, unwillingness to volunteer, lack of interest or other reason that may prevent sufficient representation of men and women from the target communities to join the training.	Possible use of cost-benefit analyses indicating the value of contributions from community representatives as well as organizational representatives; agreements with community leaders on the number of interested individuals willing and wanting to receive training; creation of training that is of real interest, addressing community priorities; provide possible incentives.	Yet to be tested. The target of 40% women representation for the training facilitators has been flagged as anambitious target to achieve. Appropriate incentives to attract women candidates will have to be provided.	Medium
3.	Project resources do not match the requirements in the Terms of Reference.	Inception Phase task to determine overall feasibility, develop draft 24-month work plan	Human resources appear to be adequate. The need for additional trips for some International consultants may need to be revisited. Additional	Low

[12] The Risk Matrix is drawn from the original TECH-4.

#	Risk	Mitigation Measures identified during Proposal Preparation	Update of Mitigation Measures during Inception Phase (Nov 27, 2015, 2.5 months after mobilization)	Risk Level (Low, Medium, High, Extreme)
			resources for M&E specialist has been flagged.	
4.	Delays caused by formal procedures that cause delays in project component delivery become untenable.	Foresee approval bottlenecks, investigate pre-approval options, and maintain weekly contact with key decision-makers, schedule review and approval of documents, request signed agreement on timing.	Reporting, arranging and monitoring of CBDRM Team activities is progressing satisfactorily with full cooperation of the CPMU and is on time.	Low
5.	Performance of consultant Team members causes delays in project delivery.	Maintain strict deadlines, keep deadlines realistic, not unnecessarily tight and ensure full Team participation at Work Planning brainstorming.	Team performance has been satisfactory so far. Replacement of team leader is needed due to resignation. This will be carried out with no impact on quality and timeliness of outputs and deliverables. The Inception Report will be sub submitted 2 weeks in advance of the contractual date. Field activities are under implementation as per submitted and approved concept note.	Low
6.	Cost of monitoring, managing risks goes beyond available project resources, causing delays or difficulties implementing Safer Communes /Safer Villages Plans.	Realistic costs (and design) for risk monitoring and mitigation activities need to be considered as part of the overall cost required for a strategy or Plan implementation.	Yet to be determined.	Low to Medium
7.	Major catastrophic event causes project disruption in part or indefinitely.	Contingency plan should be prepared for this eventuality. Be diligent especially around September / October.	No major event to date (27 November 2015).	Low to medium
8.	Risk identification and assessment of risk consequence and likelihood is inadequate thus limiting risk management actions.	Identifying risks demonstrates both transparency and rigor. Ensure training is adequate, monitor participant 'understanding' of assessment methodologies.	Yet to be determined.	Low to medium
9.	(NEW RISK IDENTIED DURING INCEPTION PHASE) Risk of repeating work training and systems development that has already been achieved in Pursat over the last two and a half years.		Establish collaborative relationships with NGOs who have already conducted relevant work on CBDRM in Pursat. Initial meetings with one INGO (namely People in Need) have already been held.	Low

Note: As of 30 November 2015.

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157. CBDRM experts will interact with other teams such as the design team, NFFC and PIC. The findings and recommendations from the field should be provided to the other teams so that the design can incorporate the farmers/communities needs and expectations. A monthly Project Coordination Meeting will be organized with all consulting teams, PIUs and CMPU to ensure that synergy and

coordination among the teams. The risk matrix/assessment will be updated in the Quarterly and/or the mid-term reports.

5 PROGRESS TO DATE

158. The Consultants' Team was mobilized on 9 September 2015. Upon mobilization the Project Director led a kick-off meeting together with CBDRM team consultants, the CPMU and the Project Implementation Consultants (PIC).

159. **Office establishment.** The team has been provided office space at the MOWRAM compound in Phnom Penh and at the PDWRAM compound in Pursat. Other activities included: establishment of internet connections, administration system, procurement of office furniture and equipment, and templates for timesheet, field mission, vehicle request. A cloud-based repository of project information has been established on OneDrive with access by all consultants to facilitate sharing of information and database of documents and templates for reports and administrative forms.

160. **Consultations in Phnom Penh**. Held meetings with CPMU and stakeholders (list in Appendix 16). Met with Ministry of Women Affairs, Cambodia Red Cross (CRC), and National Committee for Disaster Management (NCDM). The team conducted meetings with NGOs such PIN, AK, and PK and set schedule for regular meetings with stakeholders for effective communication, coordination mechanism and project support.

161. **Field work in Pursat**. Includes meeting with PIU, Deputy Provincial Governor of Pursat, District Governors of Bakan and Phnum Kravanh and 4 Commune Councils. The consultant team and CPMU staff made a field visit from 26 to 29 October to Bakan and Phnum Kavanh districts and four communes within the target area; the team met with the design team in Pursat to understand the location irrigation system and infrastructure development including the barrage of the main canal for diverting water from Damnak Chhuekrom to Svay Donkeo River and then to Tonle Sap lake. Submitted and obtained approval from CPMU for a detailed program of field activities between December 2015 and February 2016.

162. **Coordination**. Conducted consultations to establish the Commune Coordination Committee (CCC) in both districts Bakan and Phnum Kravanh of Pursat province for implementation of the project. Further consultations will be required to finalize the structure, functions, and responsibilities of the CCC (see section 3.4).

163. **Communication**. The consultant team has a regular weekly meeting and monthly briefing report to CPMU of every 9th of each month. Prepared and printed the leaflet of the CBDRM & FWUC (in English and Khmer) and distributed to CPMU, PIC, PIU, Districts, and communes levels

164. **Data collection** of relevant existing documents and reviewed Circular 01, Prakas 306, and FWUC sub-decree issued on 12 March 2015 by the government of Cambodia, NCDM Law, CBDRM documents from Asian Disaster Preparedness Center (ADPC), rainfall data from MOWRAM, climate change information from Water Resources Development Sector (WRDS) CDTA 7610 and Provincial, District, Commune Emergency Preparedness and Response Plans

165. **Work Plans**. Consultants have prepared their work plan for the inception phase and the 2 years' work plans and implementation strategies. The team also prepared the Team Work Plan for 2 years covering the period September 2015 to September 2017.

166. **Development of tools**. Developed questionnaires to conduct the Hazard, Vulnerability and Capacity Assessment (HVCA), Emergency Preparedness and Response Plan (EPRP) for Communes, Districts and Provincial Contingency Plan for Disaster Risk Reduction. Prepared the background of the FWUC and Guideline of the FWUC is being prepared.

167. **Concept Note for Field Work (December 2015 to February 2016**). A concept note to conduct field work has been submitted to CPMU and approved. The aim is to start data collection for Village and Risk Profiles (related to Output 2), training needs assessment (related to Output 1 and Output 6), local coordination structures (related to Output 4), and establishment of FWUC.

168. **Deliverables**. Prepared and submitted draft Inception Report on 30 November 2015. Revised and submitted revised Inception Report on 24 December 2015 and on 24 January 2016.

6 WORK PLAN, DELIVERABLES, AND STAFF SCHEDULE

6.1 Three Phases of the Work Plan

169. The two-year assignment of the CBDRM team is divided into three phases as follows:

Phase 1 – Inception (4 months). During this phase, the team will establish office facilities and administration processes in Phnom Penh and Pursat, collect background data and information, meet with stakeholders, prepare a detailed work plan, and initiate field activities.

Phase 2 – Development (9 months). During this phase Commune Coordination Committees (including FWUC, CCDM, and CCWC), and Project Advisory Group are established, HVCA is conducted in all the target villages and communes, the capacity building and training plan is finalized, training of trainers is conducted, and the CBDRM guidelines and model are developed.

Phase 3 – Implementation (12 months). During this phase, the team will conduct training of villages and communes in CBDRM, provide technical services to the FWUC, support the development of Safer Plans for Communes and Villages, assist in the preparation of Commune Investment Plans (CIP) from a CBDRM perspective incorporating gender elements, and assist the Coordination Committees.

6.2 Deliverables

170. The list of deliverables and the due dates are illustrated in Table 6. The dates of the workshops are indicative and they will be finalized with the guidance of the Central Project Management Unit (CPMU) and the Project Implementation Consultants (PIC).

171. The preparation of production of each major report (Inception, Midterm, Draft Final, and Final) will be based on the following process:

Step 1: Preparation of Draft Report
Step 2: Submission to CPMU for Comments
Step 3: Revision of the Report based on Comments
Step 4: Comments from Stakeholders at the Dissemination Workshop
Step 5: Preparation of Final Report based on Comments

172. The length of this process depends on the time needed by various reviewers to send their comments to the Consultants' Team. It is expected that between submission of the first draft (Step 1) and final draft of each major report, there is a period of about 3 weeks. This period will be continuously monitored to assure timely completion of the report.

Table 6 Deliverables and Date Due

S.No.	Deliverable	Date Due	Comment
1.	Inception Report	9 Dec 2015	3 months after mobilization
2.	Inception Workshops to disseminate Inception Report	13 Jan 2016 (Phnom Penh) 15 Jan2016 (Pursat)	During Inception Phase. Exact date to be agreed with CPMU and PIU/PDWRAM
3.	Quarterly Reports (6)	9 Mar 2016, 9 Jun 2016, 9 Sep 2016, 9 Dec 2016, 9 Mar 2017, 9 Jun 2017	Quarterly, except first quarter (when Inception Report is submitted) and last quarter (when Final Report is submitted)
4.	Annual Progress Report	9 Sep 2016	12 months after mobilization
5.	Midterm Report	9 Sep 2016	12 months after mobilization
6.	Mid Term Workshop to Disseminate Midterm Report	9 Oct 2016	During Month 13. The exact date will be decided by CPMU
7.	CBDRM Guidelines	9 Sep 2016	12 months after mobilization
8.	Draft Final Report	9 Jul 2017	22 months after mobilization
9.	Workshop to disseminate Draft Final Report	9 Aug 2017	During Month 23. The exact date will be decided by CPMU
10.	Final Report	9 Sep 2017	24 months after mobilization

173. The first deliverables, the Inception Report has been submitted on 30 November 2015. The second deliverables (Inception Workshops) has been implemented (13 January in Phnom Penh and 15 January in Pursat).

6.3 Work Plan

174. The work plan for the assignment is illustrated in Figure 6.

6.4 Personnel Schedule and Input

175. The personnel schedule of the CBDRM-FWUC team is illustrated Figure 7. All the five international consultants are expected to work in Cambodia and their input is intermittent. Among the national consultants, three are full time and 6 are part-time. Two national consultants are based in Pursat and the other consultants are based in Phnom Penh (Figure 8) with frequent visits to Pursat.

176. Figure 9 illustrates their input over time.

6.5 Input Contribution of Personnel to the Outputs

177. Figure 10 illustrates the contribution (in terms of person days) of each consultant to the outputs and activities of the project.

6.6 Deliverables of Consultants

178. Figure 11 to Figure 18 illustrate the deliverables of each consultants and the due dates.

Figure 6 Work Plan for the CBDRM-FWUC assignment

Outputs and Activities	2015				2016									2017											
	PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
OUTPUT 1: Provincial, District, Commune and Village level participants from selected areas trained in DRM																									
(1) Ascertain the current situation, knowledge and capacity																									
(2) Design and Planning for DRM Training for Drought and Flood Hazards																									
(3) Roll-out DRM Training for Drought and Flood Hazards																									
(4) Evaluate training																									
OUTPUT 2: Safer Village and Commune Plans developed, utilized and updated																									
(1) Prepare Village and Risk profile																									
(2) Prepare Capacity Assessment to manage Risk																									
(3) Assemble necessary disaster risk management tools																									
(4) Prepare Safer Village and Safer Commune Plan templates																									
(5) Support the development of Village-specific Safer Commune and Village Plans																									
(6) Review of implemented Plans, revise templates and finalize planning guidelines																									
OUTPUT 3: Community-driven flood and drought risk reduction measures implemented in all selected communes																									
(1) Identify all available flood and drought records, summarise for all selected communes (including mapping, quantitative data, qualitative descriptions, extent of damage and loss etc.);																									
(2) Plot the cycle of floods/droughts and map locations in the affected Communes (include also all known early warnings, local knowledge on seasonal change etc.);																									
(3) Draft priorities for flood and drought preparedness planning including both social and emergency components)consider early warning systems improvement);																									
(4) Prepare an agreed set of operating procedures (SOPs) for flood and drought response that incorporates the risk reduction measures as the first stage of the risk management cycle;																									
(5) Identify likely flood and drought impacts under two or three likely scenarios to generate possible drought extent and flood inundation extent under specific possible future conditions;																									
(6) Identify key flood and drought consequences																									
(7) Facilitate implementatin of all recommended flood/drought risk management measures																									
OUTPUT 4: Local level Coordinating Committees organized and managing the CBDRM implementation																									
(1) Undertake rapid basic needs assessment for Coordinating Committee members in the selected areas;																									
(2) Brainstorm the 'opportunities and constraints' that may be relevant to Coordinating Committee members' responsibilities towards CBDRM implementation;																									
(3) Prepare a shared responsibility structure for CBDRM with Coordinating Committee members taking a lead role;																									
(4) Identify specific capacity building needs of Coordinating Committee members, prepare a Concept Note on this training and link it to the training in Output 1.																									
(5) Selecting a realistic number of communes and villages in which CBDRM can be effectively tested under the auspices of this Assignment;																									
(6) Prepare a Concept Note on the implementation of CBDRM, outlining opportunities, constraints and priorities for supporting the development of the model or the *Cambodian CBDRM Template* ;																									
(7) Draft and discuss with all key stakeholders, a Plan of ActIon for Implementing CBDRM in the selected communities.																									
OUTPUT 5: Technical Support and services available to provide technical assistance to the Coordinating Communities (FWUC/G, CCDM, and CCWC)																									
(1) Prepare a basic set of inquiries for initial interviews with Coordinating Committees (CC) to identify likely priority technical support that they may require;																									
(2) Outline possible actions and priorities, brainstorm with CCs to gain consensus on what is feasible, affordable and appropriate for the Team to provide over the course of the Assignment;																									
(3) Together with MOWRAM and FWUCs, formulate a Concept Note on how, when and what technical services will be most appropriate for the Team to provide to the CC;																									
(4) Document these technical services and support tools and include within the CBDRM Model, the Safer Communes and Safer Villages Plans and other reporting.																									
(5) Make technical services available to target communities as far as possible, throughout the project duration																									
OUTPUT 6: Local facilitators recruited and trained to support village and commune planning and implementing risk reduction strategies in participating communes																									
(1) Develop the TOR for recruiting local facilitators																									
(2) Prepare training materials including a toolkit for facilitators																									
(3) Conduct training of local facilitators																									
(4) Evaluate training of facilitators																									
(5) Certify facilitators based on testing and field observations by the CBDRM team																									
OUTPUT 7: A CBDRM model formulated and implemented in the project area																									
(1) Design of the model, conduct needs analysis, and assess opportunities and constraints																									
(2) Compile tools into a successful CBDRM Model for Cambodia																									
DELIVERABLES																									
Inception Report																									
Inception Workshops to disseminate Inception Report																									
Quarterly Reports (6)																									
Annual Progress Report																									
Midterm Report																									
Mid Term Workshop to Disseminate Midterm Report																									
CBDRM Guidelines																									
Draft Final Report																									
Workshop to disseminate Draft Final Report																									
Final Report																									

Figure 7 Personnel Schedule

No.	Name	Position	Person Month
INTERNATIONAL			
I-1	Francesco GOLETTI	Disaster Risk Management Specialist/Team Leader	9
I-2	Svend Erik SORENSEN	Institution/Social Development Specialist	3
I-3	Felix SEEBACHER	Flood Management Specialist	4
I-4	Mohammad ABID	Drought Management Specialist	4
I-5	Peter-John MEYNELL	Climate Change Adaptation Specialist	3
NATIONAL			
N-1	HUM Sophon	Disaster Risk Management Specialist/Deputy Team Leader	24
N-2	CHEAP Sam Oeurn	Institution/Social Development Specialist	12
N-3	CHHIM Sophea	Flood Management Specialist	12
N-4	OEURN Chantha	Drought Management Specialist	12
N-5	LAY Chanthy	Climate Change Adaptation Specialist	12
N-6	OUN Rithy	Social Mobilization Specialist 1	24
N-7	SEANG Bora	Social Mobilization Specialist 2	24
N-8	CHEM Phalla	Capacity Building Specialist	18
N-9	TOUS Sophorn	Gender Specialist	12

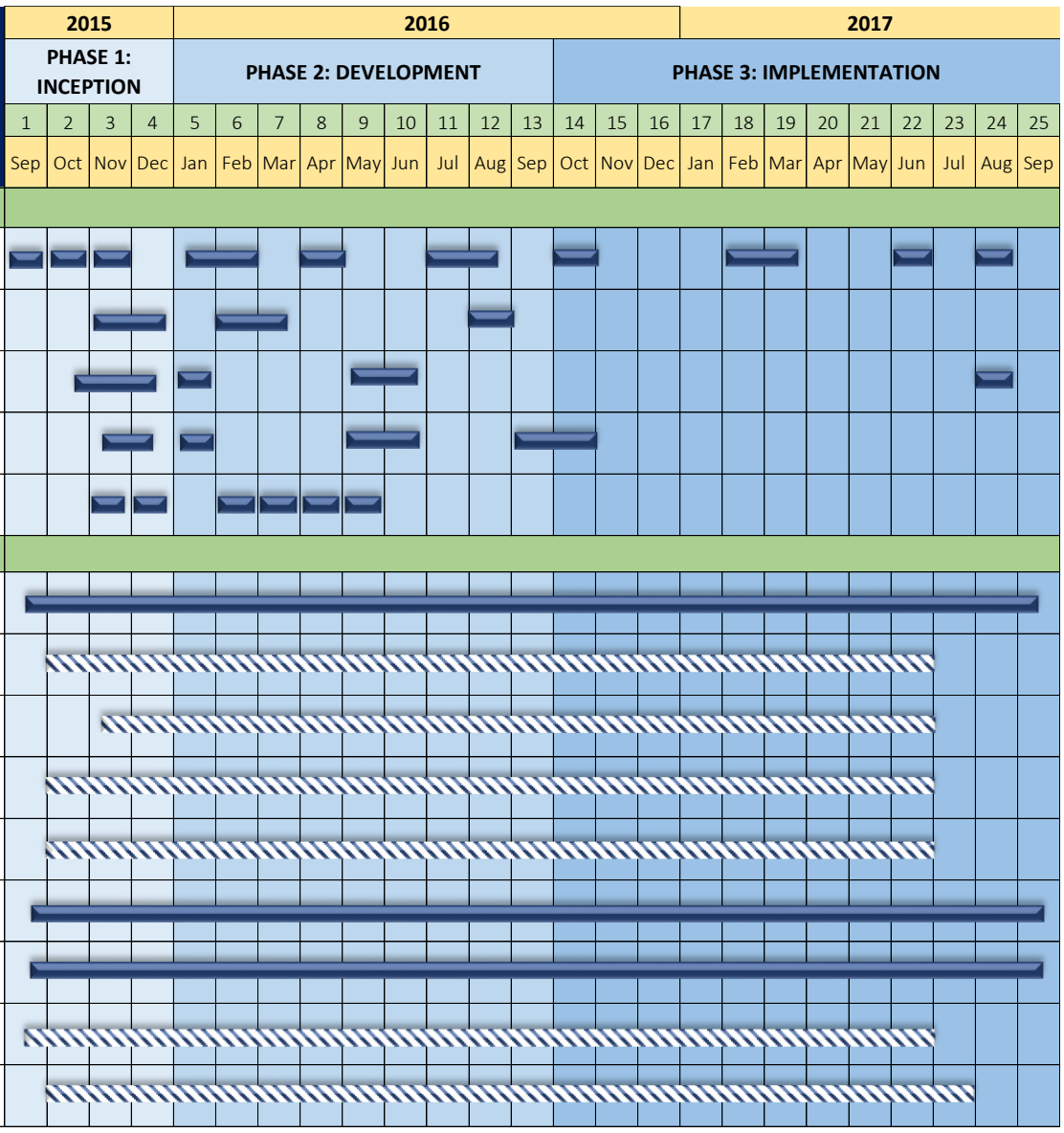

Figure 8 Location of Consultants

No.	Name	Position	Location	Person Month (pm)		
INTERNATIONAL				Home	Field	Total
I-1	Francesco GOLETTI	Disaster Risk Management Specialist/Team Leader	Phnom Penh	0	9	9
I-2	Svend Erik SORENSEN	Institution/Social Development Specialist	Phnom Penh	0	3	3
I-3	Felix SEEBACHER	Flood Management Specialist	Phnom Penh	0	4	4
I-4	Mohammad ABID	Drought Management Specialist	Phnom Penh	0	4	4
I-5	Peter-John MEYNELL	Climate Change Adaptation Specialist	Phnom Penh	0	3	3
NATIONAL				**Home**	**Field**	**Total**
N-1	HUM Sophon	Disaster Risk Management Specialist/Deputy Team Leader	Phnom Penh	16	8	24
N-2	CHEAP Sam Oeurn	Institution/Social Development Specialist	Phnom Penh	8	4	12
N-3	CHHIM Sophea	Flood Management Specialist	Phnom Penh	8	4	12
N-4	OEURN Chantha	Drought Management Specialist	Phnom Penh	8	4	12
N-5	LAY Chanthy	Climate Change Adaptation Specialist	Phnom Penh	8	4	12
N-6	OUN Rithy	Social Mobilization Specialist 1	Phnom Penh	8	16	24
N-7	SEANG Bora	Social Mobilization Specialist 2	Pursat	8	16	24
N-8	CHEM Phalla	Capacity Building Specialist	Pursat	12	6	18
N-9	TOUS Sophorn	Gender Specialist	Phnom Penh	8	4	12

Figure 9 Personnel Input

No.	Name	Position	Days	2015				2016									2017													Person Month (pm)		
				PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
				Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep			
INTERNATIONAL				**Days**																									Home	Field	Total
I-1	Scott CUNLIFFE / Francesco GOLETTI	Disaster Risk Management Specialist/Team Leader	198	8	9	10		12	22		22		22		15		15				15		15		15		15	3	0	9	9
I-2	Svend Erik SORENSEN	Institution/Social Development Specialist	66			16	9		11	11					19														0	3	3
I-3	Felix SEEBACHER	Flood Management Specialist	88		5	22	9	14				14	9														15		0	4	4
I-4	Mohammad ABID	Drought Management Specialist	88			9	12	14				20			16	17													0	4	4
I-5	Peter-John MEYNELL	Climate Change Adaptation Specialist	66			8	8		13	13	12	12																	0	3	3
NATIONAL																													**Home**	**Field**	**Total**
N-1	HUM Sophon	Disaster Risk Management Specialist/Deputy Team Leader	528	11	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	11	16	8	24
N-2	CHEAP Sam Oeurn	Institution/Social Development Specialist	264		10	11	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	11				8	4	12
N-3	CHHIM Sophea	Flood Management Specialist	264			10	22	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	11				8	4	12
N-4	OEURN Chantha	Drought Management Specialist	264		10	11	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	11				8	4	12
N-5	LAY Chanthy	Climate Change Adaptation Specialist	264		10	11	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	11				8	4	12
N-6	OUN Rithy	Social Mobilization Specialist 1	528	11	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	11	8	16	24
N-7	SEANG Bora	Social Mobilization Specialist 2	528	11	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	11	8	16	24
N-8	CHEM Phalla	Capacity Building Specialist	396	2	10	19	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	17	15	15	10	10	10	12	6	18
N-9	TOUS Sophorn	Gender Specialist	264		5	5	11	12	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	11	11	11			8	4	12

Figure 10 Contribution of the Consultants to the Outputs of the CBDRM-FWUC assignment

OUTPUT AND ACTIVITIES	Inputs of Consultants into Outputs of the CBDRM & FWUC project (days)													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Team Leader	Deputy Team Leader	Institutional Devel. - Int	Institutional Devel. - Nat	Capacity Building	Flood Mangmt - Int	Flood Mangmt - Nat	Drought Mangmt - Int	Drought Mangmt - Nat	Climte Chnge Adapt - Int	Climte Chnge Adapt - Nat	Social Mobilization 1	Social Mobilization 2	Gender Specialist
Total input (days)	198	528	66	264	396	88	264	88	264	66	264	528	528	264
OUTPUT 1: Provincial, District, Commune and Village level participants from selected areas trained in DRM														
(1) Ascertain the current situation, knowledge and capacity	5	10	2	5	5	2	5	2	5	1	5	5	5	5
(2) Design and Planning for DRM Training for Drought and Flood Hazards	3	5	2	3	5	2	3	2	3	1	3	5	5	3
(3) Roll-out DRM Training for Drought and Flood Hazards	5	30	5	5	60	5	5	5	5	2	5	30	30	5
(4) Evaluate training	2	5	2	2	2	2	2	2	2	1	2	4	4	2
OUTPUT 2: Safer Village and Commune Plans developed, utilized and updated														
(1) Prepare Village and Risk profile	2	5	1	2	2	1	2	1	2	2	5	30	30	2
(2) Prepare Capacity Assessment to manage Risk	2	5	1	5	10	1	2	1	2	2	4	30	30	5
(3) Assemble necessary disaster risk management tools	2	5	2	2	5	2	2	2	2	2	5	5	5	2
(4) Prepare Safer Village and Safer Commune Plan templates	2	5		5	5		2		2	2	1	1	1	5
(5) Support the development of Village-specific Safer Commune and Village Plans	5	50		10	15	2	5	2	5	5	10	60	60	10
(6) Review of implemented Plans, revise templates and finalize planning guidelines	2	5		4	5	1	2	1	2	2	2	5	5	4
OUTPUT 3: Community-driven flood and drought risk reduction measures implemented in all selected communes														
(1) Identify all available flood and drought records, summarise for all selected communes (including mapping, quantitative data, qualitative descriptions, extent of damage and loss etc.);	2	4		2	2	2	10	2	10	2	10	10	10	2
(2) Plot the cycle of floods/droughts and map locations in the affected Communes (include also all known early warnings, local knowledge on seasonal change etc.);	2	4		2	2	2	7	2	7	2	10	10	10	2
(3) Draft priorities for flood and drought preparedness planning including both social and emergency components)consider early warning systems improvement);	2	4		2	2	2	5	2	5	2	5	2	2	2
(4) Prepare an agreed set of operating procedures (SOPs) for flood and drought response that incorporates the risk reduction measures as the first stage of the risk management cycle;	5	5		5	5	2	5	2	5	2	5	1	1	5
(5) Identify likely flood and drought impacts under two or three likely scenarios to generate possible drought extent and flood inundation extent under specific possible future conditions;	2	4		2	2	2	5	2	5	2	10	2	2	2
(6) Identify key flood and drought consequences	2	3		2	2	2	5	2	5	2	5	3	3	2
(7) Facilitate implementation of all recommended flood/drought risk management measures	7	50		5	5	4	15	4	15	2	15	60	60	5
OUTPUT 4: Local level Coordinating Committees organized and managing the CBDRM implementation														
(1) Undertake rapid basic needs assessment for Coordinating Committee members in the selected areas;	3	10	1	3	3	1	3	1	3		1	4	4	3
(2) Brainstorm the 'opportunities and constraints' that may be relevant to Coordinating Committee members' responsibilities towards CBDRM implementation;	2	5	1	2	2	1	2	1	2		1	4	4	2
(3) Prepare a shared responsibility structure for CBDRM with Coordinating Committee members taking a lead role;	2	5		2	2		2		2			1	1	2
(4) Identify specific capacity building needs of Coordinating Committee members, prepare a Concept Note on this training and link it to the training in Output 1.	2	5	2	2	5	1	2	1	2		1	1	1	2
(5) Selecting a realistic number of communes and villages in which CBDRM can be effectively tested under the auspices of this Assignment;	2	5		2	2		2		2			1	1	2
(6) Prepare a Concept Note on the implementation of CBDRM, outlining opportunities, constraints and priorities for supporting the development of the model or the *Cambodian CBDRM Template* ;	3	6	2	3	3	1	3	1	3		1	2	2	3
(7) Draft and discuss with all key stakeholders, a Plan of ActIon for Implementing CBDRM in the selected communities.	5	10		5	5	1	5	1	5		1	4	4	5
OUTPUT 5: Technical Support and services available to provide technical assistance to the Coordinating Communities (FWUC/G, CCDM, and CCWC)														
(1) Prepare a basic set of inquiries for initial interviews with Coordinating Committees (CC) to identify likely priority technical support that they may require;	3	6	1	3	3		3		3		3	1	1	3
(2) Outline possible actions and priorities, brainstorm with CCs to gain consensus on what is feasible, affordable and appropriate for the Team to provide over the course of the Assignment;	2	4	1	2	2		2		2		2	4	4	2
(3) Together with MOWRAM and FWUCs, formulate a Concept Note on how, when and what technical services will be most appropriate for the Team to provide to the CC;	3	6	1	3	3		3		3		3	1	1	3
(4) Document these technical services and support tools and include within the CBDRM Model, the Safer Communes and Safer Villages Plans and other reporting.	5	10	1	5	5		5		5		5	10	10	5
(5) Make technical services available to target communities as far as possible, throughout the project duration	15	50	5	15	17	4	15	4	15	4	15	60	60	15
OUTPUT 6: Local facilitators recruited and trained to support village and commune planning and implementing risk reduction strategies in participating communes														
(1) Develop the TOR for recruiting local facilitators	1	2	1	2	3	1	1	1	1	1	1	2	2	2
(2) Prepare training materials including a toolkit for facilitators	1	30	10	30	40	8	20	8	20	10	20	30	30	30
(3) Conduct training of local facilitators	1	15	5	40	60	5	10	5	10	1	10	15	15	40
(4) Evaluate training of facilitators	1	2	2	3	5	1	2	1	2	1	2	2	2	3
(5) Certify facilitators based on testing and field observations by the CBDRM team	1	2	1	2	5	1	1	1	1		1	2	2	2
OUTPUT 7: A CBDRM model formulated and implemented in the project area														
(1) Design of the model, conduct needs analysis, and assess opportunities and constraints	5	10	1	5	5	1	5	1	5	1	5	5	5	5
(2) Compile tools into a successful CBDRM Model for Cambodia	20	40	2	5	5	2	20	2	20	5	20	10	10	5
DELIVERABLES														
Inception Report	5	5	2	3	3	2	5	2	5	1	5	5	5	3
Inception Workshops to disseminate Inception Report	3	6	1	3	3	3	3	3	3	1	3	6	6	3
Quarterly Reports (6)	12	12	2	12	12	2	12	2	12	2	12	12	12	12
Annual Progress Report	5	10	2	5	7	3	7	3	7	2	5	10	10	5
Midterm Report	5	10	2	5	7	3	7	3	7	3	6	10	10	5
Mid Term Workshop to Disseminate Midterm Report	3	6		3	3	2	3	2	3		3	6	6	3
CBDRM Guidelines	12	17	5	12	15	5	15	5	15		12	17	17	12
Draft Final Report	15	20		15	20	4	15	4	15		15	20	20	15
Workshop to disseminate Draft Final Report	2	5		2	2	2	2	2	2		2	5	5	2
Final Report	7	15		7	15		7		7		7	15	15	7

Figure 11 Deliverables of Consultants – Team Leader and Deputy Team Leader

	Team Leader and Deputy Team Leader Deliverables	2015				2016									2017									
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Regular monthly briefings of the CPMU		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
02	Establishment of Commune Coordination Committee (FWUC, NCDC, CWCC)					■																				
03	Safer Commune and Village Plans of target area																				■					■
04	CBDRM incorporated into Commune Investment Plan to incorporate CBDRM														■											
05	Formation of FWUC and FWUGs in the target area									■																
06	Capacity development plans for Province, Districts, Communes, and Villages in target area									■																
07	Local facilitators trained													■												
08	Capacity development plans carried out													■											■	
09	Establishment of CBDRM Advisory Group (CAG)					■																				
10	Regular meetings with CAG						■			■			■			■			■			■			■	
11	Development of CBDRM model													■												
12	Inception Report				★																					
13	Inception Workshops to disseminate Inception Report					★																				
14	Quarterly Reports							★			★			★			★			★			★			
15	Annual Progress Report													★												
16	Midterm Report													★												
17	Mid Term Workshop to Disseminate Midterm Report														★											
18	CBDRM Guidelines													★												
19	Draft Final Report																							★		
20	Workshop to disseminate Draft Final Report																								★	
21	Final Report																									★

Figure 12 Deliverables of Consultants – Flood Management Specialists

	Flood Management Specialists Deliverables	2015				2016									2017									
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Collected flood data of the rivers in the project area				■																					
02	Existing flood frequency analysis reviewed					■																				
03	Analysis of damage of various frequency floods to the communities in the project area						■																			
04	Proposal of structural and non-structure measures to minimize damagae							■																		
05	Prepare village based preparedeness plans									■											■					■
06	Flood mitigation and management guidelines for the communities													■												
07	Develop training material with respect to flood													■												
08	Support flood forecasting and EWS to be improved by PIC													■											■	
09	Support Irrigation Scheme design team on aspects of flood mitigation					■																				
10	Support training and capacity building for the FWUC												■													
11	Support training of communes and villages																								■	
12	Input into Inception Report				★																					
13	Input into Inception Workshops to disseminate Inception Report					★																				
14	Into into Quarterly Reports							★			★			★			★			★			★			
15	Input into Annual Progress Report													★												
16	Input into Midterm Report													★												
17	Input into Mid Term Workshop to Disseminate Midterm Report														★											
18	Input into CBDRM Guidelines													★												
19	Input into Draft Final Report																							★		
20	Into into Workshop to disseminate Draft Final Report																								★	
21	Input into Final Report																									★

Figure 13 Deliverables of Consultants – Drought Management Specialists

	Drought Management Specialists Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Collected drought data of the rivers in the project area					■																				
02	Existing drought frequency analysis reviewed					■																				
03	Analysis of damage of various frequency droughts to the communities in the project area						■																			
04	Proposal of structural and non-structure measures to minimize damage from drought							■																		
05	Prepare village based preparedeness plans									■											■					■
06	Drought mitigation and management guidelines for the communities													■												
07	Develop training material with respect to drought													■												
08	Support drought forecasting and EWS to be improved by PIC													■											■	
09	Support Irrigation Scheme design team on aspects of drought mitigation					■							■													
10	Support training and capacity building for the FWUC												■													
11	Support training of communes and villages																								■	
12	Input into Inception Report				✸																					
13	Input into Inception Workshops to disseminate Inception Report					✸																				
14	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
15	Input into Annual Progress Report													✸												
16	Input into Midterm Report													✸												
17	Input into Mid Term Workshop to Disseminate Midterm Report														✸											
18	Input into CBDRM Guidelines													✸												
19	Input into Draft Final Report																							✸		
20	Into into Workshop to disseminate Draft Final Report																								✸	
21	Input into Final Report																									✸

Figure 14 Deliverable of Consultants – Institutions and Social Development Specialists

	Institution and Social Development Specialists Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Analysis of training needs of village and communes							■																		
02	Capacity building plan							■																		
03	Design of training courses and training material										■															
04	Completed training the trainers													■												
05	Prepare village based preparedeness plans									■											■					■
06	Support training of communes and villages																								■	
07	Evaluation of training													■							■				■	
08	Input into Inception Report				✸																					
09	Input into Inception Workshops to disseminate Inception Report					✸																				
10	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
11	Input into Annual Progress Report													✸												
12	Input into Midterm Report													✸												
13	Input into Mid Term Workshop to Disseminate Midterm Report														✸											
14	Input into CBDRM Guidelines													✸												
15	Input into Draft Final Report																							✸		
16	Into into Workshop to disseminate Draft Final Report																								✸	
17	Input into Final Report																									✸

Figure 15 Deliverables of Consultants – Capacity Building Specialist

	Capacity Building Specialist Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Analysis of training needs of village and communes							■																		
02	Capacity building plan							■																		
03	Design of training courses and training material										■															
04	Completed training the trainers													■												
05	Prepare village based preparedeness plans									■											■					■
06	Support training of communes and villages																								■	
07	Evaluation of training													■							■				■	
08	Input into Inception Report				✸																					
09	Input into Inception Workshops to disseminate Inception Report					✸																				
10	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
11	Input into Annual Progress Report													✸												
12	Input into Midterm Report													✸												
13	Input into Mid Term Workshop to Disseminate Midterm Report														✸											
14	Input into CBDRM Guidelines													✸												
15	Input into Draft Final Report																							✸		
16	Into into Workshop to disseminate Draft Final Report																								✸	
17	Input into Final Report																									✸

Figure 16 Deliverables of Consultants – Climate Change Adaptation Specialists

	Climate Change Adaptation Specialists Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Collected climate change data and information in the project area				■																					
02	Assessment of potential climate hazards in the project area							■																		
03	Input into village based preparedeness plans									■											■					■
04	Climate change adaptation and management guidelines for the communities													■							■				■	
05	Develop training material with respect to climate change										■															
06	Support drought and flood forecasting and EWS to be improved by FFNC													■												
07	Develop appropriate climate change knowledge tools for the communities													■												
08	Completed training of trainers												■													
09	Support training of communities and villages																			■						
10	Input into Inception Report				✸																					
11	Input into Inception Workshops to disseminate Inception Report					✸									✸											
12	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
13	Input into Annual Progress Report													✸										✸		
14	Input into Midterm Report													✸											✸	
15	Input into Mid Term Workshop to Disseminate Midterm Report														✸											✸
16	Input into CBDRM Guidelines													✸												
17	Input into Draft Final Report																							✸		
18	Into into Workshop to disseminate Draft Final Report																								✸	
19	Input into Final Report																									✸

Figure 17 Deliverables of Consultants – Social Mobilization Specialists

	Social Mobilization Specialists Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Regular monthly briefings of the PIU		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
02	Establishment of Commune Coordination Committee (FWUC, NCDC, CWCC)					■																				
03	Regular consultations with the Coordination Committee						■			■			■			■			■			■			■	
04	Collection of data for Village Risk Profiles and HVCA							■																		
05	Safer Commune and Village Plans of target area																				■					■
06	Formation of FWUC and FWUGs in the target area									■																
07	Capacity development plans for Province, Districts, Communes, and Villages in target area									■																
08	Local facilitators trained													■												
09	Capacity development plans carried out													■											■	
10	Input into Inception Report				✸																					
11	Input into Inception Workshops to disseminate Inception Report					✸																				
12	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
13	Input into Annual Progress Report													✸												
14	Input into Midterm Report													✸												
15	Input into Mid Term Workshop to Disseminate Midterm Report														✸											
16	Input into CBDRM Guidelines													✸												
17	Input into Draft Final Report																							✸		
18	Into into Workshop to disseminate Draft Final Report																								✸	
19	Input into Final Report																									✸

Figure 18 Deliverables of Consultants – Gender Specialist

	Gender Specialist Deliverables	2015				2016												2017								
		PHASE 1: INCEPTION				PHASE 2: DEVELOPMENT									PHASE 3: IMPLEMENTATION											
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
01	Analysis of training needs of village and communes							■																		
02	Complete Organizational Gender Assessment (OGA)							■																		
03	Design of training courses and training material from a gender perspective										■															
04	Completed training the trainers													■												
05	Prepare village based preparedeness plans from a gender perspective									■											■					■
06	Support training of communes and villages																								■	
07	Evaluation of training													■							■				■	
08	Ensure gender perspective is incorporated into the CBDRM model developed by the team													■												
09	Input into Inception Report				✸																					
10	Input into Inception Workshops to disseminate Inception Report					✸																				
11	Into into Quarterly Reports							✸			✸			✸			✸			✸			✸			
12	Input into Annual Progress Report													✸												
13	Input into Midterm Report													✸												
14	Input into Mid Term Workshop to Disseminate Midterm Report														✸											
15	Input into CBDRM Guidelines													✸												
16	Input into Draft Final Report																							✸		
17	Into into Workshop to disseminate Draft Final Report																								✸	
18	Input into Final Report																									✸

7 RECOMMENDATIONS

179. The following is a short list of recommendations emerging from the discussion in the Inception Report.

1. **Adoption of Hazard, Vulnerability and Capacity Assessment (HVCA) methodology** The Consultant's Team proposes to use the HVCA methodology in the preparation of Village and Risk Profiles for individual villages. This methodology has been tried and tested and is well known in Cambodia. The Cambodian Red Cross has prepared guidelines on this methodology (CRC 2005). Appendix 12 discusses some tools for HVCA. Appendix 4 presents the draft questionnaire for conducting HVCA.
2. **Finalization of Target Area Communes and Villages.** The command area map shows 42 villages in 5 communes. The 42 villages will be considered the focus of the Consultant's Team HVCA activities and CBDRM measures.
3. **'Value for money' Methods applied to Training and Capacity Building**

   The training delivered in the project should be of value to its stakeholders. The training must show that it will improve the skills and knowledge of the target group (mainly commune and village level stakeholders) and the performance of commune and village level organizations. Also, the training delivered should be efficient and show the monetary value of the inputs provided, (e.g. cost for TA, design, implementation and evaluation). Since there is no evaluation system established for the training delivery in the current project, we propose that a '*value for money*' method will be adopted for the training delivery, by applying a '*return on investment*' (ROI) for training. The method will include a design of a data and evaluation plan for the training. Appendix 7 discusses the method of *value for money*.
4. **Monitoring and Evaluation (M&E) for the CBDRM-FWUC assignment**

   In order for the CBDRM assignment to measure its performance during the project lifetime and beyond, it needs a well-designed Monitoring and Evaluation (M&E) framework. The Project Performance and Management System (PPMS) will be used to monitor the outputs/outcomes of the Project by CPMU and Project Implementation Consultants (PIC). PIC and CPMU will work with CBDRM team to monitor the key indicators under CBDRM component of the DMF. Some indicators may also be added with consultations with CBDRM.
5. **Proposed Establishment of a CBDDRM Advisory Group (CAG)**

   The Consultant's Team proposes to establish a CBDRM Advisory Group (CAG) consisting of key organizations working on CBDRM, including National Committee on Disaster Management (NCDM), Cambodian Red Cross (CRC), Ministry of Women Affairs (MOWA), Ministry of Environment (MOE), Mekong River Commission (MRC), Cambodia Development Research Institute (CDRI), and People in Need (PIN). Membership might be changed or expanded. The Group will meet periodically with the Consultants' Team to exchange experiences and advice the team on tools, methodologies, and innovations in the field of CBDRM. The Consultants will prepare a concept note and submit to CPMU to detail the composition and the Terms of References of CAG.
6. **Proposed Conference on CBDRM Workshop**

   CBDRM approach is gaining popularity in Cambodia and in addition to key players such as NCDM and CRC, other organizations including NGOs are currently working on this field. The work of the CBDRM-FWUC assignment is among the most innovative ongoing projects in this area in Cambodia. It is therefore a great opportunity to organize a highly visible conference on

CBDRM in order to disseminate the accomplishments of the CBDRM-FWUC assignment and establish partnerships with organizations working in this field both in Cambodia and in the region. By the Midterm Report submission, the Consultant's Team will prepare a concept note.

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APPENDIX 1 LIST OF TARGET VILLAGES

Table 7 List of Target Villages for CBDRM Activities (provided by PIC/CPMU)

District	Commune name	Village name
Bakan	Ta Lou	1. Kouk Rumlo 2. Tuol Totueng 3. Tuol Thma 4. Buor Chres 5. Prey Roung 6. Ta Lou 7. Thmei 8. Tuol Chreav 9. Prey Tao 10. Boeng Kak 11. Prey Veang 12. Serei Kunthea 13. Trayang Sa 14. Chhnal Moan 15. Prey Kantout 16. Tang Kouk 17. Baos Ko 18. Prahal 19. Rohal Til 20. Som Sant
Bakan	Khnar Totueng	1. Krao Svay 2. Krao Voat
Phnum Kravanh	Bak Chenhchien	1. Ou Rumchang 2. Bak Chenhchien 3. Krabau Chrum 4. Chan Serei 5. Tuol Pongro 6. Ou Ruessei
Phnum Kravanh	Phteah Rung	1. Kaoh Svay 2. Ta Sas 3. Kranham 4. Prey Kanlang 5. Thlok Dangkao 6. Bat Rumduol 7. Kandal 8. Phteah Rung 9. Damnak Kansaeng 10. Sdok Khtum 11. Chongruk
Phnum Kravanh	Samraong	1. Preaek Bei 2. Ou Heng 3. Samraong Muoy

APPENDIX 2 TOR OF CONSULTANTS

Table 8 Original TOR of Consultants

Position	Term of Reference (TOR)
Disaster Risk Management Specialist/Team Leader (International 9 months)	(i) Assist the CPMU and PIUs in the CBDRM process, particularly in seeing to it that the process is understood at the local level. (ii) Development of the model. (iii) Prepare training manual, modules and material in Khmer. (iv) Development of guidelines for CBDRM (v) Gathering and collecting the materials on CBDRM in country and region, studying it and if possible use it as basis for production of training manuals. (vi) Coordinating with the CPMU, PIUs, and villages in the preparation and implementation of all the training and workshop activities: schedule, participants, venue, and additional resource persons. (vii) Providing training to the communes and districts related to non- structural flood and drought risk management. (viii) Studying and reviewing and finalizing the sample formats for safer village plan, safer commune plan and priority investments (ix) Advising the local level Community Coordinators (CCs) and the local facilitators as to the feasibility and soundness of the proposed measures as contained in local disaster preparedness from the technical and financial point of view. (x) Assisting local level CCs and the local facilitators in producing detailed investment plans based on the priorities contained in the Safer Commune Plans. Translate or interpret the investments to an investment plan that includes the technical details. (xi) Assisting the local level CCs and the local facilitators in monitoring the implementation of the investment plan.
Institutional/Social Development Specialist (International 3 months)	(i) Carrying out training need assessment (TNA). (ii) Designing training program. (iii) Preparing the training material, plans, schedule. (iv) Imparting trainings.
Flood Management Specialists (International 4 months, National 12 months)	(i) Collect flood data of the rivers in the project area. (ii) Review the existing flood frequency analysis. (iii) Carry out analysis to determine the extent of damage of various frequency floods to the communities in the project area. (iv) Suggest structural and non-structural measures to minimize damages at community level. (v) Suggest flood mitigation and management measures (vi) Prepare village based preparedness plan. (vii) Develop flood mitigation and management guidelines for the communities (viii) Support Team Leader in designing the CBDRM Program. (ix) Support Institutional Specialist in designing and implementing trainings. (x) Support flood forecasting and warning system to be improved by PIC
Drought Management Specialists (International 4 months, National 12 months)	(i) Collect available data, research and reports related to drought in the country (ii) Review past drought incidence and their impact on communities (iii) Assess vulnerability of the communities in the project area (iv) Prepare village based preparedness plans (v) Develop strategy for coping with potential droughts with respect to its severity (vi) Develop drought mitigation and management guidelines for the communities (vii) Support Team Leader in designing the CBDRM Program (viii) Support Institutional Specialist in designing and implementing trainings

Position	Term of Reference (TOR)
Climate Change Adaptation Specialists(International 3 months, National 12 months)	(i) Collect available data, research and reports related to climate change in the country (ii) Assess potential climate hazards in the project area (iii) Prepare village based climate change hazards map (iv) Develop climate change adaptation measures for the communities (v) Develop appropriate climate change knowledge tools for the communities (vi) Impart training to the communities and government officials.
DRM Specialist/Deputy Team Leader (National 24 months)	(i) Assisting the CPMUand PIUs in the CBDRM process, particularly in seeing to it that the process is understood at the local level. (ii) Development of the model and training material. (iii) Development of guidelines for CBDRM (iv) Gathering and collecting the materials on CBDRM in country and region, studying it and if possible use it as basis for production of training manuals. (v) Coordinating with the CPMU, PIUs, and villages in the preparation and implementation of all the training and workshop activities: schedule, participants, venue, and additional resource persons. (vi) Providing training to the communes and districts related to non- structural flood and drought risk management. (vii) Studying and reviewing and finalizing the sample formats for safer village plan, safer commune plan and priority investments (viii) Advising the local level Community Coordinators (CCs) and the local facilitators as to the feasibility and soundness of the proposed measures as contained in local disaster preparedness from the technical and financial point of view. (ix) Assisting local level CCs and the local facilitators in producing detailed investment plans based on the priorities contained in the Safer Commune Plans. Translate or interpret the investments to an investment plan that includes the technical details. (x) Advising on the technical design, construction drawing and total cost estimate for small civil works and equipment for the subproject focused on strengthening CBDRM (xi) Assisting the local level CCs and the local facilitators in monitoring the implementation of the investment plan.
Social Mobilization Specialists (2 National specialists each 24 months)	(i) Prepare social mobilization plan (ii) Organize working committees within the Communities for CBDRM (iii) Arrange and moderate meetings of other experts with communities (iv) Maintain close liaison with communities and act as community coordinator for carrying out CBDRM activities (v) Facilitate trainings of communities
Capacity Building Specialist (National 18 months)	(i) Carrying out training need assessment, (ii) Developing training plans and modules, (iii) Imparting trainings
Gender Specialist (National 12 months)	(i) Incorporating gender elements in the CBDRM activities according to ADB's guidelines.

APPENDIX 3 CLIMATE CHANGE PROJECTION FOR PURSAT PROVINCE

180. In providing assistance to communes and villages for assessing the increased risk of floods and droughts in the project area, it is helpful to understand the range of changes in climate that may be expected. While the project will not undertake detailed down-scaled projections for climate change for Pursat Province, it will review the different attempts that have been made at both national and sub-national levels, especially those that have focused on Pursat and neighboring provinces around the Tonle Sap. The following examples illustrate some of the climate parameters that will be considered in such a review. It should be noted that whilst the exact figures of the different projections may differ, the trends and ranges are generally consistent.

181. The usual climate change parameters projected are temperature – average, maximum and minimum daily temperatures, and rainfall - monthly averages and daily maxima, and then these can be used to develop further parameters which are more directly useful for understanding the risks of flood and drought, such as frequency of storm events and hydrological flows in the river, frequency of dry periods in the rainy season and evaporation rates and soil moisture content.

182. As part of an earlier ADB project with MOWRAM[13], a database of climate change parameters was developed with a series of maps and overlays to help predict the ranges of climate change. **The MOWRAM Climate Change Database and GIS Toolkit** was developed with the GIS application - DIVA-GIS, for climate data processing and mapping. The GIS application is used to process climate data and maps for visualization and comparison of climate in different time periods (baseline or historical reference period 1961-1990 and mid-century 2046-2065). This GIS toolkit has also pulled together a range of base maps such as administrative boundaries, hydrological and river system, delineated water resources regions, elevation, ecological and natural resources zones (including protected areas), geological features and soil types, agricultural land and productions, infrastructure and population. It is capable of modelling crop suitability and ecological niches based on key climate parameters.

183. This Climate Change Database and Toolkit can be used to prepare indicator maps of climate change vulnerability such as the projected increase in rainfall variability over an area (change in seasonality), or the projected percentage reduction in dry season rainfall over that area in future time periods, or areas that are prone to flood or drought.

184. The climate maps can be generated based on climate data available such as daily precipitation, minimum temperature and maximum temperature, downloaded from SEASTART's database and World Bank Portal. The climate change maps produced from this Toolkit can be exported to ARC-GIS, a platform that provides more options for geo-data processing including web hosting. The following parameters are available in the underlying database for the toolkit.

[13]Water Resources Management Sector Development Program TA-7610-CAM

Table 9: Climate Parameters used in the MOWRAM Climate Change Database and Toolkit

Indicator	Units	Description
Hottest temperature	°C	Maximum temperature for the month and year
Coldest temperature	°C	Minimum temperature for the month and year
Hot days temperature	°C	Maximum temperatures that exceed the hottest 10% of all days per year
Very warm days	%	Percent of the time that *daily maximum temperatures* exceed the 90th percentile (Tmax) value in the reference period (1961-1990)
Heat wave duration index	days	Number of days per year within intervals of at least 6 days during which the maximum temperature is greater than (5°C above the *normal maximum temperature* in the historic period). The normal maximum temperature for the historic period is the 5-day running average.
Total precipitation	mm	Total precipitation for the month and year
Consecutive dry days	days	Largest number of consecutive dry days during the year, "dry day" meaning that rainfall is less than 1 mm
Number of dry periods	N°	Number of consecutive dry day periods during the year that last longer than 5 days
Number of wet days	days	Number of days per month and year; "wet day" meaning precipitation is greater than 1 mm
Wet days	%	Percent of wet days per year with rainfall exceeding the 90th percentile value in the reference period (1961-1990)
Wet day rainfall	%	Precipitation percent per year due to days with precipitation greater than the 90th percentile value in the reference period
5-day rainfall	mm	Maximum precipitation accumulated over a period of five days during the year
Daily rainfall	mm/day	Average daily precipitation during wet days, i.e., days when rainfall is greater than 1 mm

185. The results for the changes projected under climate chage scenario A1B for different basin areas of Cambodia are shown in

186. Table 10.[14] The following projections for the Tonle Sap Basin show that:

- Annual rainfall is likely to increase by 59 mm to 1,616 mm
- The number of wet days will decrease by nearly 10 days per year to 155 days
- The 5-day rainfall will increase by 6.65 mm to 53.23 mm
- The daily rainfall intensity is likely to increase by 0.75 mm/day to 10.51 mm/day
- The wet day rainfall % is likely to increase by 6.05% to 29.36%
- The wet days % is likely to increase by 3.11% to 12.65%
- The daily rainfall intensity recurrence interval will be 7.76
- The consecutive dry days will increase by 6.64 days to 58.9 days
- The number of occurrences of dry periods will decrease by 0.39 to 8.44
- The hot day temperature is likely to increase by 1.74 deg C to 41.97°C
- Heat wave duration index will increase by 4.81 days to 5.00 days

[14] EGIS International 2014. High Resolution Climate Change Database and GIS Toolkit for Cambodia. Final Report. Water Resources Management Sector Development Program TA-7610-CAM.

Table 10: Baseline and mid-century Climate Change Indicators for Basin Planning Groups.

No.	Climate Change Indicator	Basin 1	Basin 2	Basin 3	Basin 4	Basin 5
		Coastal Zone	3S (SA 7C)	Mekong Upstream (SA6+8C)	Tonle Sap (SA 9C)	Delta (SA 10C)
A	Rainfall (mm)					
A1	Annual Rainfall (mm)					
	- Annual Rainfall Baseline	2,689	2,131	1,902	1,557	1,708
	- Annual Rainffall Project A1B	2,801	2,234	1,986	1,616	1,770
	- Annual Rainfall Change A1B	112	104	84	59	62
A2	Number of wet days (days)					
	- Number of wet days Baseline	175	164	161	164	165
	- Number of wet days Projection A1B	162	158	155	155	155
	- Number of wet days change A1B	-12.9	-6.99	-8.15	-9.80	-9.52
A3	5 Days Rainfall (mm)					
	5 Days Rainfall Baseline	91.95	81.67	63.19	46.58	59.34
	5 Days Rainfall Projection A1B	105.04	92.61	71.98	53.23	65.71
	5 Days Rainfall Change A1B	13.09	10.94	8.79	6.65	6.37
A4	Daily Rainfall Intensity (mm/day)					
	Daily Rainfall Intensity Baseline	17.32	14.39	12.81	10.51	11.56
	Daily Rainfall Intensity Projection A1B	18.16	15.74	13.88	11.26	12.08
	Daily Rainfall Intensity Change A1B	0.84	1.35	1.07	0.75	0.52
A5	Wet Day Rainfall (percent)					
	Wet Day Rainfall Baseline	25.03	26.11	24.95	23.32	25.19
	Wet Day Rainfall Projection A1B	31.02	31.95	30.76	29.36	31.08
	Wet Day Rainfall Change A1B	5.99	5.84	5.81	6.04	5.89
A6	Wet Days (percentage)					
	Wet Days Baseline	9.56	9.51	9.53	9.54	9.54
	Wet Days Projection A1B	12.54	12.56	12.53	12.65	12.41
	Wet Days Change A1B	2.98	3.05	3.00	3.11	2.87
A7	Daily Rainfall Intensity Occurrence Interval	3.42	3.09	4.09	7.76	4.27
B	Dry Days (days)					
B1	Consecutive dry days (days)					
	Consecutive dry days Baseline	47.02	55.6	54.39	52.26	54.75
	Consecutive dry days Projection A1B	53.81	61.16	60.86	58.9	61.54
	Consecutive dry days Change A1B	6.79	5.56	6.47	6.64	6.79
B2	Number of dry periods (number of occurrences)					
	Number of dry period Baseline	8.90	8.89	8.74	8.83	9.16
	Number of dry period Projection A1B	8.56	8.60	8.42	8.44	8.8
	Number of dry period Change A2B	-0.34	-0.29	-0.32	-0.39	-0.36
C	Temperature (degree C)					
C1	Hot day temperature (degree C)					

	Hot day temperature Baseline	36.83	37.78	39.5	40.22	37.98
	Hot day temperature Projection A1B	38.37	39.79	41.45	41.97	39.72
	Hot day temperature Change A1B	1.54	2.01	1.95	1.75	1.74
C2	Hottest temperature (degree C)					
	Hottest temperature Baseline	36.83	37.78	39.50	40.22	37.98
	Hottest temperature Projection A1B	38.37	39.79	41.45	41.97	39.72
	Hottest temperature Change A1B	1.54	2.01	1.95	1.75	1.74
C3	Heat wave duration (days)					
	Heat wave duration Baseline	0.06	0.24	0.19	0.19	0.05
	Heat wave duration Projection A1B	3.82	7.02	5.59	5.00	3.28
	Heat wave duration Change A1B	3.76	6.78	5.40	4.81	3.23

☛**The Basin relevant to Pursat is Basin 4**

187. As part of the USAID Mekong ARCC project, ICEM carried out downscaled projections for different areas of the Mekong basin, including Cambodia.[15]

[15] ICEM. 2013. USAID Mekong ARCC Climate change Impact and Adaptation Study for the Lower Mekong Basin.

188. Figure 19 and Figure 20 show the changes in average maximum daily temperatures in the dry season and wet season. In comparison to other parts of the country, by 2050 Pursat province shows a relatively lower projected increase of 2.3 – 2.6 degree C rise in temperature during the dry season and a 2.9 – 3.2 degree C rise in maximum daily temperature during the wet season.

189. Trends in rainfall are also expected to change over the coming decades. Seasonal variability in rainfall patterns is expected to grow resulting in wetter wet seasons and drier dry seasons. In Pursat province, rainfall in the wet season may increase by about 80 – 100 mm or a 6 – 8% increase (Figure 21 andFigure 22).

190. Changes in dry season rainfall are more variable depending on location. Large areas of Cambodia will receive a little less rainfall in the dry season – by up to 6mm, however in Pursat province it is projected that there will be slightly more rainfall by 1 – 2 mm than at present (**Figure** 23).

191. While it is projected that average rainfall will increase in the basin**, periods of annual agricultural drought are expected to lengthen significantly**; particularly in the Mekong floodplain in Cambodia and Southern Lao PDR. Cambodia stands out as a hot spot with up to 30% increases in the number of drought days each year in some provinces. In Pursat province the increase in the number of drought months is less dramatic, with projections of up to 0.5 months by 2050 (Figure 24).

192. The rainfall increases and more intensive rainfall events will lead to increases in the extent, depth and duration of flooding throughout the country. For example in the Tonle Sap and Mekong delta and floodplains system would experience significant increases with the Cambodia floodplains experiencing increases of extreme floods with depths 2.0m (**Figure** 25). This figure does not extend to the project area in Pursat province.

Figure 19: Change in average maximum daily temperature in the dry season – 2050

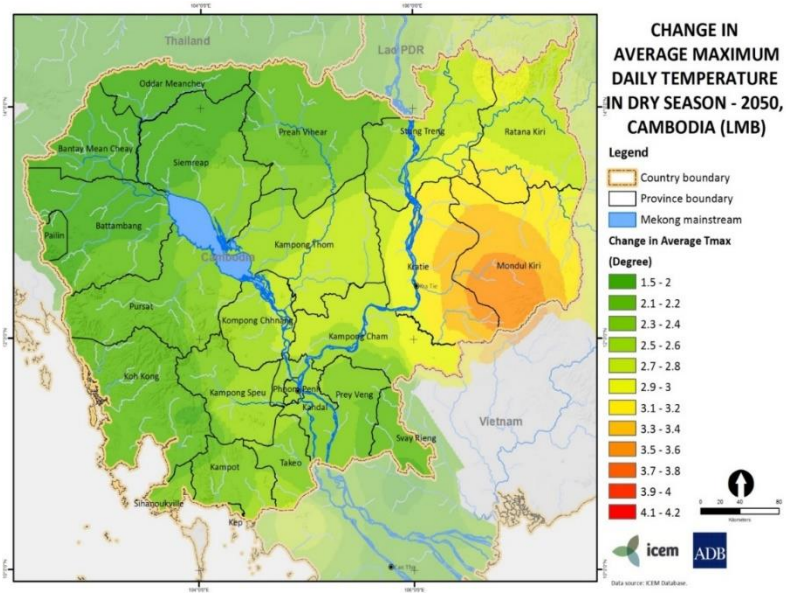


Figure 20: Change in average maximum daily temperature in the wet season by 2050

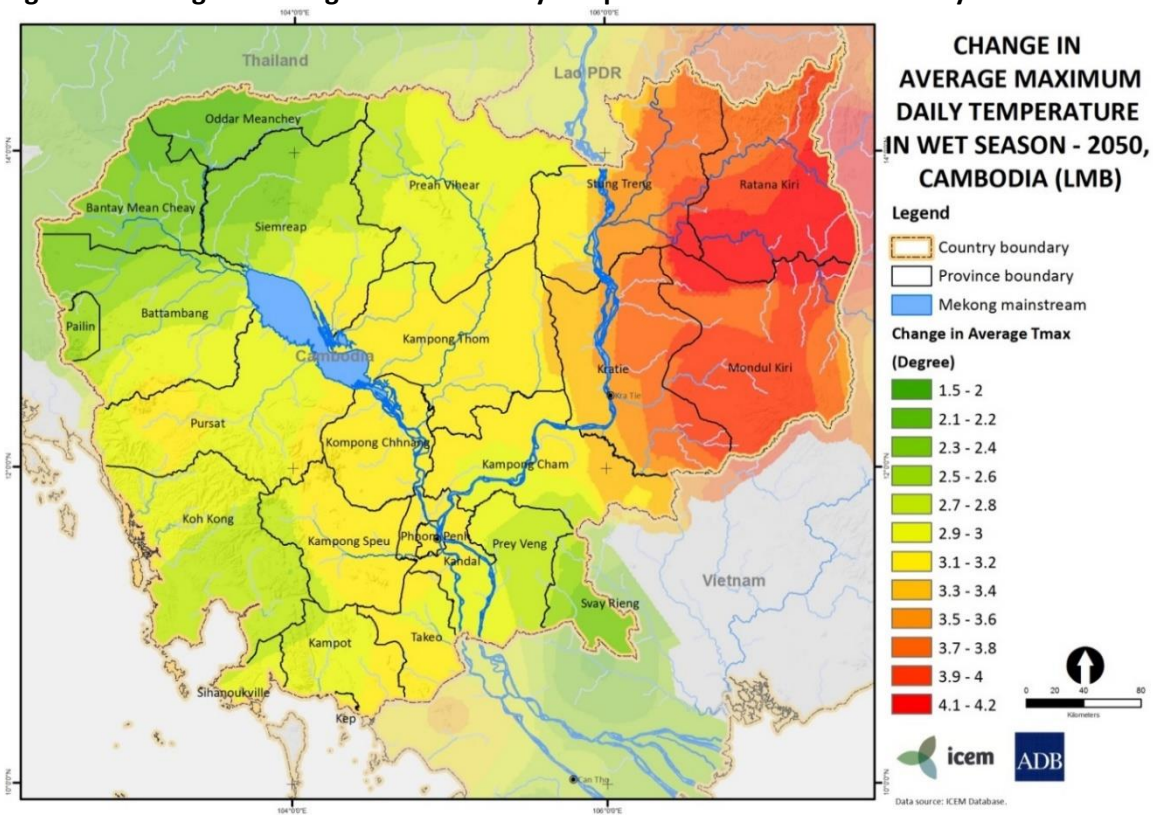


Figure 21: Increase in rainfall in the wet season – 2050

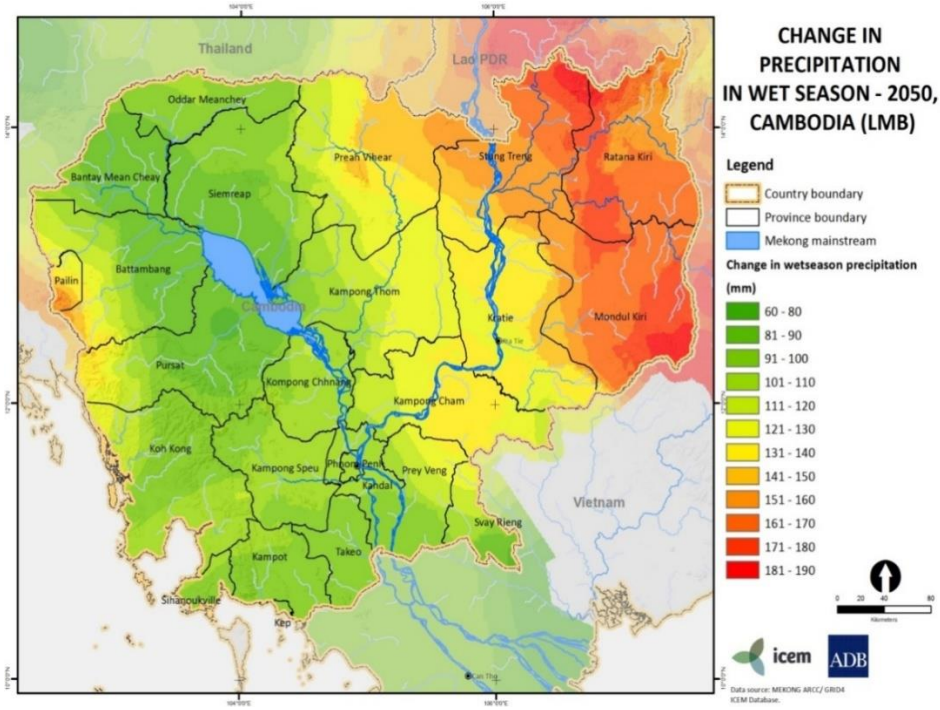


Figure 22: % change in rainfall in wet season – 2050

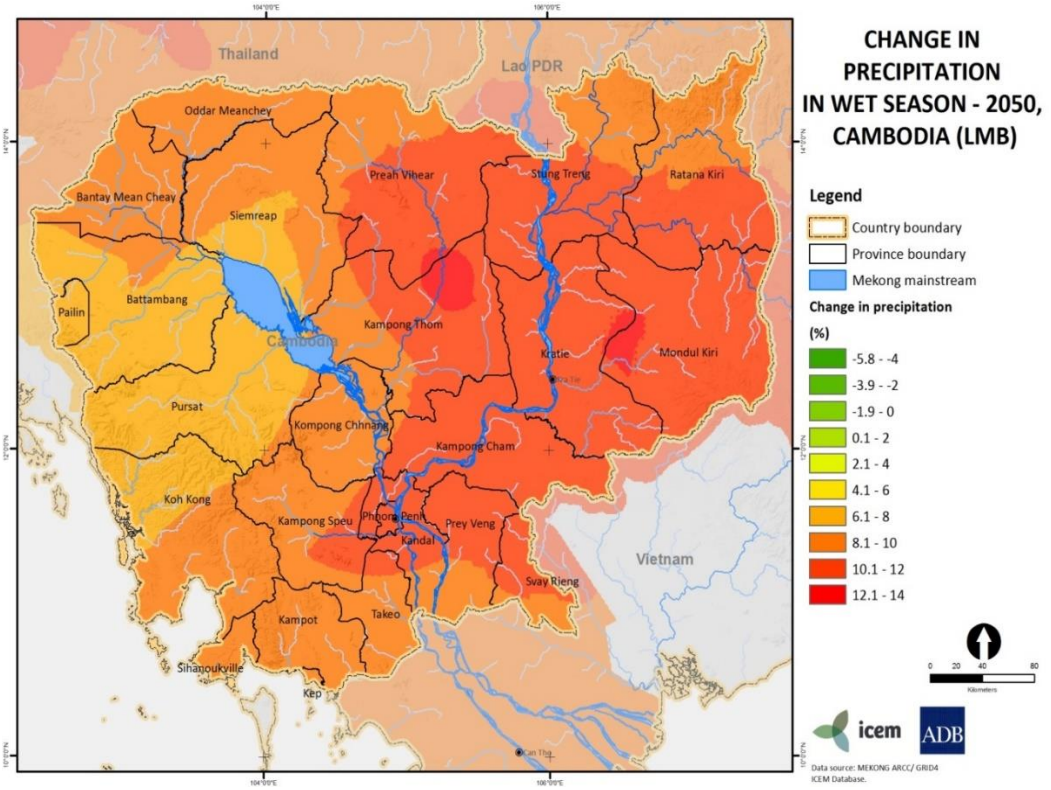


Figure 23: Change in rainfall during the dry season - 2050

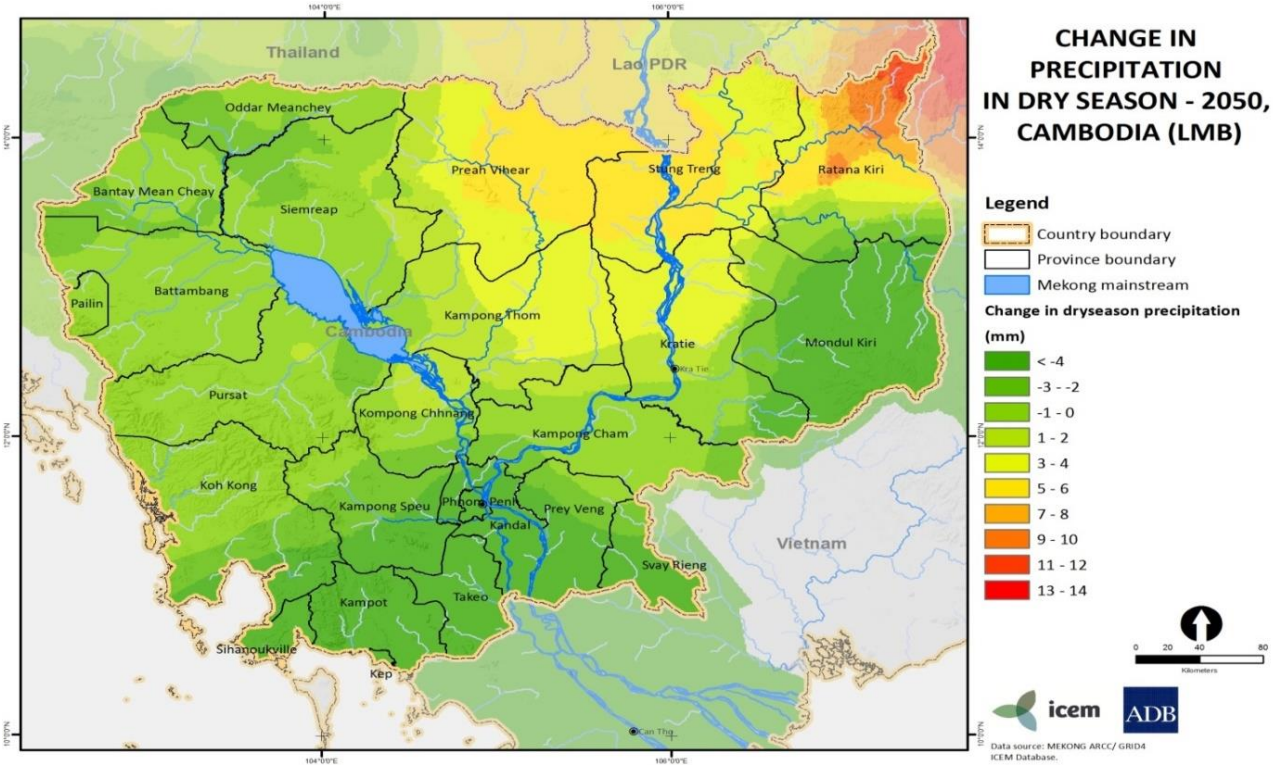
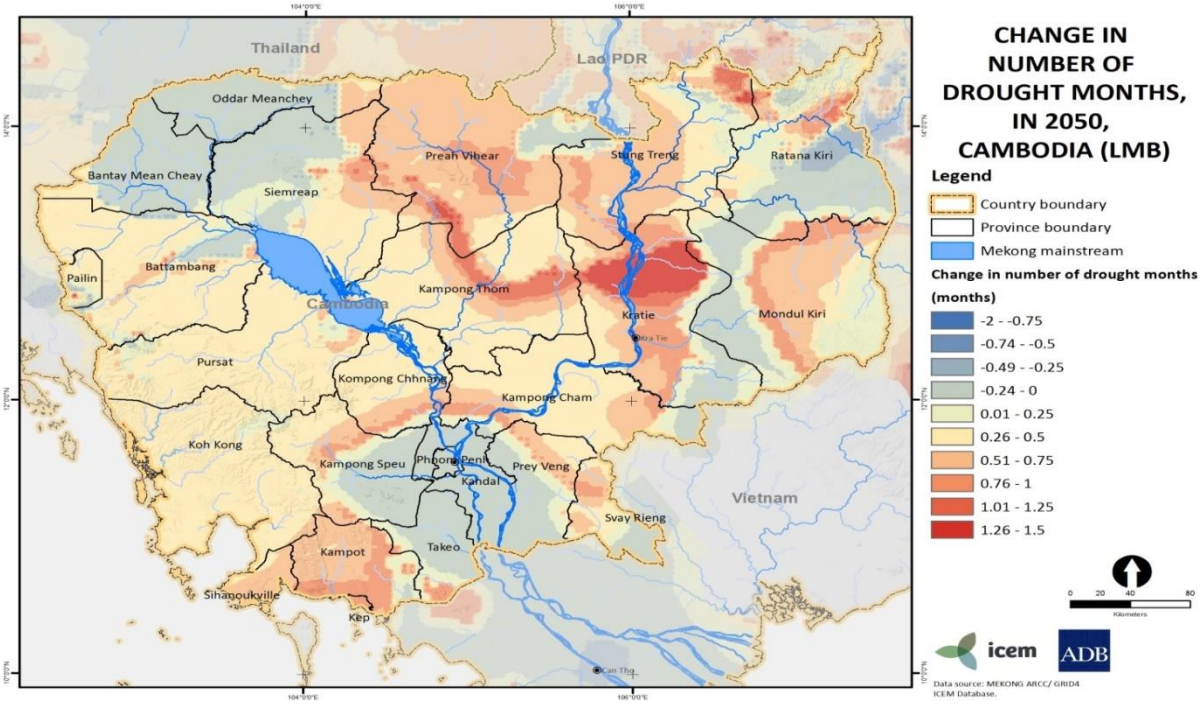


Figure 24: Change in number of drought months per year16



193. An earlier ADB study considered climate projections for the adjacent Tonle Sap province of Battambang.[17] Here the projections show significant increases in wet season rainfall of up to 8.3% (Figure 25) and decreases in the dry season of – 2.5% (**Table 11**). Annual average daily maximum temperature increased by 2.2°C up to 2.6°C in the wet season.

194. Pursat Province shows very similar characteristics, with a 7- 7.5% increase in wet season rainfall in the mountainous areas of the Pursat river catchment and a 7.5 – 8% increase in the lowland areas of the catchment down to the Tonle Sap (Figure 26). In the dry season, the percentage change in rainfall patterns in Pursat is projected to decrease by 2 – 4 % . When combined with an increase in average maximum temperatures of 2 – 3.5 degree C in the dry season, the potential for dry season drought conditions is likely to increase. In the dry season, the percentage change in rainfall patterns in Pursat is projected to decrease by 2 – 4 % (Figure 27). When combined with an increase in average maximum temperatures of 2 – 3.5 degree C in the dry season, the potential for dry season drought conditions is likely to increase (**Figure** 28).

[16] http://icem.com.au/portfolio-items/arcc-report/

[17] ICEM 2105, Building Urban resilience in Battambang, Cambodia. Volume 5 of the Resource Kit for Building Resilience and Sustainability in Mekong Towns. Prepared by ICEM – International Centre for Environmental management for the Asian Development Bank and Nordic Development Fund, Hanoi, Vietnam

Figure 25: Projected flooding in the Mekong delta and floodplain – 2050

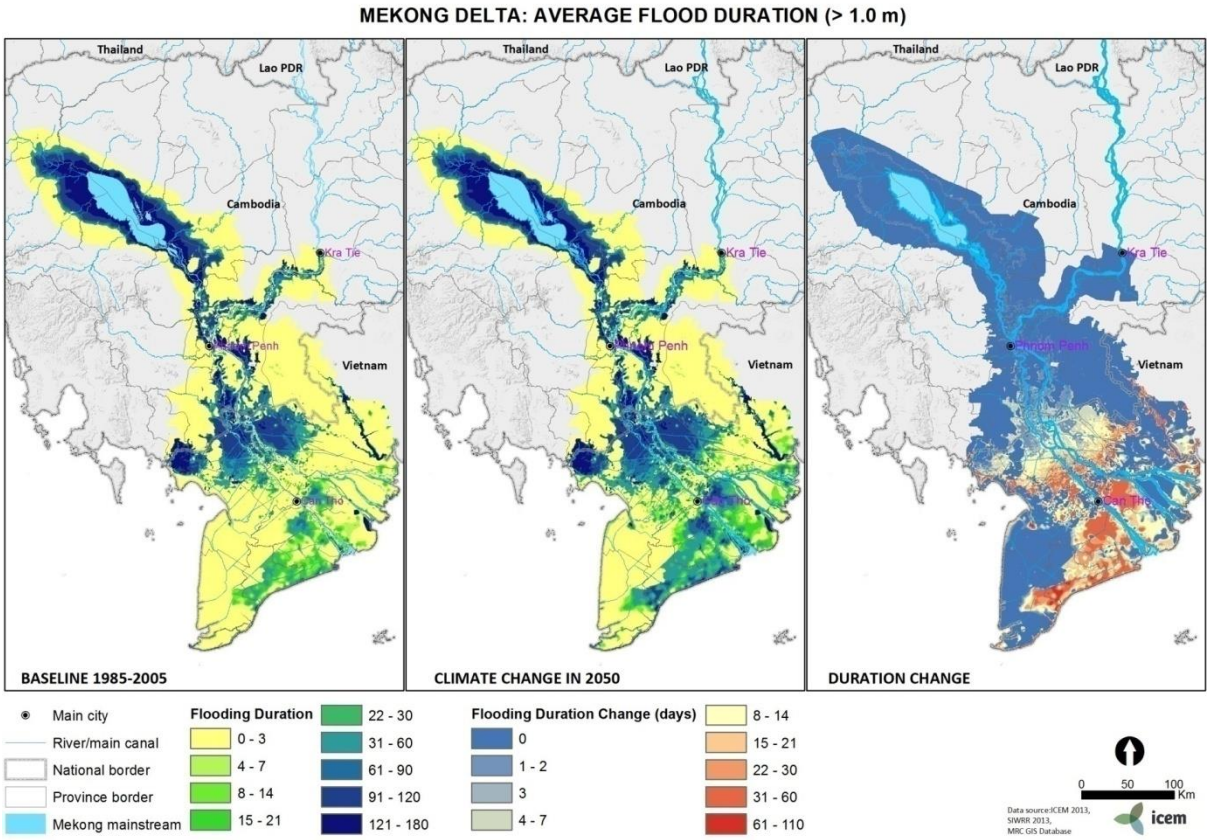


Table 11: Summary of climate changes in Battambang - 2050

Items	Baseline	With C.C.	Change
Average annual rainfall:	1300 mm	1365 mm	+5 %
Total rainfall in wet season	1170 mm	1267 mm	+8.3 %
Total rainfall in dry season	230 mm	224 mm	-2.5 %
Average daily maximum temperature (annual)	32 °C	34.2 °C	+2.2 °C
Average maximum temperature in wet season:	31 °C	33.6 °C	+2.6 °C
Average maximum temperature in dry season:	32.5 °C	34.4 °C	+1.9 °C

Figure 26: Actual and % rainfall increase in wet season in Tonle Sap surrounding areas

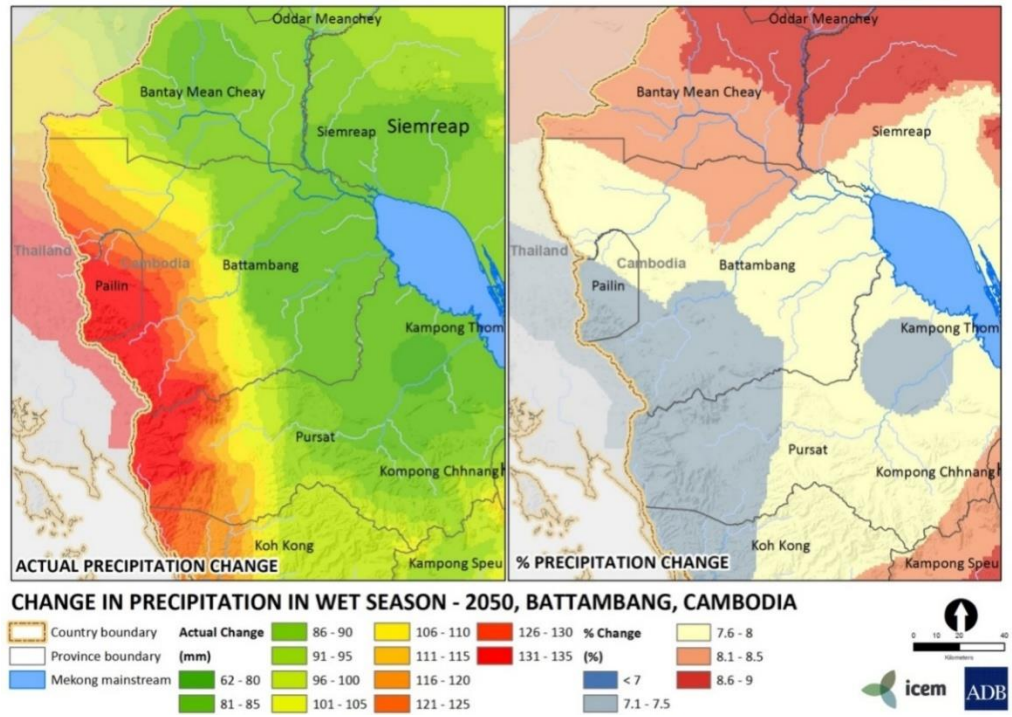


Figure 27: Present precipitation and b) % Precipitation change in dry season by 2050

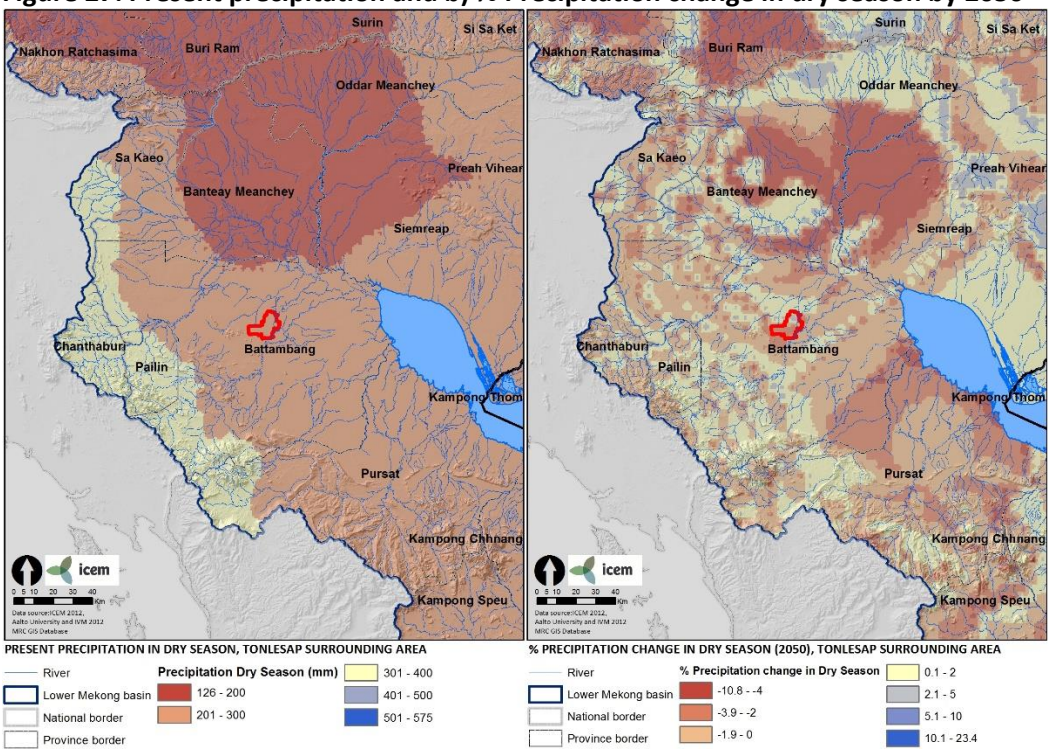
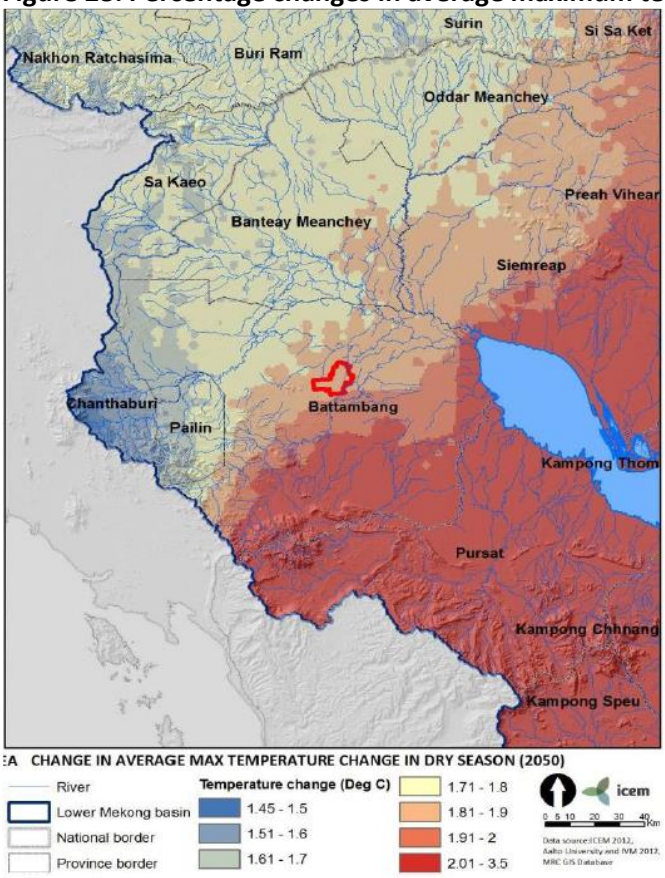


Figure 28: Percentage changes in average maximum temperature during the dry season



195. Further indications of risks of flooding in the Pursat province can be obtained from the flood risk maps prepared by the ADB project with the Ministry of Public Works and Transport[18] which identified roads at risk of different types of flood damage – large drainage area flooding, flash floods and lowland flood damage. These are illustrated in**Figure** 29, Figure 30 and**Figure** 31. All indicate an increase in the risk of flood damage to roads in the Pursat province, and this can be taken as indicative of the overall risk of flood to the areas around these roads; this especially acute for lowland flood damage.

[18] Provincial Roads Improvement Project (PRIP) ADB Loan NO. 2839-CAM (SF) \ No.8254-CAM

Figure 29: Roads at risk of large drainage area flood damage under future climate conditions

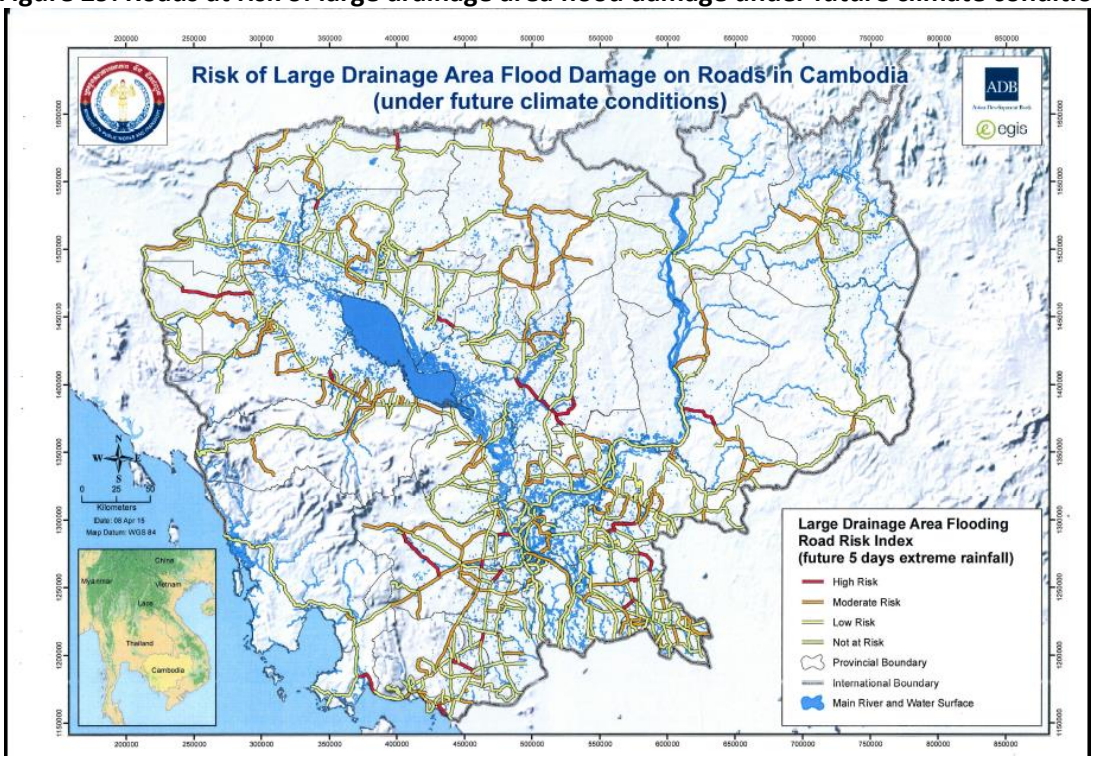


Figure 30: Roads at risk of flash flood damage under future climate conditions

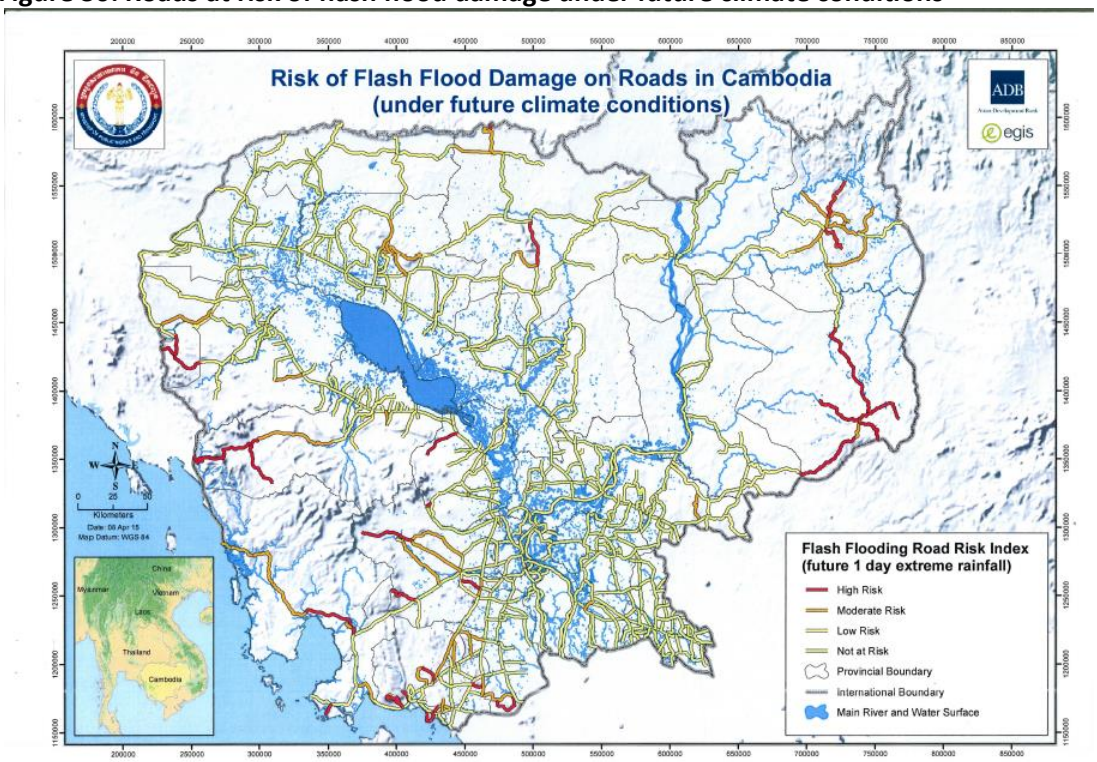


Figure 31: Roads at risk of lowland flood damage under future climate conditions

APPENDIX 4. DRAFT QUESTIONNAIRE FOR VILLAGE RISK PROFILE

196. The Consultant's Team has started developing survey tools to assess hazards and vulnerability at the village level. The questionnaire below still needs to incorporate gender dimensions and capacity assessment. With those two additions, then the survey tool will be suitable to conduct a Hazard, Vulnerability, and Capacity Assessment (HVCA (see Appendix 12).

197. The questionnaire addresses the issues of flood and drought hazards and vulnerability; moreover it includes questions related to climate change adaptation and food security.

198. Village Chief will be interviewed and he/she can choose up to 5 participants which present a cross-section of the population of the village to assist him/her. Specific instructions for the field data enumerators will be given so as the cross section of the village includes women and vulnerable people.

199. At the start a detailed introduction to the participants and explanation of the purpose of the survey will be given.

VILLAGE PROFILE / QUESTIONNAIRE - DATA COLLECTION FORM			
AIP/CCAI 2015			
Nr	**IDENTIFIERS**	**Name, Numbers, Answers, etc.**	**Codes**
I	**VILLAGE CHARACTERISTICS**		
1.	Date and time of interview	/____/_____/2015, hour: /____/	
2.	Country	|_____|	
3.	Province	|_____|	
4.	District	|_____|	
5.	Commune	|_____|	
6.	Village	|_____|	
7.	GPS Coordinates:	Latitude: |____ ____ ____| Longitude: |____ ____ ____|	
8.	Name of responsible interviewer	|_____|	|__|1 digit male..01 / female..02
9.	Name of key respondent	|_____|	|__|1 digit male..01 / female..02
10.	Function and profession of key respondent	|_____| |_____|	
11.	Key respondent mobile telephone-number:	|_____|	
12.	Number of participating interviewees (incl. village chief)	Number (should be less then 6):|____|	|__|1 digit
II	**POPULATION AND LIVELIHOODS**		

13.	Number of households in village	Number: |_____|	|__ __ __| 3 digits
14.	Total population	Number: |_____|	|__ __ __| 3 digits
15.	Female population	Number: |_____|	|__ __ __| 3 digits
16.	What are the 4 MAIN livelihoods of the people in the village? Note the 3 to 4 most important livelihood activities.	Crop farming ---------- 01 Livestock (incl. poultry) ---------- 02 Fishing ---------- 03 Aquaculture---------- 04 Navigation and river transport --- 05 Handicrafts---------- 06 Tourism ---------- 07 Trading and markets---------- 08 Plantation work ---------- 09 Casual wage work (in sectors not mentioned above)------ ----------10 Other ---------- 11 Please specify: |_____|	|__ __| 2 digits |__ __| 2 digits |__ __| 2 digits |__ __| 2 digits
17.	Do you know if there was a time when many people in the village did not have enough food	YES---------- 01 NO----------02 Don't know----------09 if YES, which Year |_____|	|__|1 digit |__ __ __ __| 4 digits
18.	If YES, what was the reason for the food shortage	FLOOD---------- 01 DOUGHT----------02 SALINTY increase----------03 Don't know----------09 Other, ----------04 please specify: |_____|	|__|1 digit |__|1 digit
19.	If YES, how severe was the food shortage and how long did it take	Not very sever ----------01 Sever----------02 Very sever ----------03 Don't know----------09 It took |____| weeks	|__|1 digit |__ __| 2 digits
20.	If YES, what did people do to overcome the food shortage - up to 4 answers possible	Waited for improvement of weather- 01 Waited for government support------ 02 Were seeking help from NGOs ------- 03 Created a self-help activity ---------- 04 Moved temporarily to relatives-------- 05 Moved permanently away---------- 06 Worked on temporary jobs outside -- 07 Tried other forms of income ----------08 Tried more fishing to support-------- 09 Tried more livestock to support -----10 Produced more handicrafts---------- 11 Other ---------- 12 Please specify: |_____|	|__ __| 2 digits |__ __| 2 digits |__ __| 2 digits |__ __| 2 digits

21.	Where does the majority of the village get the drinking water from (up to 2 answers possible)	River / canal ----------01 Pond---------- 02 Community groundwater well ---03 Individual groundwater wells----- 04 Piped water to houses----------05 Other, ----------06 Please specify |_____|	|__| 1 digit |__| 1 digit
22.	Does the drinking water supply function throughout the year	YES---------- 01 NO----------02 Don't know----------09	|__| 1 digit
23.	If NO, what are the reasons for the failure of the drinking water supply?	Flood hinders access ----------0 Sometimes dirty water ---------- 02 Well is dry - drought ----------03 Technical problem: pump broken -- 04 Other, ----------05 Please specify |_____| Don't know ----------09	|__| 1 digit |__| 1 digit
III	**FLOODING**		
24.	Has there ever been flooding in the village?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
25.	If YES: what was the main cause of flooding?	Excessive rainfall (no drainage)----- 01 Overflow from river / canal----------02 Don't know----------09	|__|1 digit
26.	If YES: when was the latest major flooding in the village?	Year|_____| Month|_____| Don't know----------09	
27.	If YES: did the flooding DURATION change over the past 10 years or so?	NOT REALLY---------- 01 YES A BIT----------02 NOTICABLE----------03 SIGNIFICANTLY----------04 Very MUCH----------05 Don't know----------09	|__|1 digit
28.	If YES: by about how many days or weeks did the length of the flood increase?	Days |_____| or Weeks |_____|	|__ __|2 digits |__|1 digit
29.	Has the village experienced any losses or damages from any floods in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
30.	if YES: How many households in the villages experienced losses or damages from any floods in the last 5 years?	Number of households |_____|	|__ __ __| 3 digits

31.	How were the impacts of the most serious flooding in the last 5 years compared to earlier years (past 10 years)?	Much Worse ----------01 Worse----------02 Same ----------03 Less----------04 Much less ----------05 Don't know----------09	|__|1 digit
32.	Was there any loss of human life from flooding in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09 If YES Number of casualties |_____|	|__|1 digit
33.	Was there any loss of crop (rice, maize, sugarcane, cassava) from flooding in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09 If YES Approximate area in ha: |_____|	|__|1 digit
34.	If YES, has this loss of crop led to noticeable less food or even hunger in the village?	YES---------- 01 NO----------02 Don't know----------09 If YES, how many families were affected: |_____|	|__|1 digit
35.	Was there any loss of livestock (buffalo, cow, pigs) from flooding in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09 If YES Number of livestock: |_____|	|__|1 digit
36.	If YES, has this loss of livestock led to noticeable less food or even hunger in the village?	YES---------- 01 NO----------02 Don't know----------09 If YES, how many families were affected: |_____|	|__|1 digit
IV	**DROUGHT**		
37.	Has there ever been drought in the village?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
38.	If YES, when was the latest drought in the village?	Year |_____| Month |_____| Don't know----------09	
39.	Has the village experienced any drought related shortage of drinking water in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
40.	If YES, how would you describe the drinking water shortage?	Very bad ----------01 Bad---------- ----------02 Moderately----------03 No great problem ----------04 Don't exactly know----------09	|__|1 digit
41.	If YES, how many households were affected?	Number of households |_____|	|__ __ __|3 digits

42.	Have any households in the villages experienced losses or damages from drought in the last years?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
43.	If YES, how many households?	Number of households |_____|	|__ __ __|3 digits
44.	Was there any loss of crop (rice, maize, sugarcane, cassava) from droughts in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09 If YES Approximate area in ha |_____|	|__|1 digit
45.	If YES, has this loss of crop led to noticeable less food or even hunger in the village?	YES---------- 01 NO----------02 Don't know----------09 If YES, how many families were affected: |_____|	|__|1 digit
46.	Was there any loss of livestock (buffalo, cow, pigs) from droughts in the last 5 years?	YES---------- 01 NO----------02 Don't know----------09 If YES Number of livestock |_____|	|__|1 digit
47.	If YES, has this loss of livestock lead to noticeable less food or even hunger in the village?	YES---------- 01 NO----------02 Don't know----------09 If YES, how many families were affected: |_____|	|__|1 digit
48.	How long was the most serious drought in the last years?	1 month to 2 months---------- 01 2 months up to 3 months-------02 More than 3 months----------03 Don't know----------09	|__|1 digit
49.	How were the impacts of the most serious drought in the last years compared to earlier years (e.g. past 10 years)?	Much WORSE---------- 01 WORSE----------02 SAME----------03 LESS----------04 Much LESS----------05 Don't know----------09	|__|1 digit
50.	Which impacts of the most serious drought in the past 10 years have occurred? (multiple answers possible)	Loss of humane life----------01 No drinking water ----------02 No irrigation water----------03 Significant reduction in crop yield-----04 Complete loss of crops----------05 Reduction of livestock ----------06 Loss of most livestock ----------07 Some people left the village----------08 Don't know----------09 Other, ----------10 Please specify: |_____| |_____|	|__ __|2 digits
V	**SALINE INTRUSION (If applicable)**		

51.	Has salinity / saline water ever affected the village?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
52.	If YES, how would you describe the effect of salinity in the water?	Very bad ----------01 Bad---------- ----------02 Moderately----------03 No great problem ----------04 Don't know----------09	|__|1 digit
53.	If YES, has the time of increased/elevated salinity changed of the past 10 years?	Not increased ----------01 Increased but not much----------02 Increased noticeable----------03 Increased very much ----------04 Don't know----------09	|__|1 digit
54.	If YES, are you aware of any changes in crops / cropping pattern due to the effect of salinity in the water?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
55.	If YES, what was the size of crop land area which was the effect of salinity in the water?	Number of hectares (ha) |_____|	|__ __ __|3 digits
56.	Are you aware that salinity / saline water affected any other activity in the village?	Agriculture (other than rice) --01 Aquaculture--------- ----------02 Wilde fish catch----------03 Livestock----------04 Non agriculture products-------05 Other, ----------06 Please specify |_____| Don't know----------09	
VI	**AGRICULTURE, LIVESTOCK and FISHERY**		
57.	How many households had crops on the field in the last season?	Number |_____|	|__ __ __| 3 digits
58.	What type of crops is the village growing? (multiple answers possible)	Rain-fed rice ----------01 Irrigated rice ----------02 Maize----------03 Cassava---------- 04 Sugar cane ----------05 Soy bean----------06 No agriculture----------07 Other ----------08 Please specify |_____|	|__|1 digit |__|1 digit |__|1 digit |__|1 digit
59.	How many harvests of the main crop can be achieved in the village per year?	One (rain-fed) ----------01 Two (irrigated) ----------02 Three (irrigated) ----------03 Don't know----------09	
60.	Of the MAIN crop - what is the average yield per harvest?	Crop, specify |_____|	|__ __ __ __| 4 digits in kg/ha

61.	Is the mechanization on the field increasing? If YES - in which areas:	YES---------- 01 NO----------02 Sawing ----------03 Weeding ----------04 Harvesting----------05 Threshing---------- 06 Other ----------07 Please specify |_____|	|__|1 digit |__|1 digit |__|1 digit |__|1 digit
62.	Who MAINLY owns the agricultural land?	Privately owned----------01 Village common ----------02 Government land ----------03 Mix of the above----------04 Absent landlords----------05 Other ----------06 Please specify |_____|	|__|1 digit
63.	Is the majority of the village considering changing crops in the coming years (e.g. from rice to sugar cane)?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
64.	If YES, is this change of crops attributed to more severe climate (increased floods, drought, salinity)	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
65.	Is the village seasonally/ annually rotating crops?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
66.	If the majority in the village rotate crops - which crops and which is the cycle?	Which crops: specify |_____| cycle: seasonally/annually: |_____|	
67.	How many households have livestock?	Number |_____|	|__ __ __| 3 digits
68.	What type of livestock is raised in the village?	Cattle ----------01 Buffalo ----------02 Pigs----------03 Sheep---------- 04 Goat ----------05 Duck----------06 Chicken----------07 Other ----------08 Please specify |_____|	|__|1 digit |__|1 digit |__|1 digit |__|1 digit |__|1 digit

69.	Of the 5 MAIN livestocks - please specify the approximate numbers in the village	Fill in the number in the right column Cattle ---------- Buffalo ---------- Pigs---------- Sheep---------- Goat ---------- Duck---------- Chicken---------- Other ---------- Please specify |_____|	Estimated number of livestock |__ __ __| 3 digits |__ __ __| 3 digits |__ __ __| 3 digits |__ __ __| 3 digits |__ __ __| 3 digits |__ __ __ __| 4 digits |__ __ __ __| 4 digits |__ __ __| 3 digits
70.	Is the majority of the village considering changing from e.g. rice towards more livestock in the coming years?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
71.	If YES, is this change of crop towards livestock attributed to more severe climate (increased floods, drought, salinity)	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
72.	Is the majority of the village considering changing the livestock distribution in the coming years (e.g. from cattle to more pigs)?	YES---------- 01 NO----------02 Which livestock increase: |_____| Which livestock reduce: |_____|	|__|1 digit
73.	Is fish a main staple of the village daily meals?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
74.	If YES, how many times a day do people in the village eat fish with any meal?	Never---------- 01 Once----------02 Twice---------- 03 Three times---------- 04 More than 3 times ------ 05 Don't know----------09	|__|1 digit
75.	Has the amount of fish (wild catch and aquaculture) eaten in the village changed over the years?	Reduced significantly ----------01 Reduced a bit----------02 Stayed the same----------03 Increased a bit---------- 04 Increase significantly----------05 Don't know----------09 Other ----------08 Please specify |_____|	|__|1 digit
76.	How many households MAIN income comes from fishing?	Number |_____|	|__ __ __| 3 digits
77.	How many households maintain any form of aquaculture?	Number |_____|	|__ __ __| 3 digits

78.	Any additional food for households from Other Aquatic Animals?	daily: Number |_____| every other day: Number |_____| twice a week: Number |_____| weekly: Number |_____| less than weekly: Number |_____|	|__ __ __| 3 digits
VII	**ADAPTATION MEASURES AND GENDER**		
79.	Are you aware of any kind of significant change in the village which might be attributed to climate change? (Changing crops, livestock, moving away, etc.)	YES---------- 01 NO----------02 Don't know----------09 If YES, please specify how |_____| |_____| |_____|	|__|1 digit
80.	Has the village done any activities anytime in the past to prevent or mitigate weather or climate related disasters or impacts?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
81.	If YES, what kind of adaptation activities have been carried out?	Building dikes ----------01 New water regulating infrastructure-02 Awareness raising ----------03 Changing crops/cropping patterns---04 Protecting infrastructure ----------05 Organized community around adaptation -------- ----------06 Other----------07 Please specify |_____|	|__|1 digit |__|1 digit |__|1 digit
82.	If drought/ floods/ salinity happen in the future more frequent or severe, would it affect men and women differently?	YES---------- 01 NO----------02 Don't know----------09 If YES, please specify how |_____|	|__|1 digit
83.	Are existing different obstacles to men and women in adapting to possibly increasing drought/floods/salinity ?	YES---------- 01 NO----------02 Don't know----------09 If YES, please specify how |_____|	|__|1 digit
84.	Are there differences in the knowledge/ methods that women and men use to adapt to possibly increasing floods/ drought/ salinity?	YES---------- 01 NO----------02 Don't know----------09 If YES, please specify the differences |_____| |_____|	|__|1 digit
85.	Is there a Village Development Plan?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit

86.	If YES, does the Village Development Plan include Climate Change adaptation measures?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
87.	If NO, does the village get the request or funds from the District to do village activities related with climate change adaptation?	YES---------- 01 NO----------02 Don't know----------09	|__|1 digit
88.	If YES, what kind of activities has been carried out?	Please specify what activities: |_____|	
89.	Would the villagers be open / interested in new ideas / approaches to overcome the increasing problems?	YES---------- 01 NO----------02 Don't know----------09 If YES, please specify what might help the most to overcome climate change related problems: |_____| |_____|	|__|1 digit
	THANK YOU VERY MUCH - NOW THE INTERVIEW IS OVER		
Interviewer's remarks			
Observations on cooperation, village situation, reliability of information, etc. if any			
90.	_____|		

APPENDIX 5 DEVELOPMENT OF A MODEL CBDRM PROCESS

Requirements

200. There are three important requirements in developing the CBDRM model:

i. **Plan the process thoroughly** – take the time to plan, include as many stakeholders as possible in the process, make it a team effort, plan thoroughly and comprehensively, include all parts of the community;

ii. **Match tasks and activities to clearly described roles and responsibilities** - Make sure all responsible people and organizations know and understand their roles, have been involved in developing them and have the capacity to ensure their effective implementation. The tasks and activities necessary for using the model in a village or commune must be assigned to specific persons or groups;

iii. **Use realistic expectations, build strength over time** – the development of the model will proceed beyond this Assignment. Our role is to commence the process on the best footing possible and with the widest possible inputs from all major stakeholders. We must be realistic about what can be achieved in this first two years and plan for the ongoing development and use of the model beyond the project.

201. A CBDRM model for Cambodia has the potential to help guide the development and progressive strengthening of CBDRM over the next ten to twenty years. The model will draw on every aspect of the work in the Assignment and has the potential to have significant impact on economic growth by decreasing the loss of lives, infrastructure and livelihoods. We will be developing appropriate means of monitoring these impacts over time.

202. **Sustainability of the project** is one of the biggest challenges project; to ensure the ideas, methods, lessons learned and trainings developed within the two years of this project are sustainable, that the investments will be maintained, that knowledge and skills at community level will grow and mature, and that the models and plans generated by this project will endure, be revised, updated and continue to support improved water control infrastructure and flood warnings.

Principles

PRINCIPLE 1: *… make best use of existing resources*

203. As far as possible we will build on **existing structures** (community leadership for example, including the hierarchy of Sangkat, District and Provincial relationships). When introducing any new things (ideas, concepts, standards, practices etc.), the process will not proceed without full participation and agreement of the target community, village or commune. While the integration of disaster risk management into local development processes may be a new concept, the practice of community-based approaches is not new. The FWUCs are a good example with some FWUCs already being formed at commune level.

PRINCIPLE 2: *… good leaders can see long-term benefits*

204. Respected community **leadership and transparency** will be critical to sustaining successful CBDRM in the long term. The investment plans (content, priorities, and costs) will be agreed and treated as transparent community investment plans, i.e. they will be available for all to see how the resources are being deployed and how the money is being spent.

PRINCIPLE 3: ***… working with, for and alongside the community***

205. The **community** is the both the target beneficiary as well as part of the broader team. Our technical and non-technical guidance is for the community to adopt or adapt or reformulate to ensure it is appropriate to their commune or village. Safer Community Plans for example must be based on specific community needs and priorities for investment. We have good examples of successful community planning for DRR along the Tonle Sap that we can adapt for our needs.

PRINCIPLE 4: ***… priorities are those of the community***

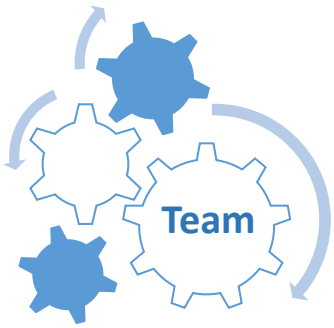
206. Priority may be given to those **most vulnerable** in the community if that is agreed by consensus. The elderly, infirmed and young children in particular can be marginalized without due diligence towards community consensus building. Establishing priorities is often a difficult task; with good facilitation, consensus can be achieved.

PRINCIPLE 5: ***… straight-forward, clear communications***

207. Appropriate means of **communications** will be agreed with communities; straight forward language will be used at all times, in all communications. For example, things like "*multi-sectoral and multi-disciplinary approaches*" may not have clear meaning to some in the community. Rather we will talk about doing things that "*we can all understand",* or "*to make sure all key persons are able to help make decisions".*

PRINCIPLE 6: ***… working together, a strong Team, an integrated approach***

208. One of our key strengths is our ability to work as a Team, which is **inclusive and respectful** of inputs from all stakeholders, as described below.



To be most effective, our **commitment** to participate as a **Team** that recognizes our respective capacities and capacity building needs will be critical. Our strong National Team, our smaller International Team, our Client Team (MOWRAM and FWUCs) and the key members of the communities in which we will work; this is our collective Team, this is how we can 'integrate' all relevant inputs from all sources.

PRINCIPLE 7: ***… CBDRM for Cambodia must be developed in Cambodian Villages and Communes***

209. CBDRM is an evolving and dynamic framework and there is considerable valuable experience from the GMS region[19] and elsewhere in Asia Pacific. Our approach will be to ensure

[19] Vietnam: Disaster Risk Management Project, World Bank, 2013 (http://www.worldbank.org/en/results/2013/04/09/vietnam-disaster-risk-management-project).
Framework on Community-based Disaster Risk Management in Viet Nam, Centre for International Studies and Cooperation, European Commission's Humanitarian Aid Office (ECHO) 2007.
"The role of local institutions in reducing vulnerability to natural disasters", FAO 2005.
"Key determinants of a successful CBDRR programme Community Based Disaster Risk Reduction Study ", ARUP International Development – September 2011.
"Concept Note CBDRR Common Framework for MRCS", Myanmar Red Cross Society (MRCS), 2011.
UNCRD, Sustainability in Grassroots Initiatives Focus on Community Based Disaster Management, Kobe, April 2013.

the **model** is developed specifically for the target communities and training is designed and developed specifically for the Cambodian cultural and social situation.

Principle 8: … Sustainability will be the measure of success

210. One of the biggest challenges is achieving sustainability. Our approach seeks to ensure that the ideas, methods, lessons learned and trainings developed within the two years of this assignment are sustainable, that the investments will be maintained, that knowledge and skills at community level will grow and mature, and that the models and plans generated by this project will endure, be revised, updated and continue to support improved water control infrastructure and flood warnings.

PRINCIPLE 9: ***… Sustaining financial support for community-based approaches***

211. There are a number of potential **opportunities** to develop follow-on financial support for CBDRM projects and programmes for MOWRAM and FWUCs. The linkages to existing and pipeline climate change adaptation projects (from ADB, the Climate Investment Funds, NGOs and bilateral donors) could be a means of gathering further seed financing for on-going training and capacity development.

Implementation of the Model CBDRM for Pursat (and for Cambodia)

212. For our Team, this will be one of the most important products of the entire Assignment. The development of the model we see as an opportunity to coordinate and compile, all the lessons learned, the positive achievements and progress that has been made in the first year or so of the project. We will temporarily refer to this model as: "***The Cambodian CBDRM Template*"**.

213. The model will be the best, comprehensive and straight-forward set of ***mixed media tools***, which the Team can prepare with the help of all stakeholders. It will be a kind of ***template*** – a systematic way of doing things; in this case, community-based risk management for floods/droughts in Cambodia.

214. It will be made up of Guidelines, Templates, sample analyses (risk assessments, vulnerability assessments etc.) and supported by trained persons, who know and understand the risk management process, the disaster management cycle, and the value and opportunities offered by good and timely planning that will minimize future loss and damage for these hazards.

215. The wider application of the model to accommodate other major hazards such as fires, storms, cyclones, epidemics and pest influx, will be accommodated however the focus will be on floods and droughts in the selected areas of Pursat.

216. We estimate the commencement of compiling the components of the model, from the very beginning of our work on the project. We will therefore gradually build up the components through the training, the work on Safer Community Plan templates, CBDRM Guidelines and other key components indicated on the following page.

217. The intention of the model is to provide a template or prototype of community-based disaster risk management in Cambodia (plans, guidelines, case studies, graphics, training, M + E) that can be adapted and implemented across other regions in the country. Templates for the Safer

Shah Rajib and Okajaki Kenji, *Sustainable Community-based Disaster Management Practices in Asia: A User's Guide*, UNCRD, Kobe, Japan.

Communes / Safer Villages Plans will be part of the model. The design, development and testing will be carried out over the course of the project in the following stages.

218. The Key**Activities** to be undertaken for this output include the following:

Activity 1 – Initial design, outline, needs analysis, opportunities and constraints

219. The first job will be to start this process as early as possible so that all outputs can feed directly into the package of tools to be known as the Cambodian CBDRM Template.

220. Under this Activity, the following tasks will be undertaken:

- Review existing CBDRM templates available in the region;
- Select best lessons and experiences from case studies from the region;
- Rapid needs analysis with Government, communities and stakeholders, identify opportunities and constraints;
- Undertake initial brainstorming with MOWRAM the FWUCs and other key stakeholders to identify the main parts of the model or template;
- Prepare a concept Note for approval (and circulate widely for inputs and suggestions from practitioners);
- First draft Outline of the Model/Template.

Activity 2 – Compilation of tools into a successful CBDRM Model for Cambodia

221. Over the course of the first year, most project activities will provide the many basic tools for the CBDRM template, including for example, the Training modules, templates for risk assessments, vulnerability assessments and other rapid assessment tools. As these specific activities are undertaken, a revised (generic for Cambodia) version will be prepared for the Model, thus gradually building the toolkit.

222. What will make this a success will be the ideas and contributions to developing this model that will come from the persons who will be using this model; the vulnerable communities who need assistance to minimize future damage and loss. The job of the consultant Team will be to facilitate the discussion and brainstorming sessions and to then help prioritize those needs.

223. Tools and baseline information would include for example (how to…): prepare a community profile, identify risks, hazards, vulnerability and exposure, undertake risk assessments, establish priorities, risk reduction needs, risk reduction goals, consider options and opportunities/resources to treat priority risks, document, present, review early warning system needs.

224. The final selection of which tools will be included in the Model or Template, will be a collaborative decision including MOWRAM, FWUCs and the communes themselves (including the Commune leaders or Village leaders where possible). Both the model and the Safer Communes/Safer Villages Plans will remain as "living" documents. That is, they will be regularly updated according to changing needs of communes and villages and as new skills and capacities are developed within communities.

225. The final selection of the tools to be included in the model needs to clearly indicate that the current content is likely to change. We would also proposed to outline a schedule of revisions and a TOR for that process to ensure it can and will be done and to provide some basic guidelines

on approaching donors for support for this kind of small scale initiative. This will of course depend upon a growing success of the use and value of the model and the Plans.

226. This will require the following tasks will be undertaken:

- Finalize the list of tools for the CBDRM template;
- Draft Safer Villages /Safer Communes Plan and template
- Finalize a feasible Model (appropriate, affordable, accessible, etc.)
- Design the specific individual templates for each of the tools;
- Maintain discussion of the Model at all possible meetings and workshops to continue to solicit inputs and suggestions from community groups and the FWUCs in the project areas.
- Finalize the selection of content and presentation of the Model, the templates used in the Model and compile all materials into the first draft of the Cambodian CBDRM Template;
- First draft final version of the full Cambodian CBDRM Template;
- Finalize Outline templates for Safer Communes Plans and for Safer Villages Plans;
- Prepare specific Safer Villages /Safer Communes Plan for nominated villages and communes;
- Establish a system of monitoring the impacts of implementation of the Model as well as the individual Safer Communes and Safer Villages Plans.

APPENDIX 6 FLOOD MANAGEMENT IN THE CBDRM-FWUC ASSIGNMENT

A) Background

227. The development of Disaster Risk Management at the community level consists in building resilient communities, supporting the rural population and assisting in coping with increased climate change challenges. Soft measures, such as increasing flood preparedness, flood proofing on a household level, flood defense measures, early flood warning can significantly decrease damages and losses during extreme flood events. Over the project span of 24 months the team is working closely with the communities in 42 villages and government officials to improve their skills in flood preparedness and defense (and other hazards such as drought) to help improve the livelihood of the mostly underprivileged farmers. We will need the close cooperation and inputs from the local stakeholders to determine the most effective, efficient and gender balanced means to ensure the success of the project.

228. The current situation in the project area with respect to flood and drought and possible effects of climate change will be thoroughly investigated and will serve also as a baseline to be able to evaluate the success of the project at a later time. Through capacity building and training the trainees will enhance their understanding of flood effects (from occurrence to damages and defense) and learn skills to improve their and the villagers livelihood in case of extreme events. It is expected that by the end of the project individuals and teams in villages and communes are trained in disaster risk reduction and management in such a way that they feel comfortable to act decisively when the next extreme event occurs.

229. Parallel to the project an Early Warning System will be installed on the Pursat River which will form an integral part of the CBDRM activities by incorporating the flood warning procedures in the line of command.

230. The main implementation project will provide irrigation trough a system of canals to 16,200 ha of farm land. This newly created network of canals will also be used during flood events to (i) divert excess water, (ii) facilitate accelerated drainage after the event, and (iii) drain more rapidly rain water runoff during and after a storm (e.g. typhoon). To make optimal use of this canal system and keep the system well operated and maintained Farmer Water Users Community (FWUC) will be created or existing groups supported by the team through capacity building and training activities.

B) The CBDRM-FWUC TOR for the flood management specialists

231. The TOR lists the following specific tasks:

i. Collect flood data of the rivers in the project area.
ii. Review the existing flood frequency analysis.
iii. Carry out analysis to determine the extent of damage of various frequency floods to the communities in the project area.
iv. Suggest structural and non-structural measures to minimize damages at community level.
v. Suggest flood mitigation and management measures
vi. Prepare village based preparedness plan.
vii. Develop flood mitigation and management guidelines for the communities
viii. Support Team Leader in designing the CBDRM Program.
ix. Support Institutional Specialistin designing and implementing trainings.
x. Support flood forecasting and warning system to be improved by PIC

232. After reviewing the TOR and gaining an overview of the entire project – Damnak Chheukrom Irrigation Scheme – the consultant found that additional tasks should be considered to assist in incorporating the outputs of this project component into the design of the irrigation infrastructure, and by focusing more in depth on one of the main project targets to improve the functioning of the FWUC (and FWUG) through training and capacity building. Therefore it is suggested to augment the existing TOR by the following two tasks:

xi. Provide input to the Design Team on aspects of flood mitigation and management using irrigation infrastructure;
xii. Support Training and Capacity building for the FWUC and provide guidance materials.

233. It is at the heart of the project to improve and strengthen the resilience of villagers against flood risks and to enhance progress in their livelihood and economic means. Therefore strong emphasis is given to capacity building and training for all levels from the villagers to province officials. Additionally materials such as guidelines, leaflets and handouts, will be prepared in light of the pilot character of the project.

234. The TOR with respect to Flood Management indicates links to the other project components of "*Greater Mekong Subregion Flood and Drought Risk management and Mitigation Project - CAM 40190*" such as the *Pursat River Early Warning System* and the *Damnak Chheukrom Irrigation Project Implementation* with an emphasis to coordinate and collaborate with the client, the Ministry of Water Resources and Meteorology (MOWRAM), and the ADB Project Management Unit at MOWRAM. It should be emphasized that the collaboration with the parallel project component team for Early Warning / Flood Forecasting will be an essential part for the non-structural measures to ensure disaster risk reduction.

C) Specific Methods and Strategies for Achieving Project Outputs

Flood data of the Pursat River and Flood Extent within the Project Area

PursatRiver hydrology

235. Within the river basin are a number of hydrological stations which record water levels since the 1990s. It is not clear if regular discharge measurements are taken. A total of up to 13 stations were located (at different time periods) on the Pursat river but longer term observations are only available only on a few stations. Based on current information reliable data are available over a reasonable time period on the Strung Pursat at (i) Bak Trakuon and (ii) Khum Veal.

236. However, some stations which are newer and don't include long term observations will be used to investigate e.g. mean water levels, flood levels along the river, the flood propagation and possible overbank spillage effects in the plains.

237. Candidates for evaluation of shorter time series are: (a) Kbal hong, (b) Peam, and (c) Prey Klang.

238. Based on provided discharge measurements the 2 main hydrological stations the existing rating curves will need to be reviewed and possibly adjusted.

239. The existing flood data will be used to evaluate the main statistics and compared with the currently used flood statistics / frequencies (review of data, statistics, and selected frequency distribution/density function). Tentative evaluation of changes in the frequency distribution due to (a) upstream measures such as reservoirs (dam #3 and dam #5), (b) possible changes due to hydropower development (dam #1), (c) changes in the downstream section (Pursat town) due to

flood diversion, and (d) changes due to expected climate change (def. scenario and horizon) will be undertaken.

240. Missing and additional water level data (extension of time series) as well as discharge data and used rating curves will be collected from the DHRW of MORAM.

Flash Floods and Water Logging

241. With respect to flash floods and water logging (remaining stagnate water after intense rainfall due to insufficient drainage) data from meteorological station in the project area and adjacent stations will be collected and evaluated.

242. The meteorological stations in the Pursat river basin with more than 10 years of records (not always continuous) are: (a) Dap Bat, (b) Kravanh, (c) Peam, (d) Pursat, and (e) Veal Veng.

243. Additional meteorological data are available in neighboring river basis. If the records exhibit too many gaps it may be necessary to apply some statistical gap filling to complete records for further evaluation. Different methods can be applied. If surrounding stations have data over the missing period e.g. the inverse distance weighting method may be used.

244. It is assumed that only daily longer term records are available. The precipitation data will be statistically evaluated for e.g. date of onset of the rainy season, duration of droughts (15 days or more without precipitation) can be investigated. This is of particular importance with respect to the growing period and survival of crops during dry spells.

245. Generally daily records are available. However, in case of an automatically recording station shorter interval data will also be investigated and statistically evaluated to obtain precipitation intensity – duration curves.

246. Missing and additional rainfall data (extension of time series) as well as evaluations such as rain duration / depth / frequency curves will be collected from the DHRW of MORAM.

Extent of floods at different frequencies within the project area

247. Upon through investigation no detailed flood maps covering the project area could be found. There exist satellite images from the 2011 flood for the entire Mekong basin at MRC (which could not be obtained yet). Therefore the extent and duration of floods will be investigated through the village profile. The most recent and floods where in 2011 and 2013 so it should give a good indication on how affected the people were, and what extend the flood exhibited.

248. When mapping flood extend special attention on drinking water supply has to be given (e.g. stand pipes, wells) to be able to preserve and maintain safe drinking water during flood events. Similarly primary health care centers need to be located in the flood maps to be able to assign a high priority for flood proofing and protection measures.

249. Based on the village profiles the flood level and extend of recent floods will be established and sketched in local maps. In the interview emphasis should be given on how high the flood level was (e.g. marked on their house), how long it lasted (days, weeks, months), and if people remember what was the origin of the flood (description of “where it came from” may indicate what the origin of flooding was). The resulting maps will then be discussed with the District officials of MOWRAM before finalization.

Capacity Building and Training with respect to Flood Risk

250. The training focuses on flood risk assessment on a provincial, district, commune and village level. Emphasis will be given on locally appropriate flood and drought risk management

measures. Materials on flood mitigation and management in form of handouts, leaflets, power point will be prepared for the training of trainers. Special emphasis will be also given flood preparedness and the incorporation of women in the process. Women should be encouraged to also become future trainers and the training materials will be prepared in a gender sensitive manner.

Structural and Non-structural Measures to Mitigate and Manage Floods

Structural and Non-structural Measures

251. The principle hazards in the area are flood and drought, however the effects of Climate Change will exacerbate the existing threats and worsen their impacts. A Hazard, Vulnerability and Capacity Assessment will be conducted in the assigned villages to identify the extent of the hazards (floods, flash floods, drought), how vulnerable the villagers are with respect to floods (housing, livestock, access to drinking water, etc.) and which capacity they already have developed to cope with these reoccurring events.

252. The main issue is to reduce flood related losses to the affected population, not only to human life, but also to livelihood. In cooperation with the villagers an array of structural and non-structural measures for risk reduction will be discussed. The team will review and evaluate existing structural and non-structural community based flood mitigation measures and their effectiveness. The team will communicate the results to the affected population. The villagers will assist in prioritizing these measures, given the constraints of effectiveness, efficiency and affordability. Based on experience with other schemes the sustainability of the suggested measures will also be discussed. Based on the outcome of the discussions with the village representatives, assistance will be provided in the establishment of a commune development and commune investment plans.

253. Structural measures, such as dikes, diversions, etc. may have immediate visible effects in the event of flooding but without the non-structural measures based on community support, such as Early Warning Systems and Safer Village & Commune Plans, these are generally not sustainable over time. It is important to instill ownership, knowledge, and pride within the community. Hence the training, public discussion, fostering transparency and motivation of the community is most important.

254. The basis for implementation of any structural measure will be the development of Safer Village and Commune Plans which summarize the hazards and the appropriate measures taken to improve the resilience of the population against flood events by strengthening their disaster risk management capacity.

Safer Village and Commune Plans

255. Following the National Committee for Disaster Management (NCDM) established Cambodian National Contingency Plan for each province, district and commune an Emergency, Preparedness and Response Plan (EPRP) will be either already in place or will be prepared in the near future. The government of Cambodia is focusing its efforts at the community level on preparedness, disaster risk reduction and response preparation. In the TOR Safer Village and Commune Plans are suggested which in principle are these EPRPs at commune and village level.

256. The plans will be developed based on national and provincial disaster risk management contingency planning for 2 selected districts and 50 villages within these districts. The investigation on the extent of floods at different return periods (occurrences), depths and duration will form part of the development of the EPRPs. The preparation of these plans is guided by 2 specific objectives: (i) to reduce risk and vulnerability to flood hazards, and (ii) to develop stronger Village and Commune disaster risk-management capacity. It is expected, that each community will have

a different set of priorities, and therefore each plan will reflect the identified hazards, vulnerabilities, and specific circumstances of the village.

257. Existing information infrastructures such as emergency response via sms to mobile phones will need to be incorporated and the villagers will need to be encouraged to sign up for this free service.

258. Based on the village surveys and evaluations, stakeholder participation, and the EPRPs (Safer Village and Commune Plans), the agreed and ranked structural and non-structural measures will then be incorporated in the Commune Development Plans and the Commune Investment Plans, which form an important part of the project.

Implementation, CapacityBuilding and Training for CBDRM

259. Community-Based Disaster Risk Management is implemented and managed by various levels of the National Committee for Disaster Management. To implement successfully the CBDRM on a district and village level, it is mandatory to build and increase capacity of these commune-based organizations / committees by providing them with additional information, training, knowledge based materials, and guidelines.

260. Aspects of flood mitigation and management through structural and non-structural measures at a community level, as well as knowledge on flood preparedness and building resilience form a significant part of the capacity building efforts. Water in a wider sense (including drinking water and sanitation) is not only a threat because of the flood level and discharge, but also for the principle livelihoods and health. The goal is to minimize damage and loss down to the individual household level.

261. The District Committee for Disaster Management (DCDM) is the main CBDRM implementing agency. We will work closely together and as a first step the capacity needs with respect to flood management will be discussed. Based on this evaluation the specific capacity building and training activities will jointly be developed. In the course of the training handouts, leaflets and guidelines will be established which can be further developed and improved in coordination and discussion with the stakeholders. Of course all provided trainings at the different levels will be linked and synchronized to use similar terminology, formats, layouts and graphics.

262. Contributions to the Concept Note on the implementation of CBDRM aspects relevant to flood mitigation and management will be provided, outlining opportunities, limits and constraints and priorities for supporting the development of the model Cambodian CBDRM Template. Technical support and services will be provided with respect to flood management to the DCDM, reflecting the needs and demands of the communities. These outlined activities and services will also form the basis for the Plan of Action for Implementing CBDRM in selected communities.

Supporting the Flood Forecasting and Early Warning Team and the Irrigation Project Implementation Team

Early Warning System Team

263. Based on the hydrological investigation (as described above), the review of the available data and the development of a rating curve at a dedicated and project relevant hydrological station an appropriate frequency distribution is selected to determine the flood frequencies. The flood discharges are converted into flood levels which are relevant to the project. Flood frequencies with a return period of 2 to 100 years will be considered.

264. With the Early Warning System Team and the PIC these calculated values will be reviewed and discussed and translated into suggested Flood Warning Levels. This will of course be undertaken together with the Department of Hydrology and River Works. Additionally it is planned

to prepare for one main hydrological station a data and cross-section documentation (e.g. Bak Trakuon station) and the questions on cross-section stability, reliability of discharge estimates, etc. will be addressed.

Irrigation Project Implementation Team

265. The irrigation infrastructure can also serve flood mitigation measures if properly laid out. It is planned that the main Damnak Chheukrom Irrigation canal will be also used to divert flood waters of up to 40 m^3/s from the Pursat towards the SvayDonkeoRiver.

266. With respect to flood mitigation also the secondary canals may assist in more rapid drainage after an event by providing additional discharge capacity (compared to overland flow). This would also require that the secondary canals exhibit a proper drainage possibility towards e.g. the Svay Donkeo River.

267. Farmer Water User Committees (FWUC) will be in charge of the O&M of the irrigation scheme and hence design principles which minimize the O&M cost should be followed. Additional inputs can be provided to the Irrigation Project Implementation Team based on the discussions with and advice of the FWUCs and FWUGs (see below).

Support of the Farm Water User Community

Farm Water User Community

268. FWUCs are commissioned to operate and maintain the infrastructure of the irrigation scheme within their command area. This also includes the financial management and the collection of user fees from the farmers. Investments for irrigation schemes are costly and significant compared to other non-structural measures. Improper or not existing O&M leads quickly to failure of the system or even worse may even lead to an exacerbation the effects of floods and droughts in the command area. Hence proper and adequate O&M is essential in keeping the investment viable and productive.

269. The main technical tasks of the FWUCs include (i) regular operation and maintenance of the irrigation infrastructure, (ii) periodic routine O&M including small repairs (e.g. annually or after an event), and (iii) emergency rehabilitation. Based on experiences of the FWUC members the team is prepared to assist in developing structural and not structural measures to reduce O&M of the irrigation system. This may include basic designs for e.g. introducing watering facilities for livestock along the irrigation canals. Aspects of non-structural interventions such as information to the farmers and general population in form of handouts, leaflets, brochures on simple procedures, rules and measures to keep the irrigation infrastructure viable will be provided (e.g. solid waste/ garbage free canals).

Capacity Building and Training for FWUC and FWUG

270. Farmer Water User Community (FWUC) and Farmer Water User Groups (FWUGs) are a main pillar in ensuring sustainable infrastructure investments for irrigation, drought and flood control. Based on a capacity needs assessment for FWUC a detailed work plan for capacity building and training will be established. Special emphasis will be also given to the commune based FWUGs and their specific functions and possible involvement in flood mitigation and management.

271. The main goal is to augment the sustainability of the FWUCs and FWUGs by providing properly adapted capacity building. The success of a community based project depends very much on providing practical knowledge to its personnel and managers to enhance project ownership and pride, also within the community. Hence activities may also include measures to increase the visibility and importance of the FWUC functionaries within the community.

D) Project Evaluation with Respect to Flood Management

272. To evaluate the project outputs frequently performance indicators are used. Indicators can be of quantitative or qualitative nature to provide a simple and reliable means to measure achievements or to reflect the changes connected with an activity.

273. When specific targets are stated (e.g. numbers of community disaster response teams trained) quantitative indicators are appropriate to assess the progress. Qualitative indicators are used to measure changes that occur as the result of project activities. It is not necessary to record/evaluate absolute changes, it is often sufficient to identify relative change (e.g. the adoption of hazard resistant agriculture practices). It may be of interest to analyze the relationship between two indicator types to enhance the understanding of e.g. the chain of cause and effect or to identify specific aspect which may lead to failure or success. However, we have to be aware that it is not always possible to find all the evidence one wants. Indicators are indicators and are therefore not necessarily a final proof.

274. The following principle indicators will be used to evaluate the projects outputs with respect to flood mitigation and management:

Quantitative:

- Number of Commune Disaster Management Committees trained;
- Number of individuals (province, commune and village level) trained in specific flood risk management measures within the CBDRM;
- Number of women trained in flood preparedness, mitigation and management skills;
- Number of structural flood mitigation measures implemented;
- Number of SaferVillage and Commune Plans / Emergency, Preparedness and Response Plans (EPRP) established;
- Number of individuals from the FWUC and FWUG trained in flood risk management;
- Number of Trainers trained (on aspects of flood management).

Qualitative:

- Dissemination of Community Disaster Risk Management guidelines;
- Village risk profile established at the beginning of the project (as base line);
- Non-structural measures implemented or enhanced;
- Flood risk reduction on a household and village level due to introduction of the SaferVillage and Commune Plan;
- Proactive incorporation of women in the discussions and highlighting their importance with respect to flood preparedness in all provided documents;
- Enhanced capacity and skills with respect to water management (flood and drought) within CBDRM;
- Providing enhanced capacity and skills for the FWUC with respect to flood management by providing adequate leaflets and handouts.

275. The above list is not complete and will be more detailed and augmented accordingly during the project implementation phase.

E) Expected Results - Deliverables from the Flood Management Team

276. The team will contribute to the following TOR outlined deliverables:

i. Inception Report
ii. Inception Workshops to disseminate Inception Report
iii. Quarterly Reports (6)
iv. Annual Progress Report

v. Midterm Report
vi. Mid Term Workshop to Disseminate Midterm Report
vii. CBDRM Guidelines
viii. Draft Final Report
ix. Workshop to disseminate Draft Final Report
x. Final Report

277. It is planned that some activities will result in additional deliverables which are of practical nature geared towards helping to improve flood resilience of the local population and to enhance the activities of the FWUC. Emphasis will be also given to aspects of gender, elderly, traditions and religion to root activities across the entire affected population. Straight forward explanations on flood proofing, maintenance and small scale repairs of irrigation canals and river banks in form of leaflets or brochures will be established. It is planned to include aspects of the disaster risk management cycle from prevention planning, risk reduction, flood preparedness, response, relief and recovery, to highlight the importance of taking up initial activities, undertaken by individuals on a household and village level, which will help to reduce damage and loss.

278. It is planned that the Flood Management Team will provide additionally to above list the following inputs or documents:

- Contributing to the Village and Commune Preparedness Plan (structural and non-structural measures)
- Leaflets and handouts related to flood mitigation and management
- Practical manual for flood preparedness on a household level with examples explained by photos or graphics or pictograms
- Inputs to the Implementation Project (Irrigation Scheme) in form of suggestions on design to facilitate flood mitigation and management within the project area
- Manual on Operation and Maintenance (O&M) for irrigation canals, hydraulic structures and river banks with respect to FWUC, providing examples (photos and sketches, etc.)
- Documentation of the main / relevant Hydrological station with profile, time series and Rating curve, flood frequencies in Q m^3/s and stage reading

F) List of Reference Documents

- GMS-Flood and Drought Risk Management and Mitigation Project Nr 40190, Final Inception Report (of the Implementation Project), Yooshin Engineering Corporation, ADB August 2015,
- Technical Guidelines for Development of Contingency Plan for Emergency Response at Capital/Provincial, and Municipal/District/Khan Levels, National Committee for Disaster Management (NCDM), June 2013
- Disaster Management Reference Handbook - Cambodia, Center For Excellence, 2014
- Disaster Risk Management in Cambodia, ADB Additional Financing of Flood Damage Emergency Reconstruction Project (RRP CAM 46009-003)
- Water Demand Analysis within the Pursat River Catchment; Fostering Evidence-based IWRM in Stung Pursat Catchment, Mekong Basin Leader CGIR Challenge Program on Water and Food, 2013
- Water Balance Study Report, JICA, 2012
- UN Sendai Framework for Disaster Risk Reduction 2015-2030, 2015
- Disaster Resilience – Topic Guide, GSDRC, 2014
- Community-led Partnership for Resilience, World Bank and GFDRR, 2015

APPENDIX 7 TRAINING IN THE CBDRM-FWUC ASSIGNMENT

A) Introduction

279. The main tasks and activities of the institutional and social development consultants include:

i. Carrying out needs assessment
ii. Designing training program and institutional support
iii. Prepare training material, plans and schedules
iv. Imparting training
v. Evaluating training

280. It should be mentioned that changes have been made to the original ToR, now including an evaluation component. Capacity development and training can be addressed in many different manners and would normally take the above sequence of analysis/work (1-5). The most important point is that we should be dedicated to achieve important and measurable results from our work in the project. Only in this way can we reliably see how the project has contributed and/or attributed to the impact on disaster risk management and reduction in the target area – as well as bring about informed and evidence-based lessons for future disaster risk reduction endeavors in Cambodia.

281. The overall strategy will adopt a '*money for value'* approach, in line with current trends in development cooperation, which was sparked off systematically with the worldwide approval of the Paris Declaration in 2005 among development actors.

B) Needs Assessment

282. Needs identification will be addressed within a context, namely, the disaster risk management cycle (preparedness, response, recovery, mitigation) identifying current insights and experience in the target region (at province, district, commune and village levels) on current risk management practices. We will in that process draw on knowledge and experience from relevant sources, including key stakeholders and informants, including NGOs, relevant databases, international and national consultants and critical project products, e.g. village profiles and gathering of other socio-economic and cultural data.

283. The exact types of tools to be applied for the needs assessment in the target area are yet to be fully developed but they aim at identifying needs at specifically commune and village levels in terms of their (current and potential) economic losses from disasters and the *likely* increase in losses as disasters may be more frequent in the future due to climate changes. Importantly, performance needs of stakeholders on how they best (economically, socially and culturally) strengthen their disaster response in an effective manner to reduce loss of lives and livelihoods and asset damage will be at the core of the analysis.

284. Based on performance needs identification *learning* needs will be drafted and prioritized in terms of need and what is practical to the exact context. Table 12 illustrates the overall framework for the implementation strategy.

Table 12 Strategy Implementation Framework for the Training

Levels of Needs Analysis	Measurement and Evaluation of Objectives for effectively meeting of needs identified
Payoff/livelihood needs **Economic and other losses due to disaster(s) are life threatening** **Reduce disaster risks in the target area.**	Measure the 'value for money' of the training for key stakeholders (individuals and institutions) Define and measure of training impact objective(s)
Performance needs **Application of learned skills and knowledge in disaster risk management at institutional and individual levels**	Measure application of skills and knowledge for important disaster risk practices
Learning needs **Skills and knowledge learned and aligned with performance needs identified**	Measure training interventions for disaster risk reduction, i.e. course reaction and what skills and knowledge are to be learned.

285. Adopting the above strategy will not only provide measurement of learning needs (which is traditionally where training are measured and seldom beyond) but also enable the training consultants to assess whether the training are *used* and *applied* in their particular *contexts* (in the commune and villages) during disasters.

286. Most importantly, the approach will, if tools and methods are adequately designed, be possible to measure the '*value for money*', i.e. the monetary benefits of the training delivered. To which extent this approach is to be implemented in full depends on the possibilities of establishing a baseline, the availability of project, public staff and villagers, funds for training, quality of training delivered, and the effective use of methods and tools, etc.

287. It would be relevant to link data on historical disaster events and projections with records of damages and loss of life and livelihoods. This could provide a *'proxy' baseline* for the project. To assess to which extent the CBDRM has contributed/ attributed to reduction in loss and damage in the target area can then be done in two ways:

- If the Province is *hit by disaster events* within the next couple of years we will be able to measure the difference between what could have been expected without the CBDRM assignment (baseline/projections) in operation as compared to what actually happened;
- If the Province is *not hit by disaster events* within the next couple of years, *simulations* and *drills* should be carried out at least twice during the project lifetime and preferably beyond for selected communes and villages to test out the effectiveness of the training delivered. While this scenario is to be preferred, as we want to avoid disasters, it will provide less evidence to which degree the training has provide monetary benefits.

288. While this method for assessing the impact of training is *'projection' based* there may be an alternative or complementary approach to execute a value for money assessment. Based on the existing baseline it would be possible to compare a selected number of villages in the target area that will be subject to the risk management training with villages with *similar* socio-economic and disaster risk profiles, either in the target area or outside, that have not been and will not be exposed to the risk management training. Assessing the money for value of this '*comparison' based* approach would be the same as for the projection based assessment – i.e. measured against the degree of loss of lives and livelihoods and asset damage.

289. While it will most probably not be possible to identify all parameters for loss of 'livelihoods' and 'asset' damage, we will try either to identify key parameters and measure the loss and damage levels across the 50 target villages or take out as many easy detectable but important measurable parameters as possible and select a number of villages (e.g. 5-7 trained and 5-7 not trained).

290. To which extent it will be possible to carry out the above 'value for money' approaches will depend on the availability of resources and access to key stakeholders in target communes and villages. This 'value for money' approach will be further discussed with the project management.

C) Design, planning, implementation and evaluation, and train-the-trainer

291. Following the needs assessment a data collection and evaluation plan for the preparation and conduct of the training will be prepared. It will have the following format:

Table 13 Data collection and evaluation plan for the training

Level	Programme objectives	Measure / scale	Method of data collection	Data source	Timing	Responsible
Reaction						
Learning						
Application						
Impact						
'value for money'						

292. **Table 14**provides an outline of a tentative plan that shows how, in principle, the plan should be filled in. The attached plan could be a realistic point of departure for the implementation of the training strategy. It will need further fine-tuning during the course of the planning stage and from the results of the needs assessment. A second version is likely to be ready by the time of the conduct of the two inception workshops in Phnom Penh and Pursat.

293. As of now three courses have been identified: (1) Concepts and terms; (2) Prevention, disaster, response, recovery and reconstruction; and (3) Plans management and tools. In addition, a training-of-trainers (TOT) course will be designed for implementation in 2016.

294. The TOT will be an *essential part of the training* ensuring the effectiveness of the training to be implemented. Facilitators will be recruited, trained as trainers and they will deliver the training to key target groups in communes and villages. As such, the TOT will be a priority for the training support and will be a crucial success factor in itself and a prerequisite for the overall success of the training delivery to the commune and the villages.

295. Preparation of training material and preparation of training plans and schedules will follow the design phase, and the conduct and evaluation of the training finalize the intervention – making use of the draft plan proposed in Table xx. However as discussed with the team management steps could be taken early on to draft pre-determined training materials for some of the courses.

Table 14 Data collection and evaluation Plan (draft)

Level	Programme objectives	Measures/ indicators	Data collection method/instrument	Data source	Timing	Responsibility
1 Reaction	Satisfaction with course contents and instructional delivery	At least 4,5 on a 5-point scale	• Standard feedback questionnaire • Practical tests • Trainer report	• Participants (XX at each level – province, district, commune, village) • TOT (XX participants) • Trainers	End of the training	• Trainer • Project responsible •
2 Learning and Confidence	Further development of capacity for sustainable community based disaster risk management enabling specifically (a) reduced vulnerability to flood, drought and storm hazards, and (b) increased efficiency and community capability for improved disaster preparedness and post-disaster recovery Three courses: 1. Concepts and terms 2. Prevention, disaster, response, recovery and reconstruction 3. Plans, management and tools One TOT course	Before and after set-up (time bound)	• Evaluation questionnaire(s) • Practical tests and observations • Brainstorming sessions • Small working groups • Technical workshops • Learning seminars • Active discussion groups • Feedback sessions • Facilitated discussions • •	• Small structured notes on each event. • Submitted by facilitator or group leader. • • Evaluation sheet for the training/workshop conducted and tests performed (participants)	During and end of training delivered	• Trainer • Project responsible
3 Application & implementation	Applying successfully selected concrete planning and practical skills and knowledge of community based flood and drought risk reduction at commune and village level	Disaster events occurring during 2016 *OR/AND* drill and simulation measurements (exact measures to be developed following the needs assessment exercise)	• Evaluation questionnaire(s) • Practical tests and observations • Brainstorming sessions • Small working groups • Technical workshops • Learning seminars • Active discussion groups	• Committee members • Commune and village residents and leaders • Relevant templates • • Small structured notes on each event. Submitted by facilitator/group leader • • Evaluation sheet for the training/workshop conducted & tests performed (participants) •	• Structured notes collected on a continuous basis • •	• Theme-based responsible personnel (national and international) • • Project management

Level	Programme objectives	Measures/ indicators	Data collection method/instrument	Data source	Timing	Responsibility
		TOT (this is still in prep. process and may require a separate Plan)	• Feedback sessions • Facilitated discussions •			
4 Impact	Improved risk reduction verified by the end of 2016 (or beyond) among risk reduction trained communes and villages as compared to communes and villages not exposed to the training	Projection and comparisons based methods applied using selected easy accessible yet important parameters	• Baseline data (socio-eco, human, technical, mgt. and environmentally) • Post-testing • (Interviews) •	• Village profiles • CamDi (Cambodian socio-economic database) • (Villagers / leaders) • (Committees commune)	• Data collection at the start-up of project and at its completion	• Project management • • Institutional / training responsible
5 Value for Money	Return on investment					

APPENDIX 8 CONCEPT NOTE FOR INCEPTION WORKSHOPS

Inception Workshop in Phnom Penh

Background

296. Climate change is expected to increase the occurrence of extreme weather events in Cambodia. Consequently, Cambodia is considered the second most hazard-prone country in South and South-East Asia after Bangladesh, and globally, ranked 8th among the countries particularly vulnerable to climate change20. Applying the United Nations Framework Climate Change (UNFCC) criteria, some 43% of the 1,633 communes (or close to 50% of all households) in Cambodia exposes to climate change in the forms of droughts and floods. The major disasters frequently occurring in Cambodia include floods, droughts, and storms/typhoons. The impact of floods and droughts events in recent years has resulted in a significant loss and damage in terms of house, health, education, market, agricultural crop, livestock, property and infrastructure.

297. In 2011, Cambodia suffered extensive and prolonged rains which resulted in unprecedented floods in 18 provinces. The floods had widespread impacts on social, economic, and public infrastructure as well as caused the death of 250 people and loss and damage of US$ 625 million; it also affected more than 1.7 million people in many communities. Afterward, during the third week of September 2013, a combination of successive typhoons and heavy rains has the level of water in the Mekong River gone up significantly caused extensive flooding in western Cambodia. On 18 October 2013, the National Committee for Disaster Management (NCDM) reported that there were 20 provinces affected and 168 people killed. The floods affected about 377,567 households and 1.78 million people directly or indirectly. 231,484 houses, 1,242 schools, 78 health centers and hospitals, and 533 pagodas were flooded with roads, bridges and infrastructure damaged. An estimated 384,846 hectares of rice paddies have been affected by floods and 125,011 hectares, 5 percent of the total cultivated area, were damaged according to the data from the Ministry of Agriculture, Forestry and Fisheries. The 2013 Cambodia Post Flood Early Recovery Need Assessment report highlighted that the loss and damage was estimated US$ 365 million.

298. In response to the extreme weather events and the need to mitigate the impacts of disasters that occur- frequently in Cambodia particularly in Pursat province (Flood and Drought), the Ministry of Water Resource and Meteorology (MOWRAM) is implementing the GMS-Flood and Drought Risk Management and Mitigation Project with financial assistance from the Asian Development Bank (ADB). The Community Based Disaster Risk Management (CBDRM) and Farmer Water User Community (FWUC) Support is one of the three components of the GMS-Flood and Drought Risk Management and Mitigation Project.

Brief Introduction to the Workshop

299. The goal of the workshop is to assist and support the Government (MOWRAM and PDWRAM) to further develop capacity for sustainable Community-Based Disaster Risk Management (CBDRM) and Farmer Water Users Committee (FWUC) in selected areas of Pursat Province. The *Inception Workshop* provides the opportunity to clearly outline our work plans and methods for achieving this goal.

[20] UNDP Strengthening Resilience Disaster 2014

300. Therefore, the Workshop will present and discuss how we will achieve this throughout the project. Presentation of key aspects of the ***Inception Report*** will focus on specific CBDRM& FWUC Support tasks:

i. How we will work to *reduce vulnerability* to flood, drought and storm hazards;
ii. How we will increase the efficiency and community capability for *improved disaster preparedness* and post-disaster recovery at the community level; and
iii. How we will include other types of hazards while having *flood, drought and storm hazards* as the main focus throughout the project.

301. The Workshop is structured along the table of content of the Inception Report and we will be presenting the current status of each of the seven outputs. Various members of the Team will present the main topics.

The Objectives of the Workshop

302. The Objectives of the Workshop are as follows:

i. To consult and collect comments from major stakeholders of CBDRM assignment on the inception report
ii. To introduce the Project (and CBDRM concept) to prospective collaborators; and
iii. To outline work plans and our approach and methods for achieving project objectives.

Expected Outputs

303. The Workshop will result in the following outputs:

i. At the end of the Workshop, those in attendance will have a good understanding of the following:
    - The concept and importance of CBDRM in Pursat and nationally;
    - Revised description of the project objectives and work plans; and
    - A good understanding of how we will use a risk-based approach to achieve the required project objectives.
ii. Comments and suggestions from major stakeholders are collected at the workshop for revision and updating the draft inception report to become the final inception report;
iii. Short brainstorming on community risk identification and needs (village and commune level); and
iv. Informative presentations developed that will be the basis of other knowledge products.

Time & venue

304. A full day workshop will be held on 16th December 2015[21] at .....hotel, Phnom Penh. This event will be presided over by of H.E. Ponh Sachak, Director General, In Charge of Technical Affairs, Project Director of GMS-FDMMP, Ministry of Water Resources and Meteorology

Summary Approach and Methodology

305. Participants will also understand that our methodology is a very practical and easy to grasp "risk-based methodology". This focuses on understanding risk and all the things that create risk so we

[21] The exact date will be decided by CPMU.

can provide proactive actions to mitigate risk and help to minimize loss and damage from hazards such as floods and droughts with a clear focus on local families, villagers and communities.

306. The afternoon starts with a Working Session encouraging everybody to discuss, contribute ideas, present opinions or also raise concerns on the topics and issues presented in the morning. The discussion will take place in form of several parallel working groups of 8 to 10 participants each, supported and facilitated by the project team members. This session will serve to brainstorm needs and opportunities to mitigate risk at Commune and Village levels. The team wants to use the unique chance of such a diverse mix of participants, covering a wide range of related activities and a multitude of functions within the field of Disaster Risk Reduction and Management. Therefore the expression of very diverse viewpoints can be expected. It also gives each participant the opportunity within this forum raising and expressing a specific personal concern, of being heard, and being able to contribute to the success of the project and hence fostering the project's roots in the communities. The outputs of these discussions will be recorded and will be incorporated in the project, providing highly appreciated added value. Hence each participant has the chance to assist in shaping the development of the unique Cambodian NDRM Guidelines.

Contact Information

307. For further information for this workshop, please contact:
Mr. Hum Sophon, Deputy Team Leader, CBDRM+FWUC, Tel: 099 890 898,
Email: sophon.cbdrm@gmail.com

List of Participantsin Phnom Penh Workshop[22]

No	*Participant*	*Number of Participants*	*No*	*Participant*	*Number of Participants*
1	CBDRM+FWUC team	14		**NGOs**	
2	ACI TEAM	5	20	PIN	2
3	CPMU, PIC and PIU	10	21	Plan International	1
4	FWUC and PDWRAM	8	22	DCA	1
	Line Ministries		23	FCA	1
5	NCDM	2	24	OXFAM	1
6	MOWA	2	25	AA	1
7	MoH	2	26	Save the Children	1
8	MAFF	2	27	Caritas	1
9	MRD	2	28	WVC	1
10	MoPWT	2	29	CRC	1
11	MoEYS	2	30	UNDP	1
12	MoI	2	31	UNHABITAT	1
13	MoP	2	32	WFP	1
14	MLMUPC	2	33	CCCA	1
15	MoE	2	34	FAO	1
16	MoEF	2	35	UNICEF	1
17	MRC	2	36	IOM	1
	Development Partners		37	WHO	1
18	ADB	2	38	NFFC TEAM	5
19	WB	1			**90**

[22] To be finalized with the guidance of CPMU

Draft Workshop Agenda Phnom Penh

OPEN SESSION			
Time	**Activity**	**Presenter** (add titles)	**Person in Charge**
0800 - 0900	Registration Table Open for Sign-in	Open	ACI and MoWRAM
0900 - 1000	Welcome Address	H.E. Ponh Sachak, Director General, Technical Affairs, Project Director of MoWRAM	Team Leader/ Deputy Team Leader
	GMS Flood and Drought Risk Management and Mitigation Project (FDRMMP)	[ADB - TBD]	Team Leader/ Deputy Team Leader
	CBDRM-FWUC Component Introduction, Presentation of the Inception Report	Project Manager Mr. Bunna (title)	Team Leader/ Deputy Team Leader
	CBDRM-FWUC Component Update and Overview of Inception Workshop	Team Leader	Deputy Team Leader
	Photo session and Press Release		ACI and MoWRAM
1000 - 1030	*Tea Break*		
1030 - 1230	**Introduction to the Component Outputs**	Team Leader	5 min.
	Output 1. Risk Management Training	Dr. Svend and Mr. Phalla	10 min.
	Output 2. Safer Village and Commune Plans	Mr. Hum Sophon, DRM, DTL, Mr. Rithy	10 min.
	Output 3. Disaster Risk Reduction	Dr. Filex Sebacher, Flood Management Specialist and Mr. Chantha	10 min.
	Output 4. Coordinating Committees	Mr. Samoeurn and Mr. Bora	10 min.
	Output 5. Technical Assistance	Tous Sophorn and (International-Drought)	10 min.
	Output 6. Training trainers	Dr. Svend and Sam Oeurn,	10 min.
	Output 7. CBDRM model	Dr. Peter-John with Chanthy	10 min.
	Challenges and Opportunities Ahead	Team Leader	5 min.
1230 - 1400	*Lunch Break*		
1400 - 1530	**Working Session - Needs at Local Level to Reduce Loss from Flood and Drought**	Group Work - Team Facilitators	90 min.
1530 – 1600	*Tea Break*		
1600 – 1700	Feedback from Groups and Wrap-up	(5-6 groups depending on how many are left)	30-40 min.
	Closing Remarks	Dr. Francesco Goletti, President of Agrifood Consulting International	10 min.
1700	*Close*		

Inception Workshop in Pursat

308. Given the same background as for the Phnom Penh workshop, the primary objective of the Workshop in the Pursat province is to assist and support the Government (PDWRAM) to further develop sustainable capacity for the CBDRM + FWUC in two selected districts, 4 selected communes, and covering 50 villages. The workshop will focus more on guided discussions and group collaborative efforts to communicate the fundamentals and advantages of CBDRM and FWUC principles to the stakeholders.

309. A presentation of ***the workshop*** will focus on specific CBDRM & FWUC Support tasks:

i. How we will work to *reduce vulnerability* to flood, drought and storm hazards;
ii. How we will increase the efficiency and community capability for *improving disaster preparedness* and post-disaster recovery at the community level; and
iii. How we will include other types of hazards, apart from *flood, drought and storm hazards*.

Workshop – Objectives

i. To introduce the Project and CBDRM concept to prospective collaborators on district, commune and village level;
ii. To outline work plans and our approach and inform the audience about the upcoming activities in the communities (HVCA, Hazard mapping, training and capacity building, etc.);
iii. To acquire primary information and concerns of the affected population;
iv. To investigate locally practiced mitigation and adaptation measures

Expected Outputs

i. The participants will have a good understanding of the CBDRM concept and its importance for their province, districts, communes and villages;
ii. Will have a basic knowledge on how a risk-based approach may help to improve their disaster risk resilience;
iii. Further insight will be gained through Group Discussions on community risk identification and the need for mitigation and preparedness;
iv. Comments, suggestions and contributions from the local stakeholders will be collected at the workshop and be reflected in the final inception report;
v. Informative presentations on basic principles of CBDRM will be the basis of other knowledge products (leaflets, brochures, etc.).

Time & Venue

310. A full one day workshop will be held on the 18th of December 2015 at KM hotel, Pursat province[23]. The event will be presided over by of H.E. Ponh Sachak, Director General, In Charge of Technical Affairs, Project Director of GMS-FDMMP, Ministry of Water Resources and Meteorology.

Summary Approach and Methodology

311. Participants will also understand that our methodology is a very practical and easy to grasp "risk-based methodology". This focuses on understanding risk and all the things that create risk so we

[23] The exact date will be confirmed by the CPMU and PIU.

can provide proactive actions to mitigate risk and help to minimize loss and damage from hazards such as floods and droughts with a clear focus on local families, villagers and communities.

312. The afternoon starts with a Working Session encouraging everybody to discuss, contribute ideas, present opinions or also raise concerns on the topics and issues presented in the morning. The discussion will take place in form of several parallel working groups of 8 to 10 participants each, supported and facilitated by the project team members. This session will serve to brainstorm needs and opportunities to mitigate risk at Commune and Village levels. The team wants to use the unique chance of such a diverse mix of participants, covering a wide range of related activities and a multitude of functions within the field of Disaster Risk Reduction and Management. Therefore the expression of very diverse viewpoints can be expected. It also gives each participant the opportunity within this forum raising and expressing a specific personal concern, of being heard, and being able to contribute to the success of the project and hence fostering the project's roots in the communities. The outputs of these discussions will be recorded and will be incorporated in the project, providing highly appreciated added value. Hence each participant has the chance to assist in shaping the development of the unique Cambodian NDRM Guidelines.

Contact Information

For further information for this workshop, please contact:
Mr. Hum Sophon, Deputy Team Leader, CBDRM+FWUC, Tel: 099 890 898,
Email: sophon.cbdrm@gmail.com

List of Participants in Pursat Workshop[24]

No	*Participants*	*Number of Participants*	*No*	*Participants*	*Number of Participants*
1	CBDRM+FWUC	14		NGOs	
2	ACI TEAM	5	18	PIN	1
3	CPMU, PIC and PIU, NFFC	10	19	AK	1
4	FWUC and PDWRAM	8	20	PK	1
	Provincial Departments		21	EPDO	1
5	Director of Administration and PCDM	4	22	SORF	1
6	PDoWA	1	**23**	**Bankan District**	
7	PHD	1	24	Ta Lou commune	4
8	PDA	1	25	20 villages	20
9	PDRD	1	26	Khnar Totueong commune	2
10	PDoPWT	1	27	2 villages	2
11	PDoEYS	1	**28**	**Phnom Kravanh district**	**2**
12	Provincial Department of NCDD-S	1	29	5 villages	5
13	PDoP	1	30	Photeah Rung commune	3
14	PDoLMUPC	1	31	11 villages	11
15	PDoE	1	32	Samrong commune	2
16	PDoEF	1	33	3 villages	3
17	ADB	1			**112**

[24] To be confirmed by the CPMU.

Draft Workshop Agenda in Pursat

Time	Activity	**Presenter** (add titles to all presenters)	**Person in Charge**
0800 - 0900	Registration of the participants	Open	Sokkou and PDoWRAM
0900 - 1000	Welcome Address	H.E. Ponh Sachak, Director General, Technical Affairs, Project Director of MoWRAM;	Sophon
	GMS Flood and Drought Risk Management and Mitigation Project (FDRMMP)	Presented by Mr. Bak Bunna, PM, CBDRM + FWUC	Sophon
	CBDRM-FWUC Component Introduction, Presentation of the Inception Report	Presented by HUM Sophon, DRM and DTL	Sophon
	CBDRM-FWUC Component Update and Overview of Inception Workshop	Presented by HUM Sophon, DRM and DTL	Sophon
	Photo session and Press Release		Sokkou and MoWRAM
1000 - 1030	*Morning Tea Break*		
1030 - 1230	**Introduction to the Component Outputs**	Sam Oeurn	5 min.
	Output 1. Risk Management Training	Phalla	10 min.
	Output 2. Safer Village and Commune Plans	Mr. Hum Sophon, DRM, DTL, Mr. Rithy	10 min.
	Output 3. Disaster Risk Reduction	Dr. Felix Sebacher, Flood Management Specialist and Mr. Sophea	10 min.
	Output 4. Coordinating Committees	Mr. Samoeurn and Mr. Bora	10 min.
	Output 5. Technical Assistance	Dr. Felix Sebacher, Flood Management Specialist and Mr. Sophea	10 min.
	Output 6. Training trainers	Dr. Svend and Sam Oeurn,	10 min.
	Output 7. CBDRM model	Dr. Peter-John andChanthy	10 min.
	Challenges and Opportunities Ahead	Mr. Hum Sophon, DRM, DTL	5 min.
1230 – 1400	*Lunch Break*		
1400 – 1530	**Working Session – Needs at Local Level to Reduce Loss from Flood and Drought**	Group Work - Team Facilitators (Mr. Hum Sophon) and Resource persons (Dr. Felix) as well as all Team members.	90 min.
1530 – 1600	*Afternoon Tea Break*		
1600 – 1700	Feedback from Groups and Wrap-up	(five or six groups depending on how many are left)	30-40 min.
	Closing Remarks	Dr. Francesco Goletti, President of Agrifood Consulting International	10 min.
17:00 - 17:30	Closing the workshop	H.E. Ponh Sachak, Director General, Technical Affairs, Project Director of MoWRAM;	Sophon

APPENDIX 9 COLLABORATION OF CBDRM-FWUC ASSIGNMENT WITH NGOS

Background

313. In the process of preparing our bid for this project, we found that there was one particular international non-government organization (INGO) which had developed a wealth of effective and significant work on Community-based Disaster Risk Reduction (CBDRR) in Pursat Province, with the assistance of four local Khmer NGOs. That INGO is called "People in Need" (PIN).

PDWRAM in Pursat

314. PIN has worked closely with PDWRAM and, as the Director of PDWRAM told us during our proposal preparation, both the Department and the Province were very satisfied with the work of PIN. So they have already established a good working relationship in the province. Also, the local NGO partners that PIN has worked with in the Province will also be potentially valuable local resources given their CBDRM experience over the last three years.

Shared Resources

315. During the Inception Phase, the Consultant's Team had the opportunity to meet with PIN, and we confirmed that a significant and valuable opportunity exists for our team to collaborate closely with PIN in order to make best use of existing resources and experiences that they have developed. PIN will be winding down their three-year project this December as their key funding source (DIPECHO) is slowly changing their operations in Cambodia. There exists therefore, a significant opportunity to work with PIN as a partner/collaborator, to make good use of the resources they have already accumulated. We can save time, avoid repeating existing accomplishments, and build on the work already completed.

Successful CBDRR in Pursat

316. The PIN teams have been working for two and a half years throughout Pursat Province (in all Districts and all Communes) in 140 villages, including in 17 villages in Kravanh District. They have undertaken District and Village needs assessments, Commune capacity assessments, training, Village level hazard, vulnerability and capacity assessments, early warning system establishment (including testing, drills etc.) and other such activities, all focusing on Community-based Disaster Risk Reduction (CBDRR), precisely our objective as well. We would not wish to confuse the Communes and Villages by the application of different methods and tools.

Partnership and Collaboration

317. It makes sense to work with PIN to gain access to their experiences, their databases, their methodologies, templates, modules, publications etc. and review, select and adapt the best of these to our needs. The key difference that our project has compared to the PIN experiences since 2012, is that our focus is on i) Farmer Water User Community and Groups and ii) the link to sustainable infrastructure investments for irrigation, drought and flood control.

Specific collaboration opportunities

318. We identified the following areas for collaboration with PIN:

- Multi-disciplinary research results (water governance, conflict mitigation, water conservation, access to markets etc.);
- Close connections to Cambodian universities and research institutes with an interest in CBDRM and water resources management;
- Risks assessments using participatory methods and geospatial analysis;
- Access to HVCAs in the eighteen villages in Kravanh District, and experience in integrating CBDRM into local planning process;
- Designing and co-authoring community targeted publications (making sure they are readable, understandable and attractive, using their extensive network of illustrators, graphic designers and editors);
- Developing ICT tools for beneficiary communities and organizations (manuals, leaflets, radio adds, educational and data collection, guidelines);
- Adapting PIN's M&E tools (e.g. Institutional Capacity Assessment);
- Connecting us to other groups of CBDRM stakeholders and the work done to date on the development of a model CBDRM.

Proposal

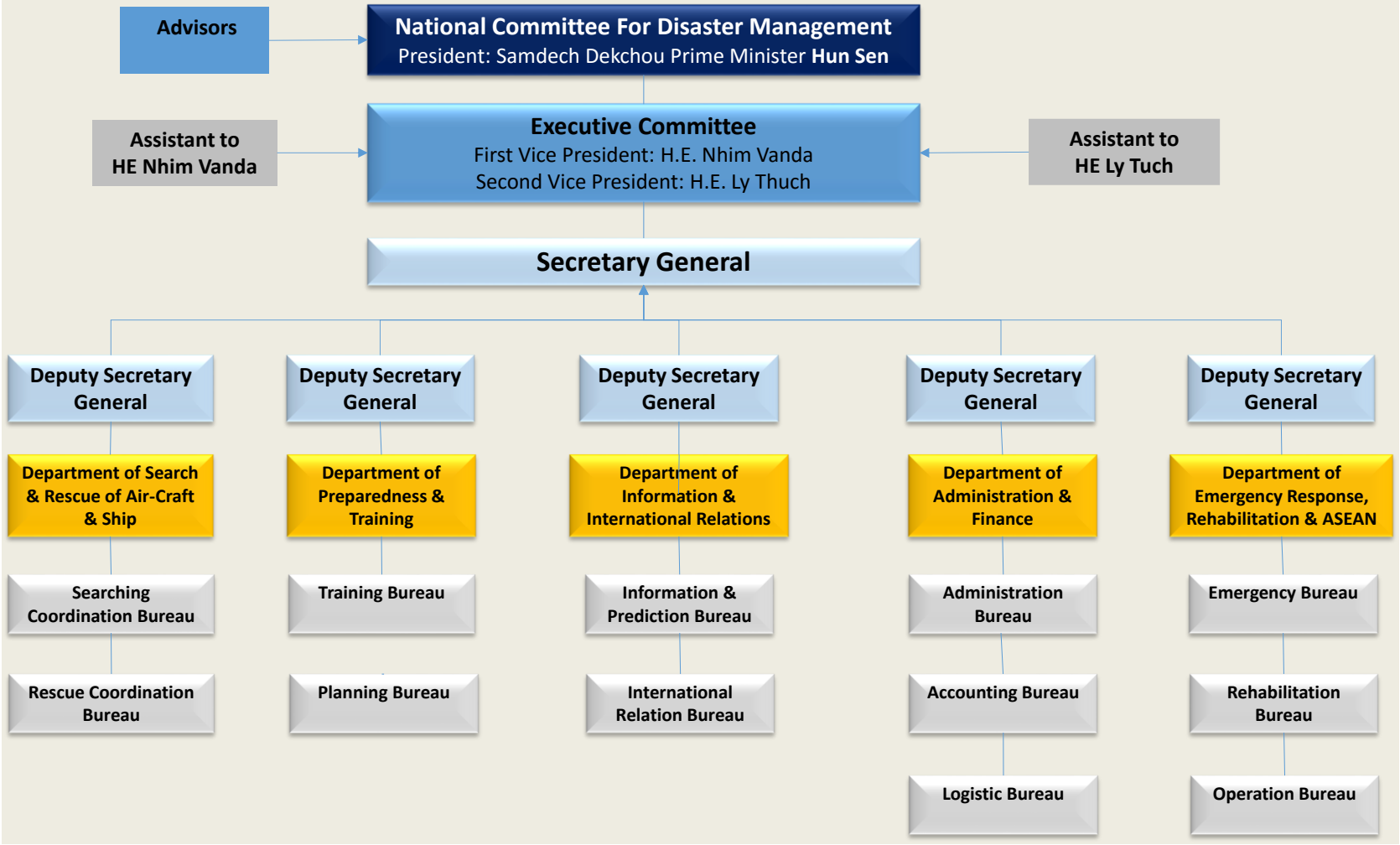
319. Over the course of implementation of the project, the CBDRM will evaluate specific forms of collaboration with PIN and other NGOs.

APPENDIX 10 MAP RESOURCES

Table 15 List of available and needed Maps (as of 16 Nov. 2015)

Nr:	Title / Topic	Author / Source	Scale	Year	Format
1	Project Map Overview	ADB-GSM?	?	?	pdf
2	Project Overview with Communes and Villages		?	?	pdf
3	Project Map Overview (outdated?)		?	?	pdf
4	Pursat District overview	JICA		2012	pdf
5	5734 II Pouthisat	US mapping Agency	1:50.000	1991?	
6	5734 III Svey Don Kev.	US mapping Agency	1:50.000	1991?	
7	5733 I Leach	US mapping Agency	1:50.000	1971	
8	5733 IV Ta Lou	US mapping Agency	1:50.000	1971	jpg
9	5734 Pousat	JICA	1:100.000	2002	jpg
10	5733 Phnum Kra Vanh	JICA	1:100.000	2002	jpg
11	Road Map fo Pursat	RGC	1:500.000	?	jpg
12	Agricultural map which shows the 2011 flood damaged (rice) in 17 Provinces	MOWRAM	?	2013?	
13	Geographical Relief	Open Development Cambodia	?	?	jpg
14	Political Map	Open Development Cambodia	?	?	jpg
15	Base-map	?	?	?	jpg
16	Soil-Type Cambodia	Open Development Cambodia	?	?	jpg
17	Soil Map 1963.jpg	Open Development Cambodia	?	?	jpg
18	Soil Fertility	Open Development Cambodia	?	?	jpg
19	Rice Ecosystem	Open Development Cambodia	?	?	jpg
20	Rice Field Surface per commune in %	Open Development Cambodia	?	?	jpg
21	Access-to-Health-Facilities	Open Development Cambodia	?	?	jpg
22	Hydropower (planned, etc.)	Open Development Cambodia	?	?	jpg

APPENDIX 11 STRUCTURE OF NCDM



APPENDIX 12 HAZARD, VULNERABILITY, AND CAPACITY ASSESSMENT

320. Hazard, Vulnerability, and Capacity Assessment (HVCA)must be participatory: it involves all sectors and key stakeholders in the community and considers different perceptions of disaster risks by a cross-section of the community.

Hazard Assessment

321. Community stakeholders identify and analyze the nature and behavior of hazards or threats that are likely to hit the community, the livelihood or probability of the occurrence and the magnitude, frequency, scope and duration of various hazards is determined.

322. The Hazard Assessment Matrix will be used to gather and validate data through plenary discussions, during which communities identify the nature and behavior of hazards by looking at the following elements: forces, warning signs, speed of onset, frequency, time of occurrence, and duration. Factors affecting the hazards will also identify in order to deepen the hazard analysis, and evaluate the impact of man-made hazards.

Table 16 Example of Hazard Assessment Matrix

Hazard Type	Flood
Force	Water, typhoon, high tide Monsoon rains
Warning signs	News on TV, radio and in the newspapers When it rains more than two consecutive hours Rhythm of high tide
Fore-warning	2 hours till 2 days
Speed of onset	Relatively fast
Frequency	Every high tide When typhoon pass (about 6 times a year) During rainy season Every time it rains
When	From June till October
Duration	2 days to 3 months

323. A number of map tools are used in HVCA including: village map, risk map, seasonal calendar, historical disaster, hazard map, and social network. The map tools are described below.

Village Map (Figure 32)

324. It visualizes the map of the village, with the location of households housing and structures relevant to disaster response (safe areas, water tanks, roads, rivers, ponds, etc.).

Risk Map(Figure 33)

325. Risk Maphelps to identify the disaster risk (Low, Medium and High) in target area. Its features include:
- Identify the safety place like hill, School, Pagoda.....
- Make it easy to make disaster mitigation plan
- Helps the Community to understand the disaster preparedness and response

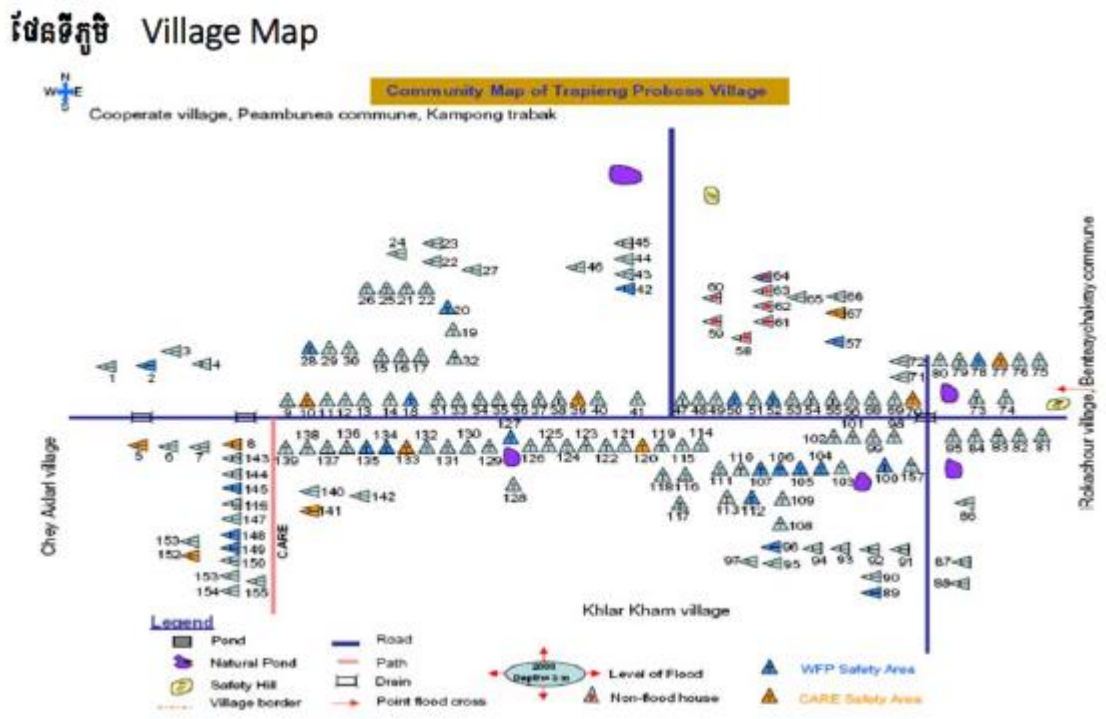


Figure 32 Village Map

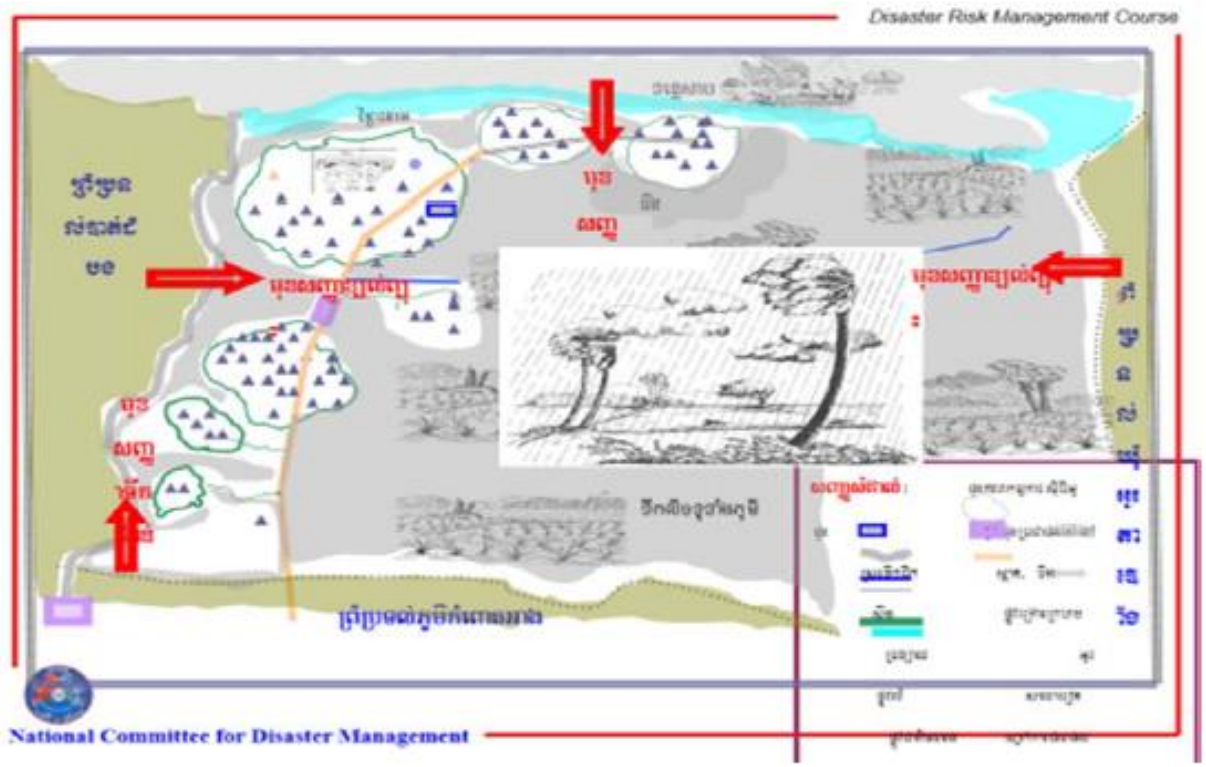


Figure 33 Risk Map

Seasonal calendar (Figure 34)

326. The map visualizes the main activities and livelihoods of the community during the year and the likely occurrence periods of floods and droughts

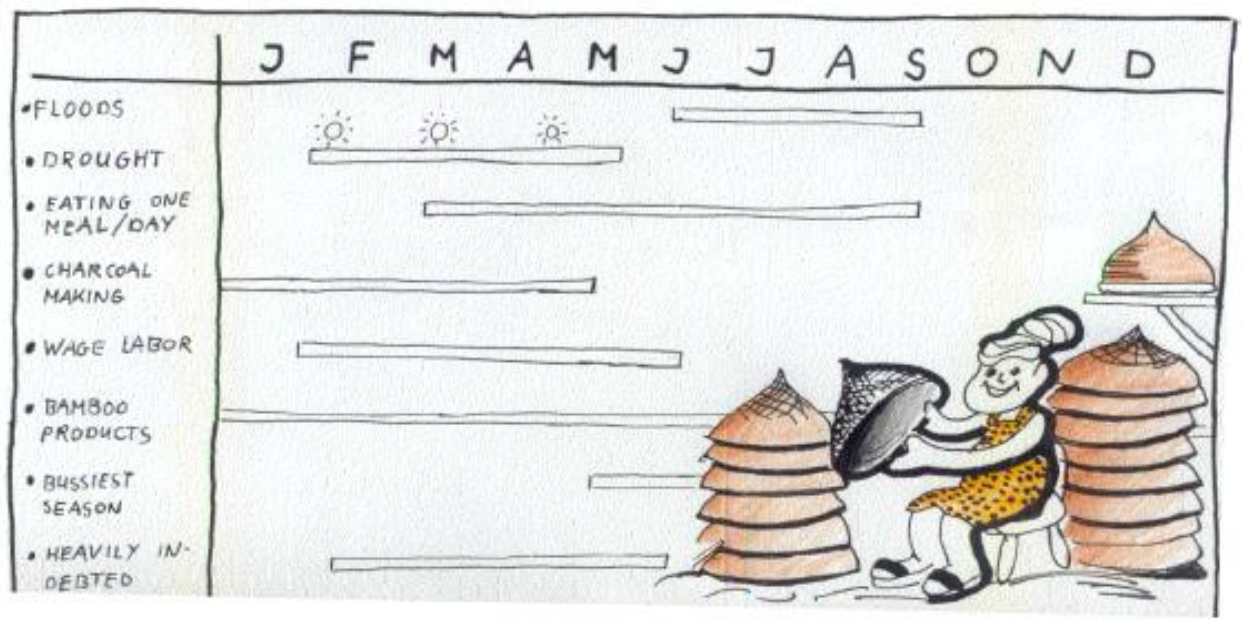


Figure 34 Seasonal Calendar

Historical Calendar(Figure 35)

327. The map helps recording information about disasters that affected the community over the past 10 years. Through the map, the community visualizes the occurrence date and the entity of the disaster.

Hazard Map (Figure 36)

328. The map illustrates the common local hazards and identifies the locations affected by specific hazards. It also visualizes information about local hazards, their intensity and frequency, damage caused, and risks. The maps is used to identify the locations and the reasons of the problemscaused by disaster. It helps prepare the disaster mitigation plan.

Social Network Map (Figure 37)

329. The map helps identifying the stakeholders in the affected area and their capacity. The Venn diagram allows to assure proper communication to the relevant stakeholders in the community when a disaster strikes. It also improves the understanding of the roles and responsibility of different stakeholders.

Figure 35 Historical Disaster

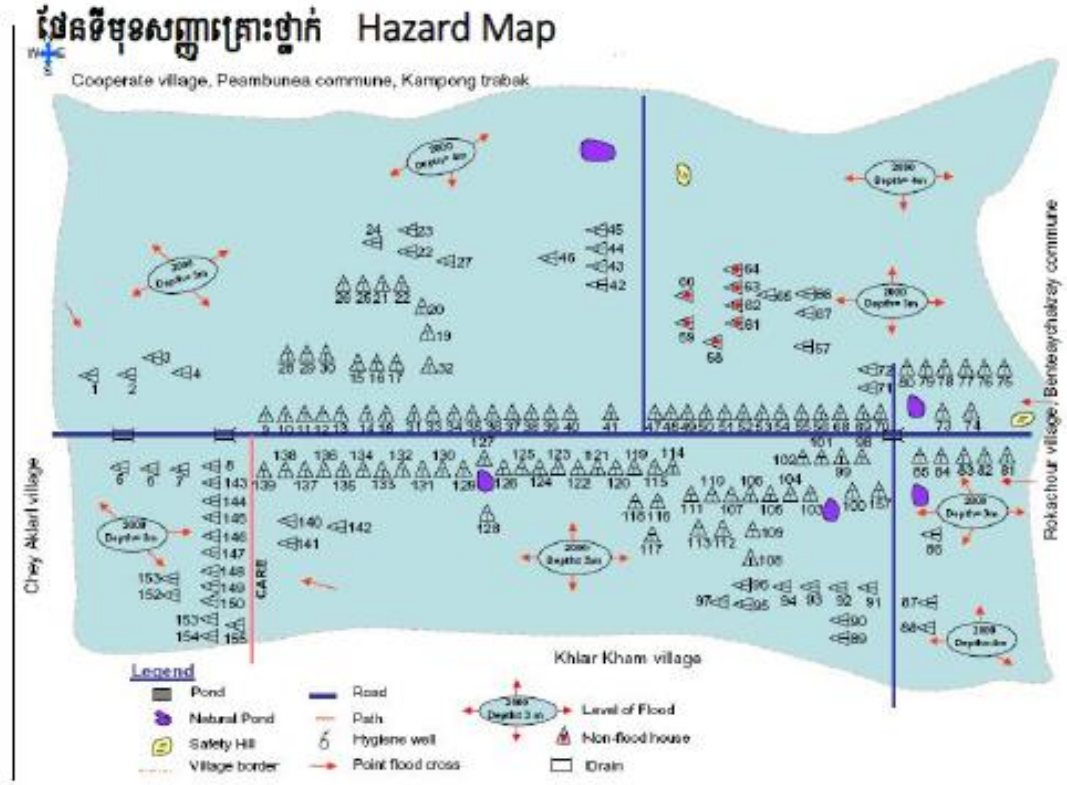


Figure 36 Hazard Map

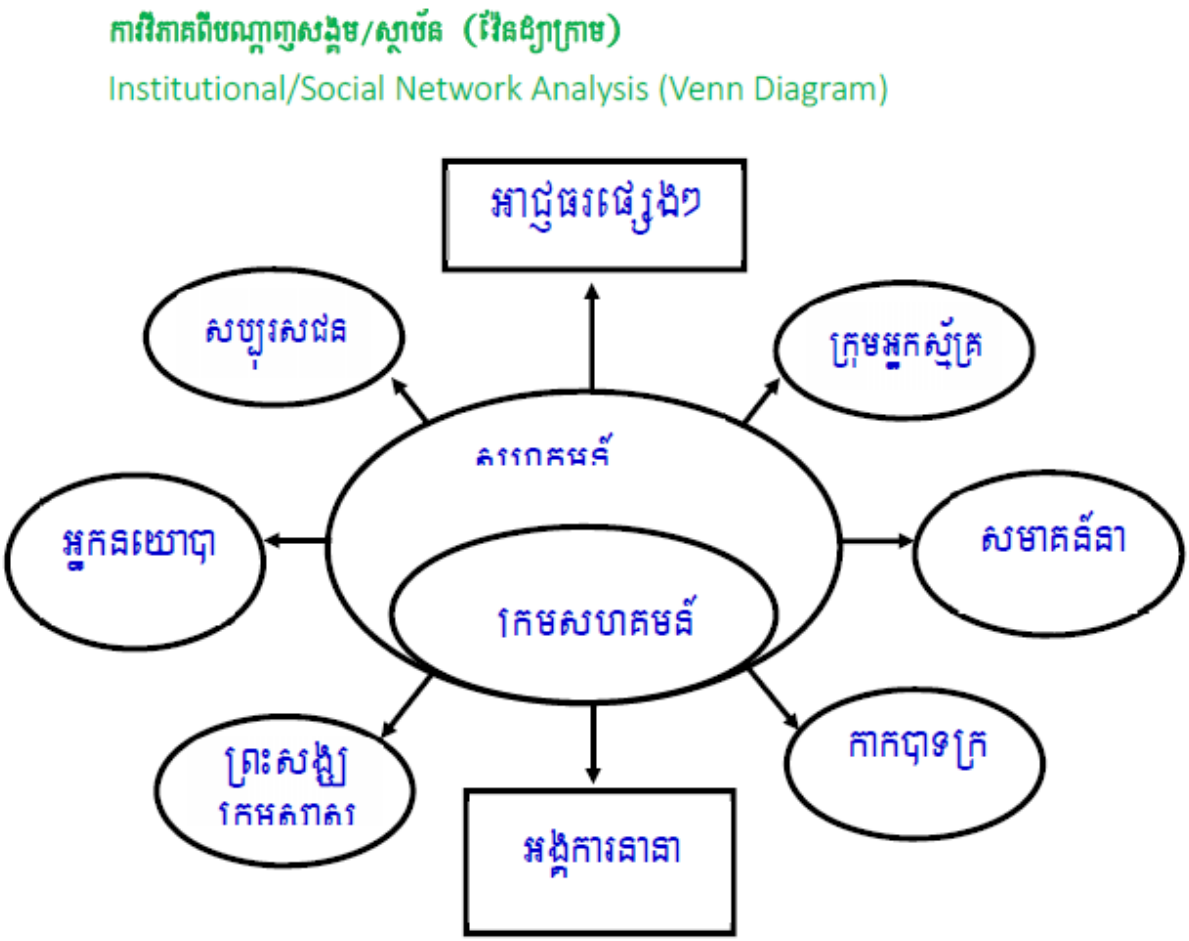


Figure 37Social Network Map

APPENDIX 13 COMMUNICATION MATERIAL FOR O&M

Don't throw garbage, plastics or branches into the river and canals!

WHY?

- ☞ Blocking the regulation structures and intakes of canals
- ☞ Increases the O & M of the irrigation infrastructure
- ☞ Health hazards for people and livestock

HOW?

- ☞ Raise awareness on the consequences of garbage in canals
- ☞ Incorporate schools in basis waste collection approach
- ☞ Introduce solid waste collection (emphasis on plastics)

Floating plastic garbage blocking gate

Photo © Keith Schneider, Circle of Blue

Use locally available resources to produce bio-engineering materials for repairs on irrigation canals

WHY?

- ☞ Earth banks of canals and stream are easily eroded
- ☞ Water has a tendency to meander hence erodes outside bends
- ☞ Bank erosion is increased during flood events
- ☞ Due to erosion land & infrastructure can dilapidating the entire system

HOW?

- ☞ Local materials are usually available and easy to acquire
- ☞ Bio-engineering is usually more flexible and durable than e.g. concrete
- ☞ Cost effectiveness

Bamboo for channel bank protection

Photo © Ekkehard Hartmann, World Bank source book

APPENDIX 14 GENDER STRATEGY AND ACTION PLAN

Background

330. Cambodia is one of the countries at a relatively high economic risk from multiple natural hazards which have been affecting women and men. The main natural hazard to which Cambodia is exposed is floods followed by droughts, occasional epidemics and storms across the country which disproportionately affect many women-headed households. These disasters have a significant impact on the livelihood of farmers.

331. The impacts are different for men and women. While a number of men in rural areas migrate to seek better options for their livelihood, a disproportionate number of women stay at home to look after their children and their main income depends on agriculture production. Climate Change affects the agriculture sector and water availability for agricultural production; this has an important bearing on the role of women as active members of the Farmer Water User Communities (FWUCs). Disasters affect women's health and their physical wellbeing also disproportionately: women are often at risk of epidemic outbreaks, as it was observed during the H5N1 outbreak in 2011 and flood disasters in 2011, 2012, 2013 when more women and girls drowned. Furthermore, during emergency situation some pregnant women could not access health facility and the pregnancy and delivery was at risk. All these factors contribute to women's greater vulnerability to Climate Change impacts than men. In spite of a higher impact of disasters on women, women normally play active roles to mitigate Climate Change and disaster risks. In the community, women have strong leadership positions, because they are able to influence others to make right decisions on disaster preparedness and responses.

332. Cambodian women contribute to the country's development by playing their active roles in the three domains of reproduction, production and community development. From an economic point of view, women do a majority of housework such as buying or shopping, cooking, washing, cleaning and they devote their time to take care of family members; this is mostly unpaid, unrecognized and unaccounted for in the formal economic system. In addition, women have fewer opportunities to access education and training, and information. In terms of early warning system, most women pay less attention to get weather information from MoWRAM regarding floods, drought and storms because they are busy with household work such as taking care of children, preparing food, etc.

333. The Law on Disaster Management has been enacted by the National Assembly on 8 June 2015 and approved by the Senate on 30 June 2015. Article 8 of this Law clearly describes that the ministerial institutions of the Royal Government of Cambodia shall establish a Disaster Management Committee in their respective ministerial institutions and assign a focal point for regular coordination and communication with the Secretariat General of the NCDM. In addition, the National Climate Change Committee approved the Cambodia Climate Change Strategic Plan (CCCSP) in late 2013, which CCCSP provides an overarching guidance for Climate Change implementation in the country. It recognizes the importance of both Climate Change and Gender mainstreaming into the sectoral strategic plans and action plans. Under the CCCSP framework. MoWA developed and approved a Gender and Climate Change Strategic Plan and Action Plan, and integrated the corresponding priorities in the National Strategy on Gender, Neary Ratanak IV. Under the Climate Investment Fund through the World Bank and ADB, a Master Plan on Gender and Climate Change 2013-2022 has been adopted by the MoWA.

334. The new 2015 Government Sub-decree on the Farmer Water User Committees (FWUCs) will provide the project with a firm basis upon which we can build some new Groups (and strengthen existing) at District and Commune levels. The intention will be to ensure the management and use of the irrigation systems in an effective and sustainable manner in Cambodia. Most importantly, it will be the community-based disaster risk management processes (e.g. risk reduction and management

plans) that will provide the CBDRM-FWUC assignment the opportunity to enhance the structural investments of the Project and ensure the communities are able to obtain the full benefit of the improved water control infrastructure of the GMS-FDRMMP project.

335. To achieve the ultimate goal, the general objective is to reduce future social, economic and environmental losses from the impacts of hazards causing disaster events, especially floods and droughts. The project is designing and developing community-based disaster risk management processes for Villages and Communes in Pursat within the 16,100 hectares of the Command Area and Farmer Water Use Community Support.

336. The CBDRM component will support and build on the activities in the Project's Gender Action Plan (GAP) by integrating gender and social-inclusion analysis at all stages of program design, implementation, monitoring and evaluation. To achieve this, a list of action plans has been identified in consultation with all project partners and key stakeholders including Gender Mainstreaming Group of Ministry of Water Resource and Meteorology (MoWRAM) and Ministry of Women's Affairs (MoWA).

Purpose of the gender strategy

337. This strategy aims to assist to overcome current and existing barriers in improving women's participation and engagement in GMS-FDRMMP activities and to mainstream gender perspective in all stages of the Project in order to achieve gender equality.

338. It provides overall action plans for reducing gender gap and inequality perceived in project planning, management and decision making positions as well as in M&E, reporting and communication mandate. In addition, a list of several actions are suggested to address gender issues and to improve gender equality in specific CBDRM's objectives.

339. At the end of the strategy, *gender checklists* will be developed to guide CBDRM implementers to assess gender responsiveness when conducting key activities during different stages of the CBDRM activities.

Approach

340. The CBDRM component employs two approaches for its gender strategy—(i) *Gender Mainstreaming Approach* and *(ii) Female Empowerment Approach.*

(i) Within CBDRM's context, gender mainstreaming is essential when preparing annual work plan, implementing project activities and monitoring progress in the field. **Gender Mainstreaming Approach** requires that women and men participate, engage and be consulted on an equal basis. It is a process of assessing the implications for women and men of any planned action, including legislation, policies or programs, in any area and at all levels. It is a strategy for making the concerns and experiences of women as well as of men an integral part of the design, implementation of all activities, monitoring and evaluation of policies and programs in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality[25].

[25]United Nations Economic and Social Council (ECOSOC): Agreed Conclusions E/1997/L.30, p.2)

(ii) **Female's Empowerment Approach** aims to empower women, girls, youth as agents of change for gender equality by eliminating and reducing gender gap between women and men, girls and boys through implementing affirmative/positive actions and women-focused support in various forms.

The objective is to promote women and girls' full and equal participation, access and control over resources and services on an equal basis as men's through *capacity development* and *skill building* in order to enhance their self-confidence and actions to become leaders and agents of change. The end result from this approach is that women are empowered to raise their voices and concerns and make decisions based on their own choices and to transform unjust situations between women and men in all aspects of life, thereby contributing to gender equality[26].

This approach will be used to increase and improve women's participation in meetings, workshop, forum and dialogue at national and sub-national levels organized by CBDRM. At least 40% of women, girls and youth within the communities are required to take part in all project activities and in recruitment of national and international specialists/consultants. Specific capacity building for women leaders and women groups will be identified and delivered..

Action Plan

Promoting Gender Equality in Planning and Management:

- Ensure that technical expertise is in place and financial support is available to properly carry out work related to gender mainstreaming and women empowerment in CBDRM related activities.
- Mainstream gender perspective into CBDRM monthly, quarterly and annual work plan and activities for actual implementation.
- Include responsibilities on gender mainstreaming and women empowerment into Term of References (ToR) of all technical consultants of the Project.

Gender Action Plans for CBDRM's Implementation and Capacity Strengthening:

- Integrate gender perspective into relevant capacity building activities such as ensuring women's active participation in training, mixed group of male and female trainers/facilitators, and reflecting gender aspects in training materials.
- Conduct gender assessment in CBDRM's target areas in order to better understand the roles of men and women, identify and assess existing GCCC and NGOs/CBOs for partnership building, and explore potential field projects/initiatives to support and improve women participation and promote gender equality in the future.
- Identify, support and strengthen capacity of existing women groups/gender (or existing) networks in CBDRM's target areas so that they are able to effectively perform their leadership, promote gender equality, and influence decision making in community water management and climate change.
- Conduct gender awareness raising among key stakeholders in CBDRM activities' target areas (both men and women) through training, workshop, meeting and forums to improve

[26] Gender Strategy of the first three-year Implementation Plan (IP3) of the National Program for Sub-National Democratic Development (NP-SNDD) 2011-2013

understanding on gender in CBDRM and climate resilience, and to reflect progress from CBDRM activities' implementation through identifying key challenges, gaps and solution.

Promote Gender Equality in Community's Consultation, Participation, Planning, and Dialogue between and among stakeholders on Community Water Management and Disaster Risks Management Issues:

- Ensure that at least 40% of women participate and become part of the activities through employment, consultation, meeting, workshop, dialogue, forum and other public events organized by CBDRM.
- Organize specific women meetings/forums where they can put forth their opinions, concerns, and suggestion prior to the formal meetings and workshop with mixed participants.
- Coordinate and promote close collaboration and exchange of information regarding gender mainstreaming, women empowerment, women engagement and best practice among CBDRM partners, other key stakeholders including the Advisory Group of GCCC, NCDM/PCDM.
- Explore possibilities to pilot successful experiences of women economic empowerment through livelihood improvement, climate change adaptation, and enterprise development in CBDRM's target areas and through small grant scheme
- Ensure that all strategies, policy, mechanism, regulations and structures and Benefit Sharing initiated by CBDRM reflect women and other under-represented group's needs and interest.

Measuring Progress through M&E, Reporting, learning and Communication:

- Ensure that indicators for CBDRM are gender responsive and progress are measured and monitored.
- As a cross-cutting issue, gender is to be reflected in all sections of CBDRM's reports quarterly and annually. In addition a specific section should be included in the report to describe progress over gender mainstreaming and women empowerment during reported period.
- All data in report shall be disaggregated by gender and other under-represented group where possible.
- Produce and disseminate information on best practices of women inclusion and benefit sharing in water resources management and climate change as a result of CBDRM's work on promoting gender equality and women's empowerment.
- Integrate gender equality and women's empowerment issues into the agenda of CBDRM's management meetings, planning workshop, speeches, public events, and forums.

Gender Checklists

341. These checklists will be prepared as quick guides for CBDRM staff, counterpart and partners to be able to assess negative impact on women and men from any intervention they plan to carry out at different stages and different levels. It will contain different lists of questions to help CBDRM implementers to mainstream gender perspective into main activities such as: training/workshop/meeting/forum, Problem Analysis, Assessment/Appraisal, Component Intervention and Monitoring.

APPENDIX 15 NOTES ON DROUGHT MANAGEMENT

342. Disaster management or mitigation may be done by both structural and non-structural means. Best results are obtained by integrated planning; that is, striking a balance and combining both structural and non-structural means. The drought management water consumption model is dependent on two inputs: (i) the number of users and; (ii) their water use. The users are the local population who use the water for drinking, bathing, washing and other purposes, agriculture, livestock and wildlife. The availability of demographic information about these users is of paramount importance. The information requires data of existing villages, population, agriculture, livestock and wildlife.

343. Preliminary study in the two districts of Pursat has established that the economy of the Project Area is essentially agro-based and minor commercial activities. The drought management structural activities will particularly revolve round the agricultural activities in the area, which are heavily dependent on the surface water resources. The occurrence of persistent drought conditions in the area during the past years has resulted in lowering of the agriculture yield in the area, which had substantial negative impact on increasing the cost of agricultural production and reduction in net returns and resultant increase in pumping costs. This had been instrumental in increasing the poverty level in the project area. In order to combat drought in the project area, it is considered imperative that, in addition to other measures, there should be a drought management plan for a well-planned augmentation and implementation of surface water resources.

344. A well-managed drought management plan could be drawn from the inferences drawn from the present surface and ground water balance studies, that there is a progressive tendency of occurrence of net deficit in the available surface and groundwater resources in the project area, particularly during the drought years. It would be pertinent to record the surface and groundwater levels, which will indicate a more or less consistent pattern of decrease in surface and ground water variability and lowering over the years. It is necessary that in the drought management plan measures could be taken to optimize the use of surface and groundwater resources through improvements in irrigation practices and cropping patterns, and thereby maximize the conservation of present rainfall runoff flows and aquifer capacities.

345. Another neglected regions are the replenishing surface water conservation points and evenly the groundwater storage, as they also need replenishment through percolation of surface water to the groundwater aquifer. An effective way of achieving this objective is to increase the surface area of percolation as well as the time of percolation of surface water to the aquifer through construction of delay action dams, also known as percolation dams. In addition check dams can also contribute in affecting more percolation of water to aquifer and diversion directly to the agriculture field as wells. When the check dams are silted on the upstream side to make these flush with the crest, vegetation is planted to provide stability and reduce the velocity of the runoff and saving the downside area.

346. By providing structural drought mitigation measures, following government and even community infrastructure schemes could possibly be proposed to be implemented and their agreed numbers include:

1. Water conservation projects: Pipe Irrigation Schemes
2. Small storage projects to store rain water for drinking by livestock: Water Ponds
3. Drinking Water Supply Schemes
4. Delay Action Dams
5. Check Dams
6. High efficiency irrigation schemes

7. Natural Resource Management Interventions

347. The non-structural means include involvement of the community and educating them in water conservation methods and possible changes in cropping pattern, which would improve efficiency of water utilization and minimize wastage and result in livelihood diversification. Education and social mobilization of communities on policies and issues would also be part of non-structural mitigation measures. A communication strategy needs to be developed for disseminating the information about drought management/mitigation particularly the message about desirability in change of the cropping pattern and water conservation techniques.

APPENDIX 16 LIST OF PERSONS MET

S/N	Person Met	Sex	Position	Organization	Contacts	
					Phone no.	Email
	1. Phnom Penh					
1	H.E Ponh Sachak	M	Project Director	CPMU/MoWRAM	012 886 241	sachak_p@yahoo.com
2	Mr. Bak Bunna	M	Project Manager	CPMU/MoWRAM	012 886 241	bakbunna@yahoo.com
3	Dr. DIVAS B. Basnyat	M	Team Leader	PIC/Yooshin	087 858 547	divas.basbanyat@gmail.com
4	Mr. Sok Saing Im	M	Deputy Team Leader	PIC/Yooshin	011 607 890	sok.saingim.ta7610cam@gmail.com
5	Ms. Sim Sokhema (1)	F	Gender Officer	CPMU/MoWRAM	012 799 058	N/A
6	Mr. Ouk Channaridd	M	FWUC Officer	CPMU/MoWRAM	012 967 160	ochannaridd@yahoo.com
	2. Province (Pursat)					
7	H.E Ieng Kimleang	M	Deputy Prov. Governor	Board of Governors	012 644888	kimleang_ing@yaho.com
8	Keo Vey	M	Director	PDRWAM	012 243666	vey_keo@yahoo.com
9	Kit Phal	M	Deputy Director	PDRWAM	012 966978	kitphal@yahoo.com
10	Sat Bonno	M	Accountant	PDWRAM	070 414114	satbonno27@gmail.com
11	Phat Sophal	M	Officer?	PCDM	077 956816	N/A
	3. District/Commune/Village(Pursat)					
12	So Sahong	M	District Gov	Kravanh	012 323206	N/A
13	Sy Saro (2)	F	Deputy Gov	Kravanh	092 899514	N/A
14	Tim Yan	M	Deputy Gov	Kravank	092 993989	N/A
15	Heng Vesna	M	Deputy Gov	Kravank	012 897504	N/A
16	Nhem Mie	M	Commune Chief	Samrong	097 720 5406	N/A
17	Chhuon Khorn	M	Commune Chief	Phteah Ruong	012 1957326	N/A
18	Nuon Sorn	M	Commune Council	Samrong	097 8879307	N/A
19	Hem Horn	M	Commune Council	Samrong	097 8670425	N/A
20	Chea Socheat	M	Deputy Gov	Kravank	017 945406	N/A
21	Ou Dorn	M	Commune Council	Phteah Rung	077 627647	N/A
22	Norn Chan Rath	M	Commune Council	Phteah Rung	092 266773	N/A
23	Sok Viseth	M	Health center	Samrong	088 9925532	N/A
24	Roeurn Savuth	M	Police Post	Phteah Rung	012 636752	N/A
25	Nhem Lorn	M	Village Head	Kandal	092 919656	N/A
26	Yim Phoeurn	M	Village Head	Deang	097 3293707	N/A
27	Chuon Khorn	M	Commune Council	Bak Chenhhchien	012 474332	N/A
28	Sam San	M	Village Head	Krabao Chrum	088 6546726	N/A
29	Men Son	M	Village Head	Tuol Pongro	017 250553	N/A
30	Chan Proeurn	M	Commune Council	Phteah Rung	097 7899194	N/A

S/N	Person Met	Sex	Position	Organization	Contacts	
					Phone no.	Email
31	Sean Bunthy	M	Village Head	Veal	097 3500063	N/A
32	Krim Kesey	M	Village Head	O'Preal	012 205810	N/A
33	Chhem Huon	M	Village Head	Ou Heng	095 232788	N/A
34	Tith Son	M	Village Head	Preak 2	088 3489365	N/A
35	Chum Phun	M	Village Head	Samrong 2	088 7212367	N/A
36	Van Voeurn	M	Village Head	Preak 3	088 6269009	N/A
37	Chuop Din	M	Commune Chief	Bak Chenhchien	092 709417	N/A
38	Ouk Phorn	M	Commune Council	Bak Chenhchien	012 566317	N/A
39	Oun Seang	M	Village Head	O'Resey	017 566830	N/A
40	Puong Daruon (3)	F	Village staff	Samrong 1	017 363067	N/A
41	Mao Horn	M	Commune Council	Bak Chenhhchien	095 501236	N/A
42	Hen Chroeng	M	Deputy village	Chung Ruk	017 579832	N/A
43	Cheng Pov	M	Key person	O'rum Chang	077 821125	N/A
44	Sem Sokhema (4)	F	Gender	MoWRAM	011 939710	N/A
45	Sim Rorn	M	Police Post	Samrong	089 720222	N/A
46	Ouk Chandarith	M	FWUC	MoWRAM	012 967160	N/A
47	Khim Linda (5)	F	Deputy of village	Tasas	031 9632431	N/A
48	Sum Sarim (6)	F	Deputy of village	Thlok Dangkor	017 751573	N/A
49	Kang Lay Heam (7)	F	Chief of	Phnom Kravanh	097 7780519	N/A
50	Heng Samphorse (8)	F	Women	Phnom Kravanh	097 4896447	N/A
51	Gnin Phoerun (9)	F	Commune Council	Phteah Rung	097 3178811	N/A
52	Maol Sok Thear (10)	F	Commune Council	Samrong	088 494462	N/A
53	Kuy Yet	M	Deputy	Thlok Dangkor	089 279624	N/A
54	Nov Phoeurn	M	Village Chief	Phteah Rung	017 861459	N/A
55	Chum Sophon	M	Commune Council	Samrong	092 139270	N/A
56	Khom Yorn	M	Commune Council	Bak Chenhchien	088 2281860	N/A
57	Lorn Seng	M	Village Chief	Angkrong	071 7090360	N/A
58	Tith Saroth	M	Deputy of village	Samroung	088 7465777	N/A
59	Lorn Chea	M	Village Chief	Chan Serey	012 915218	N/A
60	Sem Sorn	M	Village Chief	Bak ChenhChien	012 1940790	N/A
61	Troung Yon	M	Village staff	Tuol Pongro	077 6595531	N/A
62	Prum Samon	M	Deputy of village	Damnak Kansaeng	017 344108	N/A
63	Morm Rin	M	Commune Council	Bak Chenhchien	092 719553	N/A
64	Oerun Chantha	M	Village staff	Prohorse Khbal	097 5601364	N/A
65	Cheng Sotha	M	Village Chief	Preak Muy	017 842679	N/A
66	Kong Son	M	Village Chief	Sdok Khtom	017 561467	N/A
67	Nop Ton	M	Village Chief	Prey Kanlang	017 426765	N/A

S/N	Person Met	Sex	Position	Organization	Contacts	
					Phone no.	Email
68	Dol Pin	M	Deputy	Chrey Krim	097 6406217	N/A
69	Top Ry	M	Village Head	Kra Nham	088 5532304	N/A
70	Sok Be	M	Village Head	Bat Rumduol	088 6056770	N/A
71	Sum Say	M	Commune Council	Phteah Rung	089 713222	N/A
72	Dy Saory	M	Health center	Tasas	092 259091	N/A
73	Nov Sal	M	Village Head	Koh Svay	097 9477290	N/A
74	Sao Daroeurn	M	Chief District Governor	Bakan	N/A	N/A
75	Haey Simen	M	Chief of Admin	Bakan	092 130338	vannoch.bk@pur.ncdd.gov.kh
76	Yam Yen	M	Commune Chief	Ta Lou	089 714222	N/A
77	Nov norn	M	Commune Council-1	Ta Lou	976260200	N/A
78	Sok Phae	M	Commune Council-2	Ta Lou	017 496023	N/A
79	Khan Sao	M	CC Member	Ta Lou	092 688290	N/A
80	Yorng Sarin	M	CC Member	Ta Lou	092 130355	N/A
81	Kak Kimheang	M	CC Member	Ta Lou	092 130322	N/A
82	Kheav Chun	M	CC Member	Ta Lou	012 258975	N/A
83	Neak Tang Horn	M	CC Member	Ta Lou	092 539800	N/A
84	Hang Lam	M	CC Member	Ta Lou	088 4541042	N/A
85	Sar Oun	M	CC Member	Ta Lou	017 521516	N/A
86	Sar Thun	M	CC Member	Ta Lou	092 304473	N/A
87	Roeng Teak (11)	F	Village Leader	Kok Rumlor	097 2706499	N/A
88	Roeng Ron	M	Deputy	Kok Rumlor		N/A
89	Chuop Tho	M	Village Leader	Tuol Totoeng	092 151663	N/A
90	Bun Bo	M	Village Leader	Tuol Thmor	097 9024421	N/A
91	Touch Sarorn	M	Village Leader	Bo Chres	097 2862267	N/A
92	Gnet San	M	Village Leader	Prey Rong	077 754144	N/A
93	So Sophon	M	Village Leader	Ta Lou	077 609053	N/A
94	Lay Tha	M	Village Leader	Thmey	012 954973	N/A
95	Som Raem	M	Village Leader	Tuo Chreav	077 657754	N/A
96	Yam Yoeurn	M	Village Leader	Prey Torv	092 783042	N/A
97	Vaet Em (12)	F	Village Leader	Boeng Kork	071 9546056	N/A
98	Moeng Sarat	M	Village Leader	Prey Veang	092 553962	N/A
99	Prak Savet	M	Village Leader	Serey Kunthea	097 5752237	N/A
100	Nov Phorn	M	Village Leader	Trayan Sar	097 230618	N/A
101	Men Thol	M	Village Leader	Chnal Morn	088 6139936	N/A
102	Long Phorn	M	Village Leader	Bos Kor	092 462884	N/A
103	Phang Orn	M	Village Leader	Rohal	012 618656	N/A
104	Chay Seat	M	Village Leader	Rohal Til	017 368701	N/A
105	Kaet Thoch	M	Village Leader	Prey Kantuot	088 9742477	N/A
106	Vy Sarith	M	Village Leader	Tang Kok	088 7908825	N/A

S/N	Person Met	Sex	Position	Organization	Contacts	
					Phone no.	**Email**
107	Muong Ol	M	Village Leader	Sam San	012 762187	N/A
108	Teang Vortanak	M	Deputy district Governor	Bakan	011 830187	N/A
109	Sam Sopuon (13)	F	District Council/CCWC	Bakan	012 402172	N/A
110	Yem Yooeurn	M	Deputy Police commander	Bakan	097 9119899	N/A
111	Van Sokhon	M	Deputy office of Agriculture	Bakan	097 6703226	N/A
112	Chea Ketvorn	M	Deputy office of Education	Bakan	092 495920	N/A
113	Keo Kangphaldo	M	Chief office of Health	Bakan	012 563061	N/A
	4. DP/NGO Agency (Phnom Penh & Pursat)					
114	Tep Sokha	M	Deputy Program Manager of DRR/ER	PIN (Phnom Penh)	097 888 66 86	tep.sokha@peopleinneed.cz
115	Paul Conrad	M	DRR & ER Program Manager	PIN (Phnom Penh)	012 234 076	paul.conrad@peopleinneed.cz
116	Tue Kell Nielsen	M	Water Resource Management Advisor	PIN (Phnom Penh)	N/A	tue@kellnielsen.dk
117	Sim Mao	M	Coordinator of Anakut Koma (AK)	Phnom Kravanh Pursat	092 265972	N/A
118	Dim Soksan (14)	F	Staff of AK Organization	Phnom Kravanh Pursat	097 8570606	N/A
119	Sak Sareth	M	Staff of AK Organization	Phnom Kravanh Pursat	092 736605	N/A

APPENDIX 17 LAW ON DISASTER MANAGEMENT AND SUBDECREE ON FWUC

Disaster Management Law

348. The Law on Disaster Management has been enacted by the National Assembly on the 8th of June 2015 and entirely approved by the Senate on its form and legality on 30th of June 2015. The law covers both natural and human-made disasters occurring in Cambodia and intends improve the following processes: (i) Prevention, adaptation and mitigation in the pre-disaster period, due to natural or human-made causes; (ii) Emergency response during the disaster; and (iii) Recovery in the post-disaster period.

349. The Law recognizes the National Committee for Disaster Management hereafter (NCDM) as the headquarters of the Royal Government to lead, administer and coordinate all disaster management activities. The organization and functioning of NCDM shall be determined by a Royal Decree. The ministries-institutions of the Royal Government shall establish a disaster management mechanism in their respective ministries-institutions and assign a focal point for regular coordination and communication with the Secretariat-General of the NCDM. NCDM shall establish the Sub-National Committees for Disaster Management, including City and Provincial Committees for Disaster Management, Town and District Committees for Disaster Management and Commune Committees for Disaster Management. The organization and functioning of the sub-national committees for disaster management shall be determined by a Sub-Decree.

350. Prevention and mitigation activities shall focus on the pre-disaster period by identifying various hazards. Regulations and measures will be formulated for strengthening public awareness and cooperation in the development and implementation of hazard risk prevention programmes, including climate change adaptation.

351. The preparedness activities shall focus on the pre-disaster period by taking action to develop early warning systems, strategies, contingency plans and emergency response plans for mitigating disaster losses, standard operating procedures for the disaster relief operation, table-top-exercises and simulation exercises.

352. The emergency response activities shall focus on the period of the disaster by taking immediate action to lead, command and coordinate the emergency response operation, obstruct the spreading of hazards, mobilize humanitarian assistance, basic materials, and equipment, human and financial resources for disaster relief.

353. The recovery activities shall focus on the post-disaster period including rehabilitation and reconstruction.

354. The law provides a solid institutional basis for the CBDRM activities. One major implication for the CBDRM team is to link and work in collaboration with the subnational committee of disaster management, at the provincial, district, and commune levels.

FWUC SubDecree

355. Subdecree 31 provides the procedures for the establishment, dissolution, roles and duties of FWUC. The subdecree was signed on 12th March 2015. A Farmer Water User Community (FWUC) is an entity serving a common interest of people through the use of an irrigation system in an effective

and sustainable manner aimed at enhancing economic and, social development, and poverty reduction. The governing body of the FWUC is the FWUC Committee. The FWUC Committee has the following roles and obligations:

i. Prepare the irrigation system management plan for the FWUC;
ii. Prepare the FWUC Statute, contracts, internal regulations, agreement on the transfer of the irrigation system, and the irrigation service plan;
iii. Maintain the irrigation system in good condition to enable the irrigation water supply;
iv. Manage and allocate the water fairly to all members of the FWUC;
v. Build up capacity in the field of water use, maintenance, and development of the irrigation system;
vi. Prepare reports on FWUC works and send them to MOWRAM for consideration and assessment;
vii. Resolve any conflicts arising within the community;
viii. Collect contribution within the irrigation system, including other revenue from other exploitation activities within the FWUC irrigation system for the purpose of sustainable O&M of the irrigation system;
ix. Impose any administrative punishment on any FWUC member, any member of the FWUC Committee, and the Chairperson of the FWUC basing on the FWUC Statute.

356. The subdecree clarifies the financial sources of a FWUC that may include:

- The contribution from the use of irrigation service collected from the members;
- Other contribution collected from other exploiters and services within the reservoir or the Irrigation scheme;
- Contributions from FWUC members such as in human labors and other contribution as set by the FWUC;
- Financial support or donations from donors and other generous persons;
- Revenues from any business activities undertaken by the FWUC;
- Other administrative fines;
- National budget;
- Other legal revenue sources.

357. The use of financial sources shall be for the following:

- Regular operation and maintenance of the irrigation system;
- Regular repairs, small-scale rehabilitation and improvements;
- Contributions to the repair, large-scale rehabilitation and improvements to the capacity of the irrigation system that are funded by the Government, donors or other contributors;
- Allowance for the FWUC committee, administrative works and material use within the FWUC;
- Expenditure on the other works to ensure FWUC operations.

358. The transfer of irrigation system management for an irrigation scheme shall only be made after its irrigation has been ensured and the concerned FWUC has been supported and trained by MOWRAM. The transfer of irrigation system management shall be made through an agreement between the FWUC, the sub-national level authorities, and PDWRAM. MOWRAM may partly or fully transfer irrigation system management to be directly under the management of the FWUC to reduce the government's expenditures. The agreement on the transfer of irrigation system management shall define the roles and responsibilities of related stakeholders, such as the FWUC, sub-national level authorities, the PDWRAMs, and MOWRAM. This agreement shall be signed by all related parties. The agreement on the transfer of irrigation system management shall be prepared by MOWRAM.

359. Given the relatively complexity of the FWUC, MoWRAM has conceptualized a ten steps program for organizing the FWUC. The ten steps include:

(i) Holding initial meetings at system and sub-system level;

(ii) Identify irrigation service area and potential members of FWUC and conduct participatory rural appraisals (PRA);
(iii) Farmers agree to form FWUC and plan organizing activities;
(iv) Farmers prepare and adopts FWUC statute and by-laws;
(v) Farmers establish FWUC and select leaders;
(vi) Building the capacity of FWUC to prepare an irrigation service plan;
(vii) FWUC adopts and implements initial irrigation service plan;
(viii) Prepare and adopt management transfer agreement (or certification of management authority)
(ix) Repair and improvement of irrigation infrastructure; and
(x) Continue capacity building and provision of support service.

360. Clearly, capacity building and technical services to FWUC committees and members will be required throughout the process of organizing the FWUC. By establishing Commune and District Coordination Committee, the CBDRM-FWUC team will ensure to have a focal point to assist the organization of FWUC in cooperation with MOWRAM and mainstream CBDRM processes in FWUC activities and plans.