

KINGDOM OF CAMBODIA

Nation Religion King



Ministry of Water Resources and Meteorology

ADB

Water Resources Management Sector Development Program
ADB Loan 2673-CAM and TA 7610-CAM

MID-TERM REPORT

(August 2013)



**TA 7610-CAM: Supporting Policy and Institutional Reforms and
Capacity Development in the Water Sector**

 egis International

 **KEY CONSULTANTS (CAMBODIA) LTD.**

 egis eau

QUALITY CONTROL

Version	Date	Written / Revised by:	Checked by:
No. 1	15 September 2013	Ian FOX (Program Team Leader - Water Resource Expert)	Thierry DELOBEL (Project Director – Egis)

CONTENTS

I.	INTRODUCTION AND BASIC DATA.....	1
	1. Background	1
	2. Basic Data	1
	3. Implementation Arrangements	2
	4. Program Implementation Readiness at Commencement of CDTA 7610-CAM5	6
	5. Purpose of this Report.....	6
II.	IMPLEMENTATION PROGRESS	7
	1. Overall Work Progress of CDTA 7610-CAM.....	7
	2. Decisions taken during the ADB MTR Mission	1
	3. Impacts of MTR Decisions on Specific CDTA Tasks	4
	4. Corresponding Changes in CDTA Resources	6
	5. Revised Terms of Reference for CDTA Consultants.....	7
	6. Utilization of Consultant Resources	7
III.	REFLECTIONS ON PROGRAM DESIGN.....	1
	1. Program Preparation.....	1
	2. Lessons Learned and Recommendations (Preparation Phase).....	5
	3. Lessons Learned and Recommendations (Implementation Phase)	1
IV.	CONCLUSIONS AND RECOMMENDATIONS	7
	1. Conclusions.....	7
	2. Recommendations	8

APPENDIXES

1. Program Management Structure
2. Revised Personnel Schedule of CDTA Consultants
3. Revised Terms of Reference of CDTA Consultants
4. WRMSDP Direct Linkages with Strategy for Agriculture and Water (2010-2013)
5. Function and Mandate of MOWRAM

Acronyms and Abbreviations

ADB	Asian Development Bank
ASDP	Agriculture Sector Development Program
AusAID	Australian Agency for International Development
CCA	climate change adaptation
CDTA	Capacity Development Technical Assistance
CISIS	Cambodian Irrigation Scheme Information System
CNMC	Cambodia National Mekong Committee
CoM	Council of Ministers
DMF	design and monitoring framework
DPIC	Department of Planning and International Cooperation
FWUC	Farmer Water User Community
ITC	Institut de Technologie du Cambodge
IWRM	integrated water resources management
MEF	Ministry of Economy and Finance
MoE	Ministry of Environment
MOWRAM	Ministry of Water Resources and Meteorology
NWRP	National Water Resources Plan
O&M	Operation and Maintenance
PDA	Provincial Department of Agriculture
PDWRAM	Provincial Department of Water Resources and Meteorology
PFMRD	Public Financial Management for Rural Development
RGC	Royal Government of Cambodia
TNA	training needs assessment
TSA	Tonle Sap Authority
TSC	Technical Services Centre
WG	working group
WRMSDP	Water Resources Management Sector Development Program

I. INTRODUCTION AND BASIC DATA

1. Background

The capacity development technical assistance for Supporting Policy and Institutional Reforms and Capacity Development in the Water Sector (CDTA 7610-CAM) was formulated to assist the Ministry of Water Resources and Meteorology (MOWRAM) implement the Water Resources Management Sector Development Program (WRMSDP)¹ in Cambodia.

WRMSDP comprises a program component to address national water resources management and irrigation policy issues in Cambodia, and an investment component to assist MOWRAM rehabilitate small- and medium-scale irrigation systems and deliver irrigation services within the Tonle Sap Basin.

CDTA 7610-CAM is financed by ADB's TA funding program (TASF-IV), the Australian Agency for International Development (AusAID), the Nordic Development Fund (NDF), and the Royal Government of Cambodia (RGC).

International and national specialists employed by the joint venture of Egis International (France), Egis Eau (France) and Key Consultants (Cambodia) Ltd. (KCC), hereinafter referred to as the Consultant, commenced their services on 16 January 2012. The consulting services under CDTA 7610-CAM provide specialist support to MOWRAM for the following:

- (i) develop MOWRAM's capacity to manage water resources through strengthening the strategy, policy and legal framework for integrated water resources management (IWRM);
- (ii) improve coordination and cooperation with other ministries and agencies, and at the river basin level;
- (iii) strengthen MOWRAM's capacity to promote IWRM and climate change adaptation (CCA);
- (iv) develop human resources capacity;
- (v) strengthen policy, planning and legal framework for irrigation management and service delivery; and
- (vi) strengthen MOWRAM's capacity to manage, operate and maintain irrigation schemes.

2. Basic Data

The design of WRMSDP as a sector development program (SDP) grew out of feasibility studies carried out from 2007–2008 (under TA 4848-CAM)² for a Water Resources

¹ ADB. 2010. Report and Recommendation of the President to the Board of Directors on Proposed Loans, Grant, Technical Assistance Grant, and Administration of Loan and Technical Grants to the Kingdom of Cambodia for the Water Resources Management Sector Development Program (Loans 2672-CAM and 2673-CAM). Manila.

² ADB. 2006. Technical Assistance to the Kingdom of Cambodia to Prepare the Water Resources Management (Sector) Project. Manila (TA 4848-CAM, approved for \$1.3 million on 16 October 2006).

Management Sector Project. Fact-finding for the proposed sector project took place during 4-14 December 2007. However, in view of concerns about difficulties being faced in ongoing projects, and in recognition of the need to address sector-wide policy issues, ADB requested additional TA studies in 2008 on institutional capacity and strengthening of the investment project.

These additional studies led to a decision to adopt a SDP approach. Hence, a major change of scope of TA 4848-CAM was prepared in 2009 and additional TA studies were initiated. Processing of WRMSDP was completed in 2010.

In March 2012 ADB approved a further extension, major change in scope and increase in TA amount for TA 4848-CAM to prepare funding under the Pilot Program for Climate Resilience (PPCR) to accompany implementation of WRMSDP, and to continue to assist MOWRAM achieve project readiness for WRMSDP.³

a. Key dates for Program Loan and CDTA

- Approval of WRMSDP by ADB Board of Directors: 23 September 2010
- Loan 2673-CAM became effective on 3 June 2011
- CDTA 7610-CAM became effective on 18 May 2011
- Commencement of Program implementation: May 2008⁴
- Loan 2673-CAM closure date as designed: 30 June 2013

b. Recent ADB Review Missions for WRMSDP and CDTA 7610-CAM

- Program Inception Mission from 27 January – 4 February 2011
- Program Review Mission from 30 August – 8 September 2011
- Special Loan Review Mission from 21-28 November 2011 (Loans 2672-CAM and 2673-CAM)
- Special Loan Review Mission from 7-16 February 2012 (Loans 2672-CAM and 2673-CAM)
- Loan Review Mission from 13-17 August 2012 (Loans 2672-CAM and 2673-CAM)
- Mid-Term Review (MTR) Mission from 22 April – 3 May 2013

3. Implementation Arrangements

MOWRAM is the executing agency for both the program and project components of WRMSDP. Ministry of Economy and Finance (MEF) monitors use of loan proceeds and

³ PPCR subcommittee approved Cambodia's application for financing under the Strategic Program for Climate Resilience (SPCR) in June 2011. Allocation to Cambodia included \$14 million for investment activities under WRMSDP and \$600,000 to prepare an investment project. Subsequently, ADB Management approved direct selection of a consulting firm to undertake the project preparatory TA. Unfortunately, the selection of a consulting firm was unsuccessful, and MOWRAM's allocation of PPCR funding was passed to another ministry.

⁴ In view of the extensive stakeholder consultations (including dialogue with the government on water sector policy issues) conducted during program design and through the Government's Technical Working Group on Agriculture and Water, the Program implementation period is considered by ADB to have begun in May 2008.

counterpart funds generated from the Program Loan. WRMSDP management structure comprises:

a. Program Steering Committee

The Program Steering Committee (PSC) is chaired by the Minister of MOWRAM and its permanent vice chair is the Secretary of State (HE Veng Sakhon) of MOWRAM. PSC is responsible for providing overall direction to WRMSDP, and for interagency coordination and Program monitoring. ADB had expected that it would meet not less than two times per year (normally following Program review missions to ensure timely consideration and guidance on issues raised), or more frequently as required. PSC membership is as follows.:

- Ministry of Environment (MoE)
- Ministry of Public Works and Transport
- Ministry of Education, Youth and Sports (MoEYS)
- Ministry of Agriculture, Forestry and Fisheries (MAFF)
- Ministry of Land Management, Urban Planning and Construction
- Ministry of Industry, Mines and Energy
- Ministry of Rural Development
- Ministry of Women's Affairs
- State Secretariat for Civil Service (SSCS)
- Tonle Sap Authority (TSA)
- Cambodia National Mekong Committee (CNMC)
- Institut de Technologie du Cambodge (ITC)
- MEF

b. Program Management Office

The Program Management Office (PMO), established on 16 August 2010, is headed by the Secretary of State of MOWRAM, HE Veng Sakhon as Program Director. PMO acts as secretariat to the PSC and is responsible for coordinating, monitoring and reporting on WRMSDP activities to PSC and ADB. Mr. Chuon Bithol, Deputy Director General of Technical Affairs, MOWRAM acts as Program Manager.

The full program management structure of PMO was set out in Decision 320 of 30 December 2011. PMO includes program support units whose role is to manage day-to-day implementation of the program (Outputs A and B) and project (Output C), and to report to PMO:

- (i) **Water Resources Program Unit (WRPU)** is set up within MOWRAM's Water Resources Management and Conservation Department (WRMCD) to support WRMSDP Output A (which relates to promotion of IWRM initiatives on a country-wide scale), and is headed by the Director, WRMCD (Dr. Theng Tara) as program manager
- (ii) **Irrigation Services Program Unit (ISPU)** is set up within MOWRAM's Department of Irrigated Agriculture to support WRMSDP Output B (which relates to the promotion of sustainable irrigation management and improved service delivery), and is headed by the Director, Irrigated Agriculture Department (Mr. Loeung Sothea Channy) as program manager

- (iii) **Project Support Unit (PSU)** is set up within MOWRAM's Department of Engineering to support WRMSDP Output C (which relates to sustainable rehabilitation of existing small- and medium-scale irrigation schemes covering about 15,000 ha in 3 provinces: Kompong Thom, Banteay Meanchey, and Siem Reap).
- (iv) **Project Management and Implementation Monitoring Unit (PMIMU)** is set up within MOWRAM's Department of Planning and International Cooperation (DPIC) and is responsible for overall program monitoring and evaluation (M&E). It reports to PMO. PMIMU is headed by Mr. Chea Chhun Keat, Director of DPIC.

Each program support unit includes a M&E officer, an accounting officer, and other necessary support staff.

The program management structure (comprising 88 staff at central level and 51 staff at provincial level) includes the following entities:

- PMO
- WRPU
- ISPU
- PSU
- PMIMU
- Project Implementation Unit (PIU) of the Provincial Department of Water Resources and Meteorology (PDWRAM) Kompong Thom
- PIU of PDWRAM Siem Reap
- PIU of PDWRAM Banteay Meanchey

A diagrammatic representation of WRMSDP management structure, reflecting changes introduced by MOWRAM and ADB during 2011 and early 2012, is included as **Appendix 1**.⁵

c. Priority Operation Costs

ADB and the Government formulated a system known as Priority Operating Costs (POC) to provide incentive payments to Government staff. These payments were to provide a supplement to salary as compensation for the extra efforts imposed on staff through participation in PMO, program support units and PIUs.

Under WRMSDP, POC payments (sourced from Loan 2672-CAM) were intended for 77 staff at central level and 54 staff at provincial level).⁶ The POC proposal, prepared in accordance with POC guidelines issued by the Council for Administrative Reform (CAR), was finally not accepted by the Government. The POC system was replaced by Government-financed salary supplements.

⁵ On a day-to-day basis, CDTA team members work mainly with members of WRPU and ISPU on matters related to Output A and Output B activities.

⁶ The number of staff designated to receive POC is less than the number of staff within the program management structure. In addition, the POC for PIUs allows for the addition of drivers in the participating provinces.

4. Program Implementation Readiness at Commencement of CDTA 7610-CAM

Consultants for CDTA 7610-CAM commenced their services on 16 January 2012. A summary of Program readiness (in terms of activities completed by MOWRAM by that date or shortly thereafter) is shown below:

- Draft sub-decree on establishment of FWUCs submitted to the Council of Ministers (CoM) by Minister, MOWRAM on 28 October 2009
- Appointment of the Program Director, Program Manager and Managers of Program Support Units (10 August 2010)
- Appointment of staff to PMO, Program/Project support units, and PIUs (30 December 2011)
- Initial meeting of the of the inter-ministerial Working Group on Establishment of an Inter-ministerial Committee for Water Resources Management (WG6) was held on 28 June 2011⁷
- Establishment of PSC through Decision 53 signed by the Minister of MOWRAM (20 February 2012)

The working groups (WGs) set up by MOWRAM to support implementation of WRMSDP are shown in Table 1.

Table 1: Working Groups Supporting WRMSDP

	Working Group/ Committees	Date of establishment	Chair
1	Women's Committee within MOWRAM	7 June 2011	Ms Lim Linda
2	Gender Technical Working Group	28 May 2009	HE Sam Sarit
3	Working Group on Public Financial Management Reform	11 February 2009	HE Chan Youttha
4	Committee on Preparing Sub-decrees Related to the Law on Water Resources Management	8 November 2008	HE Nei Lorn
5	Working Group on Human Resources Development (established under WRMSDP)	8 November 2010	HE Ponh Sachak
6	Inter-ministerial Working Group on Establishment of an Inter-ministerial Committee for Water Resources Management (established under WRMSDP)	1 February 2011	HE Veng Sakhon
7	Technical Working Group for Maintenance of Irrigation Systems within MOWRAM	4 May 2011	HE Em Bun Thoeun
8	Inter-ministerial Working Group for Planning of Creation of Technical Skills (established under WRMSDP)	28 January 2011	HE Veng Sakhon
9	Working Group on Anticorruption within MOWRAM	22 December 2010	HE Sin Vuthy
10	TSA General Secretariat Working Group for the Formulation of the TSA Strategic Plan	3 July 2012	HE So Sophort

⁷ This satisfied the last remaining condition for compliance with 1st tranche conditions, and thereby enabled ADB to release the 1st tranche (US\$ 10,371,794.31 equivalent) on 3 October 2011. The 9 first tranche conditions are given in Attachment 2 to Schedule 3 of the Loan Agreement for Loan 2673-CAM.

5. Purpose of this Report

This mid-term report describes achievements of CDTA 7610-CAM at its implementation midpoint (15 July 2013) – that is, 18 months after commencement of consulting services on 16 January 2012. The mid-point corresponds almost exactly to the designed closure of the program loan (Loan 2673-CAM) on 30 June 2013.

Further, based on difficulties encountered in CDTA implementation (particularly with regard to Government's stalled achievement of compliance with 2nd tranche conditions), the report provides recommendations for adjusting the scope and nature of the targeted outputs for the remaining period of implementation (i.e., up to mid-January 2015). These recommendations take into account decisions made by the ADB MTR mission (22 April – 3 May 2013).

The mid-term report provides an assessment of the relevance of the program in the light of assumptions made during program/project preparation.

The mid-term report has the following structure:

- I Introduction and Basic Data
 - II Implementation Progress
 - III Issues and Problems Encountered
 - IV Reflections on Program Design
 - V Conclusions and Recommendations
- Appendixes
-

II. IMPLEMENTATION PROGRESS

1. Overall Work Progress of CDTA 7610-CAM

Overall CDTA work progress is assessed to be 32% at 31 July 2013, corresponding to an elapsed time of 78% (i.e., from mobilization to programmed substantive completion of program activities at end-2013). The estimated work progress at 30 April 2013, corresponding to an elapsed time of 66%, was 30%. Hence, there has been negligible progress during the 3-month period May-July 2013.

This alarming situation is somewhat tempered by the almost complete restriction that was placed on participation by Government staff in activities related to legislative change and policy reform during the lead-up to and conduct of the national elections on 28 July 2013.⁸ Such restrictions persisted in the period following the elections pending the formation of the new Government.

Nevertheless, all parties acknowledge that CDTA progress is unacceptably slow, and well below the level anticipated during preparation of the program loan.⁹ This outcome reflects, to a large extent, MOWRAM's lack of engagement (at the highest level) in the reform process and the on-flowing influence of such indifference on members of the program support units and WGs.

The CDTA consultants have reported on this situation on many occasions, beginning with the 3rd quarterly progress report (August-October 2012) which noted blockage of some CDTA activities and restrictions placed on involvement of CDTA consultants in others. Some of those impediments were overcome to an acceptable extent through ADB's engagement with the Minister, MOWRAM during loan review missions. Others continue to perturb decision-making critical to CDTA work activities.

While a reluctance to directly confront the Minister is understandable, there is an implicit recognition of the severe headwinds faced by the CDTA in the decisions taken by ADB and the Government during the MTR mission (22 April – 3 May 2013). Specific changes introduced during the MTR mission as a result of those decisions are discussed below in Section 2 of this chapter.

In a few rare cases CDTA progress remains more-or-less on track:

- (i) A.3.1: Water resources assessed at a nationwide scale (90% completed). This corresponds to 2nd tranche release condition #6.
- (ii) A.3.4: Improved coordination and cooperation between MOWRAM and MOE in mainstreaming CCA in IWRM, and vice-versa (70% completed). This corresponds to 2nd tranche release condition #7.

⁸ Only a skeleton representation of the CDTA consultant team remained on the job during July 2013.

⁹ The closing date for the program loan (Loan 2673-CAM) was set at 30 June 2013, based on an assumed commencement of policy reforms by the Government in May 2008 (refer to footnote 4).

- (iii) A.4.1: Technical skills development – tertiary level training through the Institut de Technologie du Cambodge (65% completed). This corresponds to 2nd tranche release condition #8.
- (iv) B.2.5: Gender mainstreaming unit created in MOWRAM with appropriate resources and staffing (80% completed).
- (v) B.4.2: Technical skills developed through vocational training courses under MOWRAM's Technical Services Centre (TSC) (training needs assessments, training plans, curricula and training courses 70% completed, corresponding to precursor work needed for achievement of 2nd tranche release condition #12).

A summary analysis (current at 31 July 2013) of CDTA activities under output A and output B of WRMSDP is shown below in Table 2.

Table 2: Summary Analysis of CDTA Activities under Output A and Output B of WRMSDP (31 July 2013)

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
OUTPUT A: ENHANCED CAPACITY OF GOVERNMENT TO MANAGE WATER RESOURCES			
Activity A.1: Strengthen Strategy, Policy and Legal Framework for Integrated Water Resources Management (IWRM) and Climate Change Adaption			
Task A.1.2 - The legal framework for Water Resources finalized and an implementation plan adopted and launched	Strengthen Legal Framework for IWRM 1. The Borrower shall have issued either sub-decrees or Prakas, as appropriate, on the procedures for the establishment of farmer water user communities (FWUCs); river basin management; the establishment of water allocation/licensing; and water quality.	The Ministry of Water Resources and Meteorology (MOWRAM) has 4 draft sub-decrees that were developed over a number of years. MOWRAM's process included stakeholder workshops. However, stakeholders' views have not been fully incorporated. The Minister considers that the sub-decrees do not need to be reviewed or modified further, and plans to submit them for approval in their current form. Attempts by the Minister to have the FWUC sub-decree approved prior to the national elections were unsuccessful. CDTA team has identified a number of recommended amendments and additions to propose in the river basin ¹¹ and licensing sub-decrees in discussion with the Director, Water Management and Conservation Department. Program Director (HE Veng Sakhon) requested the CDTA team to also review the other drafts and identify options for strengthening them .	FWUC sub-decree is based on a conceptual approach to irrigation development that places a heavy burden on FWUCs for provision of operation and maintenance (O&M) of completed schemes. This approach has not produced satisfactory outcomes after 13 years of irrigation development by MOWRAM. Hence, CDTA consultants believe that it would be premature to put emphasis on the FWUC sub-decree at this stage. CDTA team proposes to assist MOWRAM put in place routine budgets for O&M such that, once schemes are brought to fully operational state, a clear division of responsibility between MOWRAM and FWUCs can be established for O&M of each scheme. (This is discussed below under Tasks B.1.1 & B.3.1, 2nd tranche conditions #9 & #11).
Task A.1.3 - National Water Resources Plan (NWRP) developed and adopted	Implement National Water Resources Policy 4. The Borrower through the ministerial level committee for coordination of water resources management shall have (a)	As agreed during the mid-term review (MTR) mission, CDTA consultants are preparing a National Water Status Report (NWSR) as a precursor to a full NWRP. The complete program of data collection, analysis and preparation will require 9-12 months. A draft of the NWSR could be achieved by mid-2014, at which time it would be appropriate to hold stakeholder consultations bringing	The preparation of the NWSR would ideally involve strong collaborative support from MOWRAM staff and from members of the inter-ministerial Working Group on Establishment of an Inter-ministerial Committee for National Coordination of Water Resources Management (WG6). Interactions with and support from WG6 have been

¹⁰ The task numbers used in the CDTA work plan correspond to "Activities" listed in the Design and Monitoring Framework (DMF).

¹¹ The river basin sub-decree is a prerequisite to full establishment of River Basin Committees. The current draft river basin sub-decree has serious omissions.

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
	<p>commissioned a review of the national water resources plan (NWRP) (2009-2013); and (b) issued recommendations for the preparation of the national water resources plan (2014-2018).</p>	<p>together representatives of relevant Ministries and all provinces.</p> <p>All references to “NWRP” in the design and monitoring framework (DMF) will be assumed to be replaced by “NWSR”, and achievement of the NWSR will be accepted as satisfying 2nd tranche condition #4.</p>	<p>difficult (if not impossible) to arrange so far.</p> <p>CDTA consultants will complete the NWSR and also prepare a Water Profile for Cambodia (see Task A.3.1 below). The NWSR will provide the platform for review and amendment of the National Water Resources Policy (2004) between 2014 and 2016. A. work plan to undertake this review will be prepared by CDTA consultants. The revised NWRP will provide the basis for water sector-related budgetary and investment decisions, particularly for the 5-year planning cycle starting 2018.</p>
Activity A.2: Improve the Coordination and Cooperation Framework for IWRM			
<p>Task A.2.1 – Ministerial level committee for coordination of national water resources management and an inter-ministerial secretariat establish; and coordination and cooperation mechanisms between CNMC, TSA, MOWRAM and river basin committees clarified</p>	<p>Improve National Coordination and Collaboration on Water Resources Management</p> <p>2. The Borrower shall have established and operationalized a ministerial level committee for coordination of water resources management (NCWRM) to be chaired at the highest level of the Borrower and include relevant ministers as members, and supported by an inter-ministerial secretariat.¹²</p>	<p>During 2012 an initial meeting of WG6 was held to discuss options for the role and structure of the proposed Council. However, the meeting did not complete a detailed analysis as had been intended, and a follow-up meeting was not possible.</p> <p>In May 2013 CDTA consultants prepared a draft Royal Decree for the creation of NCWRM together with a draft Sub-Decree for the establishment of a permanent Secretariat Office of NCWRM. CDTA consultants planned a meeting of WG6 in June 2013 to review the documents as well as the draft work plan for WG6, but this could not be arranged in view of the national elections due to be held in July.</p> <p>Finalization of the draft Royal Decree for the creation of NCWRM and draft Sub-Decree for the establishment of a permanent Secretariat Office of NCWRM now depends on comments generated by members of WG6.</p>	<p>Given the wide range of critically important IWRM activities that Cambodia will face as its economy grows, it is increasingly important that the proposed NCWRM be set up in such a way that it is fully supported by the relevant ministries and is therefore empowered to bring together all relevant stakeholders in its decision-making and guidance roles.</p> <p>In spite of the Minister’s professed support for the concept, the creation of such a body demands unflagging determination, diplomacy and a willingness to compromise at the highest levels. Hence, the establishment of the NCWRM may prove to be a bridge too far, requiring a long-term process that would not conform with the timetable of WRMSDP.</p>

¹² MOWRAM proposed that the “ministerial level committee for coordination of water resources management” be named the “National Council for Water Resources Management” (NCWRM).

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
	3. The Borrower through a ministerial level committee for coordination of water resources management (NCWRM) shall have issued a policy that shall clarify the coordination and cooperation mechanisms between CNMC, TSA, MOWRAM and river basin committees (RBCs).		CDTA consultants will make an assessment of coordination and cooperation mechanisms, and will report on this. Action on any such recommendations would need to have the support of the Minister.
Task A.2.2 - Strategic plan for Tonle Sap Authority (TSA) developed		The work plan for TSA General Secretariat Working Group for Formulation of the TSA Strategic Plan (WG10) has been approved by ADB and MOWRAM and stamped by the Minister. It has been submitted by the Program Director to Ministry of Economy and Finance (MEF) for review/approval of its budget.	It is anticipated that the WG10 work plan will be approved by MEF no later than end-2013. Preparation of the strategic plan for TSA is then expected to be achieved by end-2014.
Task A.2.3 - Pilot operation of river basin coordination forum or committee established in Stung Sen river basin and water management plan for pilot river basin prepared; river basin coordination and management initiated in at least one other basin	Pilot Test Mechanisms for River Basin Level Coordination and Collaboration 5. The Borrower through MOWRAM shall have established the Stung Sen river basin committee (RBC).	CDTA consultants are supporting, as and when necessary, the group of French consultants working (under direction of HE Lim Puy) on Stung Sen RBC. Such support relates principally to facilitation of stakeholder and community consultations during 2013-2014. CDTA consultants also participate in meetings and review and comment on reports. As proposed by the Program Director and agreed by the Minister, the CDTA will support preparation of a river basin plan for the Stung Sreng river.	The arrangements agreed upon during the MTR mission depend on satisfactory establishment of pilot operation of a RBC in Stung Sen river basin as an outcome of activities being led by HE Lim Puy. That, together with the initiation of river basin coordination and management in the Stung Sreng river basin would satisfactorily meet the requirements of second tranche condition #5. CDTA consultants started investigations and field work toward initiating river basin coordination and management in the Stung Sreng river basin in June 2013.
Activity A.3: Strengthening capacity of MOWRAM for IWRM and CCA			
Task A.3.1 - Water resources assessed at a nationwide scale.	National Assessment of Water Resources 6. The Borrower through MOWRAM shall have prepared and approved a national water resources profile.	A draft report, titled "Cambodia Hydrometeorological Data Compilation Report", has been circulated to MOWRAM and other relevant organizations for review and comment.	CDTA consultants will further review and revise this report to fulfill the requirements for a National Water Resources Profile. This includes adding an addendum on ground water resources and environmental conditions (information for which will be obtained from special studies being carried out for the preparation of the NWSR – Task A.1.3).

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
<p>Task A.3.2 - Improved water data management plan prepared, approved and implemented</p>		<p>Staff of MOWRAM's Department of Hydrology and River Works and Department of the Meteorology participate in preparation of MRC's Basin Development Plan (BDP). However, MOWRAM is severely understaffed in terms of qualified and technically skilled hydrologists, flood modelers, development planners and water management specialists. Hence, this exercise has not so far translated into an improved national plan for water data management.</p>	<p>There is no university course producing Hydrologists or Meteorologists in Cambodia, and no students have been sent overseas to graduate in these subjects for the last 19 years. Hence, there is extremely low absorptive capacity in MOWRAM. Further, CDTA consultants cannot, in good faith, advise on software and hardware purchases to improve MOWRAM's water data management and flood and drought forecasting systems. Similarly, CDTA consultants cannot upgrade MOWRAM's flood forecasting model knowing that there are no staff qualified to operate and maintain a sophisticated model.</p>
<p>Task A.3.3 - Improved plan for flood and drought forecasting system prepared, approved and implemented</p>		<p>Activities in support of this task have been delayed by lack of significant progress in Task A.3.2.</p>	<p>Given the shallowness of staff resources in MOWRAM, there is little if anything CDTA can do toward meeting the outputs of Tasks A.3.2 & A.3.3.</p>
<p>Task A.3.4 - Improved coordination and cooperation between MOWRAM and MOE in mainstreaming climate change adaptation (CCA) in IWRM, and vice-versa</p>	<p>Mainstream IWRM and Climate Change Adaptation</p> <p>7. The Borrower through the ministerial level committee for coordination of water resources management shall have established procedures to mainstream (a) IWRM in the national water resources plan; (b) climate change adaptation in IWRM plans; and (c) IWRM in climate change adaptation plans and actions.</p>	<p>CDTA team completed an assessment of climate change vulnerability in the Lower Mekong Region and for the whole of Cambodia, and developed a toolkit and procedures for MOWRAM and Ministry of Environment (MoE) staff to use for climate change vulnerability assessment and adaptation for water resources management.</p> <p>Creation of either (i) NCWRM or (ii) a Sub-Working Group for Climate Change and Adaptation (Sub-WG CCA) – under the existing WG6 – comprising members of MOWRAM and MoE – would enable CDTA consultants to provide support for these activities through a work plan, thereby embedding the process of improved coordination and cooperation between these ministries (in mainstreaming CCA in IWRM, and vice-versa). This approach has been accepted in principle by the Program Director, but has not been approved at the highest level in MOWRAM.</p>	<p>Although there has been little if any involvement of MOWRAM and MoE staff in the CCA work so far, ADB and MOWRAM have agreed that the 2nd tranche condition #7 will be satisfied if training is provided to the relevant staff of those ministries, and if such training is ratified by WG6.</p>
<p>Activity A.4: Human Resources Capacity Development to Promote INTEGRATED WATER RESOURCES MANAGEMENT</p>			
<p>Task A.4.1 - Technical skills</p>	<p>Develop Technical Skills</p>	<p>With ADB's concurrence, ITC has already made two</p>	<p>CDTA consultants are preparing an educational needs</p>

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
development – tertiary level training through the Institut de Technologie du Cambodge	<p>(tertiary) at ITC</p> <p>8. The Borrower through MOWRAM shall have commenced the implementation of the plan developed by ITC and MOWRAM for effective delivery of bachelor and post-graduate engineering degree courses in water resources management.</p>	intakes of 30 students in the Water Engineering degree course (2011-12 and 2012-13). ¹³ A contract between MOWRAM and ITC was prepared and signed in February 2013. ITC has applied from reimbursement/advance of costs to date but has had no response from ADB. Apart from the relatively minor obstacle created by ADB's slow payment, the under-graduate course is proceeding correctly.	assessment in the water resources sector, the results of which would support development of specialist tertiary level courses in water resources at ITC. This work, to have been completed by end-2013, will be delayed (or may remain unfinished) because all time allocated to the international and national Educational Specialists has been used.
OUTPUT B: ENHANCED CAPACITY OF MOWRAM TO MANAGE AND DELIVER IRRIGATION SERVICES			
Activity B.1: Strengthen Policy, Planning and Legal Framework for Irrigation Management and Service Delivery			
<p>Task B.1.1</p> <p>Nation-wide plan to develop financially independent FWUCs to operate and maintain irrigation schemes prepared and adopted</p> <p>Task B.1.2</p> <p>Legal status of irrigation works reviewed and clarified by Government and rights assigned to FWUCs by end-2014</p>	<p>Legal status of irrigation works</p> <p>9. The Borrower through MOWRAM shall have (a) adopted the guidelines for division of asset responsibility between the Borrower and water users; and (b) assigned appropriate responsibilities and rights for irrigation infrastructure to respective FWUCs within the Project Area.</p>	<p>Many difficulties have been encountered with MOWRAM's current policy for O&M during the 13 years of its implementation.</p> <p>The most pressing difficulties are (i) MOWRAM's dependence on FWUCs as the primary means for achieving sustainable O&M; (ii) MOWRAM's dependence on donor funds for construction (with the outcome that many lower level structures and canals are not implemented); and (iii) MOWRAM's obligation to provide O&M funds to FWUCs in the 5-year transition period is not being met.</p>	MOWRAM's O&M policy needs to be reviewed and revised to overcome identified deficiencies. However, any such action would need to be approached with great tact given that the Minister has been single-mindedly consistent in his support for the current approach to O&M throughout his tenure. The proposed FWUC sub-decree, if approved in its current form, would provide an additional tool in MOWRAM's efforts to extract irrigation service fees from FWUCs.
<p>CDTA consultants will approach this obliquely by assisting MOWRAM to prepare budgetary requests in accordance with the requirements of the public financial management reform program, aligned with the Government's medium term expenditure framework (MTEF). This process may eventually lead to improved budgeting for irrigation rehabilitation and O&M, including the provision of funds needed by Provincial Departments of Water Resources and Meteorology (PDWRAMs) to carry out their functions properly. This nevertheless represents a long-term process (refer also to Tasks B.2.1, B.2.2, B.2.3, B.3.1 and B.3.3 below).</p>			

¹³ The original number of 100 students for each intake was scaled down to 30 by agreement among ADB, ITC and MOWRAM.

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
Activity B.2: Improve Organizational Structures and Administrative and Technical Capacity of MOWRAM, PDWRAMs and District Offices			
<p>Task B.2.1 – Plan prepared and adopted by MOWRAM to strengthen planning, budget and financial management systems in line with the public financial management reform program</p>		<p>ADB agreed to recruit one international and one national Financial and Accounting Specialist (using CDTA funds) to strengthen public financial management in MOWRAM and its provincial agencies. They will liaise closely with consultants already working with MOWRAM under ADB Grant 0222-CAM for Public Financial Management in Rural Development (PFMRD).</p>	<p>The additional consultants, assisted by CDTA consultants, will continue the work initiated under PFMRD. In particular, CDTA will assist MOWRAM to integrate its accounts into MEF's chart of accounts. CDTA's Irrigation Specialists and Economists are liaising with PFMRD consultants to advance this.</p>
<p>Task B.2.2 – Management information systems for administration and finance at national, provincial, district levels (with consolidation at central level) strengthened</p>		<p>PFMRD aims to strengthen financial management in MOWRAM, Ministry of Agriculture, Forestry and Fisheries (MAFF) and Ministry of Rural Development (MRD). PFMRD consultants have already developed recommendations for structural changes in MOWRAM and, given that CDTA and PFMRD consultants liaise closely and both work through MOWRAM's Working Group on Public Financial Management Reform (WG3), there are high hopes that those structural changes will be implemented. This would also support CDTA Tasks B.2.1, B.2.2, B.2.3, B.3.1 and B.3.3.</p>	
<p>Task B.2.3 – Internal links between MOWRAM's line departments strengthened for more effective water resource management and irrigation service delivery</p>	<p>Strengthen MOWRAM's internal linkages between line departments</p> <p>10. The Borrower through MOWRAM shall have (a) completed the review of MOWRAM's organizational structure, capacity, systems and staff resources; and (b) defined the appropriate demarcation of responsibilities within MOWRAM for water resource management and irrigation service delivery.</p>	<p>CDTA consultants assembled data on and made a review of MOWRAM's staff resources and capacity as part of the training needs assessment (TNA) supporting development of training courses for MOWRAM staff (see below under 2nd tranche condition #12, Task B.4.1). The outcome of this activity partially satisfies 2nd tranche condition #10.</p>	<p>CDTA consultants will make an assessment of the organizational structure and will propose recommendations for change if permitted to do so. Action on any such recommendations would need to have the support of the Minister, MOWRAM.</p>
<p>Task B.2.4 – Linkages strengthened between Provincial Departments of Water Resources and Meteorology (PDWRAMs), district offices and Provincial Departments of Agriculture (PDAs)</p>		<p>CDTA consultants work closely with staff of MOWRAM and the project area PDWRAMs to formulate strategies to complete the development of irrigation systems and ensure their sustainability.</p>	<p>The strategy will be implemented through the work plan of the Technical Working Group for Maintenance of Irrigation Systems (WG7).</p>

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
<p>Task B.2.5 - Gender mainstreaming unit created in MOWRAM with appropriate resources and staffing (recruitment target 20% women)</p>		<p>The work plan of the Gender Technical Working Group (WG2) was approved by ADB and MOWRAM and has recently been stamped by the Minister, MOWRAM. It has been submitted by the Program Director to MEF for review/approval of its budget.</p> <p>The Gender Mainstreaming Action Plan (GMAP) for 2013-2017 has been updated.</p>	<p>Activities under the WG2 work plan include training-of-trainers on gender mainstreaming in the project cycle, conduct of a pilot study on gender role and issues in the water sector in Kampong Thom, Siem Reap and Banteay Meanchey provinces, and finalizing the model for the gender mainstreaming unit in MOWRAM (including preparation of legal documents). These activities touch all aspects of WRMSDP. Their further implementation awaits final approval of the work plan and budget by MEF.</p>
B.3: Strengthen MOWRAM's ability to manage, operate and maintain irrigation systems			
<p>Task B.3.1 - Comprehensive irrigation O&M plan for MOWRAM prepared, adopted and implemented</p> <p>Task B.3.3 - Sustainable funding mechanism for O&M established in MOWRAM</p>	<p>Strengthen MOWRAM's O&M planning processes</p> <p>11. The Borrower through MOWRAM shall have prepared, adopted and implemented a comprehensive irrigation O&M plan.</p>	<p>CDTA consultants, working in close consultation with members of WG7 and other staff of the Irrigation Services Program Unit – MOWRAM's Irrigated Agriculture Department, FWUC Department and Finance Department – prepared a strategy for strengthening irrigation management and developing financially independent FWUCs based on (i) rehabilitating degraded infrastructure, (ii) improving MOWRAM's capacity to support FWUCs, (iii) improving MOWRAM's procedures and organizational structure to support irrigation services, (iv) putting in place reliable systems and procedures for obtaining O&M funds, (v) completing secondary and on-farm infrastructure, and (vi) clarifying the legal status of irrigation works as a first step toward transferring assets to FWUCs.</p>	<p>This strategy underpins the activities included in the WG7 work plan which has been approved by ADB and the Program Director. Subject to its being approved by the Minister, CDTA consultants believe that there is strong support within staff of MOWRAM for the type of adjustments envisaged in MOWRAM's approach to O&M of irrigation schemes.</p> <p>The separate but closely related reforms toward aligning MOWRAM's budgeting to the MTEF would lend weight to that approach.</p>
<p>Task B.3.2 - MOWRAM's asset management system for irrigation systems adopted and operationalized</p>		<p>In 2012 CDTA completed numerous enhancements to the existing Cambodian Irrigation Scheme Information System (CISIS) database.</p> <p>In September 2013 a contract was awarded to a service provider to conduct field surveys within 30 irrigation schemes in Siem Reap province to provide data for CISIS. Experience gained on this pilot survey will enable Department of Planning and International Cooperation to develop a set of best practices for CISIS data collection.</p>	<p>Subject to satisfactory outcomes of the pilot survey, and assuming MOWRAM approval is forthcoming, additional surveys will be conducted in 2014 covering about 1,500 irrigation schemes, the budget for which is included in the work plan for WG7.</p> <p>Although these field surveys did not form part of the original scope of work of the CDTA consultants, their implementation was specifically requested by the Minister, MOWRAM.</p>

CDTA Work Plan Reference ¹⁰	2nd Tranche Condition	Current Situation	Comments
B.4: Develop Human Resources Capacity to Manage, Operate and Maintain Irrigation Systems (Government and FWUCs)			
<p>Task B.4.1 - Human resources development (HRD) plans developed for MOWRAM, PDWRAMs, district offices and FWUCs</p> <p>Task B.4.2 - Technical skills developed through vocational training courses under MOWRAM's Technical Services Centre (TSC)</p> <p>Task B.4.3 - Capacity of FWUCs and PDWRAMs enhanced through vocational and on-the-job training</p>	<p>Develop Technical Skills (vocational training)</p> <p>12. The Borrower through MOWRAM shall have (a) developed and delivered training courses to include on-farm water management and irrigation practices, and maintenance of major and minor irrigation works; and (b) harmonized the training curriculum between FWUC Department and TSC.</p>	<p>Work completed so far includes (i) draft work plan for Working Group on Human Resources Development (WG5), (ii) TNA reports and training plans for MOWRAM, 5 project area PDWRAMs and 33 FWUCs, and (iii) training courses on climate change, gender, CISIS & IWRM.</p> <p>In consultation with TSC staff and JICA consultants, CDTA consultants identified further training needs and are preparing course materials for new subjects to be offered by TSC. Budgets have been prepared for delivery of training (using TSC facilities as well as external service providers).</p>	<p>It is anticipated that the WG5 work plan and human resources development plan will both be approved by no later than end-2013. Training, to be provided through 3-year contracts is anticipated to commence by mid-2014, subject to approval of their costs and implementation arrangements by MOWRAM and ADB.</p> <p>Assuming that the costs and implementation arrangements are considered suitable by all parties, the training is expected to go ahead as planned.</p>

CCA = climate change adaptation, CISIS = Cambodian Irrigation Scheme Information System, DMF = design and monitoring framework, IWRM = integrated water resources management, MAFF = Ministry of Agriculture, Forestry and Fisheries, MEF = Ministry of Economy and Finance, MoE = Ministry of Environment, MOWRAM = Ministry of Water Resources and Meteorology, MTEF = Medium Term Expenditure Framework, MTR = mid-term review, NCWRM = National Council for Water Resources Management,¹⁴ NWRP = National Water Resources Plan, NWSR = National Water Status Report, O&M = operation and maintenance, PDA = Provincial Department of Agriculture, PDWRAM = Provincial Departments of Water Resources and Meteorology, PFMRD = Public Financial Management for Rural Development, RBC = River Basin Committee, Sub-WG CCA = Sub-Working Group for Climate Change and Adaptation, TSA = Tonle Sap Authority, WG2 = Gender Technical Working Group, WG3 = Working Group on Public Financial Management Reform, WG5 = Working Group on Human Resources Development, WG6 = inter-ministerial Working Group on Establishment of an Inter-ministerial Committee for National Coordination of Water Resources Management, WG7 = Technical Working Group for Maintenance of Irrigation Systems, WG10 = TSA General Secretariat Working Group for Formulation of the TSA Strategic Plan.

¹⁴ The National Council for Water Resources Management is MOWRAM's preferred name for the "NCWRM" which is referred to in the DMF and 2nd tranche conditions as the "Inter-Ministerial Committee for Water Resources Management."

2. Decisions taken during the ADB MTR Mission

Acknowledging the inherent difficulty of introducing the program's legislative and policy changes, ADB and the Government agreed during the MTR mission to allow more time for delivery of program loan 2nd tranche triggers. The new target dates have been shifted by as much as 18 months (i.e., to end-2014), but with compliance anticipated in a few cases as early as end-2013.

The revised conditions for 2nd tranche release, key steps and compliance triggers, as agreed by ADB and the Government through the Memorandum of Understanding of the MTR mission (signed by the Program Director and Mission Leader on 31 May 2013) are shown in Table 3.

Table 3: Key Steps and Triggers for Release of Tranche 2 of the Policy Loan

Condition for Tranche 2 Release	Key steps and compliance triggers ¹⁵
<p>1. The Borrower shall have issued either sub-decrees or Prakas, as appropriate, on the procedures for the establishment of FWUCs; river basin management; the establishment of water allocation/licensing; and water quality.</p>	<ul style="list-style-type: none"> • Prepare draft sub-decrees through a consultation process (WG4 and national seminars). • Submit sub-decrees for consideration /approval of Council of Ministers (CoM) and/or Prime Minister (PM) <p><u>Compliance:</u> sub-decrees signed & stamped by PM</p>
<p>2. The Borrower shall have established and operationalized a ministerial level committee for coordination of water resources management to be chaired at the highest level of the Borrower and include relevant ministers as members, and supported by an inter-ministerial secretariat.</p> <p>Note: It is proposed that the "ministerial level committee for coordination of water resources management" be named the "National Council for Water Resources Management (NCWRM)" (footnote 12).</p>	<ul style="list-style-type: none"> • Prepare a draft Royal Decree to establish the NCWRM and the Permanent Secretariat General (PSG) through a consultation process (WG6 & national seminars). • In parallel, prepare a Sub-decree to establish the Secretariat Office of the NCWRM /PSG • Submit Royal Decree for consideration /approval of CoM, and then obtain Royal signature • Submit Sub-decree for the Secretariat Office for approval of CoM /PM. <p><u>Compliance:</u> Royal Decree and Sub-decree (as above) signed and stamped, and first meeting of NCWRM held.</p>
<p>3. The Borrower through a ministerial level committee for coordination of water resources management shall have issued a policy that shall clarify the coordination and cooperation mechanisms between CNMC, TSA, MOWRAM and river basin committees (RBCs).</p>	<ul style="list-style-type: none"> • Through meetings with stakeholders, make a general assessment to determine if there are ongoing coordination and cooperation issues that need to be addressed. <p><u>Compliance:</u> to be decided as per assessment.</p>
<p>4. The Borrower through the ministerial level committee for coordination of water resources management shall have (a) commissioned a review of the national water resources plan (NWRP) (2009-2013); and (b) issued recommendations for the preparation of the national water resources plan (2014-2018).</p>	<ul style="list-style-type: none"> • As a precursor to a full-blown NWRP covering all sectors (to be finalized in 2018 for 2019-2023 planning cycle), prepare a draft Water Sector Report (WSR). • Finalize the WSR through a consultation process (WG6 and a national seminar). <p><u>Compliance:</u> the WSR submitted to the NCWRM.</p>
<p>5. The Borrower through MOWRAM shall have</p>	<ul style="list-style-type: none"> • Approve the River Basin Management Sub-decree (see

¹⁵ As proposed by the MTR Mission, and subject to confirmation of the higher authorities of the Government and ADB.

Condition for Tranche 2 Release	Key steps and compliance triggers ¹⁵
established the Stung Sen river basin committee (RBC).	<p>Condition 1)</p> <p><u>Compliance:</u> a Directive based on the Sub-decree issued by MOWRAM to formally establish the Stung Sen RBC.</p>
6. The Borrower through MOWRAM shall have prepared and approved a national water resources profile.	<p><u>Compliance:</u> A report covering the profile of both surface and groundwater in Cambodia approved by MOWRAM.</p>
7. The Borrower through the ministerial level committee for coordination of water resources management shall have established procedures to mainstream (a) IWRM in the national water resources plan; (b) climate change adaptation in IWRM plans; and (c) IWRM in climate change adaptation plans and actions.	<ul style="list-style-type: none"> • Prepare procedures (tool-kit) • Implement training for relevant staff of ministries (to be nominated by WG6). <p><u>Compliance:</u> Procedures ratified by WG6 and staff trained.</p>
8. The Borrower through MOWRAM shall have commenced the implementation of the plan developed by ITC and MOWRAM for effective delivery of bachelor and post-graduate engineering degree courses in water resources management.	<ul style="list-style-type: none"> • Contract signed between MOWRAM and ITC for implementation of the bachelor degrees • Develop a post-graduate curriculum based on a needs assessment and identify funding sources <p><u>Compliance:</u> Course work for both bachelor and post-graduate courses commenced.</p>
9. The Borrower through MOWRAM shall have (a) adopted the guidelines for division of asset responsibility between the Borrower and water users; and (b) assigned appropriate responsibilities and rights for irrigation infrastructure to respective FWUCs within the Project Area.	<ul style="list-style-type: none"> • Approve FWUC Sub-decree • Prepare guidelines based on the Sub-decree • Prepare a nation-wide plan to develop financially independent FWUCs • Apply the plan in the Project Area <p><u>Compliance:</u> Guidelines adopted by MOWRAM; and formally registered agreements concluded with FWUCs in the subprojects of the Project Area.</p>
10. The Borrower through MOWRAM shall have (a) completed the review of MOWRAM's organizational structure, capacity, systems and staff resources; and (b) defined the appropriate demarcation of responsibilities within MOWRAM for water resource management and irrigation service delivery.	<ul style="list-style-type: none"> • Conduct a training needs assessment (TNA) to assess capacity and staff resources • CDTA to prepare a report on the TNA findings and, based on this, indicate possible adjustments to existing organization structure taking into consideration new roles of MOWRAM introduced under the Program reforms aimed at improving water resource management <p><u>Compliance:</u> The report tabled for consideration of the WG5.</p>
11. The Borrower through MOWRAM shall have prepared, adopted and implemented a comprehensive irrigation O&M plan.	<ul style="list-style-type: none"> • Approve the FWUC Sub-decree • MOWRAM to adopt the O&M plan. • Seek budget to implement the plan. <p><u>Compliance:</u> MOWRAM will have prepared a budget proposal to implement the 2015 O&M plan.</p>
12. The Borrower through MOWRAM shall have (a) developed and delivered training courses to include on-farm water management and irrigation practices, and maintenance of major and minor irrigation works; and (b) harmonized the training curriculum between FWUC Department and TSC.	<ul style="list-style-type: none"> • Complete TNA for MOWRAM (including provincial and district staff), and FWUCs in 5 provinces • Prepare training courses (harmonized between FWUC Department and TSC). <p><u>Compliance:</u> Training modules and curriculum to be approved by MOWRAM. Contracts awarded to implement the training courses.</p>

Based on recognition by all parties that the time needed for policy reform is longer than the initial design assumptions, ADB proposed a two-year extension in the closing date of Loan

2673-CAM. MOWRAM and MEF concurred with this recommendation, and a letter requesting the extension was sent to ADB on 30 June 2013.¹⁶

Incidental to that extension, corresponding changes were proposed in the DMF, namely a change from 2013 to 2015 in the target completion date of the policy reform process. The resultant changes with regard to target dates for the DMF outcome and outputs are highlighted in Table 4.

Table 4: Revised Dates for Expected DMF Outcome and Outputs under WRMSDP

Outcome	Performance Targets
Improved management of water resources in Cambodia and more efficient and sustainable irrigation systems in the proposed project area	By 2013 2015 Policy, legal and institutional framework in place to operationalize the Law on Water Resources
Outputs	
A: Enhanced capacity of government to manage water resources	By 2013 2015 Four sub-decrees implementing the law on water resources issued by COM, and implementing regulations issued by MOWRAM National water resources committee established, supported by an interministerial secretariat River basin committee established in Stung Sen river basin, with replication initiated in at least one other basin Training plan adopted by the Institut de Technologie du Cambodge (ITC) offering undergraduate and postgraduate courses in water resources management, with 100 students entering program annually by 2013 (of which 30% are women)
B: Enhanced capacity of MOWRAM to manage and deliver irrigation services	By 2013 2015 MOWRAM has assigned rights and responsibilities for irrigation infrastructure to FWUCs within the project area MOWRAM has completed a review of its organizational structure, capacity, systems and staff resources, and demarcated responsibilities for water resource management and irrigation services MOWRAM has prepared, adopted and implemented a comprehensive irrigation O&M plan MOWRAM has developed and delivered training courses through ITC on on-farm water management and irrigation practices, and maintenance of irrigation works (target: 45% of beneficiaries to be women)

¹⁶ Extension approved by ADB on 16 July 2013.

3. Impacts of MTR Decisions on Specific CDTA Tasks

The impacts of MTR decisions on specific tasks of the CDTA Work are discussed below with reference to those that depart significantly from the CDTA consultants' original TOR.

a. Task A.1.2: The legal framework for Water Resources finalized and an implementation plan adopted and launched

Full responsibility for revision of the four draft sub-decrees and their submission to CoM for approval now rests with the Minister of MOWRAM. Changes in the draft sub-decrees that were recommended by the CDTA team in 2012 have not been passed through to the Minister for consideration. At a later date, subject to request, these recommended changes will be submitted for consideration of relevant stakeholders, particularly members of WG6.¹⁷

ADB and the Program Director anticipate that approval of these 4 sub-decrees may be achieved by end-March 2014. Unless requested by the Program Director or Minister, CDTA consultants will make no further contributions to the contents of the draft sub-decrees prior to their approval.

Nevertheless, It should be noted that the comprehensiveness and mutually-supportive coherence of those sub-decrees will have a strong bearing on the ease with which certain other 2nd tranche conditions can be achieved. For example, the establishment of a river basin committee as a legal entity – necessary to fulfill 2nd tranche condition #5 – is dependent on the issuance of a river basin management sub-decree. Similarly, the legal status of irrigation works, pertinent to achievement of 2nd tranche condition #9, will be constrained by limitations included in the FWUC sub-decree, as will the adoption and implementation of a comprehensive O&M plan (2nd tranche condition #11).

b. Task A.1.3: National Water Resources Plan developed and adopted

The Government and ADB concluded that it would not be practicable within the timeframe of the CDTA for the CDTA consultants to prepare a full NWRP for inclusion in the next 5-year planning cycle (2014-2019). Instead the CDTA consultants will prepare a National Water Status Report (NWSR) that will describe the status of water resources in Cambodia, covering all relevant ministries and the full range of issues in line with the requirements of Cambodia's National Water Resources Policy (2004).¹⁸

Preparation of the NWSR is an activity that would be achievable within the remaining time of the CDTA consultants' contract. Importantly, this activity can be managed by MOWRAM without having to seek authorization from NCWRM whose formal establishment may not occur until the latter half of 2014. Submission of the NWSR to (and its acceptance by) the NCWRM would then constitute fulfillment of 2nd tranche condition #4.

¹⁷ If the sub-decrees are submitted to and approved by CoM in their existing form, CDTA consultants will work within their current limitations and will assist MOWRAM to apply them to the best possible effect. The sub-decrees will ultimately be reviewed and revised by MOWRAM and other stakeholders in the light of experience gained from their application, and CDTA consultants will contribute to that process as and when appropriate.

¹⁸ The NWSR will encompass detailed information covering (i) the full range of water use sectors (including agriculture, irrigation, aquaculture, urban and rural water supply, sanitation and drainage, industrial water use, hydropower and navigation); (ii) all aspects of water source protection (e.g., pollution control and catchment management); and (iii) effective water resources management (e.g., data and information, legislation and policy, education and public awareness, and capacity development and training).

NWSR will provide the data needed to underpin preparation of the NWRP (2019-2023). The target for completion of the draft NWRP by MOWRAM is 2016 and its finalization would be expected in 2018. CDTA consultants will provide guidance and recommendations to MOWRAM for that activity.

c. Task A.2.1: Improve National Coordination and Collaboration on Water Resources Management

The establishment of a ministerial level committee for coordination of national water resources management (NCWRM – refer to Table 3) would satisfy 2nd tranche condition #2. This is a critically important output given that three other 2nd tranche conditions (numbers 3, 4 and 7) are conditional upon its achievement.

To initiate the establishment of NCWRM, the Minister of MOWRAM requested CDTA consultants to begin preparation of a draft Royal Decree to establish NCWRM, together with a draft Royal Decree to establish the Permanent Secretariat General (PSG) of the NCWRM.¹⁹ These were prepared and submitted by CDTA in May 2013. A proposed meeting of WG6 in June 2013 to review and discuss the drafts was deferred pending formation of a new Government following national elections. The draft documents were provided to WG6 members for their initial review and internal discussion, and a review meeting will be scheduled as soon as possible subject to the Minister's approval.

The finalization of the Royal Decrees to the satisfaction of all relevant stakeholders will require extensive, detailed consultations and negotiations among members of WG6, and the establishment of the NCWRM will not be possible until a sufficient quorum of those stakeholders is fully on board. The implementation of stakeholder consultations will be led by MOWRAM, assisted by CDTA consultants, working through the inter-ministerial WG6. This process will, of necessity, be governed by constraints beyond the consultants' control.²⁰

d. Task A.2.3: Pilot operation of river basin coordination forum or committee established in Stung Sen river basin and water management plan for pilot river basin prepared; river basin coordination and management initiated in at least one other basin

The Minister of MOWRAM confirmed that H.E. Lim Puy (TSA Vice Chair and Advisor to the Minister) would take the lead in establishing the Stung Sen RBC with assistance of French water agencies under the International Office of Water. CDTA support is to be provided, as and when necessary, under instruction of the Program Director. It is anticipated that such support will relate principally to facilitation of stakeholder and community consultations during 2013-2014.

During the ADB mid-term review mission, it was agreed by ADB and the Government that compliance with 2nd tranche condition #5 would be met by issuance of a directive (based on the river basin management sub-decree) by MOWRAM formally establishing the Stung Sen RBC.

¹⁹ A working secretariat office in MOWRAM would also be established under the direction of the PSG to undertake day-to-day activities in support of NCWRM.

²⁰ There is a long overdue covenant of the program loan which had not been possible to fulfill due to the political sensitivity of the NCWRM inter-ministerial negotiations. This covenant states " *Within nine (9) months of the Effective Date, the Borrower shall have conducted a national seminar that shall develop the mandates, modalities and operations of the inter-ministerial committee to be established or reformulated for coordination of national water resources.*" (Schedule 5, para. 7). It is expected that there will be a more receptive climate for compliance with this covenant once the new Government is in place.

It was further agreed that, in line with activities specified in Task A.2.3, CDTA consultants will initiate coordination and management work focused on the Stung Sreng river basin. This will include preparation of a draft Status Report for the Stung Sreng river basin and draft Stung Sreng river basin plan (based on the Status Report).

- e. **Task B.2.1: Plan prepared and adopted by MOWRAM to strengthen planning, budget and financial management systems in line with the public financial management reform program; and**

Task B.2.2 – Management information systems for administration and finance at national, provincial, district levels (with consolidation at central level) strengthened

Discussion of the need to bring into CDTA some additional specialist input, including both international and national specialists in financial management and budgetary procedures, was presented in the 3rd quarterly progress report. Their presence would enable the CDTA to liaise effectively with consultants implementing ADB's ongoing Public Financial Management for Rural Development Subprogram 2 (PFMRD). In this way CDTA would reinforce and deepen capacity building (initiated under PFMRD) within the Working Group on Public Financial Management Reform (WG3). ADB decided during the MTR mission to recruit the international and national specialists separately using CDTA funds. CDTA consultants had previously provided TOR for these additional specialists.

- f. **Task B.3.2: MOWRAM's asset management system for irrigation systems adopted and operationalized**

In 2012 CDTA completed initial steps to operationalize MOWRAM's asset management system, including (among other things) numerous enhancements to the existing Cambodian Irrigation Scheme Information System (CISIS) database.

MOWRAM requested, as a priority activity, CDTA assistance to complete field surveys of those schemes (about 1,500) whose data have not yet been entered into CISIS. Although this had not originally formed part of CDTA scope of work, ADB and the Program Director authorized CDTA to support CISIS field surveys. In addition, ADB has agreed to allocate CDTA funds to finance such surveys, subject to satisfactory arrangements for contracting the services.

In close consultation with MOWRAM's Department of Planning and International Cooperation (DPIC), CDTA prepared contract documents for the award of a pilot contract (covering 30 irrigation schemes in Siem Reap province) to establish best practice procedures for surveys, including training of PDWRAM staff in mapping, data recording and quality control. CDTA will prepare contracts for rolling out similar surveys in other provinces.

4. Corresponding Changes in CDTA Resources

In accordance with decisions taken during the ADB MTR mission, CDTA consultants revised the work program for the remaining period of CDTA implementation (June 2013–December 2014) in discussion with the Program Director.

CDTA also revised the personnel schedule, in consultation with the Program Director, to assure achievement of the additional and revised activities agreed upon during the MTR mission. The revised personnel schedule (as approved by ADB) is provided in **Appendix 2**.

The approved additional consultant inputs²¹ include the following:

- (i) extension of the international Policy and Institutional Specialist by about 2.5 person-months and the national Policy and Institutional Specialist by almost 12 person-months;
- (ii) extension of the international Climate Change Adaptation Specialist by about 1.5 person-months;
- (iii) extension of the international Irrigation Specialist by about 9.5 person-months and the national Irrigation Specialist by about 13.5 person-months;
- (iv) extension of the international IT / Data Management Specialist by 2 person-months and the national IT / Data Management Specialist by about 9 person-months;
- (v) extension of the international Training Specialist by 1 person-month;
- (vi) extension of the national Education Specialist by about 0.4 person-month;
- (vii) extension of the international Economist by about 6 person-months and the national Economist by about 7 person-months;
- (viii) extension of the national Hydro-meteorologist by 2.5 person-months;
- (ix) extension of the national Gender Specialist by about 7.6 person-months;
- (x) addition of a new position for international Water Resources Planner²² (11 person-months);
- (xi) addition of two (2) new positions for national Water Resources Planner (14 person-months) and River Basin Planner (14 person-months).

5. Revised Terms of Reference for CDTA Consultants

To underpin ADB's consideration and approval of a contract variation for the CDTA Consultant,²³ revised TOR were prepared for each CDTA team member whose inputs are to be increased in accordance with the revised work plan agreed by ADB and MOWRAM during the MTR mission. This also includes two additional national consultants: Water Resources Planner and River Basin Planner, each for 14.0 person-months.

The revised TOR, to be read in conjunction with the original TOR of the CDTA Consultant's contract, are provided in **Appendix 3**.

6. Utilization of Consultant Resources

The utilization of CDTA consultant resources to 31 July 2013 reached 73% of international and 75% of national inputs, as shown in Table 5.

²¹ Not included in this list are the additional international and national Financial and Accounting Specialists tasked with strengthening public financial management in MOWRAM and its provincial agencies in fulfillment of Tasks B.2.1 and B.2.2. Although agreed upon in principle, their recruitment by ADB as individual consultants (using CDTA funds) has not yet been finally approved in ADB.

²² This specialist will be recruited separately by ADB as an individual consultant, who will be assigned to work with the CDTA team under the overall leadership of the Program Team Leader/Water Resources Specialist.

²³ Joint venture of Egis International (France), Egis Eau (France) and Key Consultants (Cambodia) Ltd. (KCC).

Table 5: Utilization of Consultant Inputs on CDTA 7610-CAM
(31 July 2013)

Name of Expert	2012												2013							Total Used (month)	Contract		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct (month)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul		Allocated ^a	Remaining	
International																							
Ian B. FOX	0.57	1.00	1.00	0.93	1.00	1.00	1.00	1.00	0.80	1.00	0.97	0.10	0.90	0.80	1.00	1.00	0.90	1.00	0.07	16.03	30.43	14.40	
Des CLEARY	0.53	0.80	-	-	-	0.13	1.00	-	-	-	0.87	-	-	-	-	-	0.57	0.37	-	4.27	8.00	3.73	
Ramon ABRACOSA	0.33	1.00	0.13	-	-	0.67	0.80	0.10	-	1.00	1.00	-	0.37	1.00	0.80	-	-	0.23	-	7.43	8.00	0.57	
Jean-Marc ROUSSEL	-	0.90	-	-	-	0.90	0.47	-	-	0.23	1.00	0.20	-	0.83	1	-	-	-	-	5.20	8.00	2.80	
A. KOSTER / Doug FLANDERS	0.53	0.97	0.53	0.17	-	-	0.37	0.17	-	-	-	-	0.40	1.00	1.00	0.73	0.10	-	-	5.97	7.00	1.03	
Gregory D. REGAN	0.53	0.57	0.83	0.68	0.50	0.41	0.59	0.82	0.82	0.25	-	-	-	-	-	-	-	-	-	6.00	6.00	-	
Vincent DAVID	-	-	0.40	0.87	1.00	0.70	-	0.37	0.53	0.53	0.57	0.63	0.40	0.47	0.60	0.53	0.27	-	-	7.87	8.00	-	
K. D. W. NANDALAL	0.13	0.87	-	-	-	0.60	0.27	-	-	-	-	-	0.17	1.00	1.00	-	-	-	-	4.03	4.00	-	
L. VANDOME / Ruud CORSEL	0.60	0.53	-	-	-	0.47	0.47	-	-	-	-	-	-	-	0.50	1.00	1.00	0.43	-	5.00	5.00	-	
Total	3.23	6.63	2.90	2.65	2.50	4.88	4.96	2.45	2.15	3.02	4.40	0.93	2.23	5.10	5.57	3.83	2.63	1.67	0.07	61.80	84.43	22.53	
National																							
SAM Chhomsangha	0.53	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.87	1.00	-	1.00	0.90	0.50	1.00	1.00	1.00	16.30	33.00	16.70	
SOK Saing Im	-	1.00	1.00	-	1.00	1.00	1.00	0.53	1.00	1.00	1.00	1.00	0.97	1.00	0.33	1.00	1.00	0.90	-	14.73	31.00	16.27	
KHUON Komar	-	0.53	1.00	0.50	-	0.50	1.00	0.93	0.93	1.00	1.00	1.00	-	0.47	0.88	0.90	1.00	0.50	-	12.15	16.00	3.85	
TAING Sophanara	-	0.73	0.73	0.77	-	0.77	0.80	0.77	-	0.80	0.50	0.50	-	0.50	0.80	0.40	0.40	0.63	-	9.10	12.00	2.90	
TES Sopharith	-	0.67	-	-	0.47	1.00	1.00	0.50	0.50	1.00	0.63	0.57	-	-	-	1.00	1.00	-	-	8.33	11.33	3.00	
TAK Virekvath	0.33	1.00	1.00	1.00	1.00	1.00	1.00	0.57	-	-	-	-	0.53	1.00	1.00	1.00	1.00	0.83	0.33	12.60	14.00	1.40	
HOUT Savorn	-	-	-	-	0.83	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.60	0.57	-	13.00	13.00	-
LIM Heng	-	1.00	1.00	1.00	-	1.00	1.00	-	-	-	-	-	-	-	-	-	-	-	-	5.00	5.00	-	
HAP Navy	-	1.00	0.50	1.00	1.00	1.00	0.93	1.00	0.77	1.00	1.00	1.00	1.00	1.00	0.23	0.47	0.47	0.23	-	14.07	15.25	1.18	
CHEAP Samoeurn	-	1.00	1.00	1.00	1.00	1.00	1.00	0.63	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-	0.47	-	15.10	16.00	0.90	
HENG Meng	-	-	-	-	0.83	1.00	1.00	0.93	0.97	1.00	1.00	1.00	1.00	1.00	0.83	0.97	0.90	-	-	12.43	12.00	-0.43	
CHAN Vannak	-	-	-	-	1.00	1.00	1.00	1.00	-	1.00	1.00	1.00	-	1.00	1.00	0.97	-	1.00	1.00	11.97	14.00	2.03	
Total	0.87	7.93	7.23	5.77	8.13	11.27	11.73	8.87	7.17	9.80	9.00	9.07	5.50	8.97	7.98	9.20	6.37	6.87	3.07	144.78	192.58	47.80	

^a In accordance with the reallocation of person-months approved by ADB in Contract Variation No. 6.

III. REFLECTIONS ON PROGRAM DESIGN

1. Program Preparation

The design of WRMSDP was based on extensive, detailed studies carried out from 2007–2010 by ADB staff, supported by consultants engaged under TA 4848-CAM (Water Resources Management Sector Project) and its various extensions (footnote 2). The project, initially conceived in 2005 as a sector project, morphed into a sector development program (WRMSDP) conforming with the structure and implementation arrangements defined in ADB's Operations Manual section D5.

Accordingly, WRMSDP comprises (i) a program component (the Program) to address national water resources management and irrigation policy issues in Cambodia; (ii) a project component (the Project) to assist MOWRAM rehabilitate small- to medium-scale irrigation systems and deliver irrigation services within the Tonle Sap Basin; and (iii) supporting CDTA.

Preparation off WRMSDP drew upon lessons learned from implementation of other recently completed ADB projects, notably Northwest Irrigation Sector Project (NWISP)²⁴ and Stung Chinit Irrigation Project.²⁵ Those projects and ADB's earlier studies and investments under the Tonle Sap Initiative were influential in, among other things, retaining a geographic focus within WRMSDP on the provinces surrounding the Tonle Sap lake as well as providing project financing for rehabilitation of small- to medium-scale irrigation schemes.

ADB's 2009 Sector Assistance Program Evaluation (SAPE)²⁶ included the following recommendation:

Greater use should be made of the sector development program modality. This modality has proven useful in putting in place legal, policy, and institutional measures and also in providing much-needed supplementary funding for the Government budget through the use of targeted counterpart funds. Options would be to undertake a sector development program in (a) the rural infrastructure subsector with a view to enhancing sustainability, and (b) the water resources subsector with a view to strengthening the institutional structure for water resources management by further refining the community driven approach, which has been undertaken in recent projects.

That particular recommendation – which lent strong support to the shift from sector project to SDP modality – was mostly based on the anticipated successful outcome of the Agriculture Sector Development Program (ASDP)²⁷ which did not close until June 2010. Although the

²⁴ ADB. 2003. Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Cambodia for the Northwest Irrigation Sector Project (Loan 2035-CAM). Manila.

²⁵ ADB. 2000. Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Kingdom of Cambodia for Stung Chinit Irrigation and Rural Infrastructure Project (Loan 1753-CAM). Manila.

²⁶ ADB. 2009. Sector Assistance Program Evaluation: Agriculture and Rural Development Sector in Cambodia, Manila.

²⁷ ADB. 2003. Report and Recommendation of the President to the Board of Directors: Proposed Loans and Technical Assistance Grant to the Kingdom of Cambodia for the Agriculture Sector Development Program. Manila

SAPE noted that “delays in the Agriculture Sector Development Program may lead to a rating of *less efficient*,” the final overall rating of ASDP was *successful*.²⁸

Some of the SAPE’s other findings were nevertheless strongly critical of irrigation and rural development projects – not only in relation to their relevance, effectiveness, efficiency and sustainability, but also to weakness in preparatory TA and capability of the executing agency.

Hence, the SAPE noted that “while irrigation projects seemed relevant at the time of identification and approval, a proper analysis may have questioned this assumption.” Further, “ADB’s earlier experience with irrigation did not provide an optimistic prognosis for irrigation development.”

A closer examination of project results shows a degree of variation in the achievement of outputs, clearly delineated by the type of project. In essence all of the expected outputs for ARD policy and sector management programs and projects (mainly in the form of program loans and sector development programs) have been achieved, completely restructuring the policy and institutional framework of the sector and providing it with a market-based orientation. In addition, outputs for the rural infrastructure projects were also basically fully achieved, providing a network of rural roads and greatly enhanced rural water supply to the country. On the other hand, the outputs for irrigation projects have been disappointing. Under the Stung Chinit Irrigation and Rural Infrastructure Project, only 3,000 ha of land were provided with irrigation facilities, against an original target of 7,000 ha, and under the Northwest Irrigation Sector Project (after 5 years of implementation) the total expected irrigation coverage at the end of the project in 2010 is expected to be only 10,000 ha against an original target of 16,000 ha. The situation for the targeted rural development projects is not much different from the irrigation projects. ... This variation in the achievement of outputs among different types of projects also reflects a declining trend in the quality of project design over time. As project designs shifted from the initial program loans and straightforward rural infrastructure projects to complex multicomponent targeted rural development projects and technically complex irrigation projects, there appears to have been a declining ability to achieve projected outputs. This reflects a lack of recognition of the project implementation capacity limitations of the Government and an overambitious and unrealistic focus on targeted poverty alleviation.

In other comments on the implementation capability of the executing agency, the SAPE was even more forthright:

MOWRAM’s track record in implementing both the Stung Chinit Irrigation and Rural Infrastructure Project and the Northwest Irrigation Sector Project can hardly be described as encouraging. Both projects have suffered serious delays in consultant recruitment, procurement, and overall implementation.

Of particular relevance to investments in irrigation is the attention SAPE drew to the inherent limitations constraining irrigation development in Cambodia:

Most paddy production in Cambodia is on a rain-fed basis and only about 25% of the total production area has any form of irrigation at all; only 7% of the

²⁸ ADB. 2011. Completion Report. Cambodia: Agriculture Sector Development Program. Manila

paddy area is provided with dry season irrigation, the balance comprising for supplementary irrigation in the wet season. The impact of providing scarce funds for irrigation works on only 21,000 ha out of a total paddy area of 2.5 million ha may be questioned.

Further, in terms of strategic assessment of ADB's program, the SAPE singled out irrigation investment as being the least relevant:

The main rice growing areas of the country are flat and have very limited water storage potential. Many of the schemes not currently operating and with apparent potential for rehabilitation were built under the Khmer Rouge regime and either never operated or were abandoned after only a few years of operation. However, potential does exist for improved small-scale water management and for the provision of small storage structures such as tanks and small reservoirs to capture water during the recession of the Tonle Sap Great Lake. Thus, investment in water management per se would have been relevant if it had been properly focused.

Figure 1 below shows the distribution of irrigation schemes in Cambodia. These are almost all located in areas that are seasonally flooded, as shown in Figure 2.

Referring to the sustainability of the Stung Chinit Irrigation Project and NWISP, the SAPE proffered the following optimistic prediction in terms of institutional achievements:

The Government's policy of forming farmer water user committees and organizations has already been tested in projects with other development partners and farmers are enthusiastically participating where irrigation infrastructure exists. In the case of irrigation infrastructure constructed under the ARD sector program, farmers are not likely to allow any newly provided infrastructure to deteriorate, even if it is going to be used only for supplementary wet season irrigation. The sustainability of irrigation projects is thus assessed likely.

Unfortunately, that prediction has not been achieved to the extent expected (see discussions below under "Lessons Learned").

On the positive side, SAPE's recommendation to make greater use of the SDP modality was fully incorporated into the design of WRMSDP whose policy and institutional reforms, if successfully implemented, will strengthen MOWRAM's capacity to (i) manage water resources and (ii) manage, operate and maintain irrigation schemes. This would generate flow-on benefits that could overcome or compensate for the intrinsic risks in irrigation investments in project provinces within the Tonle Sap basin.

A defining document that encapsulates essential elements of Cambodia's agriculture and irrigation development policies, including the consensus of MOWRAM, MAFF and their development partners on sector reforms, is the Strategy on Agriculture and Water (2010-2013), hereinafter referred to as SAW (2010-2013). SAW (2010-2013), signed by the Ministers of MOWRAM and MAFF in 2010, provides a sectoral vision and goals for the contribution of improved management of agriculture and water resources to national development. The direct linkages between WRMSDP activities and SAW (2010-2013) are shown schematically in **Appendix 4**.

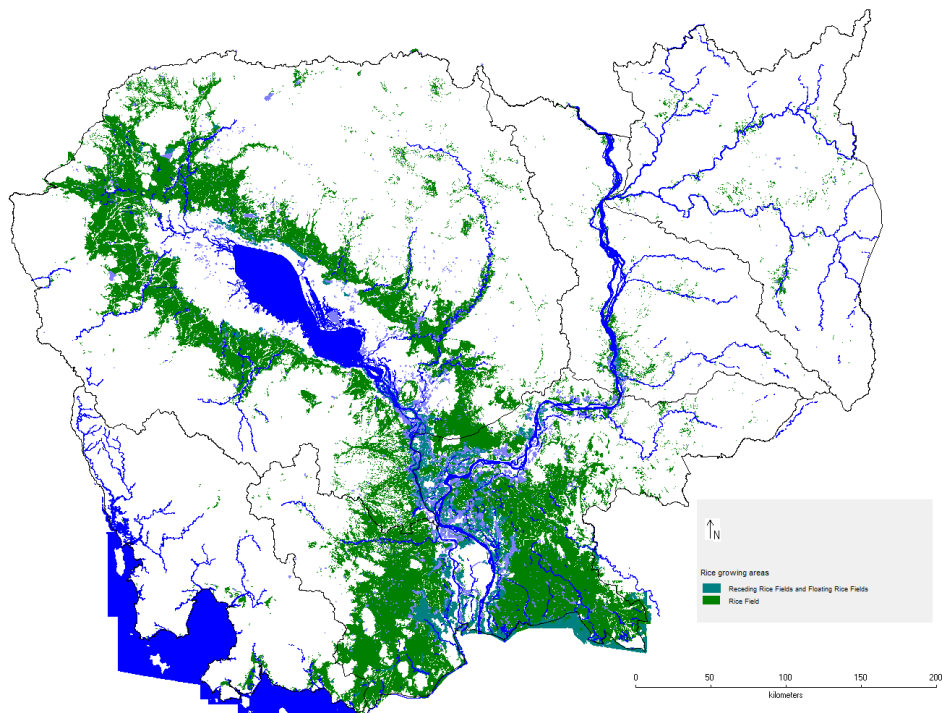


Figure 1: Rice Growing Areas

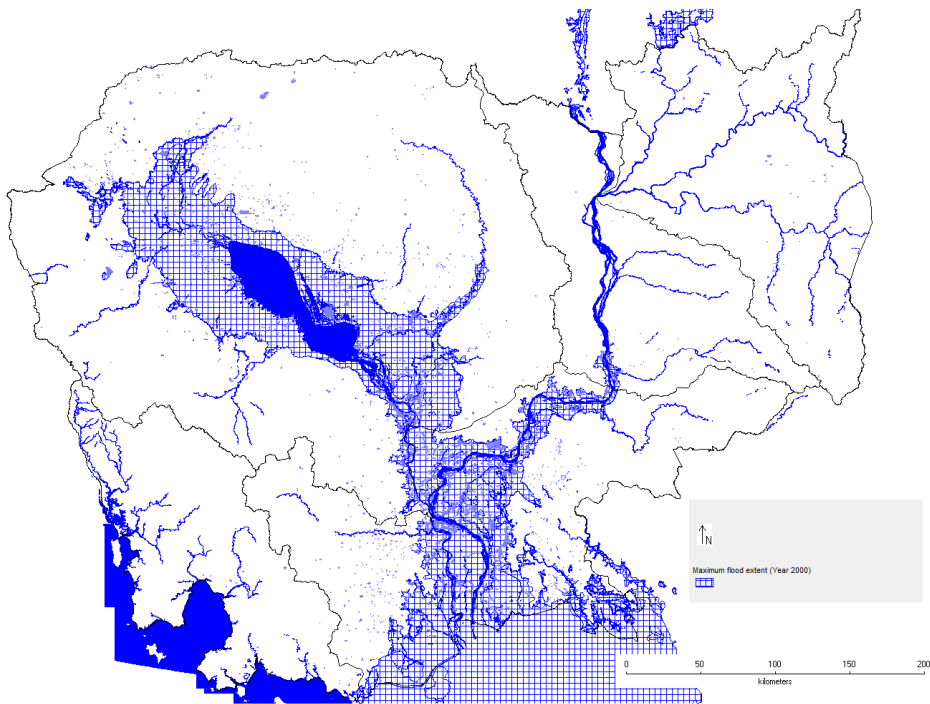


Figure 2: Maximum Flood Extent (year 2000)

2. Lessons Learned and Recommendations (Preparation Phase)

The consultants who participated in project/program preparation under TA 4848-CAM produced reports totaling several thousand pages. Their observations, findings and assessments were based on fieldwork supported by extensive stakeholder consultations (among government officials at national, provincial and lower levels, among farmers and other potential beneficiaries in the field, and among representatives of Cambodia's development partners). The lessons learned (and corresponding recommendations) listed in their reports are copious. Inevitably some selectivity was applied by ADB and the Government in formulating the elements used to shape WRMSDP.

With the advantage of hindsight following their 18 months' engagement on CDTA 7610-CAM, the CDTA consultants have had the opportunity to review the broader list of lessons and recommendations contained in various consultants' reports and other source documents that guided preparation of WRMSDP (e.g., National Strategic Development Plan 2009-2013 [NSDP]²⁹ and SAW) – and to reflect on the extent to which their recommendations were taken on board in WRMSDP.

Reference was also made to ADB's 2011 Agriculture, Rural Development and Natural Resources Sector Assessment, Strategy and Roadmap (Sector Roadmap),³⁰ a document that postdated approval of WRMSDP.

Given that CDTA 7610-CAM met with little success during those first 18 months of implementation, the opportunity also exists to propose, if and where appropriate, corrective measures that the Government and ADB (together with AusAID and NDF) may consider putting into effect during the remaining period of CDTA implementation.

Table 6 provides selected lessons learned and corresponding recommendations extracted from the available source documents. They cover a range of subjects, many of which are pertinent across all three components of WRMSDP (i.e., they relate to the capacity of MOWRAM to fulfill its mandate both to manage water resources across all sectors and to deliver water supply within its approximately 2,400 irrigation schemes).³¹

One of the persistent myths concerning Cambodia's potential for development and expansion of irrigation is the notion that Cambodia has an abundance of untapped water resources and that it is only for want of investment funds that its irrigation potential (claimed to be 1.67 million ha – footnote 30) has not yet been realized. MOWRAM estimates that, in spite of annual rainfall of only 1,000-1,500 millimeters, available surface water is of the order of 75,000 million cubic meters, which represents 100 times more than the current annual water use. **This water, however, is not available in the dry season where and when it would be required.** Almost all agricultural land produces a wet season rice crop, but only about 7% of the paddy area is currently irrigated in the dry season. Few of Cambodia's river basins could sustain storage reservoirs capable of providing year-round water supply for irrigation. Further, not all of Cambodia's farmland is suited to irrigation and many early investments in irrigation have not produced the wished-for transformations – quite a few failed completely.

²⁹ Approved by the National Assembly on 31 May 2010.

³⁰ ADB. 2011. Cambodia: Agriculture, Rural Development and Natural Resources Sector Assessment, Strategy and Roadmap, Manila.

³¹ Although accurate figures are not available, MOWRAM's Strategic Development Plan (2009) cites wet season irrigated capacity of 773,188 ha and dry season capacity of 347,058 ha (a total capacity of 1,120,246 ha).

Table 6: Selected Lessons Learned and Recommendations (Preparation Phase)

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
A ³²	Institutional Capacity of PMO and PDWRAM: Project management capacity of both PMO and PIUs under PDWRAM is constrained by inadequate number of personnel relative to the number of projects they are handling and will handle in the near future. Remuneration based on civil servant system neither encourages self-development of staff nor attract qualified and experienced personnel. In addition, the project management system and procedures at the project and subproject levels are still not efficient and effective.	The Project will need to provide consultants to fill the capacity gaps of both PMO and PIUs and concurrently to develop capacity of both entities.	Given that PDWRAMs should manage irrigation subprojects during all phases of feasibility study, detailed design, routine O&M, emergency repairs, periodic rehabilitation and FWUC support, their staff capacity and operational budgets are well below what they should be. There are many factors at play: <ul style="list-style-type: none"> (i) delayed implementation by MOWRAM of decentralization and deconcentration (D&D) reforms that are intended to transfer responsibilities and resources to subnational levels; (ii) delayed implementation by MOWRAM of public financial management reforms to adopt medium term expenditure framework (MTEF) accounting standards and to create budget entities to finance PDWRAM activities (including for routine O&M, asset repairs and asset replacement); and (iii) MOWRAM's reluctance to provide human and other resources needed by PDWRAMs to fulfill their mandates.
A	Additional Works after Subproject Completion: The completed irrigation facilities in most cases need some additional works to ensure effective water distribution. Examples of these additional works include extension of tertiary canals, farm turnouts and check structures. These additional works are minor but, usually necessitated by some unforeseen factors in the design and inaccurate topographic data. Inadequate performance of the irrigation systems will also reduce incentive for the beneficiaries to	Their costs should be included in the Project expense.	MOWRAM's failure to complete all works necessary to assure full functionality of irrigation schemes has roots in its dependence on development partners to fund construction of new, and rehabilitation of existing, irrigation schemes. MOWRAM's partners do not generally allow their funds to be used for tertiary works. In addition, strict limits are placed on the allowable per-hectare cost of the funded schemes. For example, under NWISP project funding did not cover on-

³² TEAM Consulting Engineering and Management Co., Ltd. and S.D.C. Consulting Co., Ltd. 2008. Final Report. Cambodia: T.A. No. 4848: Water Resources Management (Sector) Project.

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
	pay the irrigation service fee.		<p>farm canals, construction of which was assumed to be the responsibility of the FWUCs. Further, several NWISP schemes were not completed as originally intended due to price escalation during the 6-year implementation period. Hence, some canals do not extend far enough to reach the originally intended command area.</p> <p>Schemes have deteriorated in the short period since project completion due to lack of MOWRAM budget for O&M and repair of flood damaged structures and canals. Within two years of completion of NWISP, few of its FWUCs are capable of sustained operation without outside support.</p>
A	<p>Farmer Water User Community (FWUC): The Consultant undertook a research of three case studies³³ and a review of secondary information on the subject. The findings and lessons learned clearly establish the importance of FWUC in helping sustain the irrigation schemes to be constructed under the Project.</p>	<p>Therefore, the formulated Project will single out the establishment of efficient and effective FWUC as one project component and will provide adequate inputs and supports to ensure that the FWUC will be able to adequately function. The FWUC will be established as early as possible after a subproject has been proved feasible and endorsed for the construction, to enable the local farmers to participate in all stages of the subproject formulation and implementation. After transferring part of the irrigation schemes to FWUCs, it is desirable that MOWRAM should continue providing support and close monitoring of the FWUCs, to ensure adequate time for the development of their capacities.</p>	<p>During project implementation, development partners provide funds to support FWUC creation and strengthening. Beyond that period MOWRAM is meant to subsidize the FWUCs' payment of irrigation service fees (ISF) on a sliding scale, beginning at 80% in the 1st year of scheme operation and reducing to 0% by the 5th year, as set out in MOWRAM's O&M policy (2000) based on Declaration No. 306 Rbk FTD. This obligation has not been honored.</p> <p>A fair and transparent means of sharing O&M responsibility between MOWRAM/PDWRAMs and FWUCs does not yet exist. Transfer of responsibility for O&M of irrigation schemes (including emergency repairs) to FWUCs has not been mirrored by commensurate O&M funding by MOWRAM to ensure full operation of headworks and main canals. FWUC members quickly lose enthusiasm for maintaining secondary canals and lower level works once the higher level works fall into disrepair.</p> <p>The SAW under pillar A, component 3 discusses the legal framework for water licensing and FWUCs (linked in the DMF to task B.1.1), wherein the issuance of water licenses is</p>

³³ They were FWUCs/WUGs at Prey Nup, Kap Sesh and Kamping Pouei projects.

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
			proposed. This implies both rights (water received) and obligations (payment of user fees).
A	Community Organization for Subproject Implementation: Implementation of each subproject should involve existing community organizations as much as possible. In every commune, the commune council is the key organization that is usually very active and responsive to external development initiatives. Members of the commune councils in the core subprojects have shown their keen and active interest in the proposed Project. They have clearly shown their collective leadership in voicing their opinion and, expressed their readiness to participate in the Project through development discussions and meetings.	Therefore, in formulating the selected subprojects, community should be organized and its leaders should be identified as early as possible. The leaders will need to be involved both in subproject formulation and implementation. Their participation is especially crucial in organizing and activating FWUCs and in designing agricultural extension and supports that are appropriate to the people and practically effective.	Commune councils and other local organizations have shown willingness to be involved in irrigation development, and commune councils have been actively involved in the establishment of FWUCs and in assisting FWUCs to set ISF levels. The Northern Rural Development Project (Loan 1862-CAM, 2001) successfully implemented investment projects in a decentralized mode, working with provincial line agencies and commune councils. Advancement of the D&D reforms would enable commune councils to expand their involvement in the development and O&M of irrigation schemes.
B ³⁴	The sharing of responsibilities for maintenance and operation of water management infrastructures between the MOWRAM and the FWUCs is rarely clarified and the MOWRAM maintenance budget for irrigation infrastructure is insufficient.	The Government recognizes the importance of ensuring sustainability of irrigation infrastructure and is committed to (i) establishing and strengthening farmer water user committees (FWUC) and farmer water user groups (FWUGs) to improve cooperation for operation and maintenance (O&M), and (ii) the introduction of an irrigation management transfer process to increase participatory management and to implement a rational sharing of O&M between the Government and beneficiary communities.	The RRP for WRMSDP avoided language related to “rational sharing of O&M between the Government and beneficiary communities” in favor of “putting in place legal mechanisms to enable farmers, through elected FWUCs, to cover the costs of O&M independently, with appropriate incentives.” The WRMSDP RRP has one mention only of “incentives” in the form “matching grants for FWUCs so they can access funds for works and capacity building.” Each of the 12 FWUCs set up under NWISP and the Stung Chinit Irrigation Project is being kept active (under Component C of WRMSDP) through provision of a one-time initial operation budget of USD 3,000 and, during 6 years, an annual credit line of USD 20,000 per FWUC for on-demand technical support.
B	[On the Stung Chinit Irrigation Project] Sharing of responsibilities in the management of public infrastructure	[On the Stung Chinit Irrigation Project] Day to day maintenance of the secondary structures is most	Two important principles of service provision should be respected;

³⁴ Agricultural Development International (ADI). 2010. Program Design Outline and Final TA Completion Report. Cambodia.

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
	<p>is an important lesson from this scheme. It is proposed that projects clearly separate 1) the development of storage infrastructure, implemented by the ministry and 2) the development of secondary networks, implemented under the supervision of locally set ad hoc committees with financial contributions from state, commune and farmers.</p>	<p>suitable to farmers whereas the larger infrastructure is more suited to government annual budgeting.</p> <p>At national level, there is a need to improve institutional and financial framework of PIMD policy implementation, in order to decentralize and improve the support to the FWUCs.</p>	<p>(i) payment obligations exist only where service is provided. The concept of linking “sustainable financing mechanism for maintenance to increased farm incomes” depends on first providing a reliable supply of irrigation water to farmers’ fields – thereby assuring the means needed to generate extra income; and</p> <p>(ii) farmers through their FWUCs cannot be expected to maintain, repair and rehabilitate major hydraulic structures and canals. They have neither the technical skills nor the financial resources to do this.</p>
B	<p>MOWRAM has not developed a very strong role in the operation, maintenance and overall management of irrigation works and schemes in Cambodia. MOWRAM's technical resources are limited and the policy of 'handing over' responsibility to farmers through FWUC institutions may have led to the assumption that the Ministry can proceed with a relatively limited role in irrigation management.</p>	<p>The policy of establishing Farmer Water User Committees (FWUC) and farmer organizations has been intended to encourage farmers to take full responsibility for irrigation schemes, consistent with the government policy promoting the handover of government responsibility to the private sector. This has not occurred in all cases, and it is necessary to ensure that appropriate support is provided at the appropriate time.</p>	<p>The current 2000 O&M policy was to have been reviewed and, if necessary, revised every 5 years. That review is long overdue.</p> <p>Farmers require more support than they currently receive, but support is dependent on funding (particularly of PDWRAMs) which is not available as and when needed.</p> <p>ADB's 2011 ANR sector assessment (footnote 30) notes “The absence of implementing legislation for the Water Law to set and enforce reasonable levels of cost recovery and FWUC responsibilities leads to premature asset deterioration.”</p> <p>The establishment of legal instruments that define obligations is an important step. However, such legislation must balance obligations incumbent upon both parties (supplier and user). The rapid deterioration of irrigation schemes in Cambodia cannot be attributed to “insufficient ownership” of the schemes by FWUCs.</p>
B	<p>The cycle of decline in an irrigation system is often self sustaining. A decline in irrigation system performance leads to a decline in water supplied to the fields, leading to a decline in yields and quality, leading to a reduction in the ability to pay the appropriate ISF which reduces funds available for future maintenance thereby exacerbating the decline in irrigation infrastructure performance and the cycle continues.</p>	<p>There are three basic principles to improving irrigation infrastructure performance in Cambodia.</p> <p>The first principle is ensuring irrigation investment decisions are based on a comprehensive assessment and analysis of not only the physical and agronomic factors but also the human factors that impact the operations and maintenance of an irrigation scheme.</p> <p>The second principle is effectively balancing and</p>	<p>MOWRAM has shown itself to be incapable of maintaining its stock of irrigation infrastructure. There is an urgent need to build capacity in MOWRAM to improve technical design skills and to ensure higher standards of sustainability. There is similarly an urgent need to improve MOWRAM's capability to budget for and implement routine and periodic maintenance.</p> <p>Many irrigation schemes in the Tonle Sap basin have completely ceased operating within 5 years (or less) of their</p>

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
	<p>A serious shortcoming of existing irrigation is that in many places it does not increase crop yields, rice yields in particular, significantly above the yields obtained from rainfed agriculture.</p>	<p>coordinating the process of designing, constructing and maintaining irrigation infrastructure to ensure the end users have “ownership” and are not overly burdened with excessive ongoing operational and maintenance costs post construction or rehabilitation.</p> <p>The third principle is to ensure end users of the schemes have the skills and resources to maximize the productive output as a result of the irrigation investment in order to support the irrigation service fee (ISF) required to operate and maintain the scheme over the long term.</p>	<p>rehabilitation, due essentially to flood damage for which MOWRAM does not have the necessary repair budgets.</p> <p>During the last dry season (November 2012 – May 2013), NWISP was able to supply irrigation water for only 213 ha. Wet season supplementary irrigation was needed in a few schemes but for a period of only 2 weeks.</p> <p>Po Pi Deum scheme, rehabilitated in 2010 under NWISP, was severely flood-damaged in 2011 and can no longer provide dry season irrigation.</p> <p>Further investment in rehabilitation of failed schemes may not be warranted.</p>
B	<p>The Government has announced an intention to expand irrigated area by 20,000 hectares per year for the time being. However, the land and water potential for irrigation expansion in the Tonle Sap Basin may be more limited than assumed, so that improvement in agricultural productivity may need to rely heavily on improving irrigated output in existing areas.</p>	<p>There is a strong emphasis in MOWRAM on investment projects, but the ministry needs to place more emphasis on its irrigation management and support function so that (i) water delivery in under-performing irrigation schemes can be improved, (ii) physical irrigation assets will be maintained and sustained in the long term in effective condition and (iii) farmers will be assisted in irrigation scheme operation and management and assisted to improve irrigation practices and field water management.</p>	<p>MOWRAM’s investments in new irrigation schemes and the rehabilitation of existing irrigation schemes that have ceased operating in the Tonle Sap basin are almost certainly not economically viable in many cases. CDTA consultants are planning to prepare an economic evaluation of different types of schemes under varying levels of O&M and rehabilitation inputs to help determine optimum O&M budgets for those schemes. However, the impetus to continue building new schemes is firmly hard-wired into the MOWRAM psyche. Change will likely not occur unless development partners cease funding such schemes.</p>
B	<p>MOWRAM has some 1,500 staff, of whom 750 are located in the central Ministry and the remainder in provincial departments.</p> <p>The bulk of central staff are located in the Engineering Department and the Irrigated Agriculture Department, but the numbers of staff in active full time work at the Ministry are considered to be relatively few. The majority of professional engineers included in the ministry structure are believed to be working outside the Ministry for private sector employers.</p> <p>Younger qualified staff are engaging in external work to maintain their positions in the ministry.</p>	<p>MOWRAM faces capacity challenges, which include:</p> <ul style="list-style-type: none"> • Lack of availability of professional staff due to the standard salary structure; • Financial procedures which do not comply with ADB’s operating requirements for projects, so that separate ‘stand-alone’ financial management systems are set up for projects. <p>Decision-making in MOWRAM is highly centralized and almost exclusive to the central level.</p>	<p>In addition, the private sector has shown initiative and capability in the provision of reliable pumped water for irrigation. Given the right incentives (e.g., through low-cost loans and subsidies) these entrepreneurs could fill a gap that MOWRAM is incapable of meeting: providing timely, reliable water for irrigation at a reasonable cost (without massive investments in headworks).</p>

Source	Key Lesson	Recommendation	Comment based on CDTA Experience
B	<p>The budgetary and human resource capacity of MOWRAM [are] insufficient to enforce the legal framework for integrated water resources management and would find it difficult to coordinate between the many agencies and stakeholders involved.</p> <p>Decision-making in MOWRAM is highly centralized and almost exclusive to the central level.</p>	<p>The time is suitable to develop a national coordinating forum for water resources.</p> <p>This report concludes that WMRSP will be capable of achieving limited gains, mainly in infrastructure development, and that steps to major change require additional programs.</p>	<p>Within the limitations of WRMSDP,³⁵ there is ever greater urgency and importance attached to the implementation of Tasks B.2.1 (to strengthen planning, budget and financial management systems in line with the public financial management reform program) and B.2.2 (to strengthen management information systems for administration and finance at national, provincial, district levels).</p> <p>Their successful implementation will enable MOWRAM to secure annual budgets for irrigation rehabilitation and O&M, including the provision of funds needed by PDWRAMs to carry out their mandated functions. The use of new budget entities will ringfence the funds which might otherwise be diverted to construction activities.</p>

³⁵ The creation of NCWRM would be a critically important step toward strengthening and enforcing a legal framework for IWRM. However, this is a difficult step in any country and it is likely to be more so in Cambodia.

3. Lessons Learned and Recommendations (Implementation Phase)

a. Operation and Maintenance of Irrigation Schemes

MOWRAM was created in 1999 from the Directorate General of Irrigation, Meteorology and Hydrology of the Ministry of Agriculture, Forestry and Fisheries (MAFF).³⁶ The stated mission – and purported reason for creating MOWRAM as a separate ministry – was to develop a water resources management function in Cambodia.

In spite of the emphasis given to water resources management and policy matters in its founding document (see a description of the functions and mandate of MOWRAM in Appendix 5), MOWRAM's main activities are the design and construction of irrigation schemes and flood control works. However, MOWRAM devotes few human and financial resources toward establishing means for securing the productivity of this infrastructure. Table 7 shows the expenditure profile in MOWRAM's 2013 budget.

Table 7: Expenditure Profile of MOWRAM 2013 Budget

MOWRAM Programs	Planned Expenditure		
	(Riel billion)	(USD million)	Percentage (%)
1 a. Development of irrigation systems	1,028.00	257.00	95.0
1 b. Management of irrigation systems	0.00	0.00	0.0
2. Flood & drought management	10.25	2.56	0.9
3. Preparation of legislation and declarations	0.66	0.17	0.1
4. Water resources and meteorology information	36.78	9.20	3.4
5. Management of administration and HR development	6.15	1.54	0.6

In theory, MOWRAM's Irrigated Agriculture Department is responsible for managing O&M of irrigation, drainage and pump schemes, and the FWUC Department is charged with establishing and strengthening FWUCs.³⁷ In practice financing for O&M has not been forthcoming, neither as recurrent Government funding nor from FWUCs' ISF contributions as a result of introducing participatory irrigation management and development (PIMD).

The lack of effort devoted to PIMD and FWUC development reflects MOWRAM's approach to O&M of irrigation schemes: that is, MOWRAM's policy of transferring responsibility for O&M of completed schemes to FWUCs.³⁸ This policy was stated in documents issued shortly after the creation of MOWRAM. On 20 July 2000 the Minister of MOWRAM issued an official announcement in the form of a "*basic document to create and develop FWUC*" (Declaration No. 306 Rbk FTD) which included the following three parts:

³⁶ MOWRAM's establishment as a ministry was declared under Royal Law 0699/98 dated 23 June 1999 and its Sub-Decree 58 dated 30 June 1999.

³⁷ More than 300 FWUCs have been established by MOWRAM.

³⁸ While responsibility for O&M of storage reservoirs, major pump stations and irrigation headworks (including main canals and other large or technically important elements) rests with MOWRAM, the division of responsibility between MOWRAM and FWUCs has not been explicitly stated in any policy documents or regulations.

- Circular No. 1 on *Implementation Policy for Sustainable Irrigation Systems*, signed into effect by the Prime Minister on 11 January 1999;
- *Policy for Sustainability of Operation and Maintenance Irrigation System*, an internal MOWRAM document dated 2000; and
- *Steps for Establishment of Farmer Water User Community*.

The *Policy for Sustainability of Operation and Maintenance Irrigation System (Policy)* provides a more detailed description of the principles outlined in Circular No. 1, and is based on the following basic principles (quoted from the *Policy*):

- Legal status of FWUC;
- Involvement of FWUC in system development;
- Obligation of farmers in paying the operation and maintenance cost, and emergency cost of operation and maintenance;
- Permanent maintained and improved of the existing irrigation systems;
- Arranged the water delivery in equality and effect;
- Received support and assistance from the Ministry of Water Resources and Meteorology on technical backstopping, managing, monitoring, evaluating, etc.

The *Policy* states that “the irrigation systems will be transferred to the FWUCs for managing, repairing, maintaining, and operating.” However, such transference does not include any legal title or ownership of the facilities.

The *Policy* describes transference of responsibility for O&M costs (including emergency repairs) of completed schemes to FWUCs in 5 steps:

- 1st year, Government assumes 80% of cost, FWUCs assume 20%;
- 2nd year, Government assumes 60% of cost, FWUCs assume 40%;
- 3rd year, Government assumes 40% of cost, FWUCs assume 60%;
- 4th year, Government assumes 20% of cost, FWUCs assume 80%;
- 5th year, FWUCs assume 100%.

The *Policy* states “The Ministry of Economy and Finance has to cooperate in making funding available for the development of irrigated agriculture sector which also includes the establishment and operationalizing the FWUC until they can operate on a self-help manner.” It is uncertain that MEF was a partner to this formulation.

The *Policy* concentrates on the role that FWUCs are expected to play in scheme O&M, giving detailed descriptions of FWUCs’ obligations, down to the annual auditing of FWUCs’ accounts. It is less informative about the corresponding role and responsibilities of MOWRAM. Nevertheless, under the heading “Transfer the management responsibility and water allocation to the FWUC” the *Policy* makes some allowance for MOWRAM’s participation:

“Irrigation systems not fully transferred shall be jointly managed by the FWUC and the government.”

The transference of completed irrigation schemes to FWUCs is described as follows:

“After the scheme has been transferred the Department of Irrigated Agriculture of the Ministry of Water Resources and Meteorology shall conclude necessary agreement with the FWUC for proper utilisation of irrigation facilities and related infrastructure.”

“In addition to providing technical and managerial support in the formation of FWUC, the Ministry of Water Resources and Meteorology through its Department of Irrigated Agriculture shall responsible for getting them registered with the government in order to make them legal mechanism.”

“The Ministry of Water Resources and Meteorology will develop training and curriculum materials for knowledge transfer and human resource development.”

“Necessary human resource development activities are studies such as environmental impact assessment, feasibility studies, impact evaluation, constraint analysis, etc shall be organized by the Department of Irrigated Agriculture.”

The *Policy* makes provision for its review and amendment as necessary:

“This policy shall be reviewed and amended, if necessary, every 5 year. A task force under the auspices of the Ministry of Water Resources and Meteorology shall be formed to review and recommend the changes, required on the basis of the lessons learned.”

In summary, the *Policy* places the burden for scheme management and O&M almost completely on FWUCs based on the assumption that FWUCs established during scheme construction would be capable of raising fees from the participating farmers. The *Policy* provides no funds for Government involvement in O&M.³⁹

(i) Lessons Learned from Implementation of MOWRAM's O&M Policy

Many difficulties have been encountered with MOWRAM's *Policy* during the 13 years of its implementation:

- There is no provision in the *Policy* to compensate farmers for loss of land in those cases where secondary or tertiary canals and their control structures are located within farmers' land holdings, it being assumed that such loss of land would be negotiated among the farmers who benefit from the irrigation water supplies. This frequently leads to unwillingness on the part of farmers to participate in the schemes.
- The *Policy* is clear in its intention to transfer responsibility for O&M to FWUCs, but provides no definition of the ownership status of the different parts of the irrigation schemes for which the FWUCs are obliged to accept responsibility. The legal status of the transferred canals and structures needs to be defined.⁴⁰

³⁹ Development partners provide the bulk of the support needed for establishing FWUCs.

⁴⁰ It is generally recognized that transference of ownership of irrigation works is a necessary precondition to creating a sense of responsibility for the repair and maintenance of those assets. This element is neglected in the *Policy* as it presently stands.

- MOWRAM depends mostly on donor funding for its construction activities. Hence, it has few resources for completing lower level structures and canals that may have been assigned as MOWRAM's contribution under the financing agreement. Hence, many schemes have never been fully completed before being put into operation.⁴¹ In addition, the assumption was made in most cases that farmers would install the tertiary canals and minor structures needed to distribute irrigation water to the ricefields.⁴² This outstanding work places a heavy burden on farmers and has not been completed in many cases, leaving many intended beneficiaries without access to irrigation water.
- MOWRAM's obligation to provide O&M funding in the 5-year transition period has not always been met. In some cases budget allocated by MEF for recurrent O&M has been diverted by MOWRAM to capital works (including new construction and rehabilitation of deteriorated schemes). Further, MOWRAM's budget applications to MEF do not always include such funds against the correct budget entities (e.g., PDWRAMs), and therefore fail to provide funds for critically important aspects of scheme rehabilitation and O&M.
- Cambodia does not have national design and construction standards for irrigation schemes and related hydraulic infrastructure (e.g., water retaining structures, spillways, flow regulators, flood control embankments, slope stabilization, erosion protection, etc.). Hence, many different standards have been applied depending on the consultants employed (generally under funding provided by donor agencies) by MOWRAM. Much of the existing infrastructure was not well designed or constructed, nor was it appropriate in relation to local soil conditions and flood flow characteristics.
- Many schemes do not function correctly due to poor design, poor construction, failure to complete all necessary parts of the scheme, omission of flood protection and drainage works, inadequate water supplies at source, inappropriate soils and unsuitable topography. There is accordingly considerable reluctance on the part of farmers to pay for O&M when the schemes do not operate as intended or when in other ways MOWRAM is not meeting its side of the agreement.

(ii) Summary Conclusions

- MOWRAM currently makes no budgetary provision for routine and periodic O&M of recently rehabilitated and newly constructed irrigation systems and pump stations, it being assumed that FWUCs will contribute money and labor to meet O&M needs.⁴³
- The current *Policy* does not assure suitable quality of construction nor does it provide funds for irrigation scheme O&M.
- Many farmers do not receive adequate or timely irrigation water supply.
- Irrigation infrastructure deteriorates rapidly without routine and periodic O&M (usually degrading to a condition of unserviceability within a period of 5 years), rendering the investment ineffective.

⁴¹ This represents a failure on the part of MOWRAM to meet its obligations according to Circular No. 1 which states that "MOWRAM has to design and construct completely of irrigation system to ensure on distribution water to the farmer's crop." The *Policy* does not mention this aspect of MOWRAM's obligations.

⁴² Farmers were expected to give their labor voluntarily and without payment.

⁴³ None of the FWUCs established under the Stung Chinit Irrigation Project and NWISP has reached a stage of financial viability.

- FWUCS have been established in only 30% of irrigation schemes, and only one-third of these are currently collecting irrigation service fees (ISF).⁴⁴
- MOWRAM's budget strategic plan (BSP) 2014-2016 does not reflect Government policy nor does it include a budget line for routine and periodic maintenance of irrigation schemes.

(iii) Recommendation for Improvement of O&M in Irrigation Schemes

- MOWRAM's Department of Irrigated Agriculture, FWUC Department and Finance Department (i.e., the ISPU) to be authorized to make a detailed review and assessment of the implementation experience of the *Policy*, and to prepare a list of amendments to overcome identified deficiencies in its conceptual approach and implementation arrangements.
- CDTA consultants to assist ISPU to carry out that review.
- The draft FWUC sub-decree to be withdrawn from the approval process and that it be revised in accordance with the findings and recommendations of the review of the *Policy*.

b. Implementation of SDP Reforms using Working Groups

Implementation of CDTA/WRMSDP is premised on an approach pioneered under ASDP (footnote 27). That is, ASDP executing agency (MAFF) created working groups (WGs) made up of staff from relevant MAFF departments and, in certain cases, other ministries or agencies (i.e., to ensure adequate inter-ministerial representation).

The ASDP WGs assumed an important role in (i) planning and organizing workshops, seminars and training courses; (ii) formulating WG strategies, implementation plans and associated budgets for the achievement of the program tranche conditions; (iii) supervising collection and processing of primary and secondary data; (iv) preparing and disseminating reports and issues papers; (v) redrafting laws, sub-decrees and prakas; and (vi) monitoring and evaluating the impact of changes introduced.⁴⁵ Through this process, the Government was able to comply with the conditions for release of the ASDP second tranche.

Activities of the ASDP WG were financed by counterpart funds provided by MEF.⁴⁶ Their work plans and budgets, developed with assistance from TA consultants, were submitted to MEF for approval once their budgets had been endorsed by ADB. Disbursement and management of funds followed standard procedures for administration of government funds.

The use of WGs to manage program loan activities is claimed to have increased Government ownership of and participation in the process. The utility of this approach is measured by the Government's successful achievement of ASDP Program Loan conditions.

CDTA experience reveals that the WG approach suffers from a critical flaw in the case of WRMSDP: that flaw is the necessity for the work plan and budget of each WG to be stamped and approved by the Minister of MOWRAM (referred to as the "central point"). That step, a

⁴⁴ Fewer still generate sufficient ISF revenue to cover O&M costs.

⁴⁵ WG members were supported in the conduct of these activities by international consultants engaged under ADB's technical assistance.

⁴⁶ Sourced from loan funds.

prerequisite to submission of the work plan to MEF for allocation of budget, has suffered from long delays that put the overall success of WRMSDP into question.

Only two work plans (those for the gender action plan under WG2 and preparation of the TSA strategic plan under WG10) have so far been approved at central point.⁴⁷ Two other work plans (WG7 for maintenance of irrigation systems and WG8 for planning of creation of technical skills) met all of the initial approval steps⁴⁸ by April 2013, but have since languished at central point. Work plans for other WGs – WG6 (inter-ministerial Working Group on Establishment of an Inter-ministerial Committee for Water Resources Management) and WG11 for climate change adaptation – have been prepared, but their further advancement depends on meetings to be held with WG6.

In theory at least the PSC could authorize the Program Director to approve work plans (on behalf of central point) before those plans are submitted to MEF. There remains one major obstacle to any such change: the Minister of MOWRAM is the Chairperson of PSC.

c. MOWRAM's Performance as Executing Agency

The delays and uncertainties that have adversely affected CDTA/WRMSDP implementation progress are attributable in large part to MOWRAM – more particularly, to the Minister of MOWRAM. It is not possible in a document such as this report to discuss that matter in all of its complexity and ramifications. The Minister's indifference has been noticeable from the start of CDTA implementation. It has been directly referenced in CDTA progress reports since as early as July 2012. A final plea for assistance was made in the 4th quarterly progress report (November 2012 to January 2013):

As proposed in the 3rd quarterly progress report, the Consultant believes that the future success of WRMSDP depends on reaffirmation by MOWRAM of its commitment to the program targets (i.e., the 12 second tranche conditions). Without clearly stated support for these targets and the reforms that underpin them, WRMSDP will continue to drift.

⁴⁷ They were submitted to MEF by the Program Director in August 2013.

⁴⁸ Prior to submission of work plans and budgets to central point, the approvals of (i) Chairperson of WG, (ii) ADB and (iii) Program Director are needed.

IV. CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

The revised conditions for 2nd tranche release that were agreed during ADB's MTR mission (reproduced in this report as Table 3: Key Steps and Triggers for Release of Tranche 2 of the policy Loan) and the 2-year extension of loan closing date (to 30 June 2015) together provide a more realistic timeframe for achievement of WRMSDP policy reforms.

Corresponding additions made in the CDTA team (including extensions of certain specialists' inputs and the addition of new specialists) – approved under Variation #7 of the Egis contract – provide the resources needed to achieve the revised conditions, subject to political support to proceed with and implement water sector reform activities.

CDTA/WRMSDP implementation modality using WGs, an approach pioneered under the successful ASDP, is subject to long delays unless there is not strong support for policy reforms at Ministerial level.

Revised CDTA work plan and TOR have been prepared in consultation with ADB and the Program Director. Activities in the revised work plan include several tasks that are not subject to inter-ministerial approval, but which will generate nationally important and valuable outputs. These include

- (i) preparation of NWSR (replacing NWRP as the key trigger for 2nd tranche condition #4),
- (ii) preparation of a draft Status Report for the Stung Sreng river basin and draft Stung Sreng river basin plan (supporting 2nd tranche condition #5),
- (iii) reinforcement of the public financial management reforms initiated in MOWRAM under ADB Grant 0222-CAM by assisting MOWRAM to adopt MTEF accounting standards and to create budget entities to finance PDWRAM activities (including for routine O&M, asset repairs and asset replacement), and
- (iv) implement a pilot contract (covering 30 irrigation schemes in Siem Reap province) to establish best practice procedures for CISIS surveys, and roll out similar surveys (for about 1,500 irrigation schemes) in other provinces where the CISIS database is incomplete.

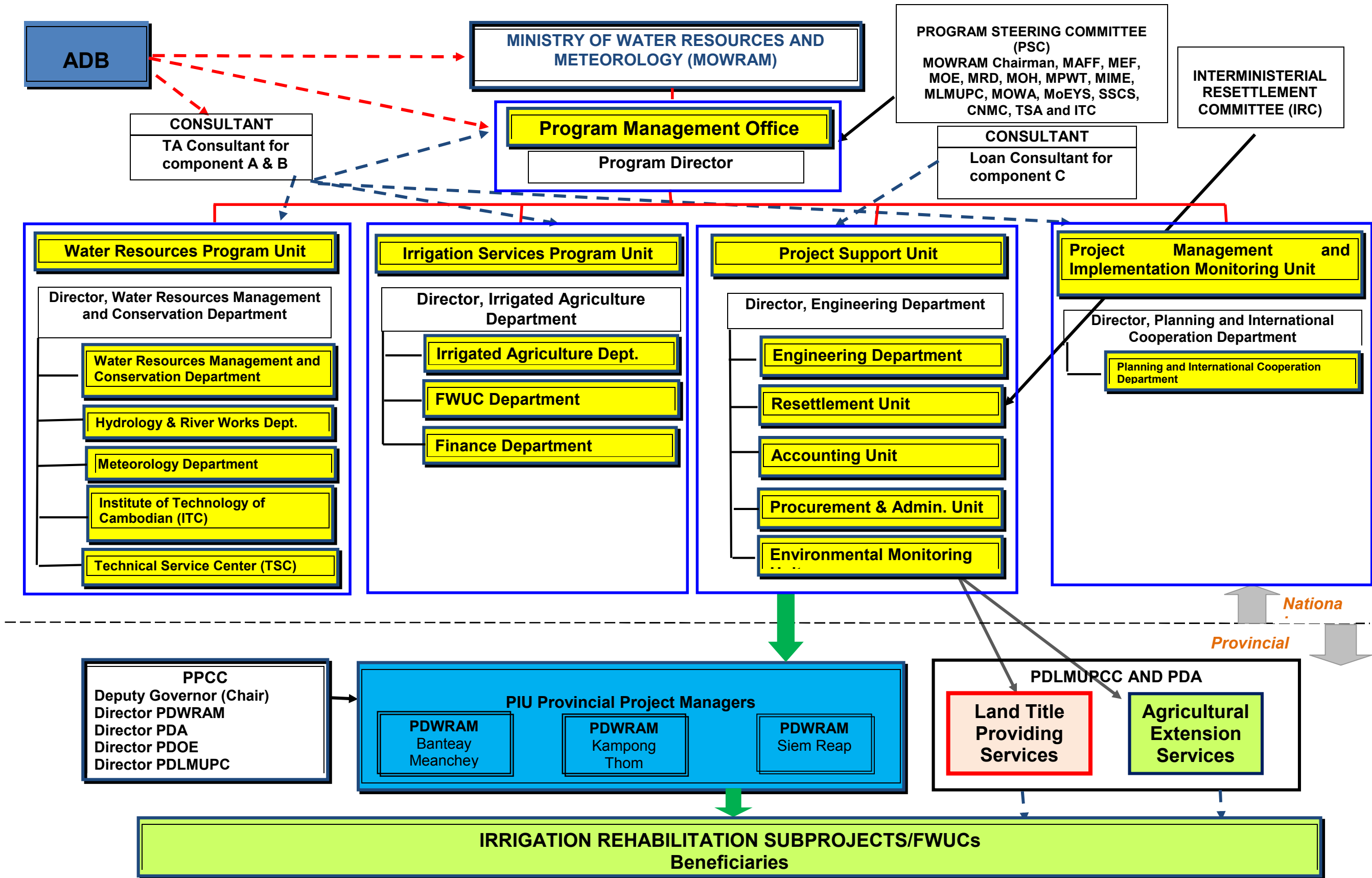
The O&M and rehabilitation of irrigation schemes have not been assured by MOWRAM, and FWUCs do not have the financial and technical capacity to take responsibility for headworks and main canals. PDWRAMs have insufficient staff and budgetary resources to fulfill their mandates. A fair and transparent means of sharing O&M responsibility between MOWRAM/PDWRAMs and FWUCs does not yet exist. Transfer of responsibility for O&M of irrigation schemes (including emergency repairs) to FWUCs has not been mirrored by commensurate O&M funding by MOWRAM to ensure full operation of headworks and main canals.

2. Recommendations

To assure smooth and progressively more effective implementation of the CDTA, it is recommended that the following actions be put into effect as soon as possible:

- Recruit and mobilize the international Water Resources Planner (under selection by ADB using CDTA funds)
- Approve the assignment of the national Water Resources Planner and River Basin Planner (additional specialists under the Egis contract)
- Recruit international and national Financial and Accounting Specialists (using CDTA funds) to help strengthen public financial management in MOWRAM and its provincial agencies (Tasks B.2.1 and B.2.2);
- Conduct a meeting of WG6 to help finalize the draft Royal Decree for the creation of NCWRM and draft Sub-Decree for the establishment of a permanent Secretariat Office of NCWRM
- ADB to transfer funds to ITC as reimbursement of costs already committed for scholarships of students accepted into the new under-graduate course since 2012.
- PSC to authorize the Program Director, MOWRAM to approve work plans before those plans are submitted to MEF (this may require assistance of both ADB and MEF).
- MOWRAM's ISPU to be authorized to make a detailed review and assessment of the implementation experience of MOWRAM's 2000 O&M policy, and to prepare a list of amendments to overcome identified deficiencies in its conceptual approach and implementation arrangements. CDTA consultants to assist ISPU to carry out that review.
- Concurrently, the draft FWUC sub-decree should be withdrawn from the approval process so that it can be revised in accordance with the findings and recommendations of the review of the O&M policy.

PROGRAM MANAGEMENT STRUCTURE



Appendix 1: Program Management Structure

FWUC = farmer water user community, MAFF = Ministry of Agriculture, Forestry and Fisheries, MEF = Ministry of Economy and Finance, MLMUPC = Ministry of Land Management, Urban Planning and Construction, MOE = Ministry of Environment, PDA = Provincial Department of Agriculture, PDLMUPCC = Provincial Department of Land Management, Urban Planning, Construction and Cadastral, PDOE = Provincial Department of Environment, PDWRAM = Provincial Department of Water Resources and Meteorology, PPCC = Provincial Program Coordination Committee.

Appendix 2: Revised Personnel Schedule of CDTA Consultants

NO.	NAME	POSITION	2012												2013												2014												2015			Person-Months		Increase/ Decrease
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	Variation #6	Variation #7	
INTERNATIONAL																																												
1	Ian FOX	Program Team Leader/Water Resources Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				30.43	29.50	-0.93			
2	Des CLEARY	Policy and Institutional Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				8.0	10.52	2.52			
3	Ramon ABRACOSA	Climate Change Adaptation Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				8.0	9.45	1.45			
4	Jean-Marc ROUSSEL	Hydro-Meteorologist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				8.0	5.20	-2.80			
5	Doug FLANDERS	Irrigation Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				7.0	16.47	9.47			
6	Gregory REGAN	IT / Data Management Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				6.0	8.00	2.00			
7	Vincent DAVID	Training Specialist in Water Resources	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				8.0	9.00	1.00			
8	K.D.W. NANDALAL	Education Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				4.0	4.00	0.00			
9	Ruud CORSEL	Economist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				5.0	11.07	6.07			
SUB-TOTAL																																							84.4	103.21	18.8			
NATIONAL																																												
10	SAM Chhomsangha	Deputy Program Team Leader	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				33.0	33.00	0.0			
11	SOK Saing Im	Water Resources Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				31.0	25.33	-5.67			
12	KHUN Komar	Policy and Institutional Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				16.0	27.65	11.65			
13	TAING Sophanara	Climate Change Adaptation Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				12.0	12.00	0.00			
14	TES Sopharith	Hydro-meteorologist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				11.33	13.83	2.50			
15	TAK Virekvath	Irrigation Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				14.0	27.68	13.68			
16	HOUT Savorn	IT / GIS & Data Management Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				13.0	21.93	8.93			
17	LIM Heng	Legal Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				5.0	5.00	0.00			
18	HAP Navy	Gender Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				15.25	22.87	7.62			
19	CHEAP Samoeurn	Training Specialist in Water Resources	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				16.0	16.00	0.00			
20	HENG Meng	Education Specialist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				12.0	12.43	0.43			
21	CHAN Vannak	Economist	[Yellow bars from month 1 to 12, 2012; Blue bars from month 8 to 12, 2013; Blue bars from month 1 to 12, 2014]																																				14.0	20.97	6.97			
22	<river basin planner>	River Basin Planner (1)	[Red bars from month 8 to 12, 2013; Red bars from month 1 to 12, 2014]																																				0.0	14.00	14.00			
23	<river basin planner>	River Basin Planner (2)	[Red bars from month 8 to 12, 2013; Red bars from month 1 to 12, 2014]																																				0.0	14.00	14.00			
SUB-TOTAL																																							192.58	266.69	74.11			

Legend: ■ Full-time input ■ Inputs used at end-July 2013 (not necessarily at the times shown)
■■■ Part-time input ■ Proposed new position in team

Appendix 3: Revised Terms of Reference of CDTA Consultants

1. Background

The ADB mid-term review mission for Loan 2673-CAM and CDTA 7610-CAM visited Cambodia during 22 April to 3 May 2013 to review overall implementation progress against the design and monitoring framework (DMF) targets, program loan covenants and second tranche release policy conditions.¹ In consultation with the Government, the ADB mission assessed the likelihood of achieving the envisaged program outputs within the original timeframe and with the consultant resources provided under CDTA 7610-CAM.

ADB and the Government concluded that the time needed for policy reform is longer than the initial design assumptions and, in view of the Government's reaffirmed commitment to achieving the original program, formulated corrective measures to reach that target. These measures include not only an extension of time for delivery of outputs,² but also additional consultant resources to help MOWRAM achieve program targets (Table A.3.1).

Table A.3.1: Consultants Extended/Added under CDTA

NO.	NAME	POSITION	PROPOSED EXTENSION (month)
INTERNATIONAL			
1.	Des CLEARY	Policy and Institutional Specialist	2.52
2.	R. ABRACOSA	Climate Change Adaptation Specialist	1.45
3.	Doug FLANDERS	Irrigation Specialist	9.47
4.	Gregory REGAN	IT / Data Management Specialist	2.0
5.	Vincent DAVID	Training Specialist in Water Resources	1.0
6.	Ruud CORSEL	Economist	6.07
NATIONAL			
7.	KHUON Komar	Policy and Institutional Specialist	11.65
8.	TES Sopharith	Hydro-meteorologist	2.5
9.	TAK Virekvath	Irrigation Specialist	13.68
10.	HOUT Savorn ^a	IT/GIS and Data Management Specialist	8.93
11.	HAP Navy	Gender Specialist	7.62
12.	CHAN Vannak	Economist	6.97
13.	<name>	Water Resources Planner (new position)	14.0
14.	<name>	River Basin Planner (new position)	14.0

Note: The inputs of some specialists in the consultant's team were decreased (i.e., totaling 3.73 person-months of international and 5.24 of national person-months).

The ADB mid-term review mission analyzed the 12 second tranche release conditions, reinterpreted them in language that is more readily accessible to MOWRAM staff, and developed in each case a set of key steps for their achievement.

¹ Attachment 3 to Schedule 3 of the program loan agreement (Loan 2673-CAM).

² The Government and ADB agreed to a two-year extension of the program loan closing date (from 30 June 2013 until 30 June 2015) to complete policy reforms.

The rationale for extension of various individual CDTA consultants³ (for whom the TOR are presented below) is based on:

- (i) new activities in the CDTA work plan resulting from reinterpretation of the 12 second tranche conditions and the key steps for compliance;
- (ii) addition of several new activities at the request of MOWRAM or in response to changed circumstances (e.g., transference of responsibility for establishing the Stung Sen River Basin Committee to H.E. Lim Puy; preparation of a Status Report and River Basin Plan for Stung Sreng river basin; addition of field surveys to improve the data on irrigation schemes in the Cambodian Irrigation Scheme Information System [CISIS]; preparation of a strategy to overcome observed deficiencies in the management and operation of irrigation schemes; etc.); and
- (iii) corresponding changes in scope and timing of the activities and outputs needed to satisfy related policy targets or increase the impact of CDTA outputs.

2. Revised Terms of Reference of CDTA Consultants

These TOR relate to those members of the CDTA team whose inputs have been extended and to the additional specialists added to the CDTA team as described above and shown in Table A.3.1. The TOR are to be read in conjunction with the original TOR of the Consultant's contract.

a. International Consultants

Policy and Institutional Specialist (Des CLEARY – 2.52 months extension), working primarily through WG6 and in close consultation with MOWRAM's Water Resources Program Unit (WRPU),⁴ will undertake the following activities and tasks under the guidance of the program team leader:

- (i) in accordance with the instructions of Minister, MOWRAM, prepare draft Royal Decrees to establish the NCWRM and PSG, including (as necessary) a working secretariat office in MOWRAM to undertake day-to-day activities in support of NCWRM;
- (ii) assist WG6 to organize and conduct a national seminar on mandates, modalities and operations of NCWRM and PSG;
- (iii) provide assistance to NCWRM/PSG to prepare a strategic plan and a capacity development plan for its members;
- (iv) finalize the model for the PSG Office and the legal requirements to have it established, and prepare any Sub-Decrees, decisions, circulars or instructions that may be needed;

³ Consultants whose inputs have been extended and new consultants who have been added following agreements reached during the mid-term review mission.

⁴ WRPU was established within MOWRAM's Water Resources Management and Conservation Department (WRMCD) to support WRMSDP Output A (promotion of IWRM initiatives on a country-wide scale).

- (v) assess any need for improved coordination and cooperation among Cambodia National Mekong Committee (CNMC), Tonle Sap Authority (TSA), MOWRAM and river basin committees (RBCs);
- (vi) guide and manage the development and adoption of a National Water Status Report (NWSR) through the following activities for which the international Water Resources Planner is directly responsible:⁵
 - disseminate national water laws and related policies and decrees to provinces and other stakeholders at national and lower levels;
 - through consultation with provinces and stakeholders, identify and report on the main water resources issues;
 - compile and analyze the sub-sector plans and strategies of the various ministries;
 - compile data and information on sector status obtained through special studies in consultation with relevant ministries;
 - undertake extensive consultation on the draft NWSR with provinces and other major stakeholders, and finalize the NWSR.
- (vii) prepare a work plan for and initiate preparation of the National Water Resources Plan (2016) based on the above activities;
- (viii) provide intellectual leadership for the activities of the national Water Resources Planner and national River Basin Planner;⁶
- (ix) guide and assist TSA General Secretariat Working Group for the Formulation of the TSA Strategic Plan (WG10) to develop a strategic plan;
- (x) assist MOWRAM (through H.E. Lim Puy) put in place institutional arrangements for the Stung Sen river basin (essentially through facilitation of stakeholder and community consultations);
- (xi) guide and manage the preparation of a draft Status Report for the Stung Sreng river basin and draft Stung Sreng river basin plan (based on the Status Report), for which the international Water Resources Planner is primarily responsible.

Climate Change Adaptation Specialist (Ramon ABRACOSA – 1.45 months extension), working primarily through WG6, will undertake the following activities and tasks under the guidance of the Program Team Leader:

- (i) conduct training of selected technical staff of MOWRAM, MoE and other ministries on the application of the CDTA-developed Climate Change Database and GIS Toolkit for Cambodia, such training being directed at developing familiarity with the functions enabling production of climate change maps for visualization of any particular area's exposure to climate change;

⁵ The international Water Resources Planner (not yet mobilized) will be an individual consultant recruited directly by ADB.

⁶ The national Water Resources Planner and River Basin Planner are new additions to the CDTA team under Egis direct management.

- (ii) assist MOWRAM to obtain ratification of the procedures from NCWRM, thereby confirming that the outputs satisfy policy targets related to 2nd tranche condition #7;
- (iii) assist WG6 to form a Technical Working Team on Climate Change and Adaptation (TWT-CCA) – as a working team attached to WG6 – to be the custodian of the CCA work plan and to ensure its implementation.

Irrigation Specialist (Doug FLANDERS – 9.47 months extension), working through WG7, and in close consultation with MOWRAM's Irrigation Services Program Unit (ISPU)⁷ and the international and national Economists, will undertake the following activities and tasks under the guidance of the Program Team Leader:

- (i) develop a strong case for securing funds (under MOWRAM's capital works budget line) to complete unfinished works on existing schemes, ensure farmers' access to irrigation water, rehabilitate schemes, and establish and strengthen FWUCs;
- (ii) develop and prepare recommendations for financially independent FWUCs based on the findings of a special study (to be contracted to a local consultant);
- (iii) develop and prepare guidelines for division of asset responsibility and assignment of rights for irrigation infrastructure between borrower (MOWRAM) and water users (based on the FWUC sub-decree);
- (iv) assist WG7 to adopt and implement a nation-wide plan for financially independent FWUCs, based on the above;
- (v) based on problem tree analysis conducted among WG7 members, complete the draft "*Strategy for Completion and Ensuring the Sustainability of Irrigation Systems*" and develop an O&M manual (utilizing a special study contract with a local consultant);
- (vi) prepare a comprehensive O&M plan based on outputs and findings of the above activities, and conduct multi-stakeholder meetings to test the plan;
- (vii) assist MOWRAM to finalize the O&M plan, have it approved and initiate its implementation;
- (viii) oversee CDTA's assistance to WG7 to further develop the technical capability of the CISIS data base and progressively consolidate its performance and coverage to include accurate information on all irrigation schemes in Cambodia in two stages:
 - survey and enter new information on the 1,500 schemes that are not yet in CISIS commencing with a pilot of 30 schemes (with funding provided by ADB);
 - review existing information on the 1,197 schemes recorded in CISIS (in coordination with other development partners);
- (ix) coordinate with IT / Data Management Specialist to further develop the CISIS data base and enhance its user friendliness and functionality to ensure its usefulness as

⁷ ISPU was established within MOWRAM's Department of Irrigated Agriculture to support WRMSDP Output B (promotion of sustainable irrigation management and improved service delivery).

a primary tool for underpinning and modernizing the management and maintenance of irrigation schemes in Cambodia;

- (x) in coordination with international and national **Financial and Accounting Specialists** (to be engaged separately by ADB),⁸ assist WG7, Working Group on Public Financial Management Reform (WG3) and ISPU to gain approval of the draft MEF “Guidance Circular on Budget Expenditure Procedures for Irrigation Maintenance Work”, develop a Strategic Budget Plan (including 3-year budget) for O&M of irrigation schemes, and develop the 2015 O&M budget plan;
- (xi) review, further develop and finalize a schedule of O&M cost norms and Manual of Procedures for Maintenance Fund, based on the findings of a special study (to be contracted to a local consultant);
- (xii) assist WG7 to conduct multi-stakeholder workshops and finalize cost norms and Manual of Procedures.

IT / Data Management Specialist (Greg REGAN – 2.0 months extension), working through WG7, will undertake the following activities and tasks under the guidance of the Program Team Leader:

- (i) develop and install functionality and user interface enhancements to CISIS including alignment of the 5 irrigation system sub-component questionnaires with the existing data input forms and screens in CISIS for necessary consistency and clarity;
- (ii) review and check the consistency of the results from the pilot survey of 30 irrigation schemes in Siem Reap province, ensure that the data entry procedures are correctly followed, analyze lessons learned and incorporate these into the survey procedures of the remaining schemes to be surveyed;
- (iii) assist MOWRAM’s Department of Planning and International Cooperation (DPIC) to demonstrate the functionality of the enhanced version of the CISIS asset management system to senior management representatives of MOWRAM and MEF;
- (iv) assist DPIC to obtain approval to adopt CISIS as the primary tool for underpinning management of irrigation systems, including the budget functions;
- (v) continue documentation of the programming code of the main CISIS module and oversee development of a CISIS user manual;
- (vi) help operationalize the CISIS inventory maintenance module in the project area and assist DPIC staff to train PDWRAM staff in its use;
- (vii) prepare a report on the results achieved in carrying out the above activities.

⁸ ADB plans to recruit individual consultants to assist the CDTA team implement tasks under DMF activities B.2.1 and B.2.2. The individual consultants (expected to be mobilized in 4th quarter 2013) will liaise with another team implementing ADB Grant 0222-CAM (supporting Component 1 of ADB’s Public Financial Management for Rural Development Subprogram [PFMRD]) to augment and deepen the capacity building achievements initiated in MOWRAM under Component 1 of PFMRD.

Training Specialist in Water Resources (Vincent DAVID – 1.0 month extension), working through WG5, will undertake the following activities and tasks under the guidance of the Program Team Leader:

- (i) assess the capacity of TSC to implement the CDTA-developed training plan and identify the courses that can be provided most efficiently using TSC trainers;
- (ii) prepare specifications and tender documents for award of contracts;⁹
- (iv) assist WG5 to award and initiate training contracts in accordance with the requirements of 2nd tranche condition #12.

Economist (Ruud CORSEL – 6.07 months extension), working through WG6 and WG7, will undertake the following activities and tasks under the guidance of the Program Team Leader and in close consultation with the Policy and Institutional Specialists and Irrigation Specialists:

- (i) review the national framework for investment in irrigation and other water resources infrastructure (based on available reports such as the Water Resources Policy, MOWRAM's Strategic Development plan [2009- 2013] and MOWRAM's Financial Strategic Plan [2013 – 2015]);
- (ii) identify and provide economic analyses of emerging development issues to support preparation of the NWSR (indicators, snapshot reports, economic worksheet data base), strategic plan for TSA, and draft Status Report and river basin plan for the Stung Sreng river basin (profile reports, issues);
- (iii) prepare guidelines for updating and modernizing national long-term economic planning in the water sector based on integrated water resources management (IWRM) basin planning approaches;
- (iv) assist the Policy and Institutional Specialists review the outputs of special studies conducted for the NWSR;
- (v) review financial utility and sustainability of capital investment in irrigation schemes;
- (vi) prepare a report on the case for provision of ongoing funding for FWUCs and measures to ensure the sustainability of the benefit stream from investments in irrigation works; and
- (vii) provide guidelines for increasing the profitability of irrigation schemes to underpin the recommendations of the strategy for completion and ensuring sustainability of irrigation systems.

b. National Consultants

Policy and Institutional Specialist (KHUON Komar – 11.65 months extension) will work directly as a counterpart to the international Policy & Institutional Specialist, and provide continuity during his absence in undertaking the following activities and tasks under the overall guidance of the Program Team Leader:

⁹ The decision to award contracts to TSC and other service providers will depend not only on the capacity of TSC, but also on the availability of Government and CDTA funds.

- (i) assist to liaise with the key members of WG6 and MOWRAM's Water Resources Program Unit (WRPU), and to organize and conduct a national seminars as required to discuss policy issues, particularly for the formation of the NCWRM;
- (ii) assist with preparation of the draft Royal Decrees to establish the NCWRM and its related secretariat, with particular emphasis on researching and assessing support or possible opposition among the key officials and stakeholders in government circles that will be influenced by the mandates, modalities, and operations of NCWRM, and thus giving close attention to finessing the wording in Khmer language that will be acceptable to stakeholders;
- (iii) assist with the preparation of a strategic plan and a capacity development plan for members of the NCWRM and the PSG;
- (iv) assist to finalize the model for the PSG Office with attention to researching specific legal requirements to have it established, and assist with preparation of any related sub-decrees, decisions, circulars or instructions that may be needed, again ensuring that Khmer language versions are acceptable and unambiguous;
- (v) with regards to second tranche condition #3, assist to assess the need for improved coordination and cooperation among CNMC, TSA, MOWRAM and RBCs;
- (vi) in conjunction with the international and national Water Resources and River Basin Planners, provide support as necessary in the preparation and dissemination of the draft NWSR with particular attention to providing the relevant policy and institutional background information, and assist with stakeholder liaison as needed to achieve its adoption;
- (vii) contribute to the preparation of a work plan to initiate preparation of the National Water Resources Plan (2016);
- (viii) assist the TSA General Secretariat Working Group to formulate the TSA Strategic Plan (WG10);
- (ix) assist MOWRAM to establish appropriate institutional arrangements for the Stung Sen and Stung Sreng river basins, including facilitation of stakeholder and community consultations in both basins;
- (x) assist other team members as directed with the preparation of a draft Status Report and a river basin plan for the Stung Sreng, with emphasis on ensuring they are consistent with prevailing policy and institutional frameworks, and if necessary, identify any shortcomings in existing frameworks that might need to be addressed.

Hydro-Meteorologist (TES Sopharith – 2.50 months extension), working through WG6 and WG7, will undertake the following activities and tasks under the guidance of the Program Team Leader and in close consultation with the Policy and Institutional Specialists and Irrigation Specialists:

- (i) review the groundwater report (under preparation as a special study for compilation of information on groundwater resources in Cambodia), extract statistics on groundwater availability, utilization and status, and prepare an

addendum on groundwater resources and environmental conditions to the “Cambodia Hydrometeorological Data Compilation Report”;¹⁰

- (ii) provide hydrological expertise and support for the preparation of NWSR, strategic plan for TSA, and draft Status Report and river basin plan for the Stung Sreng river basin; and
- (iii) assist in the training of selected technical staff of MOWRAM, MoE and other ministries on the application of the CDTA-developed Climate Change Database and GIS Toolkit for Cambodia.

Irrigation Specialist (TAK Virekvath – 13.68 months extension) will work directly as a counterpart to the international Irrigation Specialist and provide continuity during his absence. Tasks will be carried out in tandem with the international and national Economists, and focus on assisting WG7, in close consultation with MOWRAM’s Irrigation Services Program Unit (ISPU). Specific activities and tasks will include the following:

- (i) assist in developing the case for securing funds (under MOWRAM’s capital works budget line) to complete unfinished works on existing schemes, ensure farmers’ access to irrigation water, rehabilitate schemes, and establish and strengthen FWUCs;
- (ii) assist in preparing recommendations for financially independent FWUCs based on the findings of a special study (to be contracted to a local consultant);
- (iii) with regards to T2 condition #9, facilitate the consultation process with the various stakeholders, and accordingly assist with preparation of guidelines for division of asset responsibility and assignment of rights for irrigation infrastructure between borrower (MOWRAM) and water users (based on the FWUC sub-decree);
- (iv) assist WG7 to adopt and implement a nation-wide plan for financially independent FWUCs, based on the above;
- (v) facilitate a problem tree analysis among WG7 members, and based on this assist to complete the draft “*Strategy for Completion and Ensuring the Sustainability of Irrigation Systems*” and develop an O&M manual (utilizing a special study contract with a local consultant);
- (vi) with regards to T2 condition #11, assist with preparation of a comprehensive O&M plan based on outputs and findings of the above activities, and facilitate and participate in the multi-stakeholder meetings to test the plan;
- (vii) assist MOWRAM to finalize the O&M plan, have it approved, and initiate its implementation;
- (viii) assist as needed from the irrigation perspective to further develop the technical capability and accuracy of the CISIS data base, and progressively consolidate its performance and coverage to include accurate information on all irrigation schemes in Cambodia which will involve entry of 1,500 schemes not yet in CISIS, as well as reviewing the existing information recorded for 1,197 schemes;

¹⁰ The final report, including addendum, will complete the 2nd tranche condition #6.

- (ix) coordinate with IT / Data Management Specialists to further develop the CISIS data base and enhance its user friendliness and functionality to ensure its usefulness as a primary tool for underpinning and modernizing the management and maintenance of irrigation schemes in Cambodia;
- (x) in coordination with international and national Financial & Accounting Specialists, assist WG7, WG3 and ISPU to gain approval of the draft MEF "Guidance Circular on Budget Expenditure Procedures for Irrigation Maintenance Work", develop a Strategic Budget Plan (including 3 year budget) for O&M of irrigation schemes, and develop the 2015 O&M budget plan;
- (xi) assist with the review and further development of O&M cost norms and a Manual of Procedures for Maintenance Fund, based on the findings of a special study (to be contracted to a local consultant);
- (xii) assist WG7 to facilitate multi-stakeholder workshops and finalize the cost norms and Manual of Procedures.

IT / GIS & Data Management Specialist (HOUT Savorn – 8.93 months extension) will work directly as a counterpart to the corresponding international IT / Data Management Specialist and provide continuity during his absence. It will involve working through WG7 to undertake the following specific activities and tasks:

- (i) develop and install functionality and user interface enhancements to CISIS including alignment of the 5 irrigation system sub-component questionnaires with the existing data input forms and screens in CISIS for necessary consistency and clarity;
- (ii) assist with checking the consistency of the results from the pilot survey of 30 irrigation schemes in Siem Reap province, ensure that the data entry procedures are correctly followed, analyze lessons learned and incorporate these into the survey procedures of the remaining schemes to be surveyed;
- (iii) assist MOWRAM's DPIC to demonstrate the functionality of the enhanced version of the CISIS asset management system to senior management representatives of MOWRAM and MEF;
- (iv) assist DPIC to obtain approval to adopt CISIS as the primary tool for underpinning management of irrigation systems, including the budget functions;
- (v) develop a pictorial user manual for the main CISIS module;
- (vi) provide ongoing troubleshooting and on-the-job training to DPIC and PDWRAM staff in the operation of CISIS, and implement refinements as /when deemed necessary and appropriate.

Gender Specialist (HAP Navy – 7.62 months extension), working through WG2, will provide gender-based support to all ongoing CDTA activities in line with the original TOR.

Economist (CHAN Vannak – 6.97 months extension) will work directly as a counterpart to the international Economist and provide continuity during his absence. This involves working through WG6 and WG7 in conjunction with the Policy and Institutional Specialists and Irrigation Specialists. Specific activities and tasks are as follows:

- (i) assist with the review of the national framework for investment in irrigation and other water resources infrastructure (based on available reports such as the Water

Resources Policy, MOWRAM's Strategic Development plan [2009- 2013] and MOWRAM's Financial Strategic Plan [2013 – 2015]);

- (ii) assist to identify and provide economic analyses of emerging development issues to support preparation of the NWSR (indicators, snapshot reports, economic worksheet data base), strategic plan for TSA, and draft Status Report and river basin plan for the Stung Sreng river basin (profile reports, issues);
- (iii) assist with the preparation of guidelines for updating and modernizing national long-term economic planning in the water sector based on integrated water resources management (IWRM) basin planning approaches;
- (iv) assist the Policy and Institutional Specialists review the outputs of special studies conducted for the NWSR;
- (v) assist with the review financial utility and sustainability of capital investment in irrigation schemes;
- (vi) contribute as directed to the preparation of a report for provision of ongoing funding for FWUCs and measures to ensure the sustainability of the benefit stream from investments in irrigation works; and
- (vii) assist with the preparation of guidelines for increasing the profitability of irrigation schemes to underpin the recommendations of the strategy for completion and ensuring sustainability of irrigation systems.

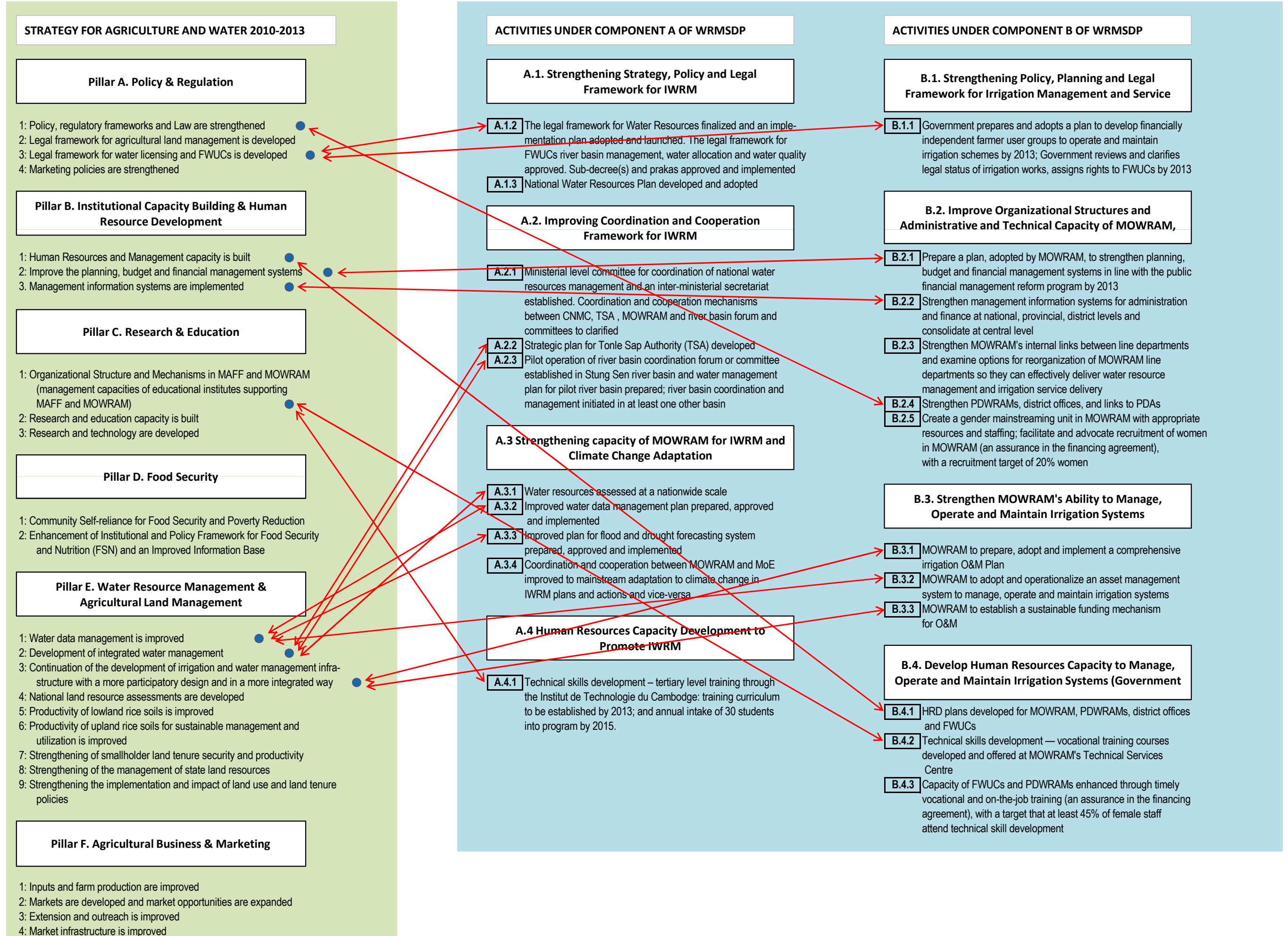
Water Resources Planner ([candidate under review by ADB] – 14.0 person-months new position) will undertake the following activities and tasks under the guidance of the Program Team Leader and in close consultation with the Policy and Institutional Specialists and international **Water Resources Planner** (under recruitment by ADB):

- (i) compile and analyze the various Governance policies and commitments that affect water resources management;
- (ii) compile and analyze the various sub-sector plans and strategies of the various sub-sectors;
- (iii) assist with the analysis of the CDTA sector-based special studies to compile data and information on the sector status at national level, its management and its water related issues;
- (iv) assist the international Water Resources Planner to prepare a water resources 'snapshot' based on indicators covering surface water and groundwater resources, water-related aspects of economic development, social conditions and environmental factors and water governance;
- (v) assist the international Water Resources Planner to prepare the draft NWSR;
- (vi) assist with consultation on the draft NWSR with provinces and other major stakeholders as required;
- (vii) assist with the analysis of comments received on the draft and with revising and finalizing the NWSR;
- (viii) assist the international Water Resources Planner with the formulation of a work plan for preparation of the National Water Resources Policy by 2016.

River Basin Planner ([candidate under review by ADB] – 14.0 person-months new position) will assist with the preparation of a detailed Status Report for the Stung Sreng and a draft river basin plan under the guidance of the Program Team Leader and in close consultation with the Policy and Institutional Specialists and international **Water Resources Planner** (under recruitment by ADB):

- (i) assist with the determination of water resource parameters for the Basin such as determining the sub-basins and aquifers to be used, analyzing existing water resources data (surface and groundwater resources, quantity and quality, water works, geomorphology etc.), and making assessments of how water resources may vary under climate change scenarios;
 - (ii) assist the international Water Resources Planner to review and compile data and information on each sector status within the Basin, its management and its water related issues;
 - (iii) assist the international Water Resources Planner undertake a detailed water sector "snapshot" across the Basin using agreed indicators, and incorporating future projections;
 - (iv) assist the international Water Resources Planner with the preparation of a draft Status Report for the Stung Sreng river basin;
 - (v) assist with consultation on the Status Report as required;
 - (vi) assist with the analysis of comments received, determining how to deal with them and preparing an analysis/response report;
 - (vii) assist with the finalization of the Status Report for the Stung Sreng river basin;
 - (viii) assist with the ranking of issues from the Status Report and selecting the highest priority actions for urgent attention, setting specific objectives for the basin plan, and identifying and analyzing options in terms of costs, impacts and benefits using an economic analysis, social impact appraisal and environmental appraisal;
 - (ix) assist the international Water Resources Planner with assessing the balance between the options and prepare a report on the results and conclusions;
 - (x) assist the international Water Resources Planner to prepare a draft river basin plan for consultation, based on the Status Report and the priority issues and options analysis;
 - (xi) assist with stakeholder consultation and seeking review/comments on the draft Plan, analyzing the comments and determining how to deal with them, and preparing an analysis/response report of all comments;
 - (xii) assist with the preparation of the final river basin plan for Stung Sreng river basin for submission and approval.
-

Appendix 4: WRMSDP Direct Linkages with Strategy for Agriculture and Water (2010-2013)



Appendix 5: Function and Mandate of MOWRAM

The role of MOWRAM, as described in its founding document, is to manage the water resources of the Cambodia through the following:

- define the policies and strategic development of water resources in order to serve the exploitation, development, and sustainable conservation at national and international level consistent with the policy program of the Royal Government of Cambodia;
- study and research the potential of water including surface, underground and atmospheric in order to establish the basic of science technique;
- prepare short, medium and long term plans for the exploitation, development, and conservation of water resources and meteorology to serve the national economy and living standard of the Cambodians including city and rural;
- manage and supervise all of the direct and indirect exploitations on water resources in a rational manner and minimize the occurrence of disasters;
- draft the law, major principles and regulations related to the management of water resources, and monitoring of the implementation process;
- collect and compile documents and use meteorological and hydrological data to serve other sectors at national and international level for the benefit of national society;
- support and provide advice on technical requirements to private sector organizations, communities and all people who are involved with the improvement and exploitation of water resources;
- expand and provide new technologies through measures for training, improvement and extension;
- strengthen and expand the national and international collaboration in sector of water resources and meteorology;
- participate to implement the concerned works with Mekong basin consistent with the obligations of the Ministry.