Kingdom of Cambodia

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Ministry of Agriculture, Forestry and Fisheries

Ministry of Water Resources and Meteorology

Technical Working Group
On Agriculture and Water

FINAL

PROGRAM DESIGN DOCUMENT

FOR

STRATEGY FOR AGRICULTURE AND WATER 2010-2013

PREPARED BY TASK MANAGEMENT SUPPORT GROUP WITH FINANCIAL SUPPORT FROM THE AGENCE FRANÇAISE DE DÉVELOPPEMENT (AFD) AND TWGAW

April 2010

PREFACE

The Royal Government of Cambodia (RGC) is fully aware that despite impressive economic growth and considerable improvement in the living standards during recent years, significant segments of Cambodians, especially those living in rural areas, continue to suffer from poverty and food insecurity. As stated in the National Strategic Development Plan (NSDP) 2006-2010, the RGC has made it a priority to make significant reductions in poverty and food insecurity in the country and improve the institutional and management capacity of the government to support farmers and the agricultural sector.

In response to this national priority, the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Water Resources and Meteorology (MOWRAM) are pleased to present the Strategy for Agriculture and Water (SAW) Program for the period 2010-2013. It is a product of an inclusive and participatory process involving a wide range of key concerned national stakeholders and external development partners, local and international non-governmental organizations, including those working for other donor-funded projects or Programs related to the Agriculture and Water Sector.

This Program is a joint response of our two ministries to an urgent need for rapidly improving food security status and reducing the poverty rates in Cambodia. It is intended as a national framework to guide the planning and programming of interventions for this purpose by concerned national and international agencies in cooperation in Cambodia.

The Program is identified to be instrumental for contributing to achieving the overall development goal of the NSDP, with its particular focus on improving the institutional and management capacity of MAFF and MOWRAM. At the same time, the Program will also benefit farmers and the agricultural sector by providing an effective means of improving the success rates of agricultural and water sector programs, promoting greater diversity in agricultural production, and improving the competitiveness of the agricultural sector.

MAFF and MOWRAM gratefully acknowledge the technical and financial support for the development of this Harmonized Program from the Development Partners of the TWGAW. Appreciation also goes to all concerned national and international stakeholders for their constructive engagement and inputs that helped shape this Program. MAFF and MOWRAM have a high hope that this new Program will make a significant contribution to the development of the agricultural and water sectors.

MAFF and MOWRAM look forward to receiving support and cooperation of all relevant ministries/agencies and external development partners for a successful implementation of this Program toward further improvement in the food security status and reduction in poverty in Cambodia.

Phnom Penh, Date: 22 April 2010

Minister
Ministry of Agriculture,
Forestry and Fisheries

Minister
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ABBREVIATIONS

ACIAR	Australian Center for International Agricultural Research
ADB	Asian Development Bank
AEA	Agro-Ecosystems Analysis
AFD	Agence Française de Développement
AFTA	ASEAN Free Trade Agreement
AIC	Agricultural Inputs Company
AMO	Agricultural Marketing Office
AQIP	Agricultural Quality Improvement Program
ARS	Agroenterprise Resource Service
ASDP	Agriculture Sector Development Program
ASEAN	Association of South East Asian Nations
ASP	Agriculture Sector Program
AusAID	Australian Government's Oversea Aid Program
BAMS	Bureau of Agricultural Materials and Standards
CAASP	Cambodia Agriculture and Agri-business Support Program
CARD	Council for Agricultural & Rural Development
CARDI	Cambodian Agricultural Research and Development Institute
CC	Commune Councils
CDRI	Cambodian Development Research Institute
CFW	Cash-for-Work
CIDA	Canadian International Development Agency
CMDG	Cambodian Millennium Development Goals
COM	Council of Ministers
DAALI	Department of Agronomy and Agricultural Land Improvement
DAE	Department of Agricultural Extension
DAI	Department of Agro-Industry
DANIDA	Danish International Development Agency
DPSIC	Department of Planning, Statistics & International Cooperation
DTIS	Diagnostic Trade Integration Study
EA	Executing Agency
EC	European Commission
EDP	External Development Partners
EU	European Union
FA	Field Agents
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
FFS	Farmer Field School
FFW	Food-for-Work
FG	Farmer Groups
FIP	Food Insecure and Poor
FO	Farmer Organizations
FS	Feasibility Study
FSN	Food Security and Nutrition
FSNIS	Food Security and Nutrition Information System
FSSP	Food Security Support Program
FSSPCC	Food Security Support Program Coordination Committee
FSSPMC	Food Security Support Program Management Committee
FWUC	Farmers' Water User Community
GDP	Gross Domestic Product
GSP	General System of Preferences
Ha	Hectare
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IPM	Integrated Pest Management
JFPR	Japan Fund for Poverty Reduction
JICA	Japan International Cooperation Agency
KAMFIMEX	Kampuchea Fishery Import and Export Company
LAMP	Land Management and Administration Project

M&E	Monitoring and Evaluation
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Ministry of Economy and Finance
MFI	Micro-Finance Institution
MIME	Ministry of Industry, Mines and Energy
MIS	market information service
MLMUPC	Ministry of Land Management, Urban Planning & Construction
MOE	Ministry of Education
MOEF	Ministry of Economy and Finance
MOH	Ministry of Health
MOI	Ministry of Industry
MOP	Ministry of Planning
MOWRAM	Ministry of Water Resource and Meteorology
MOWVA	Ministry of Women & Veteran Affairs
MPNAR	Master Plan for National Agricultural Research
MRD	Ministry of Rural Development
MTEF	Medium Term Expenditure Framework
NCDD	National Committee for Decentralization and Deconcentration
NDC	National Divestment Committee
NEC	National Executive Committee
NGO	Non-governmental Organizations
NPRS	National Poverty Reduction Strategy
NSDP	National Strategic Development Plan
NWP	National Water Policy
PBA	Program Based Approach
PCU	Program Coordination Unit
PDAFF	Provincial Departments of Agriculture, Forestry and Fisheries
PDD	Program Design Document
PDT	Program Design Team
PFI	Poor and Food Insecure
PFS	Preliminary Feasibility Study
PMC	Program Management Committee
PMSU	Program Management Support Unit
PRDC	Provincial Rural Development Committee
PS	Program Secretariat
PSU	Program Support Unit
RGC	Royal Government of Cambodia
RS	Rectangular Strategy
SAW	Strategy on Agriculture and Water
SDS	Socio-economic Development Strategy
SEDP I	First Socio-economic Development Plan (1996-2000)
SEDP II	Second Socio-economic Development Plan (2001-2005)
SFFSN	Strategic Framework for Food Security and Nutrition
SME	Small and Medium Enterprises
SOE	State Owned Enterprises
SPS	Sanitary and Phyto-Sanitary
SRI	System of Rice Intensification
TA	Technical Assistance
TL	Team Leader
TMSG	Task Management Support Group
TOR	Terms of Reference
TOT	Training of Trainers
TWG-AW	Technical Working Group on Agriculture and Water
TWG-FSN	Technical Working Group on Food Security and Nutrition
WB	World Bank
WFP	World Food Program of the United Nations
WTO	World Trade Organization

EXECUTIVE SUMMARY

1. Cambodia's economic performance over the past decade has been impressive and poverty reduction has made significant progress. Over the past 10 years growth has averaged 9.7 percent per annum while in the last four years it has averaged nearly 11 percent. Poverty has been reduced significantly (around 10 percentage points in a decade) and continues to fall; going from 35 percent in 2004 to 31 percent in 2007 (Knowles 2006, 2008). As a result of economic development income per capita increased from US$250 in 1998 to an estimated US$660 in 2007 (ADB 2008).

2. Agriculture continues to be the mainstay of the economy, comprising 34 percent of GDP and absorbing 60 percent of the total labor force. Growth in agriculture has been volatile, but continues to be low at 5-5.5 percent of GDP for the period 2006-2008. Any growth in agriculture has been due to mainly increasing production of paddy rice. In contrast, growth in industry and services has been double that; albeit concentrated in the garments, tourism and construction sectors.

3. While global economic history shows that the process of development usually entails a shift from agriculture to manufacturing and services, the consensus for Cambodia is that in the short to medium term poverty reduction will require growth in rural areas, most likely through sustained agricultural growth and the ability to capture value added.

4. In order to overcome the challenge of agricultural and rural development, the RGC formulated the *Rectangular Strategy* (RS) to serve as a roadmap for socio-economic development in the country, with priority set on alleviating poverty and enhancing economic growth. The *National Strategic Development Plan* 2006-2010 (NSDP) operationalized this strategy by emphasizing the need for the development of *Strategy for Agriculture and Water* (SAW) with an over-arching goal: ***"To contribute to poverty reduction, food security and economic growth through enhancing agricultural productivity and diversification and improving water resources development and management"***.

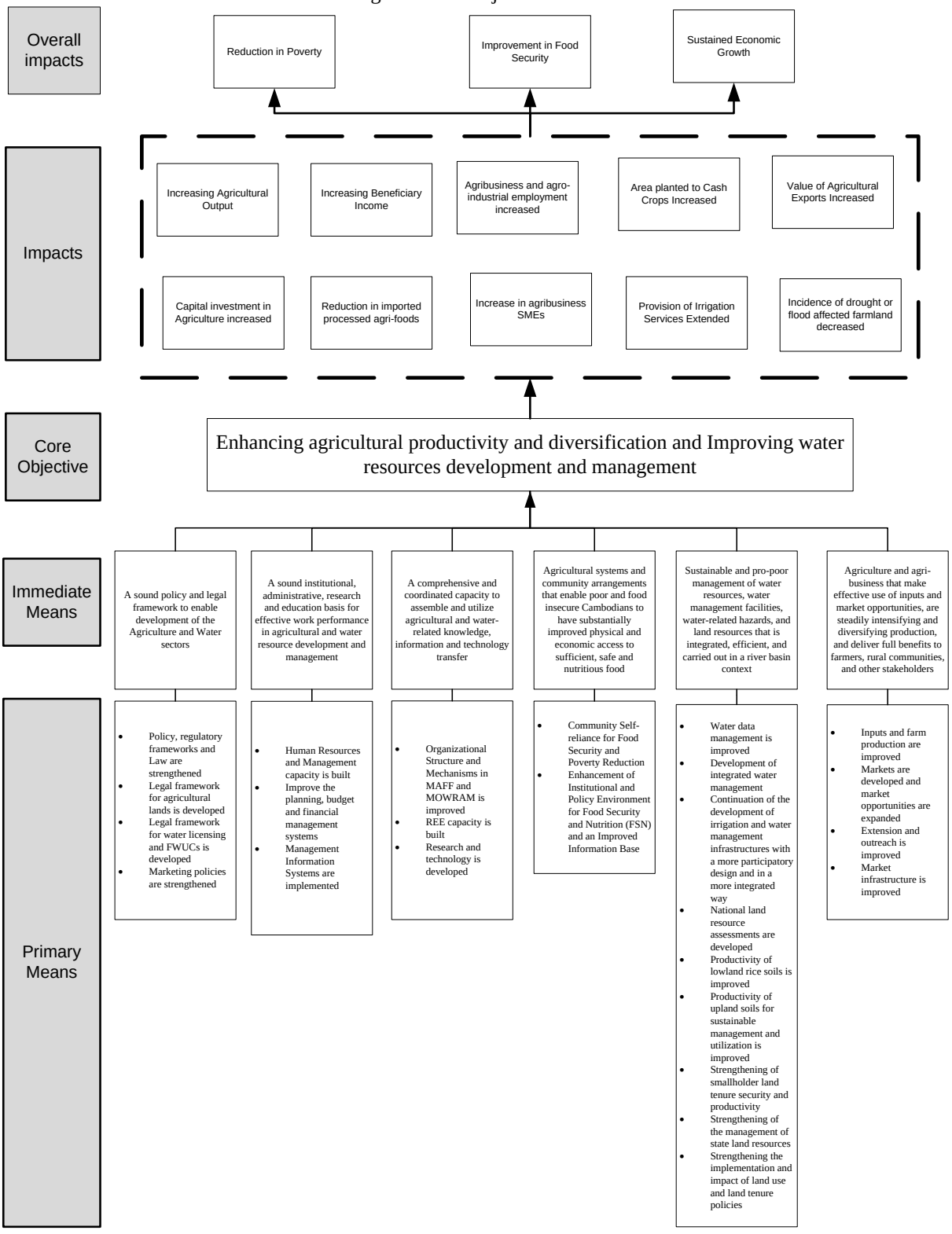
5. The core problem identified from the analysis is that currently agricultural productivity is stagnant and narrowly based on a few crops and that water resources remain underdeveloped and underperforming. The challenge for the project design is to turn the core problem and the associated primary causes into solutions. Reformulating the core problem into a core objective implies that a successful project would give rise to enhanced agricultural productivity and diversification and improved water resources development and management. This would have consequent impacts in a greater diversity of production, higher success rates in agriculture and water sector programs, improved competitiveness, higher income in rural areas, increased employment in rural areas, and finally higher economic growth in rural areas. The overall impact of the intervention would be a higher growth in productivity, a vibrant rural economy, and a reduction in poverty; see Figure 1.

6. The primary causes of the core problem also have primary solutions to the achieving the core objective. These are also presented in Figure 1 and form the basis for the proposed interventions.

7. These areas for improvement can be grouped into six overall areas: (i) A sound policy and legal framework to enable development of the Agriculture and Water sectors; (ii) A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management; (iii) A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer; (iv) Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food; (v) Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a

river basin context; and (vi) Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders

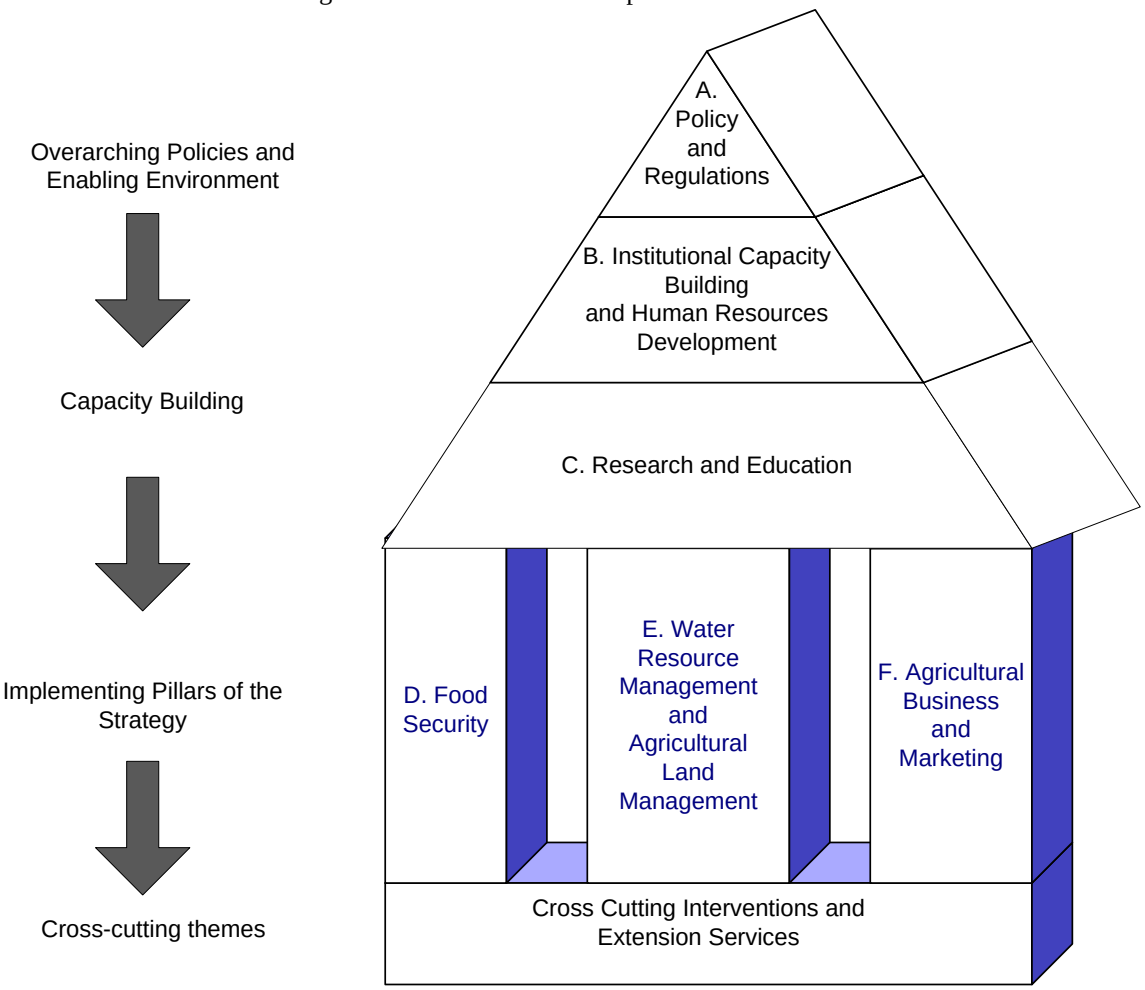
Figure 1 The Objective Tree



8. The Program is a rolling medium to long term Program to guide the implementation of individual projects and actions aimed at improving food security and economic growth through (a) enhancing agricultural productivity and diversification and (b) improving water resources development and management. It comprises 24 components arranged over 6 pillars; see Figure 2.

9. The 6 pillars of the strategy are designed as 3 enabling pillars and 3 core or implementing pillars. Pillar A sets the overarching policies and enabling environment for the SAW, while Pillars B and C provide the capacity building to MAFF and MOWRAM for them to implement the SAW activities. Pillars D, E and F serve as the main implementation vehicle for the SAW; concentrating on delivering interventions and services in Food Security, Water Resource Management and Agricultural land Management, and finally Agricultural Business and Marketing. It is worth emphasizing that cross-cutting services such as gender mainstreaming functions and extension services are fully embedded in Pillars D, E and F.

Figure 2 Harmonized SAW Implementation Pillars



10. The achievement of the Program goal will be realized by quantifiable indicators that the Program's six intermediate outputs and objectives contribute towards. The quantifiable indicators are:

1. Agricultural output increased by 20% over 4 years
2. Beneficiary income increased by 20% over 4 years
3. Employment in agri-business and agro-industrial sector increased by 20% over 4 years
4. Area planted to cash crops increased by 20% over 4 years

5. Value of agricultural exports increased by 30% over 4 years
6. Value of formal bank loans for capital investment in agriculture increased by 25% over 4 years
7. Volume of imported processed agri-foods decreased by 20% over 4 years
8. Number of agri-business SME's increased by 10% over 4 years
9. The area of cropping land with access to irrigation services is increased by 100,000 hectares over 4 years
10. The incidence of drought or flood affected farmland is reduced by 20% over 4 years

11. The Program's six intermediate outputs that contribute towards the Program goal are:

1. **Output A (Policy & Regulation):** A sound policy and legal framework to enable development of the Agriculture and Water sectors

2. **Output B (Institutional Capacity Building and Human Resource Development):** A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management

3. **Output C (Research and Education):** A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer

4. **Output D (Food Security):** Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life

5. **Output E (Water Resource Management and Agricultural Land Management):** Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context

6. **Output F (Agricultural Business and Marketing):** Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders

12. The program is designed as a national Program with the aim of strengthening the enabling environment, whilst at the same time mobilizing the natural, human and financial resources in order to empower national and sub-national authorities, communities, and families to manage agricultural and water resources to increase the productivity of agriculture enabling secure food supplies and economic growth.

Overall Program Impact Expected

13. The Program will lead to significant longer-term impact of the capacity of MAFF and MOWRAM to perform their mandated functions in the agriculture and water resource sectors and to support the implementation of the implementing pillars D. Food Security; E. Water Resource Management & Agricultural Land Management; and F. Agricultural Business and Marketing.

14. In relation to the intermediate outputs contributing to the Program goal, the Program is expected to achieve the following results:

15. Output A (Policy & Regulation):

- MAFF and MOWRAM have implemented and enforced policies, plans, laws and regulations for which they are responsible
- Ministerial Prakas' are issued devolving the implementation of development programs to provincial departments, as mandated under the Organic Law

16. Output B (Institutional Capacity Building and Human Resource Development):

- Facilities and equipment are improved
- An increase in performance and output in organizational capacity in planning, administration, management (financial and contract management, human resources management, information management, engineering and public works, project management, monitoring and evaluation) at the central and provincial level is observed
- Information systems are implemented
- A gender unit in MAFF and MOWRAM is functioning and fully funded to implement gender mainstreaming policies
- Gender Action plans are updated yearly and implemented

17. Output C (Research and Education):

- Training institutes' facilities and curricula is improved
- Strategic and applied research and technologies are developed and adopted that are pro-poor, pro-women and pro-environment
- REE capacity is built and partnerships with national and international institutes strengthened
- Training given to directors and senior staff of MAFF and MOWRAM and provincial staff as well as FWUCs
- Agriculture processing technology is improved and niche products meet market needs
- Commune councils and rural communities develop and implement community development plans for communal aspects of agriculture, agri-business and water management
- All action plans incorporate gender policy

18. Output D (Food Security):

- Beneficiary farmers are benefited by extension, technology transfer, improved production trainings and sets of low-input and improved technical packages
- Beneficiary farmers organized into groups and conducting smallholder farming activities based on the principles of sustainable and Good Agricultural Practices and Natural Resources Management
- Community projects are implemented using participatory planning techniques
- Communities are involved in the local planning processes under the provisions of the Organic Law
- Food security concepts are integrated into development programs and policy

19. Output E (Water Resource Management and Agricultural Land Management):

- The Tonle Sap Authority (TSA) develops and implements an Integrated Water Resource Management Plan for the Tonle Sap and connected river basins
- MOWRAM and MAFF develop and implement a water resource management and agricultural resource management data collection and dissemination system
- Provincial and local authorities, farmers and other stakeholders are involved in IWRM and irrigation infrastructure planning and implementation
- An inventory and appraisal of land and water resources is carried out
- Master plans and identified priorities for land and water resource utilization are implemented

- Agricultural and economic productivity of lowland and upland areas and cropping systems are assessed and subsequent land use plans are implemented
- MAFF and MOWRAM provide extension services for increased agriculture and water productivity
- MAFF and MOWRAM provide extension services for increased agriculture and water productivity in irrigable and rain-fed croplands
- 100,000 hectares of wetland and dryland irrigation is constructed and sustainable water management, harvesting and use practices are adopted by beneficiary farmers.
- Land use certificates are provided to smallholder farmers
- Communal land rights are provided to indigenous communities
- MOWRAM and MAFF develop and implement a drought and flood forecasting system that provides timely warning to local authorities and farmers on the likely incidence and severity of events.
- MOWRAM and MAFF develop and implement drought and flood mitigation measures

20. Output F (Agricultural Business and Marketing):

- Beneficiary farmers have access to rural financial packages and contract farming agreements i.e. agricultural insurance products, long-term loans through RDB and financial institutions, and leasing arrangements, to provision agriculture and water public and private extension services to increase and sustain agricultural productivity
- Beneficiary farmers, agriculture merchants, suppliers and traders, by coordination of a national network supported by the DAE, have adopted high-value crop production, appropriate farm mechanization technologies, and alternative delivery mechanisms that are proven to increase agricultural yields and quality
- Marketplaces have the human, financial and infrastructure resources to store, grade, package, process and transport agricultural products
- Farmers are linked directly with high-value markets, agri-clinics and SMEs (through ICT applications and rural networks) to enable trade in agricultural products supported by farmer marketing schools, market-led extension services, Farmer Contract Law and sub-decree(s)
- Export in certified processed agri-food products that meeting international standards has increased by 20%

Target Beneficiaries

21. The directly targeted beneficiaries of the activities will be:

1. **MAFF and MOWRAM staff at the central, provincial and district levels** enabling them to provide services to communes and villages for the benefit of their inhabitants. It should be recognized at the outset of the SAW that given the limited time-frame of the program implementation, it is envisaged that most of the capacity building effort will be concentrated at the central and provincial levels in order to strengthen their operations and mandates, before moving onto the district and lower levels during subsequent rollout of the SAW. The mid-term review of the SAW should evaluate if and how the expansion of SAW activities to more provinces and to districts should occur.

2. **Staff of research and educational institutes** enabling them to plan and implement long-term strategies for human resources development and for knowledge and technology generation, adaptation and diffusion.

3. **Men and women farmers and non-farmer households; farmer and water user groups; agri-business entrepreneurs; market traders, suppliers and buyers; financial service providers; and other rural stakeholders** providing them access to

market information and appropriate technologies to improve farm production, income and profitability and enhance their food security.

Budget and Resources

22. The proposed program over a four year period is estimated to cost US$501.295 million as summarized in Table 1. This comprises (i) US$6.21 million (1.24%) for Policy and Regulation, (ii) US$16.145 million (3.22%) for Institutional Capacity Building and Human Resource Development, (iii) 57.245 million (11.42%) for Research and Education, (iv) US$44.665 million (8.91%) for Food Security, (v) US$283.790 million (56.61%) for Water Resource Management and Agricultural Land Management, (vi) US$81.760 million (16.31%) for Agricultural Business and Marketing, and finally (vii) US$11.48 million (2.29%) for Program Management Support costs.

Table 1 Program Summary Program Cost/Budget by Components - 4 year period

Component	Total (US$)	%
A. POLICY & REGULATION	**6,210,000**	**1.24%**
Component I - Policy, regulatory frameworks and Law are strengthened	2,400,000	0.48%
Component II – Legal framework for agricultural land management is developed	1,600,000	0.32%
Component III – Legal framework for water licensing and FWUCs is developed	1,710,000	0.34%
Component IV – Marketing policies are strengthened	500,000	0.10%
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT	**16,145,000**	**3.22%**
Component I – Human Resources and Management	13,485,000	2.69%
Component II – Improve the planning, budget and financial management systems	1,050,000	0.21%
Component III – Management Information Systems are implemented	1,610,000	0.32%
C. RESEARCH & EDUCATION	**57,245,000**	**11.42%**
Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM	12,045,000	2.40%
Component II – REE capacity	20,800,000	4.15%
Component III – Research and technology development	24,400,000	4.87%
D. FOOD SECURITY	**44,665,000**	**8.91%**
Component I – Community Self-reliance for Food Security and Poverty Reduction	41,750,000	8.33%
Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base	2,915,000	0.58%
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT	**283,790,000**	**56.61%**
Component I – Water data management is improved	5,575,000	1.11%
Component II – Development of integrated water management	3,925,000	0.78%
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way	248,510,000	49.57%
Component IV – National land resource assessments are developed	6,430,000	1.28%
Component V – Productivity of lowland rice soils is improved	6,400,000	1.28%
Component VI – Productivity of upland soils for sustainable management and utilization is improved	3,125,000	0.62%
Component VII – Strengthening of smallholder land tenure security and productivity	2,625,000	0.52%
Component VIII – Strengthening of the management of state land resources	1,900,000	0.38%
Component IX - Strengthening the implementation and impact of land use and lend tenure policies	5,300,000	1.06%
F. AGRICULTURAL BUSINESS & MARKETING	**81,760,000**	**16.31%**
Component I – Inputs and farm production are improved	6,450,000	1.29%
Component II – Markets are developed and market opportunities are expanded	27,950,000	5.58%
Component III – Extension and outreach is improved	12,560,000	2.51%
Component IV – Market infrastructure is improved	34,800,000	6.94%
Total Program Budget	**489,815,000**	**97.71%**
Program Management Support	11,480,000	2.29%
Total Program Cost	**501,295,000**	**100.00%**

Program Management and Implementation

23. The Program will be implemented and managed within the existing organizational and management structures of MAFF and MOWRAM and with standard operating procedures being applied. Technically and operationally, the Program will be supported by a team of professional specialists assigned by MAFF and MOWRAM. The Program will be implemented by MAFF and MOWRAM with the assistance of donors and qualified Service Providers where required (organizations and institutions with proven competence in implementing similar development projects, selected by the concerned Ministries in collaboration with the respective donor partners), These entities will work closely with the concerned government line departments in project formulation and implementation under the technical and operational guidance of MAFF and MOWRAM.

24. For Component implementation at the local level, the project cycle process will be carried out by provincial departments (PDA and PDWRAMs) under the overall instructions and supervision of the appropriate line ministry (MAFF, MOWRAM etc) and under the guidance of the Provincial Councils as mandated under the Organic Law. Provincial departments will identify and implement appropriate projects with funding under the SAW in accordance with the procedures and standards established by the MEF, MAFF and MOWRAM. In particular, they identify suitable projects for assistance under the Program in consultation with all levels of local authorities (village, commune, district, province), formulate and submit project proposals to the Program Secretariat for approval– once approved, they will implement the activities. It is important that provincial departments ensure that the projects funded by the SAW are consistent with the Organic Law and the decentralization and deconcentration process.

Monitoring and Evaluation

25. Monitoring and evaluation arrangements would be managed through the MTEF system and built into the organizational structure established for each agriculture and water implementing project in the SAW program, under the overall authority of MAFF and MOWRAM.. It would be essential that monitoring is closely linked with the implementation planning process and the unit responsible for it. Details of the structure and procedures and methodology should follow the MTEF guidelines. Reports of monitoring, including information on management actions on the issues flagged by monitoring would be reported to MAFF and MOWRAM. Evaluation will be carried out externally at the mid-term and terminal stages of the program.

Key Assumptions and Risks

26. There are four important assumptions regarding the proposed program design:

1. Government accords high priority to program implementation
2. Resource allocations are provided to fund the program from donor and government budgets
3. The market-economy is able to provide sufficient stimulus to increase productivity and diversify agriculture.
4. The investments outlined in the program document are net additive to the on-going or currently planned pipeline investments

27. The key assumptions are essential to the successful execution and implementation of the proposed program and if any of these are not satisfied there will be serious risks to the achievement of the program goal. The risks identified are:

1. Government’s commitment waivers and resource constraints hinder implementation; and
2. MEF does not approve annual workplans and budget allocations.

Implementation plan and priorities

28. A large number of activities in the implementation pillars of D – Food Security, E – Water Resource Management and Agricultural Land Management, and F – Agricultural Business and Marketing have a 4 year duration as they are long term in nature.

29. The cross-cutting pillars of A – Policy and Regulation, B – Institutional Capacity Building and Human Resource Development, and lastly C – Research and Education, precede and/or are implemented concurrently with the implementing pillars. It is expected that activities under pillar A are to be strengthened or implemented by mid-2011, and is crucial for enabling the autonomy of the local authorities and the beneficiaries to implement activities in pillars D, E and F. In addition, financial, intellectual, human resource development, and extension services cross-cut the implementing pillars and supports the local authorities and beneficiaries to develop and sustain their skills and their autonomy.

30. The cross-cutting pillars achieve the goals of the implementing pillars, and importantly, sustain the continuing development of the agriculture and water sectors in the years beyond the 4-year duration of this program.

31. The implementing pillars have been prioritized to first meet the beneficiary's fundamental needs of securing a constant diverse and nutritional food supply. Concurrently, managing water and land resources ensures food production can be sustained for consumption and provides surplus food stocks to generate income through implementing activities in the Agricultural Business and Marketing pillar (E).

32. The sequencing of components and sub-components of the cross-cutting and implementation pillars over the 4-year program are shown in Figure 3, the Program Implementation Plan below. This high-level Plan serves to indicate projected start and end times at the sub-component level, and concurrent implementation plans.

Figure 3 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
A. POLICY & REGULATION				
Component 1 - Policy, regulatory frameworks and Law are strengthened				
1.1 Policy and regulatory frameworks				
1.2 The Organic Law is implemented in selected provincial departments				
Component 2 - Legal framework for agricultural land management is developed				
2.1 Legal framework for agricultural land management to protect, conserve, and enhance the use of agricultural lands				
Component 3 - Legal framework for water licensing and FWUCs is developed				
3.1 Legal framework and an implementation plan of water licenses and fees sub-decrees				
3.2 Legal framework on PIMD				
3.3 National Action Plan for PIMD is developed by MOWRAM				
3.4 Monitoring and evaluation system for PIMD is set up in MOWRAM				
Component 4 -Marketing policies are strengthened				
4.1 Policies for agricultural development				
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT				
Component 1 - Human Resources and Management				
1.1 HRD plans				
1.2 Implementation of Salary Supplements in Pilot Provinces				
1.3 Increase capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning				
Component 2 - Improve the planning, budget and financial management systems				
Component 3 - Management Information Systems are implemented				
3.1 Information systems strengthened at national, provincial, district levels and consolidated at central level				
C. RESEARCH & EDUCATION				
Component 1 - Organizational Structure and Mechanisms in MAFF and MOWRAM				
1.1 Management capacities of Educational Institutes supporting MAFF and MOWRAM				
1.2 TSC becomes an Institute				
1.3 TSC certified courses in Water Resources Management and Technical services				
1.4 Department of Water Resource Management at ITC				
1.5 RUA training courses to MAFF and MOWRAM staff				
1.6 Royal School of Administration Management training courses to MAFF and MOWRAM staff				
Component 2 - REE capacity				
2.1 Human resources for REE				
2.2 REE organizational strengthening				
2.3 Existing and new institutional arrangements				
2.4 Networks with other research institutes				
2.5 Resource mobilization and coordination				
Component 3 - Research and technology development				
3.1 Pro-poor, pro-women and pro-environment technologies				

Figure 3 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
3.2 Strategic and applied research improvements				
3.3 Market oriented and niche technologies (strategic and applied)				
D. FOOD SECURITY				
Component 1 - Community Self-reliance for Food Security and Poverty Reduction				
1.1 On-farm productivity is improved through adoption of low-input technical packages				
1.2 On-farm productivity is improved through adoption of improved technical packages				
1.3 Better income through diversified income-generation opportunities				
1.4 Self-management and empowerment in farmers groups and village common works				
1.5 Access to adequate food, better nutrition practices including food preparation and preservation, improved sanitation and health				
1.6 Identification of good practices and more effective approaches to food security				
Component 2 - Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base				
2.1 Key policy makers, planners and program developers are trained in FSN concepts; integrated into policy, plans, and programs				
2.2 FSN coordination structure includes collaboration between and among concerned line ministries and agencies				
2.3 Commune councils and farmer communities (FOs, FGs, FWUCs, etc) trained in managing the project cycle and FSN integration				
2.4 Existing information and data on FSN is enhanced, used and is managed (maintained)				
2.5 Quality and scope of information and data supporting FSN in Cambodia is improved				
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT				
Component I – Water data management is improved				
1.1 CISIS irrigation scheme information system is operationalized				
1.2 Evaluate irrigation schemes suitable for future funding based on CISIS output				
1.3 Analysis and storage software are defined and used efficiently for surface and ground waters, river basins and meteorological data				
1.4 Existing water data and works are stored by the relevant government departments and available to be utilized by projects				
1.5 Observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration				
1.6 Flood and drought forecasting system is improved in collaboration with the MRC				
Component II – Development of integrated water management				
2.1 River basins are delineated and classified officially				
2.2 Water management framework plan is approved for the Tonle Sap basin				
2.3 Water resources are assessed at a nationwide scale				
2.4 Water committees are created and management plans are approved for at least 2 priority basins				
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way				
3.1 Preliminary studies taking into account environmental, social and				

Figure 3 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
economic factors for all irrigation projects				
3.2 Farmers are systematically and strongly involved in the design				
3.3 MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season irrigation schemes				
3.4 MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irrigation schemes				
3.5 Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation				
3.6 MOWRAM develops its maintenance activities				
3.7 MOWRAM and other service providers are able to support FWUC for operation and maintenance				
Component IV – National land resource assessments are developed				
4.1 National Land Resources Team responsible for current and future land resource management work				
4.2 Land capability and land suitability classification will be developed				
4.3 Manual for classification, identification and management of upland soils is developed				
4.4 Soils and soil map of the rice growing areas in the lowlands is updated				
4.5 Existing National Soil Database developed by CARDI will be enhanced				
4.6 Agricultural land use changes will be determined and updated country-wide				
Component V – Productivity of lowland rice soils is improved				
5.1 Sustainable best soil fertility management practices adopted				
5.2 Rice yields using integrated crop management approach (ICM) are increased				
5.3 Productivity, intensification and diversification of post-rice lowland cropping is increased				
5.4 Guiding recommendations on management of water requirement for crops is established				
Component VI – Productivity of upland soils for sustainable management and utilization is improved				
6.1 Land suitability of the main soils in upland farming systems for field crops is assessed				
Component VII – Strengthening of smallholder land tenure security and productivity				
7.1 LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification				
7.2 Customary land tenure rights at the local level in areas not covered by systematic titling is recognized				
7.3 Social Land Concession (SLC) mechanism and improving land productivity of the SLC areas is strengthened				
7.4 Communal land rights of indigenous communities according to the provision of the law is established				
7.5 Land dispute resolution mechanisms is strengthened and integrated				
Component VIII – Strengthening of the management of state land resources				
8.1 Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose				
8.2 Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established				
8.3 Management of Cambodia's forested land according to the law is strengthened				

Figure 3 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
Component IX – Strengthening the implementation and impact of land use and land tenure policies				
9.1 Agricultural Census will be carried out				
9.2 Methodologies for land resource utilization and data collection will be standardized				
9.3 Research on land use and land tenure impacts on development will be carried out				
F. AGRICULTURAL BUSINESS & MARKETING				
Component I – Inputs and farm production are improved				
1.1 New and improved quality and efficiency of agricultural inputs				
1.2 Agriculture is diversified				
Component II – Markets are developed and market opportunities are expanded				
2.1 Technology is transferred for bridging yield gaps				
2.2 Market research and information dissemination				
2.3 Develop the agro-tourism sector				
2.4 Marketing and business skills for emerging and expanding agri business available				
2.5 Farmers are engaged in contract farming or other supply chain agreements with high-value markets				
2.6 Traditional marketing systems are strengthened				
2.7 Market oriented and niche-specific technologies are developed and adopted for export				
Component III – Extension and outreach is improved				
3.1 Market-led extension is improved				
3.2 Rural information and communication network is strengthened				
3.3 Cost-effective financial products available to the agriculture and agri-business sector				
3.4 Make available alternative rural financial products				
Component IV – Market infrastructure is improved				
4.1 Upgrade market facilities				
4.2 Traders are aware of food standards and responsive to consumer preferences				
4.3 Improved storage of agricultural produce				
4.4 Processed agri-food products meet international standards and SPS certifications				
4.5 Processing losses decreased and quality increased				
4.6 Trade in processed agri-foods increased				
4.7 Upgrade abattoirs				

1. INTRODUCTION

1.1 Background and Justification

33. Cambodia's economic performance over the past decade has been impressive and poverty reduction has made significant progress. Over the past 10 years growth has averaged 9.7 percent per annum while in the last four years it has averaged nearly 11 percent. Poverty has been reduced significantly (around 10 percentage points in a decade) and continues to fall; going from 35 percent in 2004 to 31 percent in 2007 (Knowles 2006, 2008). As a result of economic development income per capita increased from US$250 in 1998 to an estimated US$660 in 2007 (ADB 2008).

34. Agriculture continues to be the mainstay of the economy, comprising 34 percent of GDP and absorbing 60 percent of the total labor force. Growth in agriculture has been volatile, but continues to be low at 5-5.5 percent of GDP for the period 2006-2008. Any growth in agriculture has been due to mainly increasing production of paddy rice. In contrast, growth in industry and services has been double that; albeit concentrated in the garments, tourism and construction sectors.

35. While global economic history shows that the process of development usually entails a shift from agriculture to manufacturing and services, the consensus for Cambodia is that in the short to medium term poverty reduction will require growth in rural areas, most likely through sustained agricultural growth and the ability to capture value added.

36. In order to overcome the challenge of agricultural and rural development, the RGC formulated the *Rectangular Strategy* (RS) to serve as a roadmap for socio-economic development in the country, with priority set on alleviating poverty and enhancing economic growth. The *National Strategic Development Plan* 2006-2010 (NSDP) operationalized this strategy by emphasizing the need for the development of *Strategy for Agriculture and Water* (SAW) with an over-arching goal: ***"To contribute to poverty reduction, food security and economic growth through enhancing agricultural productivity and diversification and improving water resources development and management"***.

1.2 The Program Content

37. The Program's six intermediate outputs that contribute towards the Program goal are:

1. **Output A (Policy & Regulation):** A sound policy and legal framework to enable development of the Agriculture and Water sectors

2. **Output B (Institutional Capacity Building and Human Resource Development):** A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management

3. **Output C (Research and Education):** A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer

4. **Output D (Food Security):** Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life

5. **Output E (Water Resource Management and Agricultural Land Management):** Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context

6. **Output F (Agricultural Business and Marketing):** Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders

38. The program is designed as a national Program with the aim of strengthening the enabling environment, whilst at the same time mobilizing the natural, human and financial resources in order to empower national and sub-national authorities, communities, and families to manage agricultural and water resources to increase the productivity of agriculture enabling secure food supplies and economic growth.

1.3 Outline of Report

39. The report is separated into 2 main parts and the outline of the report is as follows:

1. Sections 1 to 12 present the main report for the Program Design. Section 1 provides the introduction to the report. Section 2 provides the national policy context for the Strategy for Agriculture and Water. Section 3 provides a review of the SAW program areas and the key findings of the review. Section 4 then sets out the Strategy and Vision for the agriculture and water sectors as a basis for the program design. Section 5 presents the problem tree analysis and the objective-impact tree as a basis for the program logical framework. Section 6 then presents a summary of the program, followed by Section 7 which details the program and its main components. Section 8 provides a summary of the budget and resources required to implement the program. Section 9 outlines the program management structure and its implementation. Section 10 outlines the monitoring and evaluation framework. Section 11 details the key risks and assumptions. Finally, Section 12 outlines the implementation plan and the priorities.
2. Sections 14 to 16 present the core annexes to the report. Section 14 presents the Program Logical Framework. Due to the size of the program and for ease of reading, firstly a higher goal and output level logframe is presented, followed by a Component and Sub-Component level logframe, and then finally the full logframe down to the activity level is presented. Section 15 presents the implementation plan Gantt Chart. Finally Section 16 presents the detailed budget estimates for the program. Again, for ease of reading, firstly a Component level budget is presented for each of the 4 years of implementation, followed by a Component/Sub-Component level budget and then finally the full detailed budget at the activity level is presented.

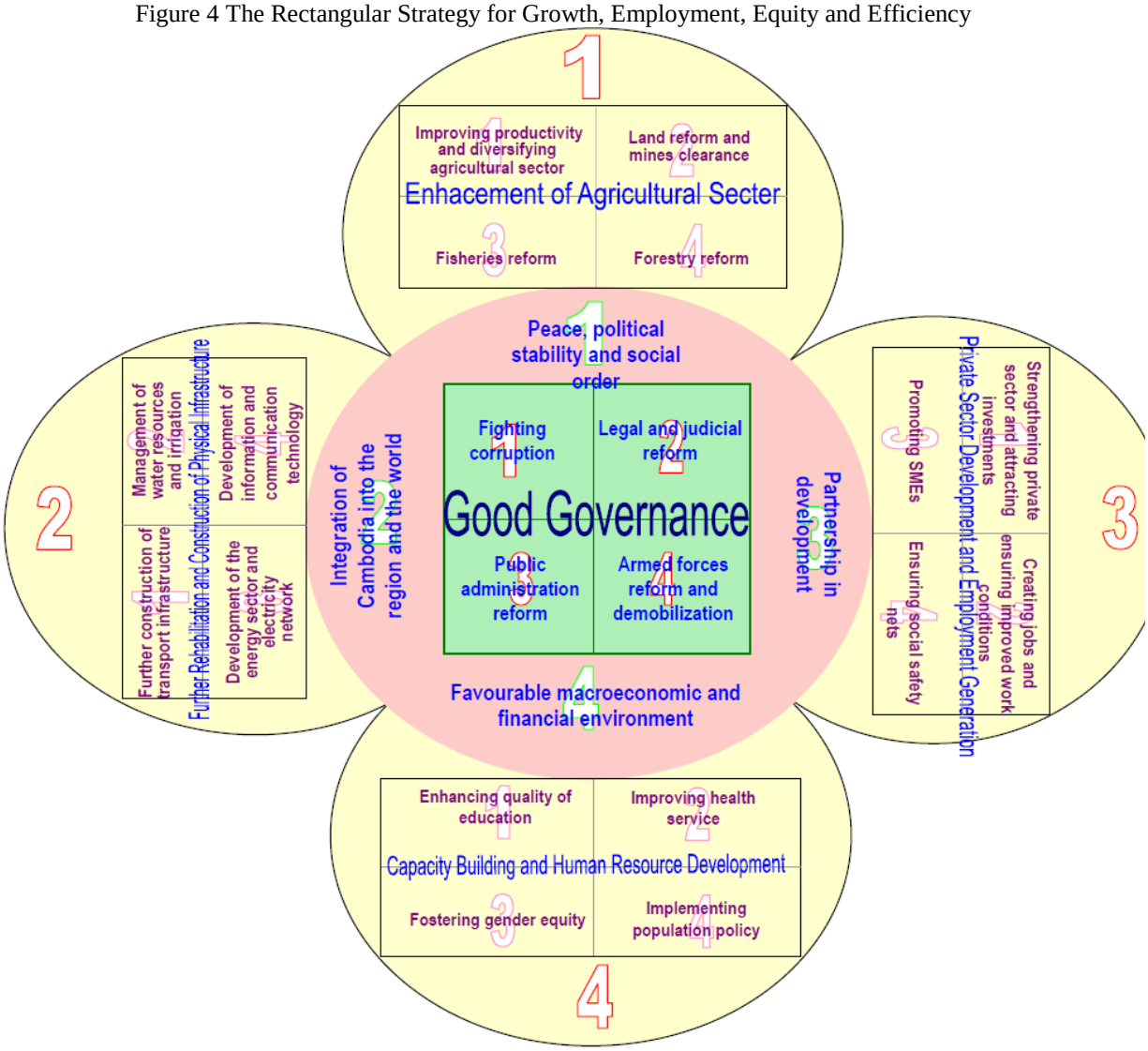
40. A supplementary annex accompanying this Program Design details the background reviews from each of the original 5 program designs; a review of Program 1 (Institutional capacity building and management support program for agriculture and water resources), a review of Program 2 (Food security support program), a review of Program 4 (Water resources, irrigation management and land program), a review of Program 3 (Agricultural and agri-business (value-chain) support program) and finally a review of Program 5 (Agricultural and water resources research, education and extension program).

2 NATIONAL POLICY CONTEXT

2.1 Government Strategies and Policies for Rural Development

41. The government's strategy for agricultural and rural development has been articulated in a number of strategies and programs starting in 1994 and has been continuously updated over time. The National Program to Rehabilitate and Develop Cambodia (NPRD) was implemented in 1994-1995 before being superseded by the First Socio-Economic Development Plan (SEDP-1), 1996-2000, and then subsequently the Second Socio-Economic Development Plan (SEDP-2), 2001-2005. Overlapping plans have included the Long Term Triangle Strategy (2001-2015) and the National Poverty Reduction Strategy (NPRS 2003-2005). These have been superseded by the *Rectangular Strategy for Growth, Employment, Equity, and Efficiency*, 2004, and the *National Strategic Development Plan* 2006-2010. Both of these current policy documents highlight the role of agricultural development as a vehicle for rural development in Cambodia; see Figure 4.

Figure 4 The Rectangular Strategy for Growth, Employment, Equity and Efficiency



Source: RGC (2005)

42. A review of the development plans show a consistent approach to economic development and growth as followed by other South East Asian countries; namely monetary and fiscal reforms for restoring and maintaining macroeconomic stability; trade, industrial, and financial reforms for improving economic efficiency and competitiveness; governance reform and decentralization for improving the effectiveness of the national and local governments; and social policies and programs

for fighting poverty, improving income distribution, and achieving the Millennium Development Goals (MDGs).

43. The Royal Government of Cambodia (RGC) in 2004 adopted the Rectangular Strategy for Growth, Employment, Equity and Efficiency (RGC 2004) as the framework for the country's socio-economic development. Founded on the platforms of good governance, peace, political stability, social order, macroeconomic stability, partnership and economic integration, the Rectangular Strategy focuses on critical development issues such as the enhancement of the agricultural sector, rehabilitation and construction of physical infrastructure, private sector development and employment generation, and capacity development and human resource development.

44. The RGC has indicated in its Rectangular Strategy that its agriculture policy is "to improve agricultural productivity and diversification, thereby enabling the agriculture sector to serve as the dynamic driving force for economic growth and poverty reduction." RGC has also highlighted the role of land and committed a policy of *"strengthening an equitable and efficient system of land management, distribution and utilization, including land registration and distribution, land tenure security, eradication of illegal settlements and land grabbing, and the control of land ownership concentration for speculative purposes."* This strategy is supported by the ongoing implementation of new policy instruments established under the 2001 Land Law, including Social Land Concessions (distribution of state private lands to the poor), Economic Land Concessions (long-term contracts for plantation-type developments on large areas); State Land Management (mapping, land use and allocation procedures) and implementation of the Unused Land Tax.

45. The Rectangular Strategy highlights inclusive growth, and given Cambodia's relatively rich natural resource endowment and the concentration of poverty (90 percent of poor) in rural areas, agricultural and rural development is the key mechanism to achieve this. However, neither the Rectangular Strategy nor other key strategic documents – SEDP II[1] (MOP 2001) or NPRS – clearly identify the role of smallholder agriculture in achieving growth, including export production.

46. Similar to the Rectangular Strategy, the Cambodian National Strategic Development Plan 2006-10 (NSDP) has the overall aim of poverty reduction, and serves as the guiding document for implementation of the RGC Rectangular; see Box 1. The NSDP is a combination of the earlier SEDP-1&2, the National Poverty Reduction Strategy (NPRS), the National Population Policy (NPP) and other sectoral policies & strategies aimed to ensure Cambodia's rapid progress towards achieving the Cambodia Millennium Development Goals (CMDGs) & other socio-economic goals.

47. In addition to overarching development goals, the NSDP recognizes the need to address rural development and makes improving the lives and livelihoods of the rural poor a top priority. Agricultural productivity improvement is the core strategy to meet this need.

48. Two sector-specific development plans are also relevant in the context of rural development and the agriculture sector; the Agricultural Sector Strategic Development Plan of 2006-2010 (ASDP) and the Strategy for Agriculture and Water (SAW) also covering the same time period.

49. Under the ASDP it is recognized that the commercialization of agriculture create links with agro-industries, post-farm gate processing and support services to ensure the smallholder producer obtains a reasonable income. By facilitating the private sector, providing markets and local

[1] Under the SEDPII, the RGC has recognized the importance of growth and diversification within the agriculture sector to drive the economy and shift the focus from food security, to diversification and commercialization. Diversification opportunities within the current resource base lie with crops other than rice, plantation crops, and fisheries including aquaculture and intensive livestock. Continued focus on rice production, particularly in subsistence or near-subsistence farming systems, may create a surplus of low quality paddy that could drive prices down and undermine efforts to raise incomes and generate employment in rural communities. This emphasizes the need to integrate the production system with markets and their price structures.

employment there will be a greater income earning opportunity (on and off farm) for the rural poor, with the RGC more likely to achieve its vision of transforming agriculture into a driving force to attain higher economic growth.

Box 1 The National Strategic Development Plan (NSDP), 2006-2010: Key Commitments

1. Good governance
Anti-corruption measures; legal and judicial reforms; administrative reform; decentralization and deconcentration; and military reform.

2. Environment for the implementation of the Rectangular Strategy
Ensure peace, political stability and social order through elections; strengthen development partnerships; sustain a favorable macroeconomic and financial environment; further promote economic integration into the region and the world; address poverty, ensuring that all strategies focus on poverty reduction.

3. Enhancement of Agriculture Sector
Formulate and implement a comprehensive Agriculture and Water Resources Strategy; improve agricultural productivity and diversification; reform land administration and management, fisheries and forestry reform; invest in environmental conservation and rural infrastructure development.

4. Continued rehabilitation and construction of physical infrastructure
Restore and construct transport infrastructure; improve management of water resources and irrigation; develop energy and power grids; manage future oil and gas resources and revenues; develop information and communication technology

5. Private sector growth and employment
Carry out the RGC's Twelve Point Plan and the recommendations in the Investment Climate Survey; promote SMEs, trade and tourism, rural credit; create jobs and ensure improved working conditions; establish social safety nets for the disadvantaged.

6. Capacity building and human resource development
Enhance the quality of education; improve health outcomes through the Health Action Plan; foster gender equity; implement population policy to decrease fertility and promote birth spacing.

Source: RGC (2005)

50. The Strategy for Agriculture and Water (SAW), 2006-2010 (TWGAW 2007), was adopted by MAFF and MOWRAM in 2007 as the overarching framework for the agriculture and water sectors and the harmonization of RGC and the external development partners' efforts in agriculture and rural development. The overall goal of the strategy is to contribute to poverty reduction, food security and economic growth through enhancing agricultural productivity and diversification and improving water resources development and management.

51. Under successive policies including the SEDP-2, the Rectangular Strategy, the ASDP and the SAW, the RGC has recognized the importance of growth and diversification within the agricultural and rural sectors to drive the economy and shift the focus from food security, to diversification and commercialization. However, while the policies have been well articulated and are a sound basis for development, there has been a disconnection between the development of policies at the central level and their implementation at the local level.

52. Firstly, the NSDP is organized on a sector-wide, not a ministry-wide, basis, and therefore presses ministries towards planning in a cross-sectoral and coordinated manner. Further, the RGC's *Strategic Framework for Decentralization and Deconcentration Reform* mandates a progressive transfer of responsibilities and resources to councils at provincial, municipal, district and commune levels. It is acknowledged that Cambodia's arrangements for public administration presently are not perfect, with some gaps, overlaps and poor coordination of functions. As Decentralization and Deconcentration Reform is further designed and implemented, institutional weaknesses in the

agriculture and water sectors will be identified more precisely, and the lead ministries will be required to develop remedies.

53. Secondly, there is a limited joint strategy base for the agriculture and water sectors. A *National Water Resources Policy* was promulgated in 2004, which provides a comprehensive and up-to-date statement of policy related to all aspects of water resources management. The Law on Water Resources Management presents difficulties for regulation of water utilization. Issues related to the international waters of the Mekong River are dealt with under the Mekong Agreement, with the assistance of the Mekong River Commission. The Agreement provides an important, over-arching framework for water resources and flood management along the Mekong floodplain and round the Tonle Sap/Great Lake, and therefore provides a context for the more focused Strategy on agriculture and water.

54. The NSDP states that the RGC's priority for national development during 2006-2010 is poverty reduction and economic growth, achieved particularly through enhancement of the agricultural sector. The Strategic Development Plans for Agriculture and Water Resources, prepared by MAFF and MOWRAM, state sectoral visions and goals that contribute to national development. The SAW Strategy Team (TWGAW 2007) used these as the starting point for defining a Vision and Goals, for a joint Strategy for the Agriculture and Water Sector.

2.2 Cross-Cutting Issues

2.2.1 Decentralization and Deconcentration

55. The Royal Government of Cambodia established a Strategic Framework for Decentralization and Deconcentration (D&D) to guide the process of governance reform at provincial/municipal, district/khan and commune/sangkat levels.

56. The long-term development objective of D&D is to achieve broad-based and sustainable development and strengthen vibrant local economic foundations so that every citizen has equal opportunity to participate in local development, effective environment and natural resource management and delivery of quality public services to meet the needs of citizens and poverty reduction by focusing on vulnerable groups, indigenous minorities, women and children[2].

57. The immediate outputs of the D&D Strategy are to achieve 3 main development dimensions as follows:

1. Policy and regulations: includes the establishment of an organic law and various regulations for implementation of the organic law. The regulations also include instruments for fiscal decentralization and deconcentration reforms and the assignment of revenue and expenditures for provincial/municipal, district/khan, and commune/sangkat administrations. Sectoral policies on division of responsibility for delivering public service that the national level should transfer or delegate to each level will be developed. A regulatory framework to enable commune/sangkat authority collecting their own sources of revenues will be finalized and various existing provisions will be revised in order to be consistent with the systems to be provided in the organic law.
2. Institutional management strengthening: includes provision of management systems at provincial/municipal, district/khan and commune/sangkat levels and the strengthening of commune/sangkat management systems, including the establishment of unified administrations at provincial/municipal, district/khan and commune/sangkat levels and

[2] RGC, 2005: Strategic Framework for Decentralisation and Deconcentration Reforms

revision of the roles and duties of ministries and institutions at national level. Legal instruments for institutional strengthening will be prepared to improve effective resource mobilization such as the assessment of sources of revenue, revenue collection, revenue sharing etc. and expenditure management such as preparation of a strategic plan of administrations, formulation of investment programs, preparation of annual and multi-year budget, implementation of plan, assets management, financial and accounting reporting, internal monitoring etc. The systems and procedures of transfer or delegation of public service delivery will be developed and cooperation and coordination between national institutions and provincial/municipal, district/khan, and commune/sangkat administrations will be promoted.

3. Sectoral development management: provincial/municipal, district/khan, commune/sangkat administrations deliver infrastructures and social and economic services as well as other public services, investment for natural resource management and local socio-economic development.

58. D&D has widespread implications for the SAW, for example in the provision of agricultural and marketing extension services and development of local policy and by-laws. Projects implemented with or through local Government partners will need to consider capacity levels and include institutional strengthening as a core activity to ensure successful outcomes. Management of public market places are already under the jurisdiction of local Government and will need to be considered accordingly for the proposed interventions.

2.2.2 Gender

59. Cambodia has among the lowest levels of gender equity in Asia as measured by the gender development index (0.427) and the gender empowerment index (0.283)[3]. Rural women are responsible for 80 percent of food production and more than 65 percent of women are farmers. Among all female farmers, half are illiterate or have less than an elementary level of education. The prevalence of female headed households in Cambodia is higher than in other countries. They tend to have smaller landholdings and be more vulnerable to losing their land.

60. Men and women spend approximately the same amount of time on income generating labor in rural areas, but women spend more time than men on non-income generating work and household work. In terms of agricultural wages women are paid less than men; even after taking differences in age and education into account, women's wages are only 75 percent of men's wages.

61. Women tend to dominate trading activities, with some estimates that well over 80 percent of fruit and vegetable traders, for example, are women. Women also often play a central role in the management of small and medium sized business. For this reason any program involved with the agriculture and water sector must ensure the active participation of women

2.2.3 Poverty Alleviation

62. Cambodia is among the poorest countries in the world with 34 percnt of its people living on less than US$1 a day and 15 to 20 percent in extreme poverty - and inequality appears to be increasing. Poverty in Cambodia is overwhelmingly rural, from a low of 10-15 percent in Phnom Penh to 40-45 percent in the rural areas, reaching 60 percent in some provinces in the Tonle Sap Basin. Despite the economic growth, official figures indicate that the incidence of poverty has

[3] Human Development Report 2003.

declined only modestly. According to DFID (November, 2005), this is due to a range of factors including the:

- Narrowness of the existing sources of growth, with few if any backward linkages to the domestic economy,
- Poor quality and lack of access to social services,
- Lack of access to credit,
- Landlessness,
- Environmental degradation,
- Lack of integration of the poor to the mainstream economy, and
- Lack of effective voice of the poor (particularly minority groups and women) in decisions that shape their lives.

63. Poverty profiles suggest that income inequality has increased, especially in rural areas. Slow agricultural growth has exacerbated income inequality. The industrial sector was the main engine of growth, with industry's share of GDP increasing from 13 percent in 1992 to 28 percent in 2002, and that of agriculture falling from 48 percent to 36 percent during this period.

64. The bulk of the poor are found among the rural landless who make up around 20 percent of the rural population. The SAW seeks to directly address the situation of the chronically poor, who are generally operating at subsistence or sub-subsistence levels, through Pillar D (Food Security Support Program). Many in this group do not have sufficient land resources to produce a marketable surplus but will benefit indirectly due to improved on-farm labor opportunities and increased employment in processing and marketing.

2.2.4 The Impact of Climate Change in the Lower Mekong Basin and Cambodia

65. National governments and international organizations working in the region are increasingly expressing their concern over climate change. There is a high demand for better understanding of the potential impacts from climate change and variability and in particular the options for adaptation to these changes. Cambodia ratified the UNFCCC in 1995 and the Kyoto Protocol in 2002. The primary policy framework is Cambodia's National Action Plan for Adaptation (NAPA), which was approved in 2007, but to date climate change has not been well integrated into other sectoral or development policies. The principal policy focus has been on post-disaster emergency relief. The Ministry of Environment is the climate change focal point, and in 2003, established the Cambodian Climate Change Office, which is the technical unit for climate change activities. The National Climate Change Committee was established in 2006 as a high level policy making body (MRC 2009b).

66. There has been a history of implementation of natural disaster response projects but few activities specifically designed as adaptation to climate change. The NAPA contains information on 39 adaptation activities, including 20 priority activities across sectors of coastal areas, public health, and water resources and agriculture. To date the Government has had limited success in sourcing funding for implementation of adaptation activities, although at least 17 climate change projects across three sectors involving many international organizations have been or are being undertaken (MRC 2009b). The Strategy for Agriculture and Water needs to take into account the impact of climate change on food security and vulnerability of households, as well as how to mitigate the effects of increased climate variability (floods and droughts). The SAW takes into account these impacts of climate change through interventions in Food Security and Water Resource Management.

67. The fourth assessment report of the Intergovernmental Panel on Climate Change (IPCC) from 2007 (IPCC 2007) and the IPCC Technical Paper on Climate and Water (Bates, Kundzewicz *et al.*

2008) outlines the current understanding of the climate change impacts on water resources[4]. This includes changes in weather patterns affecting temperature, rainfall and wind in terms of intensity, duration and frequency. The mega-deltas of the big river basins in Asia are considered particularly vulnerable because of the combination of flooding, sea level rise and large populations living there. Many of the impacts envisaged by IPCC can be expected to affect the Lower Mekong River Basin. The projected weather pattern changes point to increase in variability e.g. less rain during the dry season and more rain during the wet season and more frequent extreme weather events though with regional differences within the Basin (Eastham, Mpelasoka *et al.* 2008; SEA START RC 2008). Seasonal water shortages and floods may become worse, as may saltwater intrusion into the Mekong Delta due to storm surges and sea level rise (Carew-Reid 2007; SIWRP 2008). Impacts of such changes are expected to affect natural ecosystems and agriculture and food production, and exacerbate the challenges of satisfying increasing food demands from growing populations (Hoanh, Guttman *et al.* 2003). This will increase the pressures on the socio-economic conditions of the various man-made systems and sectors and in the Mekong Delta increase the competition between land use interests. Especially communities whose well-being depends on natural resources and ecosystem services will be affected with particular concerns for the Mekong Delta where a large population may be threatened.

68. For the time being, detailed understanding of climate change and how climate change may threaten the key environmental and social systems in the Mekong River riparian countries vary, but is in general limited. Vietnam and Thailand have developed climate change scenarios and projections and have accomplished some studies on impact assessment and potentials for adaptation (MRC 2009c, a). The climate change information for Cambodia and Lao PDR is less developed (MRC 2009a). The climate change information is expected to increase in the coming few years following from the efforts to develop the Second National Communication to the UNFCCC (MRC 2009a).

69. Most past studies on climate change in the Mekong region used a single or limited number of global climate model (GCM-General Circulation Model) simulation results to represent the future climate and did not quantify the uncertainty around the climate projections. The climate change projections are associated with a range of uncertainties related to the underlying assumptions of the global climate change drivers (expressed in the global IPCC scenarios), the selection of scenario for the projection, the uncertainties of the GCMs and uncertainties of regional downscaling of the global modeling results. A recent study, undertaken by the CSIRO (Eastham, Mpelasoka *et al.* 2008), attempts to quantify some of these uncertainties. The study predicted climate change parameters for 2030 based on the IPCC‟s Scenario A1B using the models that best simulated past climate conditions in the Mekong River Basin (using 11 models out of 24 available model simulations). The scenario A1B was selected as it represents a mid-range emission scenario. The study came up with the following average climate effects for the Mekong River Basin:

1. A basin wide temperature increase of 0.79˚C, with greater increases for colder catchments in the north of the basin with ranges from 0.68-0.81˚C.
2. An annual precipitation increase of 200mm, equivalent to 15.3 percent, predominantly from increased wet season precipitation with ranges from -3-360mm.
3. An increase in dry season precipitation in northern catchments and a decrease in dry season precipitation in southern catchments, including most of the LMB.
4. An increase in total annual runoff of 21 percent which will maintain or improve annual water availability in all catchments, however with pockets of high levels of water stress remaining during the dry season in some areas such as north-eastern Thailand and Tonle Sap.
5. An increase in flooding in all parts of the basin, with the greatest impact in downstream catchments on the mainstream of the Mekong River.

[44] See (MRC 2009b) for a fuller discussion of the impact of climate change on Cambodia.

70. The study furthermore looked at impacts on food security through agricultural productivity and capture fisheries and found a possible 3.6 percent increase in agricultural productivity but with overall increases in food scarcity as food production in excess of demand reduces with population growth and changes to the productivity of capture fisheries and of aquaculture which require further investigation, in particular concerning responsiveness of these sector. These averages were derived from results showing some regional variability between the 18 studied sub-catchments of which 16 are fully within the LMB. Table 2 summarizes the potential impacts of climate change for each catchment in the LMB.

71. For this reason, the Strategy for Agriculture and Water needs to take into consideration the likely impacts of climate change on agricultural productivity and sustainability; food security and the impact of floods and droughts.

Table 2 Regional Effects of Climate Change on Lower Mekong Basin Catchments in 2030

LMB Catchments	Agricultural productivity	Existing food availability	Temperature	Annual precipitation	Dry season precipitation	Annual runoff	Dry season runoff	Annual water stress	Dry season water stress	Flooding potential	Peak flows,	Flood duration	Flooded area	Dry season minimum flows	Saline intrusion
Moung Nouy: Northern Lao PDR										NQ					
Luang Prabang: Northern Thailand and Lao PDR										NQ					
Vientiane: Northern Lao PDR and North-east Thailand										NQ					
Tha Ngon: Central Lao PDR										NQ					
Nakhon Phanom: Central Lao PDR and Northeast Thailand										NQ					
Mukdahan: Southern Lao PDR and Northeast Thailand										NQ					
Ban Keng Done: Central Lao PDR										NQ					
Yasothon: Northeast Thailand										NQ					
Ubon Ratchathani: Northeast Thailand										NQ					
Pakse: Southern Lao PDR and Northeast Thailand										NQ					
Se San: Southern Lao PDR, North-east Cambodia and Central Highlands of Vietnam										NQ					
Kratie: Southern Lao PDR and Central Cambodia															
Tonle Sap: Central Cambodia															
Phnom Penh: South-eastern Cambodia															
Border: Southern Cam-bodia and South Vietnam															
Delta: South Vietnam															
	Increase			Static				Decrease				Not quantified		NQ	

Source: (Eastham, Mpelasoka *et al.* 2008)

3 REVIEW OF SAW PROGRAM AREAS AND KEY FINDINGS

72. Under the Strategy for Agriculture and Water, 5 individual programs were identified and detailed designs were developed during 2008-2009 by separate design teams, headed by Co-Task Managers from MAFF and MOWRAM. The individual programs were identified as:

1. Institutional capacity building and management support program for agriculture and water resources
2. Food security support program
3. Agricultural and agri-business (value-chain) support program
4. Water resources, irrigation management and land program
5. Agricultural and water resources research, education and extension program

73. The rationale for the Programs was developed by the Strategy Team of TWGAW (2007) on the basis of a SWOT analysis, and as the starting point, the RGC's priority for national development during 2006-2010 – poverty reduction and economic growth, achieved particularly through agriculture.

74. The individual design documents were quite extensive in detail and their program reviews are summarized in the accompanying annex to this report;. This section of the report (Section 3) provides (i) a SWOT analysis of the SAW and (ii) the summary of the key findings of the individual program reviews as a basis and rationale for SAW program interventions and activities outlined in Section 6 and 7.

3.1 SWOT Analysis

75. The Strategy for A&W draws heavily on an analysis of strengths, weaknesses, opportunities, and threats (SWOT). The analysis is summarized in Table 3.

76. The strengths listed in Table 3 suggest that Cambodia's strategic advantage lies principally in the availability of natural resources (water, land and biodiversity for agriculture) and manpower inputs, which at present are under-utilised. Of the ten weaknesses, five relate to natural resources (soil fertility and unreliable water sources) and labor. Hence, they set limits on the extent to which natural resources and labor can be seen as strengths. In particular, the three weaknesses that relate to labor are aspects of the effectiveness with which labor is mobilized in Cambodia. They appear to limit the potential value of abundant labor, and firm action will be needed to deal with them.

77. Four more weaknesses indicate that access to three types of input – capital, information and technology, and access to markets – is limited in Cambodia. The remaining weakness – "the productivity of agricultural labour, land and water is low (resources are used inefficiently)" – is almost an overview statement that summarises the consequence of all the other weaknesses. Taken together, the ten weaknesses give a overview of Cambodia's strategic disadvantages in A&W; which need to be tackled by the implementation of this Strategy for Agriculture and Water. Three types of input are regarded as weak, while the other two (listed as strengths Table 3) have significant limits placed upon them. On the other hand, we might say that there are many opportunities to develop strengths and overcome weaknesses.

78. The opportunities have many linkages with the strengths and weaknesses, and relate to four of the five types of input mentioned above. The threats do not, in general, relate to inputs, but principally to the environment in which A&W functions. Hence, they include four that are related to political,

governance, social, and legal factors. All of these control whether the environment enables and encourages farmers to invest in and develop the sub-sector, or whether it provides disincentives and obstacles to investment. The risk is, overall, that present commitments to and implementation of reform could falter or not address issues that are of particular relevance to A&W. If this were the case, then components of a Strategy that depended on an enabling environment would be difficult to implement fully. A particular concern is that the RGC's *Strategic Framework for Decentralization and Deconcentration Reform* may encounter difficulties in implementation, which could hinder implementation of the Strategy for A&W, particularly at sub-Provincial levels.

Table 3 Agriculture and Water Management: Summary SWOT Analysis

Strengths	**Weaknesses**
1. Land resources are available 2. Water resources are available 3. Abundant manpower is available in rural areas at low labor cost 4. MAFF and MOWRAM have good human resources potential 5. Policy and/or strategic frameworks are developing for MAFF and MOWRAM 6. Stakeholders are committed to and recognize the importance of the sector (Government, EDPs, NGOs and farmers) 7. Diverse agro-ecosystems are available, with many land-types and cultivars 8. Developing focus on community empowerment and engagement, through inter alia Community Councils, FWUCs and FOs 9. Agri-business is developing	1. Institutional capacity, management and project implementation by MAFF and MOWRAM are weak 2. Water resources are highly variable in time and space, and agricultural water management technology is poorly developed 3. There is limited investment capacity or interest in investing in agriculture 4. Technology transfer is weak and farmers and extension workers have a low level of knowledge, access to technology, and skills 5. Soil fertility is low in many the areas. 6. Socio-cultural weaknesses include low community solidarity, vulnerability of farmers to landlessness, a cultural focus on subsistence agriculture: "Rice first, fish second" 7. Information asymmetry (inconsistency) among stakeholders 8. The productivity of agricultural labor, land and water is low (resources are used inefficiently) 9. There is weak access to markets 10. Legal instruments for A&WR are inadequate.
Opportunities	**Threats**
1. Improvement of governance, including RGC commitment (the GAP), policy definition and political stability. 2. Market development and integration with the regional and global economy. 3. Strong support from External Development Partners for investment in A&W 4. Science and new technologies 5. More fully exploit natural resources (water and land) that presently are under- or un-utilized 6. Availability of investment funds, including incentives, private funds, and rural credit services 7. Decentralization and de-concentration policy	1. Market changes, including highly competitive international markets 2. High cost of oil and gas. 3. Political circumstances, including competing demands for RGC funds from other sectors 4. Legal circumstances, mitigated by continued efforts to enforce laws on land, water, forests etc. 5. Natural disasters 6. Climate change 7. Degradation of the environment 8. Ongoing efforts to implement governance, judicial and other reforms 9. Social and political changes, e.g. social conflict over access to water and land, Labor migration. 10. Decreasing EDP support for A&W

3.2 Institutional Management and Capacity of MAFF and MOWRAM

79. On the basis of the review of the key issues for Institutional Management and Capacity of MAFF and MOWRAM outlined in the Annex. The analysis indicates a large number of constraints and problems affecting institutional and management capacity of MAFF and MOWRAM to meet the goal of ***providing a sound policy, legal institutional and administrative basis for effective work performance in agriculture and water resource development and management*** (TWGAW 2007, pg. 23).

80. These areas for improvement can be grouped into five overall factors: (i) the institutional framework for policy and strategy development and implementation; (ii) the availability of human resources and improvement of their capacity; (iii) financial management systems improvement; (iv) strengthening monitoring and evaluation frameworks to assess performance against plans; and (v) improving management and data information systems for basing strategic decisions. The following sub-sections summarize these different factors based on the analysis from the annex to this report.

3.2.1 Opportunities to Improve the Institutional Framework

81. In the agricultural planning process, MAFF retains a valuable role in strategic guidance for the agriculture sector, supported by stronger planning capacity and direction at sub-national levels as a result of the decentralization and de-concentration process. There is, however, widespread recognition of the need for improvement through rationalization of the prevailing strategic framework and institutionalizing a single, successor framework more closely linked to policy formulation, monitoring and evaluation, and the processes of annual national and decentralized planning.

82. There is a need to strengthen the provincial offices PDWRAM of MOWRAM to enable them to implement national and sub-national level programs. There is usually no more than one member of staff with an engineering qualification and that person is usually the Director who is therefore taken up with management and does not work as an engineer.

83. PDAs and PDWRAMs have insufficient staff and lack budgets to undertake their mandates; however it is consistent with the decentralization policies of the Government to give more formal responsibility to provincial offices.

3.2.2 Opportunities for Human Resource Development

84. Human resource development is supported by a number of projects, but coordination through existing human resource strategies can be improved. Planning, monitoring and evaluation skills can be improved but at the moment under-utilized as a result of approaches to personnel management and ad hoc task allocation. Where donor support is provided, this tends to be project-based and skewed to the needs of individual donors. In this environment many activities, including planning, fall to a limited number of skilled staff, many of whom are over-loaded with multiple duties.

85. Nevertheless, in the area of professional qualifications and training generally, it is very important to invest, because the flow-on will improve the capacity of Cambodia as a whole, whether or not the Ministries are capable of capturing and retaining the qualified and trained people for useful activity.

86. All departments in MAFF and MOWRAM indicated significant concern about the status of human resources in MAFF and MOWRAM and that with an increasingly aged workforce the number of technically qualified personnel is decreasing without a pool of trained recruits being available to take their place. It was noted that MOWRAM is finding it increasingly difficult to recruit new irrigation engineers, meteorologists, hydrologists or water chemical engineers to replace staff nearing retirement age. This is even more of a problem considering the expansion of irrigation schemes in Cambodia and the concomitant increase in personnel required to build and maintain them.

87. While discussions with MOWRAM and MAFF departments indicated significant constraints in recruiting trained technical staff, with line departments being given new recruits with degrees in business and marketing rather than degrees in engineering, there was also widespread concern as to the lack of trained administration staff. Often senior administrative positions in the ministries are

filled by staff highly qualified in technical disciplines but who lack the required skills in accountancy, human resources or legislative drafting.

3.2.3 Opportunities to Improve Financial Management Systems

88. There is a significant gap between the annual workplan activities being carried out by technical departments in and the information available to administrative departments, which hampers the planning and budgeting functions. For example, the planning departments under MAFF and MOWRAM do not have a clear idea of the particular projects or activities being implemented by the various technical departments and thus cannot align these activities with the national strategies being developed at higher levels of MAFF and MOWRAM. Similarly, the finance departments are only responsible for being the liaison between technical departments and MEF in passing on budgetary requests and the subsequent budget allocations, but have no oversight on actual expenditures.

89. At the provincial level the gap is even more pronounced, as the D&D system has resulted in provincial departments being responsible to the Provincial Governor for expenditures and are not providing MOWRAM and MAFF at the central level with reports on plans or budgets. While the Department of Finance is responsible for passing on MEF allocations, they are unable to receive adequate feedback from the provincial level to enable a proper M&E system to be put into place. The asset management procedures follow MEF guidelines but are limited in that there are no policies on asset replacement or asset maintenance.

90. Discussions with MOWRAM indicate that the Medium Term Expenditure Framework (MTEF) Financial Management Information System (FMIS) currently being piloted in MAFF needs to be expanded to include MOWRAM. The use of a consistent FMIS across Ministries and within ministerial departments will go a long way to enabling higher level financial and planning units to access information and coordinate the implementation of National Strategies throughout the system.

3.2.4 Opportunities for Strengthening Monitoring and Evaluation Frameworks

91. MOWRAM has not yet adopted the MTEF system and still operates under the old regime for monitoring and evaluation. In contrast, MAFF has already adopted the MTEF system and is receiving ongoing support from CIRAD and ADB (proposed in 2009) to mainstream the program amongst all departments.

92. Under the MTEF system adopted by MAFF, the M&E manual defines and describes a complete M&E information system, including processes and procedures, for Program budgeting in MAFF. The M&E system provides MAFF the mechanism to both prepare and plan its annual budget, and to introduce performance information into budget allocation decisions. It is an important component of the whole Program budget process (ADB 2006).

93. While great strides have been made in institutionalizing an effective monitoring and evaluation process within MAFF, this still needs to be adopted under MOWRAM.

94. At the provincial level more needs to be done to link the activities to the national and sub-national programs. There is no direct link between PDA budgets and development activities or Program performance. Moreover, the deconcentration process has generated two parallel systems whereby PDA participating in the D&D system are required to submit budgets and accounts directly to MEF but not MAFF.

3.2.5 Opportunities for Improving Management and Data Information Systems

95. Within MAFF, agricultural information priorities are reflected in the activities of four offices: the Agricultural Marketing Office (AMO) and the WTO Unit under the Department of Planning and Statistics (DPS), the Department for Agro-Industries (DAI), and the Bureau for Agricultural Material Standards (BAMS). Within the Ministry of Commerce (MOC), agricultural information is a major feature of activities under the offices promoting domestic and export trade, including those concerned with support for the establishment of export processing zones (or EPZs) and product quality standards, notably the Export Promotion Department and CamControl, and harmonization of cross-border regulations and procedures for WTO accession (Tasker 2003).

96. The main agricultural information and data collection activities in MAFF revolve around the Agricultural Market Information Service (AMIS) under the Agricultural Marketing Office (AMO); the supporting CIDA funded Cambodia Agricultural Market Information Project (CAMIP) involved in SMS (mobile phone text messaging) technologies with traders; ongoing activities under the ADB funded ADSP (Loan 2022-CAM); and finally data collection activities for the Annual Conference of MAFF where production and hectarage data for each crop is presented.

97. The disparate systems for data collection and analysis and the lack of integration of datasets constraints the ability of MAFF to leverage data for strategic planning purposes; particularly the likely impacts of flood and drought in the context of climate change.

98. Two departments of MOWRAM have water information roles – Hydrology and Meteorology. The capacity of these departments is critical to the capacity of the Government as a whole to know what water the country has and what can be done with it.

99. Several reviews (MOWRAM 2001a, b; Taylor 2008, 2009) have noted there is a lack of adequate information about water resources, weather and climate to support RGC strategies for socio-economic development. MOWRAM does not have the capability to generate accurate and timely forecasts of flooding in parts of the country beyond the Tonle Mekong/Tonle Sap floodplains.

100. The main problem in Cambodia is not the quality of equipment provided under various donor programs. Rather, it is the inability to ensure that the equipment, once installed and working, is maintained and used productively.

101. The key issue is that hydrological and meteorological data are not actively used and its value is no understood. Failure to value the data leads to breakdown in other areas.

102. For this reason, it is important to make a close connection between those collecting information and those using it. This is the key capacity objective. If there are few active uses or users of hydrologic data, the importance of the function will not be recognized. Similarly, timeliness of data relies on an active demand for it and value to be placed on it.

3.3 Food Security and Nutrition

103. On the basis of the review of the key issues for Food Security and Nutrition outlined in the annex to this report. The analysis indicates a large number of constraints and problems affecting the capacity of MAFF and MOWRAM to meet the goal of ***Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life.*** (TWGAW 2007, pg 24).

104. The gaps and opportunities for improvement analyzed in the annex to this report imply that the Food Security Pillar of the SAW should address the need for action at two levels, i.e. (i) further efforts for systematic implementation of the substance of the Strategic Framework on FSN as the national operative framework for coordinated planning and implementation of programmes and projects, related capacity building and for enhancement of information and data, and (ii) promoting approaches in direct field interventions that clearly target food insecure and poor groups providing them with integrated packages of support to enable them to achieve rapid and sustainable progress for food security and poverty reduction. Within the SAW strategy, it is imperative to adopt a coordinated approach with focus on meeting the priority needs of target groups, including the need to identify special needs of any particular target groups reflecting their limitations and potentials.

105. Food security is a broad and multi-dimensional concept (covering production/supply, access, utilization and stability at national/sub-national/household and individual levels), requiring multi-sectoral and multi-disciplinary approaches focused on the needs of target groups. While MAFF and MOWRAM have an essential role for production and availability, access as well as stability dimensions, their overall role and functions should be seen in the context of the Strategic Framework on Food Security and Nutrition, with their inputs being complemented with those from other sectoral agencies as well as local partners. In the context of SAW strategy, it is imperative that this Program Pillar (FS) is integrated and coordinated with the other programmes, both in design and implementation, so that the SAW as a whole delivers in combination effective support to the target groups in improving their food security situation. Further, as noted above, food aid and other safety net mechanisms, which are largely outside the mandate of MAFF and MOWRAM, need to be taken into account in mobilizing most suitable support to meet the needs of target groups, including the food insecure people in urban areas.

106. Thus, the Food Security Pillar will address food security needs at two levels - (i) at field level to provide direct support to the food insecure and poor target groups and (ii) at policy and institutional level to mainstream the objectives and concerns of FSN as well as to address food security issues at national level, especially to ensure stability and sustainability of food security arrangements:

a) Direct interventions targeted at the target groups for:
   i. Improving rapidly their food and agricultural productivity through appropriate techniques for intensification and diversification, adapted to their needs, capacity and potentials, including access to necessary inputs and technical support;
   ii. Maximizing their income generation possibilities through promoting on-and off-farm opportunities and training support, especially for those without adequate on-farm production capacity;
   iii. Capacity building and empowerment of the target groups for strengthening their collective self-reliance and group solidarity/mutual help, both for food production, income generation and livelihood improvement;
   iv. Improved management of water and land resources for productivity improvement and protection from natural disasters, like drought and flood, and the likely impacts of climate change on poor and vulnerable households
   v. Creating a financial resource base for expanding their assets and their villages for joint cooperative initiatives at community level, especially for small scale village infrastructure works and for capitals (micro-credits) to support production activities;
   vi. Promotion of different intervention packages of production, within the overall approach outlined above, adapted to address major constraints and needs unique to different physical and socio-economic environments of the target groups (modular approach); and
b) Mainstreaming of food security and nutrition objectives/concerns and related capacity building, by further strengthening the coordinated mainstreaming of FS concerns and objectives in policy, implementation and management process, including related information, in the context of decentralization and de-concentration.

3.4 Agriculture and Agribusiness

107. On the basis of the review of the key issues for Agriculture and Agribusiness outlined in the annex to this report, The analysis indicates a large number of constraints and problems affecting the capacity of MAFF and MOWRAM to meet the goal of ***Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders*** *(TWGAW 2007, pg. 26).*

108. The gaps and opportunities for improvement analyzed in the annex to this report can be summed up as follows:

3.4.1 Inputs and Farm Production

109. There is inadequate importation of sufficient quantities of quality farm inputs e.g. seeds, fertilizers and pesticides that comply to 'Law on Management of Quality and Safety of Products and Services (2000)' regarding quality standards and Khmer labeling. Licensed Agricultural Merchants are not inspected to verify the authenticity of products sold.

110. As a consequence, low yields are due to the limited use of quality seeds, fertilizers and pesticides, etc. owing to cost and unreliable quality e.g. diluted fertilizers.

111. Agricultural extension services have limited coverage and do not serve the needs of commercially oriented farmers. At the same time, there is no private sector technical or business development services available to commercial farmers.

112. Farmers are not diversifying in to high-value crops e.g. off-season vegetable production and agricultural production is based upon small fragmented farms, producing a diversity of crops, primarily for subsistence needs.

113. Farmers do not produce, or are rewarded for, quality produce. Farmers at present carry out very little post-harvest handling on farm and are unfamiliar with modern retailing requirements.

114. Farmers are divorced from markets and unaware of consumer preferences due to the number of intermediaries. Farmer organizations and cooperatives are limited in scope and effectiveness and have difficulties in servicing their farmer client base due to constraints in the policy and regulatory environment.

3.4.2 Market Development

115. Market Research and Information Dissemination is underperforming. MAFF lacks the capacity to fulfill its responsibilities for the provision of public services e.g. market research and information dissemination, certification and quality control. At the same time, in the private sector, market research and new product development skills within private sector companies is limited.

116. Marketing and Business Development Services are limited. There are a lack of skills and experience in facilitating and brokering contract farming arrangements. Support is required to develop and strengthen vertical value chain partnerships, such as contract farming, between farmers and medium to large buyers. This may include the establishment of commodity groups, though which commodity specific assistance can be channeled. There is a lack of formal education in agricultural marketing and agribusiness to provide graduates for the private agribusiness sector.

117. Market-Matching between suppliers and buyers is constrained. Due to lack of coordinated supply normally associated with wholesale markets, large buyers rely on imports e.g. vegetables for hotels and restaurants. Cambodia exports generic, undifferentiated low value raw commodities, rather than high quality niche products. Exports of rice, maize, cassava and rubber are limited to Vietnam and Thailand, representing a risk of undiversified markets, and yet at the same time, export markets cannot be diversified if SPS requirements are not addressed as Cambodia has a poor international reputation for quality.

118. The agricultural production and marketing sectors have remained fragmented and small-scale as entrepreneurs cannot access affordable finance to fund investment and growth. The large number of small-scale operators competing on price leadership does not encourage quality improvement, value addition and diversification into higher-value markets.

119. If contract farming is to become more widespread as a supply chain strategy, co-ordination through the establishment of commodity groups will become critical.

120. In terms of rural finance, there is very little long-term financing for investment capital available. The majority of loans from the formal sector require collateral and in the informal sector money lenders charge high rates of interest that do not solve cash flow problems in the long-term.

3.4.3 Market Infrastructure

121. No primary wholesale system exists in Cambodia. Large buyers of agricultural commodities have to produce the commodity themselves and engage in direct supply arrangements with producers or rely on imports. Due to the large number of intermediaries, consumer preferences are not transmitted back down the marketing chain to producers.

122. Public markets are in poor condition and require upgrading to improve product handling and food hygiene and safety standards. Better management of markets will provide a mechanism for improving standards.

123. Due to a lack of storage facilities and capital to purchase stock, commodities are sold at harvest for export with little value-added. The consequence of this is that no stocks are available later in the year for consistent supply to processors. There are no cold storage or transport facilities for perishable high-value commodities such as fruits, vegetables and fresh fish, resulting in high wastage. Packaging during transport and storage does not offer protection.

124. At the processing level, there are low levels of processing technology and efficiency. Much of the rice and maize harvest is exported unmilled as millers do not have the financial capacity to purchase or mill the large volumes put on the market at harvest by farmers.

125. The capacity of processing machinery cannot be maximized throughout the year due to the lack of storage of raw materials. Processing is not competitive with imports or as export to neighboring countries due to high costs. Exporting to further markets such as Europe and USA may be viable if SPS requirements could satisfied.

126. Abattoirs standards are particularly low and butchering techniques do not differentiate higher value cuts of meat, and there is no research into the processing of convenience foods.

3.4.4 Marketing Policy and Regulations

127. Marketing policy and regulations are still at a rudimentary level; while government policies and regulations are promulgated the enforcement of them is rarely carried out.

128. There are few government interventions to protect or support agribusiness development e.g. storage facilities for processors, protection for infant industries, promoting the SME private sector, promoting exports and import substitution.

129. There is no licensing system used to enforce standards. And the absence of standardized weights, measures and quality grades increases transaction costs. At the export level this constrains access to high value markets e.g. Europe and USA, as there is a lack of internationally recognized standards and accredited SPS testing facilities for certifying exports.

3.5 Water Resources and Agriculture Land Management

130. On the basis of the review of the key issues for Water Resources and Agricultural Land Management outlined in the annex to this report, The analysis indicates a large number of constraints and problems affecting the capacity of MAFF and MOWRAM to meet the goal of ***Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context*** *(TWGAW 2007, pg. 29).*

131. The gaps and opportunities for improvement analyzed in the annex to this report can be summed up as follows:

3.5.1 Water data management

132. The collection of water resource data is limited, does not cover the whole country, and datasets are unlinked and prone to loss. There are improvements required in both physical collection of water resource information, as well as the capacity of government staff in being able to fully utilize the information; particularly in the context of flood and drought forecasting and the likely impacts of climate change. While the flood and drought forecasting system exists, there are significant opportunities for improvement.

3.5.2 Integrated water resources management

133. While the institutional framework at the Mekong Basin level is strong and efficient, improvements in the link between the MRC and MOWRAM are needed. Integrated water resources management is still unimplemented and the national legal framework is still to be finalized with 4 sub-decrees on basin management, Farmer water user communities, water licenses and fees and water quality.

134. At the moment, the budgetary and human resource capacity of MOWRAM is 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.

3.5.3 Agricultural Land Legal Status

135. There is an ongoing effort to strengthen the legal framework to protect, conserve, and enhance the use of agricultural lands for productivity and sustainability.

3.5.4 Land resource assessment

136. Due to insufficient funds, currently land resource assessment in Cambodia has not been carried out in a comprehensive manner. Individual surveys used different principles, and hence there were differences in methodology, scales, volume and details. As a consequence, data are of variable quality, unreliable or outdated under changing circumstances. Data of land resource information are not well integrated; they are generally managed by individual projects or personnel; making access difficult. The Cambodian Agronomic Soil Classification system is a good example for immediate identification of soils in the field, but it is being restricted to use for lowland rice soils.

3.5.5 Lowland rice soils

137. There is a need to update the current soil classification system in terms of extra groups, phases, scale, volume and significance of use for crop production.

138. Most soils in the lowlands are low fertility in nature, and they are subject to use under rainfed conditions with significant fluctuations in nutrient and water availability. As a consequence, rice yields remain relatively low. Provided that water available for full and/or supplementary irrigation, the intensification and diversification in the lowland cropping systems help increase productivity of lowland rice soils and generate more incomes to farmers.

3.5.6 Upland soils

139. Very little is known about soil suitability in upland farming systems. This is a major hindrance to increasing productivity of upland soils. At the same time there are no simple guidelines to classify, identify and manage upland soils. This is a major hindrance to the land utilization, and sustainable management of upland soils. Likewise, there has been no information on crop zoning for upland cropping in Cambodia, which would be useful for agricultural land-use planning.

140. There is a lack of a comprehensive database of upland soil resources of the country; very little research has been carried out to understand the soils and overcome their constraints in order to allow for sustainable production.

3.5.7 Small holder land tenure security

141. It is widely recognized by both the government and the international community that there has been significant achievement in smallholder land tenure security and the recognition of communal land rights of indigenous communities. However, the government also recognizes that procedures can be always improved and the process of land titling, while being very efficient and successful, could be speed up and broadened in scope with additional support from donor funding. It is a priority of the government to release more land for social land concessions; particularly for veterans and their families and the very poor. At the same time, legal recognition of the communal land rights of indigenous communities needs to be reflected in the field.

3.5.8 State land resources

142. The development of economic land concessions has been carried out in accordance with the Land Law and Economic Land Concession sub-decree. The implementation of the concessionary system needs to take into account a clear definition of forests and clearly demarcated boundaries concerning the jurisdictions of various government bodies. Under the direction of the relevant government authorities and with the assistance from donor funding, the delineation of forest boundaries and their mapping needs to take place.

3.5.9 Monitoring of land tenure policies

143. The implementation, enforcement, and monitoring of land management policies and practices in accordance with the relevant laws requires a well-organized and reliable land use and land tenure database system. As such, an agricultural census every 10 years is required. In addition, specific research (rural-rural migration and its impact on land use and land change, gender aspects of rural land tenure, water resource management and land tenure and land disputes and resolution mechanisms) is required in support of policies.

3.5.10 Sustainable operation and maintenance of water management infrastructures

144. The creation of FWUCs requires a strong support to build local capacity on technical, financial and organizational matters. This support is currently lacking. 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.

145. 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.

3.6 Agricultural Research, Education and Extension

146. On the basis of the review of the key issues for Agricultural Research, Education and Extension outlined in the annex to this report, The analysis indicates a large number of constraints and problems affecting the capacity of MAFF and MOWRAM to meet the goal of ***A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer*** *(TWGAW 2007, pg. 31).*

147. The institutions involved in and responsible for agricultural innovation system in Cambodia have largely failed to satisfy most of the essential requirements. Nonetheless, the resources development and institutional strengthening, resource mobilization and coordination and formulations of needed policies and strategies are ongoing processes, including the requirements of the national system for generation and transfer of appropriate knowledge, information and technologies for agricultural transformation and judicious harvesting of water resources.

148. Enhancing national capacities of agricultural innovation (synergistic research, education and extension) requires combined, integrated and sustained interaction of all elements involved in agricultural and water research planning, technology generation, adaptation and validation, transfer and utilization, including the active collaboration of policy-makers, educators, trainers, extensionists, and clients.

149. It is essential to have sustained political will, support and commitment, linked with appropriate policies and strategies, good institutional alignment and governance, together with defined priorities, coherent objectives, qualified and motivated scientific and technical staff, adequate facilities and equipment, sustained adequate funding, effective coordination and intensified on-farm involvement.

150. Even a fraction of the above requirements have hardly been met in Cambodia. Hence, the need for national capacities to plan, fund and implement long-term strategies for building effective knowledge systems and adequate human capital, and generation, adaptation and diffusion of relevant information and appropriate technologies can hardly be overemphasized. the main root causes of the problem include:

1. Fragmented and underperforming research system as a result of inadequate policy environment, investment and coordination mechanisms; incomprehensive, poorly-responsive redundant and non-inclusive research agenda; and inadequate exposure to outside sources of knowledge;

2. Inadequate education system as a result of insufficient enabling policies, capacities, including teaching staff, trainers and resources, outdated curricula and training programs; and poor linkages with policy-makers and among research, extension and farmers;

3. Due to funding gaps, extension at the commune level is almost non-existent – it is poorly linked to farmers' priorities as a result of shortage of appropriate technologies and extension methodologies; lack of skilled extension workers, resources and infrastructure; little influence of farmers on setting extension and research agenda, and little knowledge of market trends and market information;

4. Functional linkages within and among REE institutions are generally unsustainable. A major constraint to closer co-operation is the prevailing policies which favour functional specialisation of the REE institutions and do not recognise the synergy of their functions. Even when the benefit of establishing or strengthening the linkages among R & D institutions is recognised, little or no resources and incentives are allocated to foster and sustain these linkages; and

5. Competence and capacity in the areas of socio-economic analyses and research which are supposed to underpin national policies, priorities, strategies, and allocation and development of resources could be improved.

151. The above constraints result in persistence of stagnation of food and agriculture production and productivity, low water productivity and stubbornly high food insecurity and poverty; low capacity for technology generation, adaptation, assessment, dissemination and adoption; low impact of graduate technical skills, technological interventions and extension approaches on the livelihood of resource-poor men and women farmers; duplication, overlapping and wasteful use of meager resources by stakeholders of agricultural innovation; and inability to exploit the country's comparative and competitive advantages and market opportunities.

3.6.1 Challenges and Opportunities

152. The challenge is to build and sustain a viable innovation system for agricultural and water resources development capable of generating relevant information, appropriate technologies and comprehensive knowledge system for enhanced and sustained food and agricultural production in Cambodia. In order to achieve the Program's goal and objectives, the agriculture and water resources sector must:

1. Build capacity and mobilize all available resources in a holistic, coordinated and inclusive manner, and establish linkages among all stakeholders of agricultural and water innovation to create knowledge societies and sustained funding mechanisms for the transformation of agriculture and water sectors, the enhancement of rural livelihood and conservation of environment; and

2. Develop appropriate policies, institutional arrangements and governance, and empower stakeholders, particularly the resource-poor men and women farmers and other marginalized rural groups to set the agriculture and water research, education and extension priorities and effectively participate in implementation and impact assessment of their agenda.

4 THE STRATEGY AND VISION FOR AGRICULTURE AND WATER

153. The Strategy and Vision for the Agriculture and Water Sector was articulated in TWGAW (2007). The purpose of this section is to briefly review those initial findings and provide a basis for developing the Harmonized SAW articulated in this current report. From TWGAW (2007), the long term Vision for agriculture and water was identified as:

> ***to ensure enough, safe and accessible food and water for all people, reduce poverty, and contribute to economic growth (GDP per capita), while ensuring the sustainability of natural resources***.

154. While the Over-arching Goal for agriculture and water resources management was:

> ***to contribute to poverty reduction, food security and economic growth through enhancing agricultural productivity and diversification and improving water resources development and management.***

155. To achieve this Overarching Goal TWGAW (2007) recognized that there will need to be particular focus on:

1. Increasing food security and income of rural communities and households
2. Reducing vulnerability of rural communities and households
3. Increasing surpluses of agricultural products for processing and export
4. Sustainable management and development of the Nation's land and water resources

156. TWGAW (2007) recognized that the Over-arching Goal for the SAW will be achieved principally by increased agricultural productivity, more efficient use and management of land and water, and enhanced agri-business processes. Institutional capacity building, particularly in the area of knowledge and technology transfer, will be also needed. Accordingly, the following Development Goals were set:

1. Arrangements that provide a sound policy, legal, institutional and administrative basis for effective work performance in agriculture and water resources development and management.
2. Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life.
3. Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders.
4. Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context.
5. A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer.

157. As will be discussed below, these development goals can be mapped to the 6 pillars of the harmonized Strategy.

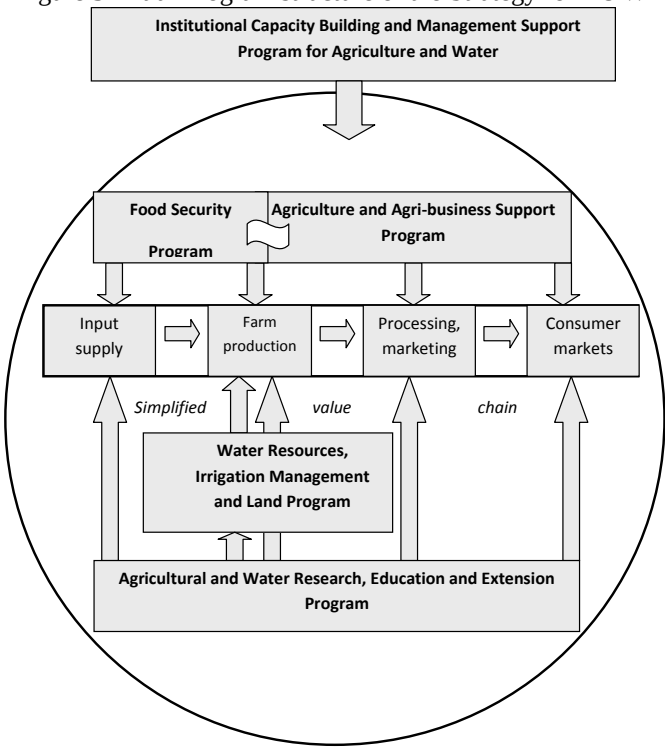
158. Under the TWGAW (2007) the first three Development Goals were so placed because they deliver social and economic benefits directly to the community. The last two provide indirect benefit to the community, through building the institutional capacity of the lead agencies to carry out their responsibilities. Nevertheless, the five Development Goals have equal priority for action – they are equally necessary for success in the agriculture and water sectors. The Development Goals lead directly to defining five Program areas under the SAW; they can be "mapped onto" the structure outlined in Figure 5. One Program addresses the enabling environment, two Programs address the "mobilization and empowering" elements of the Strategy, and two Programs address productivity and commercialization of agriculture. Together, the Programs aim to achieve poverty reduction and economic growth, through the agency of agriculture and water management.

159. The individual program designs were developed during 2008-2009 by separate design teams, headed by Co-Task Managers from MAFF and MOWRAM. The individual programs were identified as:

1. Institutional capacity building and management support program for agriculture and water resources
2. Food security support program
3. Agricultural and agri-business (value-chain) support program
4. Water resources, irrigation management and land program
5. Agricultural and water resources research, education and extension program

160. The rationale for the Programs was developed by the Strategy Team of TWGAW (2007) on the basis of the SWOT analysis carried out in Section 3.1, and as the starting point, the RGC's priority for national development during 2006-2010 – poverty reduction and economic growth, achieved particularly through agriculture.

Figure 5 Initial Program structure of the Strategy for A&W



161. During the Harmonization phase of the SAW it was noted that there were several areas of overlap between the different program designs; see Figure 6. It was therefore the task of the Harmonization team to resolve these overlaps, and ensure that the original interventions identified by

the individual design teams were retained within the overall structure of the Harmonized SAW design, and that the MOWRAM and MAFF PIPs for 2009-2013 were incorporated.

Figure 6 Original Overlaps Between SAW Program Areas

Program Components	1	2	3	4	5
1. Human resources and management capacity is built	●				
2. Improvement of organizational structure and mechanisms in MAFF and MOWRAM (P1), Policy and institutions (P5)	●				●
3. Improvement of the planning, budgeting, and financial management systems	●				
4. Management information systems are implemented	●	●		●	
5. Community self-reliance for food security and poverty reduction (P2), Education and training (P5)		●	●	●	●
6. Enhancement of institutional and policy environment for food security and nutrition and improving information base (P2), Policy and institutions (P5)		●			●
7. Market development (P3), Extension and outreach (P5)			●		●
8. Market infrastructure (P3), Research and technology (P5), Extension and outreach (P5)			●		●
9. Marketing policy and regulation			●		
10. Development of integrated water management				●	
11. Development of national land resource assessment				●	
12. Improvement of the productivity of lowland rice soils				●	
13. Improving the productivity of upland soils for sustainable management and utilization				●	
14. Strengthening the smallholder land tenure security and productivity				●	
15. Strengthening the management of state land resources				●	
16. Provide information for monitoring the implementation and impact of land use and land tenure policies				●	
17. Continuation of the development of irrigation and water management infrastructures with a more participatory design and in a more integrated way				●	

162. In the harmonization process it was seen that the original structure envisaged in Figure 5 could be modified[5], whilst retaining the original intent of the Strategy for Agriculture and Water's Five Development Goals; viz:

1. Arrangements that provide a sound policy, legal, institutional and administrative basis for effective work performance in agriculture and water resources development and management.
2. Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life.
3. Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders.
4. Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context.

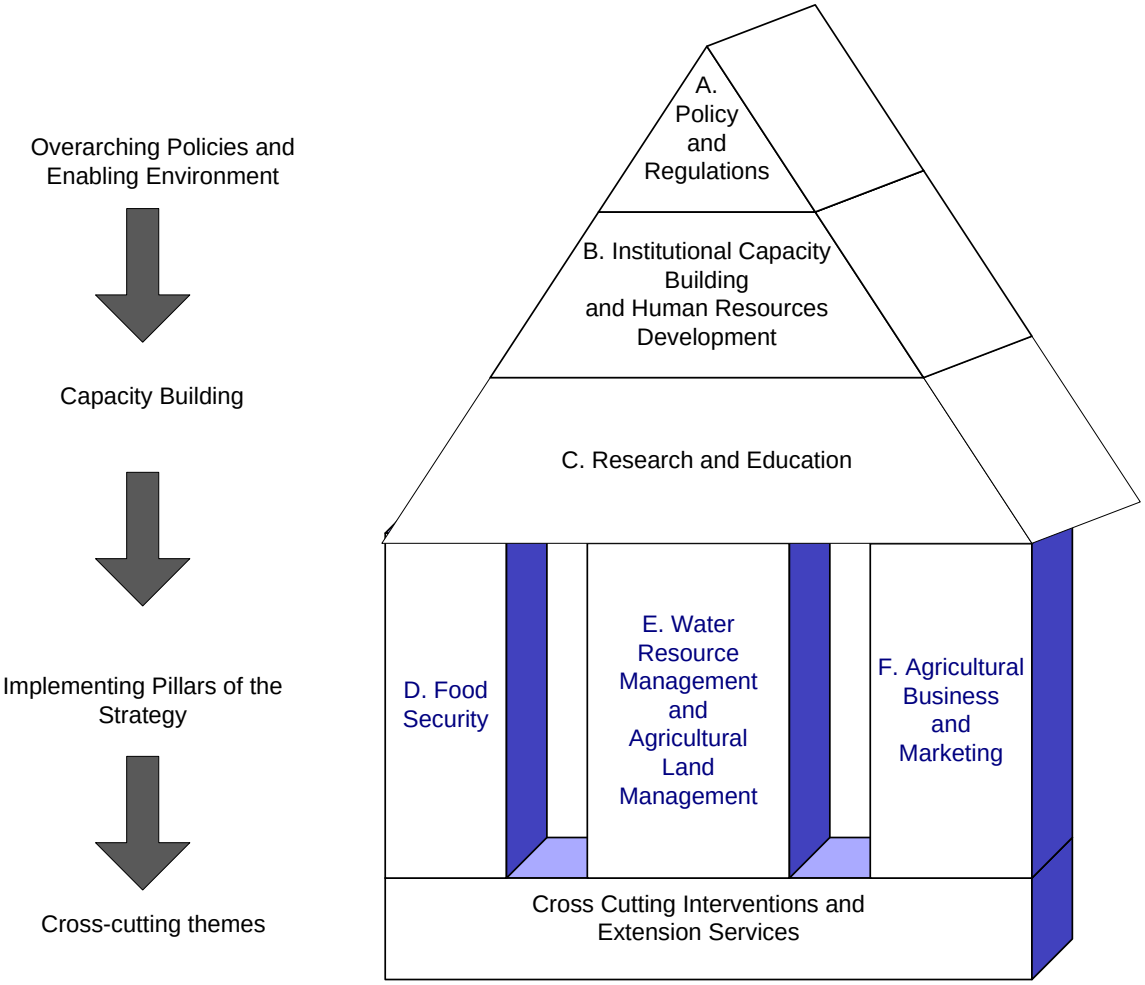
[5] Retaining the original 5 Program nomenclature caused difficulties during the harmonization process as each program design team inherently desired that their program remain untouched and that the other programs should 'harmonize with them". By changing the nomenclature to a Pillar Structure the harmonization team could 'break' with the past and propose a more streamlined strategy that retained the original design interventions but mainstreamed the interventions into a 'whole-of-ministry' approach rather than a individual programmatic approach.

5. A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer.

163. By viewing the 5 Programs activities as a whole, to be integrated with each other, the Programmatic approach as presented in Figure 5 could be changed into a Pillar approach and the SAW could be viewed as a 'house', with a roof, supporting beams, walls, and foundation; see Figure 7.

164. The 6 pillars of the strategy are designed as 3 enabling pillars and 3 core or implementing pillars. Pillar A (the roof) sets the overarching policies and enabling environment for the SAW, while Pillars B and C (the supporting beams) provide the capacity building to MAFF and MOWRAM for them to implement the SAW activities. Pillars D, E and F (the walls) serve as the main implementation vehicle for the SAW; concentrating on delivering interventions and services in Food Security, Water Resource Management and Agricultural land Management, and finally Agricultural Business and Marketing. It is worth emphasizing that cross-cutting services such as gender mainstreaming functions and extension services (the foundations) are fully embedded in Pillars D, E and F.

Figure 7 Harmonized SAW Implementation Pillars



5 IDENTIFICATION OF THE CORE PROBLEM AND APPROACH TO PROGRAM DESIGN

5.1 Key Issues and the identification of the Core Problem

165. On the basis of the preceding review, the objective of this section is to identify the core problem for the Strategy for Agriculture and Water. The identification of the core problem, its causes and its impacts are visualized through a Problem Tree Analysis indicating cause and effect relationships. The Problem will lead to the identification of the Logical Frame of the Program. By specifying the core problem and therefore the overall purpose of the Program, the analysis provides an approach to the program design.

166. The analysis conducted in the previous sections of the report indicate a large number of constraints and problems affecting the capacity of MAFF and MOWRAM to meet the goal ***to contribute to poverty reduction, food security and economic growth through enhancing agricultural productivity and diversification and improving water resources development and management.***

167. These areas for improvement can be grouped into six overall problem areas: (i) Policy and legal framework is unable to contribute to the development of the Agriculture and Water sectors; (ii) Institutions, administration, research and education are unable to be effective in agricultural and water resource development and management; (iii) Capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer is lacking; (iv) Agricultural systems and community arrangements are unable to ensure that the poor and food insecure have physical and economic access to sufficient, safe and nutritious food; (v) Unsustainable and unrepresentative management of land and water resources and facilities; and (vi) Agriculture and agri-business are unable to make effective use of inputs and market opportunities, and are not diversifying production

5.2 The Core Problem

168. By developing a logical series of observations based on the preceding analysis in this report, the Core Problem has been defined as:

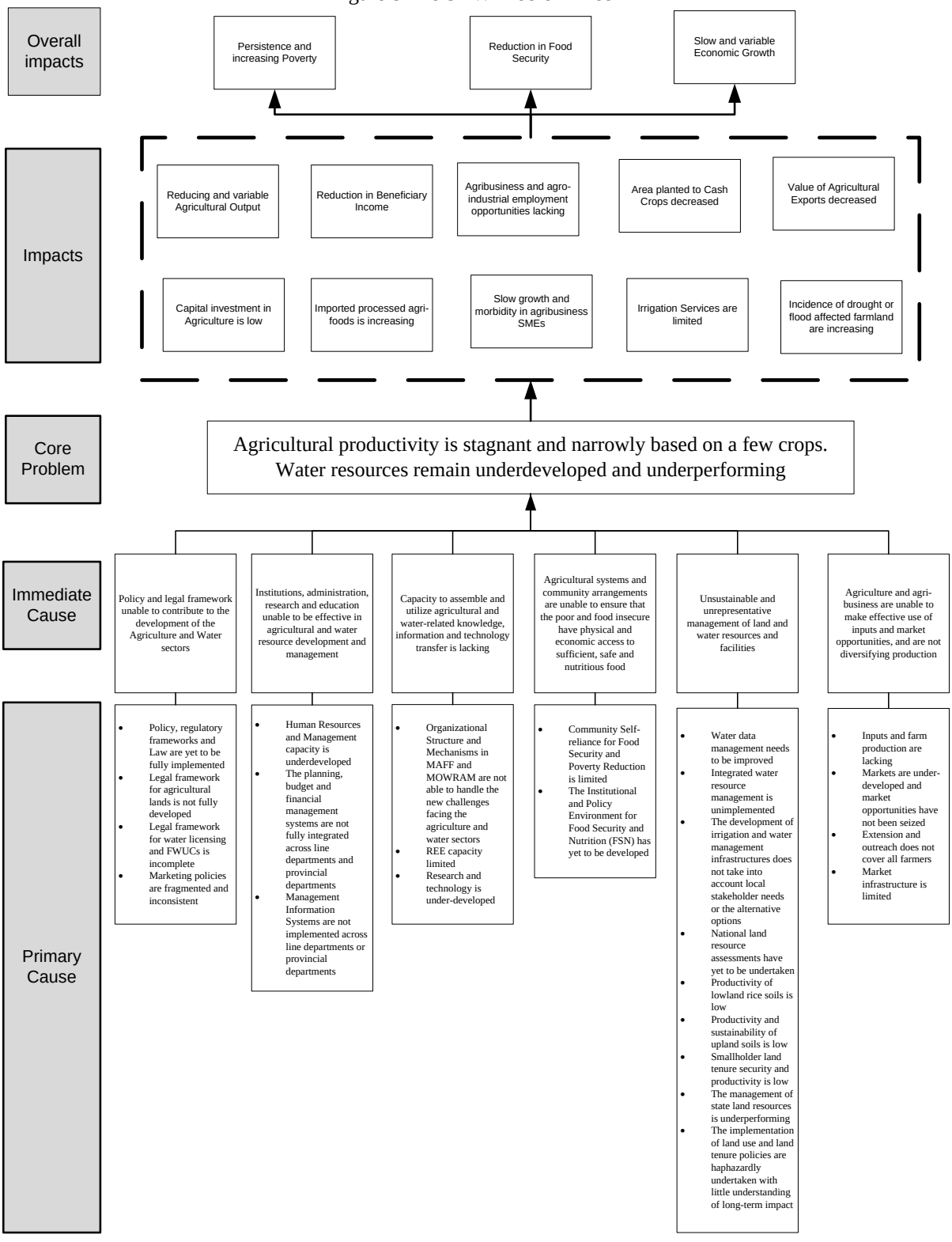
> **Agricultural productivity is stagnant and narrowly based on a few crops. Water resources remain underdeveloped and underperforming.**

169. The identification of a ‘Core Problem’ is the logical conclusion drawn from an analysis of the immediate and primary causes as presented in Figure 8.

5.3 Impact of the Core Problem

170. The impacts of the core problem are broken down as immediate and overall as shown above in Figure 8 and are briefly discussed in their bottom-to-top relationships. The ultimate, and negative, impacts to the economy are shown as the top set of boxes in Figure 8. At this point it seems almost redundant to explain these impacts, but they are so crucial to Cambodia’s future development, they must be stressed even if briefly.

Figure 8 The SAW Problem Tree



171. Agricultural ventures of every description need financial, technical, and managerial assistance aimed at improving their profitability. Primary producers are limited in their ability to diversify because of traditional cropping practices. They are unable to break into new crops or products, and to some degree are locked into them by donor and government programs which only present information on how to produce more of the same thing and have limited rates of success. With little likelihood of

seeing higher profit margins, there is little incentive to invest in better high priced inputs, machinery, or infrastructure.

172. Marketing opportunities are not linked to the increased production. Since little attention is paid to quality control and assurance by anyone (except the ultimate consumer) there is no incentive to produce a premium product. There is no competitive advantage, or incentive, associated with better prices and increased demand for their products.

173. These negative aspects of the three issues, lack of diversity and competition as well as poor low success rates of agriculture and water sector programs, lead to further depression in the rural sector.

174. Income in the rural areas remains depressed in the face of poor prices and rising production costs. While daily labor wages have nearly doubled in the last few years, they have only barely kept up with the increases in food and energy costs. Rises in agricultural input costs have not been matched by higher sale prices for their produce.

175. Low employment in rural areas is a chronic problem. As daily labor costs rise, primary producers and processors look for ways to either diversify into less demanding crops. Slow growth in the rural economy is the result of all the factors mentioned. Without growth, or even the prospect of future growth, there will be a continued downward spiral.

176. The problems become indicators of the future and without meaningful interventions there is little to indicate an optimistic future for the rural residents of Cambodia. It is easier to leave the land and try their luck in the urban areas.

5.4 Turning Problems into Solutions – The Objective Tree and Improved Sector Outputs

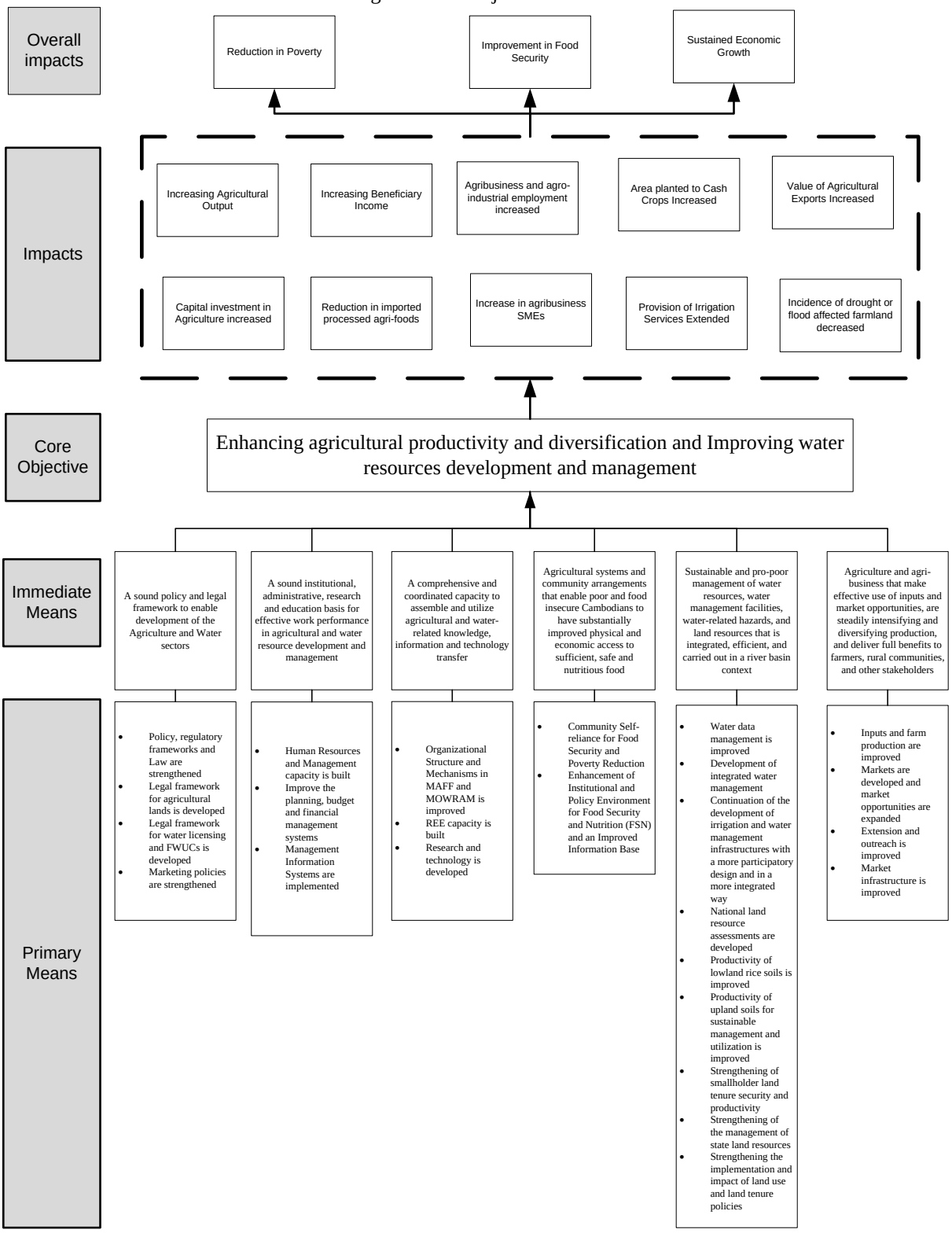
177. As noted in the previous sub-sections, the core problem identified from the analysis was that agricultural productivity is stagnant and narrowly based on a few crops and that water resources remain underdeveloped and underperforming. The challenge for the project design is to turn the core problem and the associated primary causes into solutions. Reformulating the core problem into a core objective implies that a successful project would give rise to enhanced agricultural productivity and diversification and improved water resources development and management. This would have consequent impacts in a greater diversity of production, higher success rates in agriculture and water sector programs, improved competitiveness, higher income in rural areas, increased employment in rural areas, and finally higher economic growth in rural areas. The overall impact of the intervention would be a higher growth in productivity, a vibrant rural economy, and a reduction in poverty; see Figure 9.

178. The primary causes of the core problem also have primary solutions to the achieving the core objective. These are also presented in Figure 9 and form the basis for the proposed interventions outlined in Section 6 next.

179. These areas for improvement can be grouped into six overall areas: (i) A sound policy and legal framework to enable development of the Agriculture and Water sectors; (ii) A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management; (iii) A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer; (iv) Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food; (v) Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context; and (vi) Agriculture and agri-business that make effective use of inputs and

market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders

Figure 9 The Objective Tree



6 THE PROGRAM

6.1 Summary of Program Goal and Objectives

180. The Program goal in terms of the overall outcome to be achieved in the long-term has been identified in the SAW ***"To contribute to poverty reduction, food security and economic growth through (a) enhancing agricultural productivity and diversification and (b) improving water resources development and management"*** (TWGAW 2007, pg. 11).

181. The achievement of the Program goal will be realized by quantifiable indicators that the Program's six intermediate outputs and objectives contribute towards. The quantifiable indicators are:

1. Agricultural output increased by 20% over 4 years
2. Beneficiary income increased by 20% over 4 years
3. Employment in agri-business and agro-industrial sector increased by 20% over 4 years
4. Area planted to cash crops increased by 20% over 4 years
5. Value of agricultural exports increased by 30% over 4 years
6. Value of formal bank loans for capital investment in agriculture increased by 25% over 4 years
7. Volume of imported processed agri-foods decreased by 20% over 4 years
8. Number of agri-business SME's increased by 10% over 4 years
9. The area of cropping land with access to irrigation services is increased by 100,000 hectares over 4 years
10. The incidence of drought or flood affected farmland is reduced by 20% over 4 years

182. The Program's six intermediate outputs that contribute towards the Program goal are:

1. **Output A (Policy & Regulation):** A sound policy and legal framework to enable development of the Agriculture and Water sectors

2. **Output B (Institutional Capacity Building and Human Resource Development):** A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management

3. **Output C (Research and Education):** A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer

4. **Output D (Food Security):** Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life

5. **Output E (Water Resource Management and Agricultural Land Management):** Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context

6. **Output F (Agricultural Business and Marketing):** Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and

diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders

183. The program is designed as a national Program with the aim of (i) strengthening the enabling environment, whilst at the same time (ii) mobilizing the natural, human and financial resources in order to empower national and sub-national authorities, communities, and families to manage agricultural and water resources, (iii) to increase the productivity of agriculture and (iv) enabling secure food supplies and economic growth in the face of increasing challenges such as droughts and floods and the impacts of climate change.

6.2 Overall Program Impact Expected

184. The Program will lead to significant longer-term impact of the capacity of MAFF and MOWRAM to perform their mandated functions in the agriculture and water resource sectors and to support the implementation of the implementing pillars D. Food Security; E. Water Resource Management & Agricultural Land Management; and F. Agricultural Business and Marketing.

185. In relation to the intermediate outputs contributing to the Program goal, the Program is expected to achieve the following results:

186. **Output A (Policy & Regulation):**

- MAFF and MOWRAM have implemented and enforced policies, plans, laws and regulations for which they are responsible
- Ministerial Prakas' are issued devolving the implementation of development programs to provincial departments, as mandated under the Organic Law

187. **Output B (Institutional Capacity Building and Human Resource Development):**

- Facilities and equipment are improved
- An increase in performance and output in organizational capacity in planning, administration, management (financial and contract management, human resources management, information management, engineering and public works, project management, monitoring and evaluation) at the central and provincial level is observed
- Information systems are implemented
- A gender unit in MAFF and MOWRAM is functioning and fully funded to implement gender mainstreaming policies
- Gender Action plans are updated yearly and implemented

188. **Output C (Research and Education):**

- Training institutes' facilities and curricula is improved
- Strategic and applied research and technologies are developed and adopted that are pro-poor, pro-women and pro-environment
- REE capacity is built and partnerships with national and international institutes strengthened
- Training given to directors and senior staff of MAFF and MOWRAM and provincial staff as well as FWUCs
- Agriculture processing technology is improved and niche products meet market needs
- Commune councils and rural communities develop and implement community development plans for communal aspects of agriculture, agri-business and water management
- All action plans incorporate gender policy

189. **Output D (Food Security):**

- Beneficiary farmers are benefited by extension, technology transfer, improved production trainings and sets of low-input and improved technical packages
- Beneficiary farmers organized into groups and conducting smallholder farming activities based on the principles of sustainable and Good Agricultural Practices and Natural Resources Management
- Community projects are implemented using participatory planning techniques
- Communities are involved in the local planning processes under the provisions of the Organic Law
- Food security concepts are integrated into development programs and policy

190. **Output E (Water Resource Management and Agricultural Land Management):**

- The Tonle Sap Authority (TSA) develops and implements an Integrated Water Resource Management Plan for the Tonle Sap and connected river basins
- MOWRAM and MAFF develop and implement a water resource management and agricultural resource management data collection and dissemination system
- Provincial and local authorities, farmers and other stakeholders are involved in IWRM and irrigation infrastructure planning and implementation
- An inventory and appraisal of land and water resources is carried out
- Master plans and identified priorities for land and water resource utilization are implemented
- Agricultural and economic productivity of lowland and upland areas and cropping systems are assessed and subsequent land use plans are implemented
- MAFF and MOWRAM provide extension services for increased agriculture and water productivity
- MAFF and MOWRAM provide extension services for increased agriculture and water productivity in irrigable and rain-fed croplands
- 100,000 hectares of wetland and dryland irrigation (25,000 ha per year) is constructed and sustainable water management, harvesting and use practices are adopted by beneficiary farmers.
- Land use certificates are provided to smallholder farmers
- Communal land rights are provided to indigenous communities
- MOWRAM and MAFF develop and implement a drought and flood forecasting system that provides timely warning to local authorities and farmers on the likely incidence and severity of events.
- MOWRAM and MAFF develop and implement drought and flood mitigation measures

191. **Output F (Agricultural Business and Marketing):**

- Beneficiary farmers have access to rural financial packages and contract farming agreements i.e. agricultural insurance products, long-term loans through RDB and financial institutions, and leasing arrangements, to provision agriculture and water public and private extension services to increase and sustain agricultural productivity
- Beneficiary farmers, agriculture merchants, suppliers and traders, by coordination of a national network supported by the DAE, have adopted high-value crop production, appropriate farm mechanization technologies, and alternative delivery mechanisms that are proven to increase agricultural yields and quality
- Marketplaces have the human, financial and infrastructure resources to store, grade, package, process and transport agricultural products
- Farmers are linked directly with high-value markets, agri-clinics and SMEs (through ICT applications and rural networks) to enable trade in agricultural products supported by farmer marketing schools, market-led extension services, Farmer Contract Law and sub-decree(s)
- Export in certified processed agri-food products that meeting international standards has increased by 20%

6.3 Target Beneficiaries

192. The directly targeted beneficiaries of the activities will be:

1. **MAFF and MOWRAM staff at the central, provincial and district levels** enabling them to provide services to communes and villages for the benefit of their inhabitants. It should be recognized at the outset of the SAW that given the limited time-frame of the program implementation, it is envisaged that most of the capacity building effort will be concentrated at the central and provincial levels in order to strengthen their operations and mandates, before moving onto the district and lower levels during subsequent rollout of the SAW. The mid-term review of the SAW should evaluate if and how the expansion of SAW activities to more provinces and to districts should occur.

2. **Staff of research and educational institutes** enabling them to plan and implement long-term strategies for human resources development and for knowledge and technology generation, adaptation and diffusion.

3. **Men and women farmers and non-farmer households; farmer and water user groups; agri-business entrepreneurs; market traders, suppliers and buyers; financial service providers; and other rural stakeholders** providing them access to market information and appropriate technologies to improve farm production, income and profitability and enhance their food security.

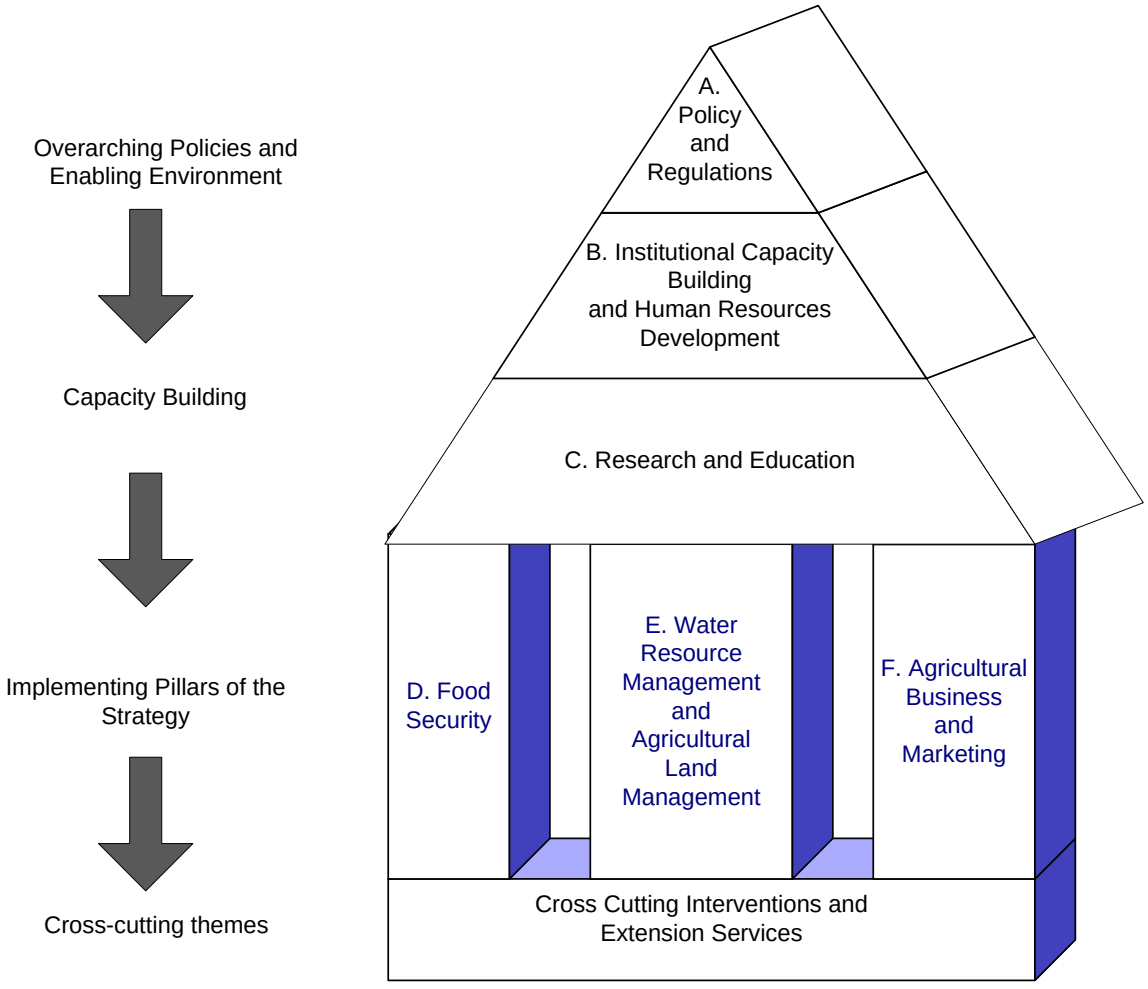
7 THE PROGRAM AND MAIN COMPONENTS

7.1 Program Structure

193. The Program is a rolling medium to long term Program to guide the implementation of individual projects and actions aimed at improving food security and economic growth through (a) enhancing agricultural productivity and diversification and (b) improving water resources development and management. It would comprise 24 components arranged over 6 pillars; see Figure 10.

194. As discussed in Section 4, the 6 pillars of the strategy are designed as 3 enabling pillars and 3 core or implementing pillars. Pillar A sets the overarching policies and enabling environment for the SAW, while Pillars B and C provide the capacity building to MAFF and MOWRAM for them to implement the SAW activities. Pillars D, E and F serve as the main implementation vehicle for the SAW; concentrating on delivering interventions and services in Food Security, Water Resource Management and Agricultural land Management, and finally Agricultural Business and Marketing. It is worth emphasizing that cross-cutting services such as gender mainstreaming functions and extension services are fully embedded in Pillars D, E and F.

Figure 10 Harmonized SAW Implementation Pillars



195. As noted above, there are 24 components across the 6 pillars, and these are briefly outlined below before explaining them in detail.

Pillar A. POLICY & REGULATION

1. Component 1: Policy, regulatory frameworks and Law are strengthened
2. Component 2: Legal framework for agricultural land management is developed
3. Component 3: Legal framework for water licensing and FWUCs is developed
4. Component 4: Marketing policies are strengthened

Pillar B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT

5. Component 1: Human Resources and Management capacity is built
6. Component 2: Improve the planning, budget and financial management systems

Pillar C. RESEARCH & EDUCATION

7. Component 1: Organizational Structure and Mechanisms in MAFF and MOWRAM is improved
8. Component 2: REE capacity is built
9. Component 3: Research and technology is developed

Pillar D. FOOD SECURITY

10. Component 1: Community Self-reliance for Food Security and Poverty Reduction
11. Component 2: Enhancement of Institutional and Policy Framework for Food Security and Nutrition (FSN) and an Improved Information Base

Pillar E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT

12. Component 1: Water data management is improved
13. Component 2: Development of integrated water management
14. Component 3: Continuation of the development of irrigation and water management infrastructure with a more participatory design and in a more integrated way
15. Component 4: National land resource assessments are developed
16. Component 5: Productivity of lowland rice soils is improved
17. Component 6: Productivity of upland rice soils for sustainable management and utilization is improved
18. Component 7: Strengthening of smallholder land tenure security and productivity
19. Component 8: Strengthening of the management of state land resources
20. Component 9: Strengthening the implementation and impact of land use and land tenure policies

Pillar F. AGRICULTURAL BUSINESS & MARKETING

21. Component 1: Inputs and farm production are improved
22. Component 2: Markets are developed and market opportunities are expanded
23. Component 3: Extension and outreach is improved
24. Component 4: Market infrastructure is improved

196. The proposed program over a four year period is estimated to cost US$501,295,000 million as summarized in Table 4 in Section 8 and detailed in the Annex (Section 16).

197. The budget breakdown for each pillar and component comprises:

Pillar A. POLICY & REGULATION

(i) Component 1 for US$2.4 million (0.48 percent), (ii) Component 2 for US$1.6 million (0.32 percent), (iii) Component 3 for US$1.71 million (0.34 percent), (iv) Component 4 for US$0.5 million (0.10 percent)

Pillar B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT
(i) Component 1 for US$13.485 million (2.69 percent), (ii) Component 2 for US$1.05 million (0.21 percent), (iii) Component 3 for US$1.61 million (0.32 percent)

Pillar C. RESEARCH & EDUCATION
(i) Component 1 for US$12.045 million (2.40 percent), (ii) Component 2 for US$20.8 million (4.15 percent), (iii) Component 3 for US$24.4 million (4.87 percent)

Pillar D. FOOD SECURITY
(i) Component 1 for US$41.75 million (8.33 percent), (ii) Component 2 for US$2.915 million (0.58 percent)

Pillar E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT
(i) Component 1 for US$5.575 million (1.11 percent), (ii) Component 2 for US$3.925 million (0.78 percent), (iii) Component 3 for US$248.51 million (49.57 percent), (iv) Component 4 for US$6.43 million (1.28 percent), (v) Component 5 for US$6.4 million (1.28 percent), (vi) Component 6 for US$3.125 million (0.62 percent), (vii) Component 7 for US$2.625 million (0.52 percent), (viii) Component 8 for US$1.9 million (0.38 percent), (ix) Component 9 for US$5.3 million (1.06 percent)

Pillar F. AGRICULTURAL BUSINESS & MARKETING
(i) Component 1 for US$6.45 million (1.11 percent), (ii) Component 2 for US$27.95 million (5.58 percent), (iii) Component 3 for US$12.56 million (2.51 percent), (iv) Component 4 for US$34.8 million (6.94 percent)

Program Management costs of US$11.48 million (2.29 percent); see Section 8 for further details. The detailed cost breakdown by activity and year is presented in Section 16.

198. The Program will be implemented and managed within the existing organizational and management structures of MAFF and MOWRAM and with standard operating procedures being applied. Technically and operationally, the Program will be supported by a team of professional specialists assigned by MAFF and MOWRAM. The Program will be implemented by MAFF and MOWRAM with the assistance of donors and qualified Service Providers where required (organizations and institutions with proven competence in implementing similar development projects, selected by the concerned Ministries in collaboration with the respective donor partners), These entities will work closely with the concerned government line departments in project formulation and implementation under the technical and operational guidance of MAFF and MOWRAM.

7.2 Pillar A. POLICY & REGULATION

7.2.1 Component 1: Policy, regulatory frameworks and Law are strengthened

199. In the agricultural planning process, MAFF retains a valuable role in strategic guidance for the agriculture sector, supported by stronger planning capacity and direction at sub-national levels as a result of the decentralization and de-concentration process. There is, however, widespread recognition of the need for improvement through rationalization of the prevailing strategic framework and

institutionalizing a single, successor framework more closely linked to policy formulation, monitoring and evaluation, and the processes of annual national and decentralized planning.

200. The Organic Law devolves responsibility down to the sub-national level, as specified under Article 14, 35-39 and 41, respectively articulating that councils be established for local planning and development; the activities, roles and responsibilities for each council; and finally, regulates coordination between different institutions/organizations. Chapter 3 of the Organic Law (Article 114 and 115) establishes technical committees to include MAFF, MOWRAM, PDA and PDWRAM, whilst Article 123 establishes technical facilitation committees to assist the councils in the development of their infrastructure and development plans.

201. Component 1 provides mechanisms to strengthen policy and regulatory frameworks, specifically, policy and regulatory frameworks consistent with the national strategic development plan and the rectangular strategy for a sustainable investment into agricultural and water innovations and technology accession bolstered by credit and insurance support. Furthermore, bio-security, IPR, and TRIPS is authenticated by policy and regulatory frameworks. An on-farm, off-farm and non-farm rural employment program will also be established with the expectation that there will be an increase of 10% in rural employment by the end of the Program.

202. This Component recognizes that PDAs and PDWRAMS do not have the capacity to deliver technical services required under the Organic Law to Provincial Councils. As an interim measure to the goal of implementing Organic Law at the sub-national level nationwide, this Component will provide budget and technical assistance to recruited staff at PDAs and PDWRAMs in 3 provinces selected by MAFF and MOWRAM as pilot provinces. They will be assisted in developing departmental strategy plans and assistance given to Provincial Rural Development Committees and Councils that allows them to determine their development priorities and implementing strategies. A mid-term review will determine planning for roll out into further provinces.

203. **Cost estimates:** The overall costs for Component 1 are estimated at U$2.4 million or 0.48 percent of the total cost of the Program. The majority of costs are to develop and strengthen policy and regulatory frameworks under a joint Steering Committee for every agriculture and water related project implementation. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.2.2 Component 2: Legal framework for agricultural land management is developed

204. Component 2 focuses on improving the governance and management of agricultural lands to extend, enhance, protect and conserve the productivity and sustainability of agricultural land use. Constraints related to uses and management of agricultural lands will be identified and necessary policies for governance of agricultural lands ratified.

205. Furthermore, as part of the national policy to preserve natural resources and mitigate the impacts of climate change, national policy and legal frameworks rationalizing the conversion of forested land to agricultural uses will be enacted.

206. **Cost estimates:** The overall costs for Component 2 are estimated at U$1.6 million or 0.32 percent of the total cost of the Program. The majority of costs are to rationalize the conversion of forested land to agricultural uses according to policy as an integral activity to develop a legal framework for agricultural lands. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.2.3 Component 3: Legal framework for water licensing and FWUCs is developed

207. A national program to strengthen the ability of farmers to manage minor irrigation works has been in progress since the promulgation of a Circular which provides for establishing farmer water user communities (FWUCs). The establishment of FWUCs requires considerable attention and a long-term program. Capacities within FWUCs are needed in irrigation practice (field water management) and management of irrigation works.

208. Component 3 provides a legal and monitoring framework, sub-decrees, and action plans that enables MOWRAM to issue water licenses and gives FWUCs the mandate to manage local water resources and the collection of water user fees.

209. The legal framework shall include a water allocation, license and protection system (for diversion, extraction, polluting discharges), a water bodies monitoring system, an organization of the water administration based on water basins boundaries, an environmental and social impact assessment obligation for each project, and participatory water resources management organizations. The legal framework can also include a water fees system very interesting to take into account the external environment and social costs.

210. This Component implements an enabling environment for the successful implementation of Component 3 in Pillar E; see Section 7.6.3.

211. **Cost estimates:** The overall costs for Component 3 are estimated at U$1.71 million or 0.34 percent of the total cost of the Program. The majority of costs are for an annually rolling activity to develop an implementation plan for issuing water licenses and collecting water user fees nationwide. This key activity involves staff salary, building capacity, organizational and operational costs. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.2.4 Component 4: Marketing policies are strengthened

212. Cambodia offers little protection to its farmers against imports and such policies would be difficult to enforce considering the long and porous borders with neighboring countries. Nevertheless, Component 4 provides a first legal step toward nurturing agri-business industry providing some protection to farmers against prevalent agricultural imports. With the provision of Technical Assistance, MAFF will identify policies for recommendation to the National Assembly for approval that support agri-business development, and are non-distortive and are compatible with existing trade agreements. A study will be conducted to identify business and regulatory environment enforcement issues of relevant legislation and a review undertaken of agri-business development policies, thereby formulating policy recommendations.

213. Recommended policy needs to meet the necessary objective for producers and agri-business SMEs to gain access to higher value export markets and could include requirements to reduce import tariffs on items necessary for agricultural production that cannot be produced in Cambodia, such as fertilizer, and increasing non-tariff measures on imported agri-foods that could be produced in Cambodia, such as vegetables. The significant and continuing challenge to actualizing Component 4 is the difficulties facing the government to enforce new policy against the open economy and informal trade across porous borders.

214. **Cost estimates:** The overall costs for Component 4 are estimated at U$0.5 million or 0.10 percent of the total cost of the Program. The majority of costs are for the conduct of studies to identify business and regulatory environment enforcement issues supporting agri-business development and policies which are non-compliant with existing trade agreements. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.3 Pillar B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT

7.3.1 Component 1: Human Resources and Management capacity is built

215. Component 1 provides a mechanism through which the organizational structure and institutional mechanisms for control of MAFF and MOWRAM are improved in order to raise the quality of goods and services delivered to users/stakeholders. This component includes the promotion of mechanisms to raise the incentives of government staff to undertake their mandated activities (through the use of Salary Supplementations and Allowances). The underlying problem tree analysis highlights the difficulties in staff salary levels and their consequent effect on incentives. Hence the decision is to have the Salary Supplement / Allowance scheme as an option in the SAW Program Logical Framework noting its implementation as a possibility in 2011 as an assumption.

216. In connection to implementing activities under the new Organic Law in Component 1 of Pillar A, Component 1B will also strengthen MAFF and MOWRAM at the central and provincial levels to take ownership and responsibility for the implementation of donor funded activities. This follows the Paris Declaration agreed to by all donors of involved in the TWGAW as well as the RGC, where donor projects shall gradually move towards program loans and grants for budgetary support activities. These activities need to be directly linked with Component 2, which involves strengthening the planning, budgeting and financial management systems within MAFF and MOWRAM. Given the limited time-frame of the SAW implementation, it is envisaged that most of the capacity building effort will be concentrated at the central and provincial levels in order to strengthen their operations and mandates, before moving onto the district and lower levels during subsequent rollout of the SAW.

217. Finally, Component 1 will support administrative capacity building and reform by providing a combination of long term and short term technical assistance as well as training courses for government staff at the central and provincial level to increase their capabilities in Policy Development, Legislation Drafting, Strategy Development and Implementation, Socio-economic analysis and forecasting, Monitoring and Evaluation, and Gender Mainstreaming. Management Advisors recruited will be placed in 3 pilot provincial departments of PDWRAM and PDA and it is expected that a mid-term review will determine the strategy for expanding technical assistance in Management to further provinces.

218. Activities are focused on the design and implementation of human resource development plans within the two ministries, conducting regular training needs assessments to update the human resource development plan, and the implementation of the training plan through targeted training courses.

219. **Cost estimates:** The overall costs for Component 1 are estimated at U$13.485 million or 2.69 percent of the total cost of the Program. The majority of costs are for implementing a capacity building program to develop the human resource and management capacity in MAFF and MOWRAM. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.3.2 Component 2: Improve the planning, budget and financial management systems

220. There is a significant gap between the annual workplan activities being carried out by technical departments and the information available to administrative departments which hampers the planning and budgetary functions. For example, the planning departments under MAFF and MOWRAM do not have a clear idea of the particular projects or activities being implemented by the

various technical departments and thus cannot align these activities with the national strategies being developed at higher levels of MAFF and MOWRAM. Similarly, the finance departments are only responsible for being the liaison between technical departments and MEF in passing on budgetary requests and the subsequent budget allocations, but have no oversight on actual expenditures. At the provincial level the gap is even more pronounced, as the D&D system has resulted in provincial departments being responsible to the Provincial Governor for expenditures and are not providing MOWRAM and MAFF at the central level with reports on plans or budgets.

221. The Medium Term Expenditure Framework (MTEF) Financial Management Information System (FMIS) currently in MAFF needs to be expanded to include MOWRAM. The MTEF has been adopted by the RGC as the mainstay of their national development strategy and as a way to streamline budgeting and financial accounting systems and monitoring and evaluation activities across ministries and down to the sub-national level. It is proposed as a matter of donor harmonization policy that donor projects have to comply with MTEF procedures and ensure that their accounting systems fit within the framework A key issue for Ministerial oversight of plans and budgets is the inability of the Departments of Planning and Finance in the respective ministries to get an idea of what budgets are being allocated and spent under donor funded PMOs/PMUs/PIUs. Since these are outside of the Departmental framework, there is no requirement for line Departments to report back to Planning and Finance what they are doing within donor projects. If donor projects adopt the MTEF accounting standards and allow their accounts systems to be integrated with Ministerial accounting software and systems this would be seen as a first major and fundamental step towards adopting the Paris Declaration in any concrete form.

222. Component 2 provides the concrete activities that complement the institutional reforms proposed under Component 1. Component 2 aims to improve the planning, budgeting and financial management systems of MAFF and MOWRAM through the adoption, implementation and strengthening of the Medium Term Expenditure Framework (MTEF) in all departments of MAFF and MOWRAM and piloted in 16 provincial PDWRAMs and PDAs.

223. Furthermore, all new donor projects will be aligned with the accounting and M&E systems of MTEF in accordance with the principles of the Paris Declaration.

224. **Cost estimates:** The overall costs for Component 2 are estimated at U$1.05 million or 0.21 percent of the total cost of the Program. The majority of costs are to implement MTEF, the Government's planning, budget and financial system, into 16 provincial PDWRAMs and PDAs. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.3.3 Component 3: Management Information Systems are implemented

225. There are a number of Management Information Systems (MIS) and individual databases within MAFF and MOWRAM All remain un-integrated either with one another or with the MIS of other ministries. These poorly integrated datasets significantly constrains the ability of MAFF and MOWRAM to adequately plan strategic interventions, monitor and evaluate performance against plans, and provide timely information to stakeholders.

226. The activities to deliver this output of this Component will involve setting up a task force to integrate the Financial Management Information System (FMIS) with MTEF chart of accounts, and the Human Resource Management Information System (HRMIS) system is consolidated and integrated with MIS. Additionally, the Agriculture Information system (AIS) and the Water Resource Information System (WRIS) will be consolidated and integrated fully with MIS. Finally, all data collected by donor projects will be integrated with MIS. The Planning Departments in each Ministry will be developed to play a coordinating role in disseminating information.

227. **Cost estimates:** The overall costs for Component 3 are estimated at U$1.61 million or 0.32 percent of the total cost of the Program. The majority of costs are to implement information systems for Finance (FIS) and Human Resource Development (HRMIS). Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.4 Pillar C. RESEARCH & EDUCATION

7.4.1 Component 1: Organizational Structure and Mechanisms in MAFF and MOWRAM is improved

228. Component 1 focuses on the development and management of human resources within MAFF and MOWRAM. The component has been designed to provide complimentary measures to the interventions covered in Component 1 of Pillar B.

7.4.1.1 Management capacities of Educational Institutes supporting MAFF and MOWRAM

229. Under Component 1 it is recognized that agriculture, in terms of intensification and extension of the cultivated areas, and water resource management in Cambodia is severely constrained by the lack of appropriately qualified technical personnel at the national and sub-national levels. This component is designed to create a needs-based pool of trained human resources to meet the needs of new and emerging technologies such as bio-technology, hydraulics, conservation agriculture, and market dynamics. It is proposed that the leading educational institutes of the Technical Services Center (TSC), the Royal University of Agriculture (RUA), the Royal School of Administration (RSA), and the Institute of Technology of Cambodia (ITC) benefit from the establishment of new and/or improved departments, curricula, diplomas and certificates (where indicated in the detailed Program Logical Framework in Section 14), supported by quality systems, and the management staff of the Institutes upskill through a comprehensive training program.

7.4.1.2 TSC becomes an Institute and provides certified courses in Water Resources Management and Technical services

230. It is proposed that significant support be given to the Technical Services Center (TSC) under MOWRAM for them to provide greater access to high quality short term and vocational training courses. These courses should be aimed at central and provincial level staff in MOWRAM, as well as the management teams of FWUCs. Activities to support FWUC management teams in sustainable O&M of their irrigation schemes should be an important part of TSC activities under the SAW and it is proposed that the management committees of 25 FWUCs are trained in Irrigation Scheme Operations and Management (O&M). As the course content and delivery levels are solidified, the Services Center will be upgraded to an Institute level, being able to award Certificate and Diploma level courses[6].

[6] TSC has the ability to provide VET courses for on-going professional development of MOWRAM, PDWRAM and FWUC committees, while ITC has the resources and potentially the staff (with further training) to provide Bachelor and Post-Graduate training in water resource management. The development of TSC into a degree awarding academy will take longer than the 5 year SAW program so as an interim step it is more appropriate to develop the capacity of ITC to provide formal qualification training courses and strengthen TSC's capacity in providing VET courses.

7.4.1.3 Establish Department of Water Resource Management at ITC

231. Currently there are no university level degree courses (Bachelor or Masters level) on water resource management; only 600 hours of elective courses under the Bachelor of Rural Engineering degree (12 percent of total time). At the same time as the TSC in being strengthened under Component 1, other activities under the same component envisage the establishment of a Department of Water Resource Management under the Institute of Technology of Cambodia (ITC) and the development of a full 5 year Degree in Water Resource Management that will enroll 100 students per year in.

7.4.1.4 RUA provides training courses to MAFF and MOWRAM

232. The Royal University of Agriculture (RUA) currently has facilities for analysis of soil, plant tissues, seed, fertilizer, and water on a small scale. Expenditure on buildings and equipment over the past decade has not resulted in an efficient laboratory system for research and development. This Component will upgrade facilities and quality assurance systems at RUA, and provide funds for MAFF and MOWRAM staff to be trained in agriculture.

7.4.1.5 Royal School of Administration (RSA) provides Management training courses to MAFF and MOWRAM

233. Finally, Component 1 recognizes that technical skills are not the only capacity constraints within the two ministries, and that basic civil service skills (management, accounting, budgeting, policy and legal drafting etc.) are lacking. Currently the Royal School of Administration (RSA) is the designated center for civil service education, but quotas are strictly limited between ministries. The proposal is then that additional funding be given to RSA to expand the number of courses on offer and the number of government staff that they could train to 10 new places for MAFF, MOWRAM, PDWRAM, and PDA. Directors and senior staff of MAFF and MOWRAM will also benefit from Management training. This would feed into Component 1 in so far as Component 2 would provide a base platform of skills and capacity to build on with continuing professional development. Component 1.

234. **Cost estimates:** The overall costs for Component 1 are estimated at U$12.045 million or 2.40 percent of the total cost of the Program. The majority of costs are to register the Technical Services Center (TSC) under MOWRAM, train staff, develop Certificate and Diploma training courses, and upgrade facilities. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.4.2 Component 2: Research, Extension and Education capacity is built

235. Component 2 focuses on implementing activities that provides a strong foundation for knowledge systems and human capital for relevant, viable, farmer-centered and development-oriented REE by improving and strengthening the competence of the human resources of REE institutions and strengthening the internal structural and managerial capacities of agricultural and water REE institutions and organizations to enable them to fulfill their organizational mission and effectively achieve their development goals.

236. Twenty REE personnel will have their technical capacity built through short courses developed that enables personnel to undertake analyses and to internalize the critical findings in new and emerging fields such as the identification and use of REE-based solutions, the creation of an integrated knowledge base system, database development and management, and technology

dissemination, validation, adaptation and impact assessment. Combined with courses taught in policy formulation, priority-setting, planning and programming, program/project formulation, management and monitoring and evaluation, the REE personnel will possess the skills, attitude and motivation to put into effect strategies and plans to meet the current and projected challenges of national and global REE issues.

237. Component 2 recognizes that structural and management capacity of REE institutions provides the foundation for technical capacity building programs to thrive. As such, Component 2 also focuses on giving the managerial staff skills to develop, implement, monitor, evaluate, and sustain inclusive, farmer-centered research agenda, university curricula and extension messages, whilst at the same time equipping REE institutions with the research laboratory resources required for technical capacity training programs, as listed above, to be delivered effectively.

238. Finally, communication and collaboration between Cambodian educational and training institutions with other knowledge pools and their counterparts in developed and fast progressing developing countries, as well as with private sector, NGOs, academic and scientific partners and farmers will be arranged. Key to bringing the agriculture and water research agenda to the national and global table will be in transforming the Cambodian Agricultural Research Council (CAREC) into an Agricultural and Water Innovation Council (AWIC) mandated with integrating agriculture and water research, education, extension, and REE dissemination with provincial stakeholders, and implementing three priority programs at the national, provincial, district and village levels; CARDI will bring the Cambodian REE agenda to global attention, and learning of global innovations for application in the national arena, by having a representation in the Asia-Pacific region by gaining membership into the Asia-Pacific Association of Agricultural Research Institutions (APAARI). International cooperation agreements and MOUs with relevant international REE institutions will broaden the scope of REE into industry and business establishments giving Cambodians opportunities to become highly trained teachers and researchers to continue to sustain REE in Cambodia.

239. **Cost estimates:** The overall costs for Component 2 are estimated at U$20.8 million or 4.15 percent of the total cost of the Program. The majority of costs are to strengthen REE organization by building the capacity in resource planning, management and M&E to REE managers, and the delivery of farmer-led, market-driven extension services. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.4.3 Component 3: Research and technology is developed

240. Subsistence farmers comprise the majority poor and food-insecure people of Cambodia as their access to knowledge, technologies, production resources, including inputs, credit and to markets is limited. Women contribute actively to household income through petty trade, wage/exchange labor and handicrafts. Furthermore, major environmental issues, soil erosion and degradation, soil and water salinity, floods and drought, chemical pollution, river siltation deforestation, loss of crop diversity, and decline of fish stocks, let alone climate change, exacerbate the vulnerability problems.

241. Component 3 addresses the above technology-related constraints by generating appropriate technologies and training resource-poor men and women farmers in the resultant prioritized technologies through extension mechanisms. At the conclusion of the training, it is expected that farmers will participate in food processing, marketing, and trading activities in support of their livelihoods.

242. In the short term, Component 3 concentrates on initiating programs and activities to improve adaptive research and national core competence in problem-solving strategic research to confer flexibility and capacity to increase Cambodia’s competitiveness particularly in bio-technology, bio-security and risk management, informatics, and GIS.

243. Finally, Component 3 eases gaps currently detriment to achieving cost-effectiveness in production, processing and distribution as well as quality aspects that underpin market access and competitiveness, by establishing a national food and agriculture processing technology center staffed by trained and qualified researchers recruited from REE institutions to undertake research programs aimed at adapting and generating value-added market-oriented and niche technologies that meet international standards.

244. **Cost estimates:** The overall costs for Component 3 are estimated at U$24.4 million or 4.87 percent of the total cost of the Program. The majority of costs are to assess pro-poor, pro-women, and pro-environment technologies and conduct an on-farm assessment to validate relevant technologies to then provide this technology to farmers through appropriate extension mechanisms. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.5 Pillar D. FOOD SECURITY

7.5.1 Component 1: Community Self-reliance for Food Security and Poverty Reduction

245. This Component undertakes direct field action aimed at improving as rapidly as possible the food security situation of 0.6 million persons as target beneficiaries in 120,000 households in some 4,000 villages over a 4-year period, through improving their food and agricultural production capacity and/or income earning capacity. An additional 0.6 million persons in 120,000 households in the same villages will also benefit from the Component's village wide activities for agriculture and food production, especially village level through training in low-input and improved technical packages for food production that is sustained by extension services under the quality assurance of DAE and PDA. The Component will be based on participatory community development and livelihood approaches, and delivers its interventions for production support in line with particular priority needs of the target groups.

7.5.1.1 Better income through diversified income-generating opportunities

246. To achieve the intended purpose of Component 1 several interventions are proposed that focuses on on-farm and off-farm target groups for income generation support through vocational training. The target groups will be linked to employment opportunities, whether they are exclusively off-farm opportunities, or opportunities that arise through their production activities, such as small-scale agro-processing.

7.5.1.2 Self-management and empowerment in farmers groups and village common works

247. Communities will be supported to become self-reliant and empowered. The target groups will be assisted in capacity building and empowerment mainly through their self-help groups (farmer groups for various production and income generation activities) in each village. Some self-help groups will be transformed into formally registered farmers' groups (FOs); including farmer cooperatives, and they will receive technical and input support, including credits, for intensification and diversification of agriculture, land and soil management, post-harvest practices for storage, processing, and marketing aspects. Support also includes larger-scale village irrigation development and management, and other village infrastructures.

248. A challenge facing a formal recognition of farmer groups (or Farmer Organizations (FOs)) is the current centralized means of registration often requiring distant travel and long registration time periods. This Component assumes that FO registration will become de-centralized to the district level

as is the current intent. At the same time as FO formation, village self-help groups will continue to plan and carry out small-scale common community projects, especially for irrigation and other infrastructure works, and emergency preparedness and response for disaster risk reduction.

7.5.1.3 Increased access to adequate food, and better nutrition practices

249. This Component recognizes the synergies between an increase in food diversification and intensification and nutrition, sanitation and health care. Hence Component 1 will also focus on training, especially for women, with an emphasis on improvement of nutrition, sanitation and food safety, supply of potable water, and food safety. Integral to sustaining best-practices in these areas is coordination with health clinics and hospitals for measuring improved health in the target groups through patient records and informing future Ministry of Health (MoH) pubic health care policy.

250. Related to informing future public health care policy is the requirement to monitor and assess the effectiveness of various elements of implementing activities of this Component. While this will make use of the monitoring and evaluation work under the Program management, it will use separate technical studies to inform best-practices in food security and public health.

251. **Cost estimates:** The overall costs for Component 1 are estimated at U$41.75 million or 8.33 percent of the total cost of the Program. The majority of costs are to improve on-farm productivity through the adoption of improved technical packages for farmers via extension, technology transfer, and training. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.5.2 Component 2: Enhancement of Institutional and Policy Framework for Food Security and Nutrition (FSN) and an Improved Information Base

252. This Component seeks to improve effectiveness of the existing institutional and policy environment for FSN and to overcome the challenge of improved use of and quality of information and data on FSN through the strengthening and exploitation of the synergies of different systems of collection, analysis, and dissemination as well as use of data related to FSN. Specific attention will be given to ensuring improved management of FIVIMS managed by MAFF, including its greater harmonization with other FSN information systems and the strengthening of analytical capacities in MAFF for FSN data analysis.

253. The government, through the overall coordination by CARD has taken several initiatives, including the establishment of a coordination body and TWGs to coordinate in mainstreaming FSN in sectoral policies and strategies as well as in integrating FSN in decentralized planning process. However, the progress has been somewhat limited, especially at the sub-national levels – in particular, limited coordination capacity and understanding of the concepts of FSN among stakeholders have impeded the mainstreaming process.

254. The specifics of Component 2 to address these issues are to build up and strengthen the collaboration between CARD, line ministries, and the National Committee for Decentralization and De-concentration (NCDD) and National Council for Nutrition (NCN), civil societies, and private sectors, with MAFF and MOWRAM establishing official focal points with clear responsibilities to coordinate the aforementioned bodies. Through the establishment of an FSN trainers pool mandated with raising the awareness of, and commitment to FSN concepts to key policy makers, planners, and program developers at the national and decentralized levels (provinces, districts and communes), FSN concepts will be mainstreamed into development plans and programs at the national and sub-national levels. The FSN trainer's pool will develop a portfolio of trainings in FSN concepts complete with a mainstreaming tool and manuals for training purposes. Capacity building of members of commune

councils and farmer communities in managing the project cycle, especially integrating FSN issues in their development management processes will be conducted.

255. At the same time, in view of the importance of information and knowledge in decision-making, different institutions have set up FSN-information supporting systems (e.g. FSNIS, FIVIMS, CAM-Info., Food Security Atlas, AIDOC, etc.). However, these information systems have not been well coordinated due to lack of harmonized procedures, structure and mechanism for cooperation among concerned institutions. To enhance and coordinate management and use of FSN data a task force on food security and nutrition related information management will be established under the TWG-FSN with close links to TWG-AW to coordinate, harmonize and disseminate FSN information in Cambodia (linked with the information platform (FSNIS) in CARD) and via the TGW-AW website. FIVIMS's capacity for compilation, analysis and mapping and reporting of food security related information will be improved. Through improved an coordination body and effective storage of FSN related data, workshops will be conducted with members of other TWGs, especially TWG-AW, TWG-FSN, and TWG of the Micronutrient and Infant and Young Child Feeding to disseminate, promote, and support best practice of innovative FSN approaches. The feedback from the application of innovative FSN approaches in FSN programs and projects will inform policy and program formulation.

256. Whilst the coordination and dissemination of innovative FSN approaches will improve with the approaches described above, Component 2 will improve the scope and quality of FSN information at the same time in order that targeted investment proposals for FSN initiatives to identify and reach poor communities and poor households can be developed using the MoP ID-Poor Program data. Also of importance is to improve information and data on food quality and safety from the viewpoint of consumer protection, especially at local levels (e.g. inclusion of food safety issues in leaflets on food security).

257. **Cost estimates:** The overall costs for Component 2 are estimated at U$2.915 million or 0.58 percent of the total cost of the Program. The majority of costs are to enhance, use, and maintain existing information and data on FSN. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6 Pillar E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT

7.6.1 Component 1: Water data management is improved

258. With support from AFD, MOWRAM since June 2008 has been developing the Cambodian Information System on Irrigation Schemes (CSIS) which aims to provide up-to-date information on all irrigation schemes in Cambodia and aims to assist MOWRAM in the planning of maintenance and development of irrigation schemes and assets in Cambodia. The CSIS program has established an alignment with the NWSIP monitoring and evaluation system for this project to monitor future works. Currently schemes supported by JICA and NWSIP are included in the system but no information from other donor projects has been incorporated.

259. Several opportunities exist for the CSIS database to perform a valuable role in standardizing the assessment of the performance of the irrigation sector. This Component focuses on implementing activities that operationalizes CSIS as a basis for asset management, scheme rehabilitation, and operations and maintenance (O&M). Such implementing activities are:

Auditing framework

- Establish data collection protocols and data collection teams to operationalize CSIS, of which a priority task is to establish an auditing framework for irrigation

infrastructure assessments and perform an independent audit of CSIS scheme data[7] to ensure accuracy and independence of information is maintained.

Best practice framework and evaluation and ranking process

- The entire success of the CSIS system is based on the premise it is a dynamic database constantly requiring updating. The system requires constant resourcing to keep over 2000 irrigation scheme data updated. Introducing a standardized continuous assessment of irrigation schemes introduces the concept of a Best Management Practice approach to the sector. By effectively ranking irrigation systems based on CSIS data, and establishing a minimum standard of performance (agreed upon by all stakeholders) both the Government and donors wishing to support the sector are able to do so with a higher degree of confidence when making investment decisions. The opportunity then exists for the introduction of a performance based funding model whereby irrigation systems that achieve a particular level of proficiency over time receive continued support[8].

Performance based funding criteria for donors for future investment in irrigation infrastructure based on CSIS analysis

- The CSIS database contains a Maintenance Module which aims to provide MOWRAM (or any funding body) with an estimate on the potential costs associated with rehabilitating a scheme or a particular component of infrastructure within a scheme. Once the cost data has been calculated for each individual irrigation system held in the database, the total budget estimate for the sector's yearly irrigation system rehabilitation expenses can be generated for MOWRAM and MEF for planning purposes.

260. Two departments of MOWRAM have water information roles – Hydrology and Meteorology. This Component recognizes that the capacity of these departments is critical to the capacity of the Government as a whole to know what water the country has and what can be done with it. The key issue is that hydrological, irrigation and meteorological data are not actively used and its value is not understood.

261. For this reason, it is important to make a close connection between those collecting information and those using it. This is the key objective. Also, the timeliness of data relies on active demand for it and value to be placed on it. Component 1 resolves such issues by training relevant departmental staff (including DHRW, DRWC, and DoM) via the TSC in data analysis and storage for surface and ground waters; river basins; meteorological information; and irrigation meteorology in water data management, once a comprehensive inventory of existing data has been carried out and software and databases installed to store and manage this data and will be integrated into the national storage system. Trained staff will then be associated to project works.

262. MRC provides support the DHRW to manage a real and near real time transmission network for flood forecasting. MOWRAM does not have the capacity to generate accurate and timely forecasts of flooding in parts of the country beyond the Tonle Mekong / Tonle Sap floodplains. This Component will define an integrated observing system set up for surface and ground waters, meteorological data, evapotranspiration, and the flood and drought forecasting system with all existing systems undergoing repair (where necessary), and an upgrade. Relevant staff will be trained to manage and operate the systems and in the use of the data outputs for its valued purposes.

263. **Cost estimates:** The overall costs for Component 1 are estimated at U$5.575 million or 1.11 percent of the total cost of the Program. The majority of costs are to improve the flood and drought

[7] Audit may be on 5 percent of schemes in data base. If there is a total of 2500 schemes may be a requirement to independently audit 125 schemes annually.

[8] Where irrigation assessment is linked to funding, appropriate governance structure would need to be established to prevent exploitation of the system. Independent auditing would be advisable.

forecasting system in collaboration with MRC. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.2 Component 2: Development of integrated water management

264. IWRM is a comprehensive approach to the development and management of water, addressing its management both as a resource, and in establishing the framework for provision of water services. The objective of IWRM is to ensure wise water governance which contributes to the economic development, social equity and environmental sustainability of the society.

265. The national water resource system of Cambodia consist of a number of river basins, most of them tributary to the Tonle Sap- Mekong system, and few basins in the Southwestern part draining to the coast. All of these river basins experience a set of common challenges, while those in the environmentally delicate Tonle Sap have a set of particular issues and challenges. Recognizing the basin as the fundamental unit for water management, river basin management (RBM) is increasingly adopted as the "first practical step towards IWRM", often practiced through river basin entities, such as river basin organizations.

266. This Component focuses on delineating and classifying river basins and developing a water management framework plan for the Tonle Sap basin. It is proposed that a study be carried out to define river basin boundaries and to classify them within the hydrological network and gaining official recognition through the development and implementation of sub-decree(s) and subsequent praka(s).

267. River basin management is to be achieved through the creation of water basin committees gathering representatives of the government, the stakeholders and the beneficiaries. The Tonle Sap basin is a priority basin and is managed by the recently created Tonle Sap Authority (TSA) that has a mandate for the development and conservation of the Tonle Sap Lake and region. For this priority basin this Component proposes that the TSA develop a strategic plan, outlining roles and the main priority programs of the TSA, as well as to develop a White Paper that outlines how the TSA will coordinate sectoral activities in the Tonle Sap, and a Master Plan for the proposed development of the Tonle Sap region and Lake. Environmental, social and economic aspects will inform basin models and proposals for development with conservation considerations. All the plans combined forms the water management plan for TSA.

268. For two other priority river basins identified by a study, Water Management Committees will be formed of government representatives, key stakeholders, and beneficiaries to address specific issues such as dealing with natural conditions of the basin, water use, and flooding through models and activities proposed in water management plans to be approved by the Committee and finally by the Government.

269. **Cost estimates:** The overall costs for Component 2 are estimated at U$3.925 million or 0.78 percent of the total cost of the Program. The majority of costs are to develop and have approved a water management framework plan for the Tonle Sap basin. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.3 Component 3: Continuation of the development of irrigation and water management infrastructure with a more participatory design and in a more integrated way

270. A key challenge facing an integrated water resources management approach is that the sharing of data and information between government departments at the central level, between central and provincial level, and between stakeholders at the local level has traditionally not been done well.

It is recognized that local leaders, especially commune and village chiefs, are often involved in calling meetings, resolving conflicts among users, and collecting water user fees. The links between FWUC and the local authorities were determined as an important factor for the success of the FWUC. Their involvement from the beginning of the projects is thus very important. In recognition of this the Government given the legal mandate to develop, operate, and maintain irrigation systems through a sub-decree. There are over 110 legally registered FWUCs with MOWRAM using the Participatory Irrigation Management and Development (PIMD) methodology to irrigation system development and maintenance.

271. This Component seeks to strengthen the irrigation and water management infrastructures by strengthening FWUC organization to achieve their mandate, and the goal of the Government for the rehabilitation or building of 25,000 ha per year of wet and dry irrigation schemes that meet an environmental and social impact assessment obligation with direct participation from FWUCS and other water resource management organizations. Specifically this will be achieved with key implementing activities:

- Preliminary studies dealing with water resources, soil conditions, agricultural potential, market dynamics, social environment, economic profitability and maintenance before all the projects
- Implementation of irrigation projects where agricultural development plans exist for 54 irrigation schemes rehabilitated by year 2, and 56 irrigation schemes constructed and/or rehabilitated by year 3
- TSC staff train farmers involved with the projects in Farmers Participation for Sustainability of Irrigation Schemes and Water Management and Development resulting in the organizational strengthening of 25 FWUCS
- Rehabilitation or building of 20,000 ha (per year) in wet season irrigation lands
- Rehabilitation or building of 5,000 ha (per year) in dry season irrigation lands
- FWUCs rehabilitate, construct and manage small-scale irrigation schemes and water harvesting devices in villages (e.g. village canals, dams, community ponds, wells, etc.)
- Launch research programs into DSMB and small-scale irrigation and identify best practice pilot farm sites, then conducting a study of conditions for large-scale adoption of DSMB and small-scale irrigation nationwide
- Implement water management technologies in direct sowing in mulch based cropping systems and small irrigation
- Develop a budgetary plan for irrigation system maintenance and an increased de-concentrated budget
- Conduct routine maintenance on newly built or rehabilitated schemes under the O&M budget
- MOWRAM strengthens its concerned departments at national and provincial level to support FWUC O&M and establishes a network of private service providers level to support FWUC O&M

272. **Cost estimates:** The overall costs for Component 3 are estimated at U$248.51 million or 49.57 percent of the total cost of the Program. The majority of costs are for the rehabilitation and/or construction of at least 25,000 ha per year of wet and dry season irrigation schemes. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.4 Component 4: National land resource assessments are developed

273. There has been a number of land resource assessment works conducted for Cambodia to serve different purposes. They are different from each other in terms of methodology used, scales, volume and details of survey, and usefulness. Recent works of CARDI and Thailand-Cambodia Project are

good example of land resource assessment work for Cambodia. The Cambodian Agronomic Soil Classification system is also a good example for immediate identification of soils in the field, but it is being restricted to use for lowland rice soils. Land capability classification needs to be done nationwide using the methodology recently developed by CARDI. In addition, all information about soil resource assessment should be stored in the National Soil Database recently developed by CARDI, and made such information available for users.

274. Hence, this Component will focus on updating the land resource inventory, crop zones, and the rice soil maps of Cambodia by conducting soil surveys that clearly identify soil limiting factors for crop production, soil classification surveys (based on the CASC system), and land capability and suitability for field crops and fruit trees. This work will inform a framework for classifying and identifying major upland soils and a classification manual, and, combined with regular surveys to determine agricultural land use changes, will provide useful information for agricultural land use planning and development planning. A National Land Resources team will be formed to coordinate the implementation of the tasks described above, and will be responsible for current and future land resource management work for Cambodia.

275. The storage of survey data will continue to be handled by the existing National Soil Database developed by CARDI. A manager in a relevant department selected by MAFF will be given the mandate to ensure the database is maintained with current data and that the data is being utilized.

276. **Cost estimates:** The overall costs for Component 4 are estimated at U$6.43 million or 1.28 percent of the total cost of the Program. The majority of costs are to formulate a National Land Resources team to manage all soil surveys and soil classification surveys on an ongoing annual basis, and to maintain the land resource inventory. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.5 Component 5: Productivity of lowland rice soils is improved

277. There is increasing tendency of land-use changes in the lowland rice ecosystems together with improved rural infrastructure, improving the current soil classification system in terms of extra groups, phases, scale, volume and significance of use will significantly improve our understanding of the soil resources in Cambodia. There is a need for a better understanding of how rice soils and water management can be used for crop intensification and diversification in the lowland cropping systems.

278. This Component is focused on disseminating sustainable techniques for soil fertility management to farmers via extension services with quality assurance provided by DAE and PDA, and giving farmers the technique to apply an integrated crop management approach (ICM) for lowland rice cropping, by implementing the following proposed activities:

- Conduct research and demonstrations on improved soil nutrient management techniques that enhance nutrient use efficiency by rice crops
- Develop sustainable soil fertility management techniques materials
- Disseminate sustainable soil fertility management techniques materials to farmers via extension services under the coordination, facilitation and quality assurance of DAE and PDA
- Assess and develop integrated crop management approach (variety, nutrients and pest) for lowland rice cropping
- Assess soil constraints limiting field crop production after rice cropping (this activity can follow the results of the soil survey in Component 4 that will identify soil limiting factors for crop production)
- Develop and implement an integrated soil, water, crop, and pest management approach in accordance with soil constraints
- Apply treatment techniques to overcome main constraints of post-rice cropping

- Assess water requirements for rice and other crops based on type of soil, cropping season, progressive stage of crop and cropping methods
- Develop recommendations for effective use and management of water

279. Farmers will learn the techniques listed above via extension services. It is expected the outcome of this Component is an increase in agricultural production through minimum use of water as a result of progressive cropping methods and diversification of lowland rice cropping after rice harvest.

280. **Cost estimates:** The overall costs for Component 5 are estimated at U$6.4 million or 1.28 percent of the total cost of the Program. The majority of costs are to conduct research and demonstrations on improved soil nutrient management techniques and develop and disseminate subsequent materials. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.6 Component 6: Productivity of upload rice soils for sustainable management and utilization is improved

281. In Cambodia there are a large proportion of soils in the upland farming systems, but very little is known about soils in such farming systems. It is important to develop guidelines for the recognition and use of these upland soils. It is suggested that the guidelines be developed based on the framework of CASC so that upland soils are simply well identified, recognized, and hence better managed for sustainable utilization. In addition, vast areas of sandy upland soils occur in Cambodia but are only poorly described, and at present not extensively used for agriculture.

282. To address these limiting factors, this Component will focus on determining the land suitability for field crops and training farmers in the application of sustainable soil fertility management techniques. Soil fertility management techniques will be documented and disseminated to the farmers by extension services facilitated by the DAE and PDA.

283. **Cost estimates:** The overall costs for Component 6 are estimated at U$3.125 million or 0.62 percent of the total cost of the Program. The majority of costs are to identify soil characteristics to determine land suitability in upland farming systems for field crops. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.7 Component 7: Strengthening of smallholder land tenure security and productivity

284. A crucial policy question concerns the process of expanding agricultural frontiers by assigning state land to agricultural uses under a comprehensive development strategy that promotes sustainable land use and secure tenure for agricultural producers. Social land concessions (SLCs) provide a mechanism to enable landless farmers to gain access to land for residential and subsistence farming now that temporary possession has been ruled out as a means for legally acquiring land. After five years of occupation, the land recipient would then be eligible to apply for land ownership title. In addition to providing landless households with access to land, the SLC mechanism provides an opportunity to guide the settlement and clearing of state land in a transparent and orderly fashion in support of the government's development objectives and policies.

285. The NSDP (2007:48) refers to the need to "continue to discuss and develop the required legal framework for effective implementation of the Land Law, including registration of indigenous people's land rights". The implementation for indigenous communities (IC), however, has opportunities for strengthening in line with the Land Law provisions. For example, "IC lands are also the State's land that has not yet been classified and mapped. State Public and State private lands have

to be distinguished within the title for indigenous communities (Andersen, 2007:36). IC claims to land must be forwarded during the State's land mapping and land classification exercise, but only ICs that are registered as legal entities can participate. As a result, the incorporation of IC communities as legal entities with the Ministry of Interior (MOI) must be secured, and the demarcation of IC land officiated (Andersen, 2007).

286. The activities of this Component seeks to secure official recognition of customary land tenure arrangements for the poor and indigenous communities, particularly in areas that receive irrigation infrastructure, and the implementation of Social Land Concession (SLC) mechanism and extension services to beneficiaries. Communal land rights for indigenous communities (IC) need to have a particular focus on cases that can be coupled with the Community Forestry application process. Additionally, an action plan for mechanisms to resolve land disputes will be developed that has a focus on poor and vulnerable rural households obtaining equal access to land use and justice according to the Law.

287. The successful implementation of the activities outlined above are heavily reliant on enabling policies, sub-decrees and/or legislation that formally recognizes indigenous communities as legal communities and therefore able to be issued communal land titles; and, MAFF and MOWRAM having an inter-ministerial coordination letter signed between MAFF, MOWRAM and MLMUP that agrees high priority areas for land titling and allows for targeted complementary input packages in support of agricultural development to accompany systematic land-titling work, and that financial and technical assistance is secured for this work.

288. **Cost estimates:** The overall costs for Component 7 are estimated at U$2.625 million or 0.52 percent of the total cost of the Program. The majority of costs are to develop more efficient procedures for providing SLCs to the poor and to provide input packages to facilitate the best use of land such as credits, irrigation farming techniques, and extension services. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.8 Component 8: Strengthening of the management of state land resources

289. Cambodia is currently pursuing a dual track approach regarding land use and land tenure that employs a systematic land titling program for smallholder farmers (see Component 7), while granting economic land concessions to private investors to support plantation styles approach to agri-business development. The rationale for economic land concessions is to make unused land work in order to promote investment in agricultural production and generate rural off-farm employment leading to poverty reduction in the rural sector, as well as generate state revenue. These approaches are spatially oriented with land titling efforts focused in rice-growing areas in the Mekong and Tonle Sap river basins, while ELCs tend to be granted in frontier and forested areas that are loosely demarcated.

290. The implementation and enforcement of the provisions governing ELC can be improved. In one example, some companies exclude local people, including indigenous communities, from land to which they have had traditional access. It is imperative that this Component focuses on delineating land boundaries in areas where ELCs have been granted in order to minimize conflict with customary land tenure arrangements by rural poor people.

291. To address these areas this Component will undertake the following key activities:

- Conduct a review of the ELCs that examines the contributions of ELCs to job creation, government revenues, and poverty reduction, and complies with the 2001 Land Law and subsequent implementing sub-decrees
- Improve procedures for granting ELCs. ELC procedures will be fully transparent and subject to public consultation
- Strengthen the capacity of existing state institutions, such as the Council for Land Policy, to oversee ELC reforms
- Develop demarcation and mapping of State Land, Forest Estate, protected areas, and national parks resulting in 25% of state private and public land classified and demarcated and 25% of forested land classified and demarcated by the end of this Program
- Undertake legal actions to secure the return of state lands by medium and large-scale land grabbing
- Develop guidelines and procedures for streamlining the application and approval process for Community Forestry and assist communities in the development of Community Forestry applications

292. **Cost estimates:** The overall costs for Component 8 are estimated at U$1.9 million or 0.38 percent of the total cost of the Program. The majority of costs are to develop demarcation and mapping of State Land, Forest Estate, protected areas, and national parks. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.6.9 Component 9: Strengthening the implementation and impact of land use and land tenure policies

293. An important component of effective and relevant public policy concerns the need for ongoing objective monitoring of key indicators to assess the effectiveness of policy interventions. In this sense, information about the pace and direction of changes in land use and land tenure needs to be regularly and carefully collected. The capacity of the government until recently, however, to mobilize sufficient human and financial resources for such activities has been limited. Other institutions, including state agencies, civil society organizations, and research institutes, have tried to fill such information gaps by undertaking this research. Over time, inconsistent and sometimes misleading data collection has resulted in conflicting and confusing analysis. This undermines the design and implementation of relevant and effective public policy. Moreover, inconsistently organized land use and land tenure data systems can undermine effective land administration and management.

294. This Component seeks to improve on the work done to date and current systems in place by implementing a nation-wide Agricultural Census that will gather data on state and household agricultural land use, whilst concurrently; methodologies for data collection and land resource utilization will be standardized in adherence to FAO guidelines on land use planning for Cambodian conditions. Additionally, research will be undertaken into the impacts that rural-rural migration, gender aspects, water resource management, and land disputes and resolution mechanisms have on land tenure. The expected result will be an improved implementation, enforcement, and monitoring of land management policies and practices in accordance with the relevant laws in a well-organized and reliable land use and land tenure database system.

295. **Cost estimates:** The overall costs for Component 9 are estimated at U$5.3 million or 1.06 percent of the total cost of the Program. The majority of costs are to carry out a nationwide Agricultural Census to gather data on agricultural land use. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.7 Pillar F. AGRICULTURAL BUSINESS & MARKETING

7.7.1 Component 1: Inputs and farm production are improved

296. Access to quality and efficient inputs is a major impediment to improving agricultural productivity. Fertilizers and agro-chemicals are imported informally across the border with Thailand and Vietnam in small individual quantities. Sample testing has shown fertilizers can be diluted by up to 48% and there are no Khmer instructions on the label for usage. This contravenes the sub-decree on Standards and Management of Agricultural Materials and the Law on Management of Quality and Safety of Products.

297. Whilst the quality of rice seeds have been improved through the establishment of a domestic seed industry, this may not be viable for other crops where importation would make more sense. The quality of rubber trees has been identified as a constraint to increasing production and needs to be addressed through gradual replanting with improved clones. The quality of vegetable seeds i.e. germination rates and purity is also a concern as they are imported informally along similar lines to fertilizers and agro-chemicals.

298. Cambodian agriculture is largely un-mechanized, often due to the small size of farm holdings. Appropriate farm machinery for land preparation, harvesting or on-farm post-harvest handling would allow the expansion of area cultivated, currently limited by family labor.

299. Strategies and indicative activities of this Component adopts to improve the quality and efficiency of farm inputs are:

- MAFF support provided to private sector importers for the official bulk importation of fertilizers and agro-chemicals from their country of manufacture, reducing unit costs. With bulk ordering the importer will also be able to negotiate Khmer labeling from the manufacturer. MAFF would facilitate this by accumulating orders from licensed agricultural merchants, providing a distribution network for the importer. Government would also assure correct import and customs procedures and could even provide tax incentives such as wavering import duties and customs tariffs. A study would first be undertaken to assess the feasibility of this approach and identify alternatives if necessary.
- The purpose of licensing agricultural merchants is to ensure standards. Farmers should feel assured that inputs bought through licensed agricultural merchants are genuine and licensing authorities have the right to periodically test authenticity. BAMS and DAL will ensure agricultural merchants are aware of their obligations through the delivery of workshops, and will mobilize BAMS and DAL staff to conduct regular sample testing. Facilities will be equipped in the provinces to carry out the testing, and laboratory staff trained in the application of testing. A public relations campaign undertaken to assure confidence in licensed merchants.
- A study on important cash crop seed requirements e.g. vegetables and rubber, considering factors such as prevailing soils and agro-environmental conditions, to identify appropriate varieties and quantities for import. An action plan will be developed for nurseries to propagate improved clones of rubber
- A study on appropriate farm mechanization technologies and alternative delivery mechanisms, such as contracting services, and an action plan developed to achieve the recommended outputs of the study.

300. Diversifying agricultural production is a second objective of this Component and implemented in parallel with activities to improve the quality and efficiency of inputs by equipping beneficiaries with knowledge of the use of agricultural technologies and inputs provides a base for diversification.

301. Public private partnerships for the provision of strategic agricultural extension campaigns is an implementation strategy suited to commercially oriented agriculture. MAFF's main roles would be co-ordination and funding. Industry experts would be required to develop extension and training materials to promote specific technologies and techniques or address specific constraints, such as diseases for specific crops. Extension agents from MAFF and the private sector, under the quality assurance of DAE and PDA, will be trained on the technologies prior to mobilizing the campaigns. Such extension campaigns are performance driven, have a wide coverage and also encourage the emergence of private sector extension providers.

302. Every faming household produces enough rice for their own consumption and extra in case of a poor harvest. At national level this represents a large over supply and lost opportunity for planting higher-value crops. A MAFF commissioned study will be conducted to identify technologies for high-value crop production e.g. adapted varieties, controlled environment off-season vegetable production, tube wells and drip irrigation. Public/private partnerships for strategic extension campaigns will be run promoting high-value crops where ready markets exist and facilitating links to buyers; and finally, public/private partnerships for the provision of short-duration training courses for commercial farmers in specific high-value crop production will be delivered.

303. Extension services play a key role in actualizing all of the implementing activities of this Component. As well as Extension agents supporting agricultural diversification, they will actively facilitate the promotion of on-farm post-harvest handling techniques e.g. drying, cleaning, grading, storage, packaging, transport for specific cash crops to alleviate the little activity farmers currently do in this area as they are not rewarded for it. The provision of competitive matching grants for farmer groups to acquire post-harvest handling facilities is thereby of importance to encourage farmers to sustain post-harvest practices.

304. Finally under this Component, a horticulture support program and a beef cattle support program will be developed that targets research, development and extension. This would be comprehensive in nature, and in the case of horticulture a value-chain approach will be adopted, including supply chain management considerations important for perishable commodities. This type of intervention is best implemented as a unique program, with the support of an EDP to draw on several areas of technical expertise.

305. **Cost estimates:** The overall costs for Component 1 are estimated at U$6.45 million or 1.29 percent of the total cost of the Program. The majority of costs are to diversify agriculture through activities such as training MAFF, private sector and farmer beneficiaries in high-value crop production and appropriate extension requirements, and in the development of a horticulture and beef cattle support program. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.7.2 Component 2: Markets are developed and market opportunities are expanded

306. Component 2 focuses on linking producers from Component 1 to markets by providing information on opportunities, developing marketing and business strategies to reach those markets, and providing access to associated services, such as business planning and financing. Outlined in following paragraphs are several necessary sub-components to be implemented to achieve the outcomes of Component 2.

7.7.2.1 Technology transfer for Bridging Yield Gaps

307. Persistent technology transfer gaps are one of the main reasons for low productivity of agriculture and water and adaptation, transfer and adoption of the proven technologies is a prudent

priority for Cambodia. Non-availability of quality inputs, especially seed, fertilizer and pesticide is a critical concern. Cambodia is not able to integrate with the global market partly due to the lack of market information and intelligence. The emphasis here is on dissemination of market information and bridging production technology gaps through packaging, dissemination and adoption of appropriate demand-driven technologies, and timely provision of quality farm inputs such as seeds, fertilizers, pesticides and IPM.

7.7.2.2 Market research and information dissemination

308. There is an established a market price collection and dissemination service under MAFF; however market research on new products and markets is not available. This Component proposes a program of institutional strengthening of relevant departments within MAFF to improve capacity in market research, analysis and information dissemination by:

- Providing training in how to identify new markets and products; international business practice, and developing marketing and promotion strategies.
- This will enable trained staff, with the provision of technical assistance, to conduct economic and marketing research and studies to identify new markets and products, and to discover the marketing constraints and solutions; to analyze the marketing costs and margins by various participants in the marketing chains; and finally to analyze and interpret price movement and variables of agricultural products in international markets.
- When market economics and demand is discovered MAFF staff, with appropriate technical assistance, will formulate policies and strategies for market development; to strengthen the agricultural marketing system; and finally to formulate the technical norms and standardizations of agricultural products, rice and paddy standards, commodity coding, standardization of cereal crops and selected vegetables, etc.
- Marketing extension services and post-harvest technology advisory services, under the provision of public and private partnerships, will be engaged and supported for the delivery of these services utilizing marketing extension materials to disseminate to farmers, farmer marketing schools, and trader beneficiaries.

7.7.2.3 Agro-Tourism

309. Agro-Tourism focuses on benefiting local people, supporting rural communities, improving livelihoods and protecting natural and cultural resources. Activities typically include staying with a rural community in traditional houses or temples; eating locally prepared food and learning or even participating in its production; rafting, trekking, horse/elephant riding and mountain biking to observe local agricultural production and wildlife and interacting with local people to learn about Khmer culture. Component 2 seeks to develop the Agro-Tourism sector in collaboration with the Ministry of Tourism. A strategy for agro-tourism is likely to cover interventions aimed at improving the institutional framework, building up the capacity of stakeholders at national and provincial level, diversifying Cambodia's agro-tourism products, and improving the linkages from tourism to other sectors and supply chains. To achieve cohesion in the emerging agro-tourism sector with other sectors, agro-tourism policies, strategies and regulations will be developed; agro-tourism products will be developed, and training given to national, provincial and community stakeholders.

7.7.2.4 Marketing and business development services

310. Business Development Services includes an array of business services such as: training, consultancy, marketing, information, technology development and transfer, business linkage

promotion, both in the medium and long term that improve performance and day-to-day operations. BDS are designed to serve individual businesses, as opposed to the larger business community.

311. BDS are an important form of support for the development of SMEs by providing a range of business advice, information and support to the sector, as well as stimulating sustainable SME development by improving the general business environment. They are generally viewed as a mechanism for addressing market failures which are particularly evident in transition and developing economies, such as lack of information on market opportunities, rules and regulations, access to credit, and quality standards for export which can act as a barrier to faster economic development and growth in a particular geographical area. BDS providers can be commercial companies such as consultants, accountants and lawyers providing specific technical advice, NGOs providing a facilitation role, donor funded training programs or the Government providing public services.

312. The potential to develop agriculture in terms of intensification and extension is important and needs the involvement of qualified national staff to fill BDS opportunities in agricultural marketing, agri-business, and research. MAFF and MOWRAM, especially MAFF, have several centers involved in vocational training but they are not adequately streamlined and sustained. Hence, indicative activities of this Component would include providing training in the above skills for potential BDS providers and private sector agri-business enterprises. Implementation strategies include subsidizing the provision of BDS to emerging enterprises until sufficient demand exists. Subsidizing the demand of such services through cost sharing agreements with those requesting the services is a means of facilitating demand rather than supply. To bridge the knowledge and skill gap in order to harness new markets, provision BDS, and other development opportunities curricula in agricultural marketing and agri-business will be updated in vocational and technical colleges nationwide. It is expected private sector agribusiness consultant training will be undertaken in ten provinces and curricula at the diploma level is being taught in 2 technical colleges by the end of the Program.

7.7.2.5 Farmers engaged in contract farming and agreements in high-value and traditional markets

313. With an improved BDS situation, and law, sub-decrees and implementing legislation giving farmers contractual arrangements with suppliers and buyers, the environment will be enabled for farmers to operate within high-value agricultural markets offering improved economic benefits to them. It is envisioned that farmers will be trained in organizational, contract farming arrangements, and commodity clustering strategies. In addition, farmers will also be organized into value chain partnerships to input suppliers, producers, and market traders in the traditional marketing system. Key to this is to understand production demand and developing inventories by province and district to link farmers to production and supply areas using commodity clustering strategies. BDS will be provisioned for business planning services to assist in developing farmer contracts that follow the Farming Contract Law, sub-decrees and legislation that will be implemented by the middle of year 2 of this Program.

7.7.2.6 Market oriented and niche-specific technologies for export

314. For farmers to fully realize the economic benefits of high-value markets, niche agricultural products with a unique Cambodian identity or brand will be identified. These niche products need to meet international standards and give the farmers a medium- to long-term return on investment to make it an economically viable speculation for the farmers. Central to securing return on investment is the essential task of developing marketing and promotion strategies and plans to target the domestic and export markets that are oriented to current and future projected market needs, thereby ensuring that agricultural production caters to consumer’s preferences, sustaining the sector into the future.

315. **Cost estimates:** The overall costs for Component 2 are estimated at U$27.95 million or 5.58 percent of the total cost of the Program. The majority of costs are to identify and disseminate new demand-driven on-farm production technologies to bridge yield gaps. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.7.3 Component 3: Extension and outreach is improved

316. Due to a weak extension system, most farmers still apply rudimentary traditional technologies because they lack information and credit to access new and improved technologies. Farmers continue to plant, weed, harvest, and thresh their crops manually, and when they need information regarding fertilizer and chemical use, they normally resort to traders for advice. Outdated and inappropriate technologies lead not only to low factor productivity but also result in considerable input misuse, crop losses and unnecessary time waste and work drudgery.

317. This component envisages a shift from extension-for-production to extension-for-market penetration and is linked closely with the key activity of Component 2 in support of bridging yield gaps.

7.7.3.1 Market-led extension

318. Access to markets and to market information has been identified as a major bottleneck to food and agricultural production and hence, to enhancement of food security and rural livelihood. This Component focuses on reducing the technical barriers to agricultural production in regard to information about market dynamics, related bio-security, and insufficient ICT support.

319. The recommended implementing activities of this Component are give farmers training in market-led technologies, such as ICT-enabled agricultural development initiatives, identified in an assessment undertaken and recommendations given. Whilst a system for collecting and disseminating market information exists, it needs to be strengthened in order that farmers are linked appropriately to markets, agri-clinics, and SMEs, based on the improved and up-to-date market information system.

7.7.3.2 Rural information and communication network

320. Participatory communication methods and processes with a variety of tools ranging from rural radio to Information and Communication Technologies, (ICTs) is central to technology transfer, market linkages, early warning, climate change adaptation and food security. These facilities are missing in Cambodia and this Component intends to put in place 10 ICT centers with 5 staff in each trained in ICT applications and rural networking. The information network would collect market intelligence and formulate it into broadcasting extension messages, and a strengthened extension package and Technical Implementation Procedures (TIP), altogether to; help make deals, link to input suppliers, technical and financial advice; explore new crops, new markets; and organize collection, retailing and distribution.

7.7.4 Cost-effective financial products for the agriculture and agri-business sectors

321. Competitive matching grants are used by Governments to stimulate investment in certain activities when market based means of financing are not available. Criteria are first established on types of activities to be funded and a scoring mechanism developed to rank proposals submitted by beneficiaries for funding. This is a means of leveraging grants with beneficiary equity and additional

loan financing, which through financial modeling, is seen to produce stakeholder risk-reward relationships, ensuring efficient deployment of the grant.

322. This Component focuses on making available access to competitive matching grants, MAFF and/or development partners incentivizing the financial sector, including, the Rural Development Bank, to provide loans and allowing investment suitable for the agricultural sector, including leasing arrangements, as follows:

- Long-term loans allowing investment in agricultural infrastructure, including leasing arrangements for both small-scale and commercial-scale farmers.
- Loans for bulk buying crops for storage based on inventory lending
- Prioritize and fast track land titling in commercial agriculture areas, for use as collateral.
- Promote use of bank accounts amongst farmers and agri-businesses as a cash book to build up a credit history and access overdraft facilities i.e. provide financial management training to MSME managers
- Promote commercially viable community-based rural financial systems i.e. microfinance institutions and improving linkage to commercial banks and/or other financial service providers i.e. MAFF/DPs to facilitate the provision of long-term guarantee and credit lines to commercial banks to be granted to microfinance institutions, MSEs and micro-enterprises.

7.7.4.1 Alternative rural financial products

323. Farmers' exposure to various agricultural risks is a real concern in disaster prone areas and for farmers growing or wanting to diversify into crops with high sensitivity to weather variations. While commercial estates have the financial strength to compensate for yield loss with the profits accumulated during abundant years, subsistence farmers do not allocate their resources to safer and, on average, lower profitability crops.

324. Interventions designed to build farmers' capacities to manage agricultural risks, such as crop insurance, offer opportunities for significant improvement of their livelihoods through (i) rapid disbursement of cash after the occurrence of damaging weather events to ensure subsistence, (ii) smoothing of income and consumption patterns, and (iii) increased opportunities for crop diversification, hence for higher margins and profit seeking by farmers and agri-businesses.

325. Parametric insurance models offer financial protection based on the performance of a specified index in relation to a specified trigger. Insurance buyers are compensated against unfavorable weather fluctuations that impact physical volumes produced or transacted and are not compensated for observed losses.

326. Weather-based index insurance offers the largest opportunity for priority commodities in Cambodia. This Component will assess the cost required into weather-based index and other alternative agricultural insurance schemes resulting in the formulation and introduction of alternative agricultural insurance products with proposed support from parametric insurance experts such as the World Bank Commodity Risk Management Group.

327. It is assumed that the banking sector is willing to diversify its financial products for the agriculture sector to support this initiative.

328. **Cost estimates:** The overall costs for Component 3 are estimated at U$12.56 million or 2.51 percent of the total cost of the Program. The majority of costs are to improve market-led extension and linking farmers directly with markets, agri-clinics, and SMEs. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

7.7.5 Component 4: Market infrastructure is improved

329. Component 4 focuses on improving market infrastructure to facilitate value addition through the efficient exchange and transformation of agricultural products.

7.7.5.1 Upgrade market facilities

330. In Cambodia public markets mix both wholesale and retail functions. Public markets are the responsibility of local Government and by-laws regarding standards and management already exist. Markets are a source of income for local Government through the collection of trader fees and are a primary means of improving food safety and hygiene. Markets are also an ideal location for the provision of other related services such as packaging and transport, enforcing standards, and collecting price information. Indicative activities for upgrading market places are as follows:

- Review standards and laws for the management of public markets and develop management manual for local Government authorities.
- Exposure visits for market staff to well managed markets in the region.
- Improve facilities for product handling and storage.
- Enforce standards for weights, measures, quality and food safety.
- Provide services such as grading, packaging, processing and transport.

7.7.5.2 Traders aware of food standards and consumer preferences

331. Market places also provide a venue for training traders. Due to the number of intermediaries in institutional marketing chains, consumer preferences are not passed back to producers and often traders themselves are unaware of food standards and safety requirements. This Component proposes that market staff and traders be trained in quality grades, food standards, consumer preferences, and in particular for market traders, training in grading, packaging, processing, and transport. Increasing the awareness of market traders' knowledge in these areas could be best done through a public awareness campaign targeted to them that clearly highlights the benefits to them to follow improved standards, procedures, and services. It is expected traders in the five upgraded markets will be trained by the EoP.

7.7.5.3 Improved storage of agricultural produce

332. Storage is important for two reasons. Firstly, agro-processors require a consistent supply of raw materials throughout the year and secondly, storage can create additional income from speculation and selling during price peaks. At present very little storage is carried out as traders and processors do not have enough working capital to purchase the large volumes of commodities that come to the market at harvest time, forcing farmers to sell to Thai and Vietnamese traders.

333. The agro-processing industry will develop as increased access to raw materials is enabled. To do this, this Component will provide for competitive matching grants to establish storage facilities for priority crops and commodities for year-round availability and speculative storage with processors and traders, and the provision of inventory based loans for purchasing and storing commodities at harvest.

7.7.5.4 Processed agri-foods meet international standards and SPS certifications

334. Accredited SPS facilities are one of the priority interventions allowing the export of Cambodian produce to high-value markets, upon which the majority of agri-business development is dependent. Standards exist for agricultural produce but are not commonly used during exchange. The use of common standards reduces transaction costs and facilitates telephone sales. This is particularly relevant for large buyers of fresh vegetables.

335. The implementation of the activities in this sub-component requires TA and funding for the development of agro-industrial products, convenience foods and packaging, and establishing and equipping accredited SPS testing and certifying facilities and training of SPS technicians. Additionally, MIME and relevant departments in MAFF will receive training on how to meet and apply standards for main agricultural commodities and products to ensure international compliance, and in turn, MAFF will enforce the application of these standards for weights, measures, quality and food safety at public markets and agro-processing facilities to officials at the sub-national level. A key activity to meet assurances and ensure confidence of compliance to international standards is to raise awareness about SPS export procedures and common standards amongst exporters and buyers.

336. These activities, when implemented fully, have the potential to increase the number of certified processed agri-food products that meet international standards for export by 20% with an expected increase of 10% in the export of agri-food products.

7.7.5.5 Processing and trade

337. Although demand within Cambodia is increasing for processed foods, significant impact in the short term will only be made through exporting to higher-value markets. Processing is undeveloped in Cambodia and most exports are as raw commodities with processed agri-foods being imported. Processing offers substantial opportunities for adding value to Cambodian agriculture both domestically and internationally. Processing costs are high due to machinery working under capacity, high energy costs, and losses from rice milling. The identification of processing technologies less reliant on electricity is one means of increasing Cambodia's competitiveness.

338. To mitigate against processing losses, efficient processing technologies will be identified and matching grants secured to promote the adoption of efficient processing technologies for agri-food products that are in demand. An agri-food import substitution plan will be implemented whilst at the same time, an action plan for the export of agri-food products to higher-value markets will be implemented. This has a synergistic relationship to the increase in SPS quality standards giving assurance to exports and buyers alike of the quality of Cambodian agri-food export products.

7.7.5.6 Abattoirs

339. Standards have been developed for abattoirs, but implementation of standards and management remains poor. Of particular interest is butchering techniques to differentiate quality cuts for adding value. This Component seeks to develop a management manual that highlights standards and regulations for local Government to be guided by. Additionally, 5 abattoirs will be upgraded with quality and efficient cold storage, packaging, and staff given training in butchering techniques, different quality cuts of meat, and how to market meat products.

340. **Cost estimates:** The overall costs for Component 4 are estimated at U$34.8 million or 6.94 percent of the total cost of the Program. The majority of costs are to improve the storage of priority crops and commodities. Section 8 and Section 16 provide a summary breakdown and detailed cost arrangements respectively.

8 BUDGET AND RESOURCES

341. The proposed program over a four year period is estimated to cost US$501.295 million as summarized in Table 4. This comprises (i) US$6.21 million (1.24%) for Policy and Regulation, (ii) US$16.145 million (3.22%) for Institutional Capacity Building and Human Resource Development, (iii) 57.245 million (11.42%) for Research and Education, (iv) US$44.665 million (8.91%) Food Security, (v) US$283.790 million (56.61%) for Water Resource Management and Agricultural Land Management, (vi) US$81.760 million (16.31%) for Agricultural Business and Marketing, and finally (vii) US$11.48 million (2.29%) for Program Management Support costs. The detailed cost breakdown by activity and year is presented in Section 16.

Table 4 Program Summary Program Cost/Budget by Components - 4 year period

Component	Total (US$)	%
A. POLICY & REGULATION	**6,210,000**	**1.24%**
Component I - Policy, regulatory frameworks and Law are strengthened	2,400,000	0.48%
Component II – Legal framework for agricultural land management is developed	1,600,000	0.32%
Component III – Legal framework for water licensing and FWUCs is developed	1,710,000	0.34%
Component IV – Marketing policies are strengthened	500,000	0.10%
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT	**16,145,000**	**3.22%**
Component I – Human Resources and Management	13,485,000	2.69%
Component II – Improve the planning, budget and financial management systems	1,050,000	0.21%
Component III – Management Information Systems are implemented	1,610,000	0.32%
C. RESEARCH & EDUCATION	**57,245,000**	**11.42%**
Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM	12,045,000	2.40%
Component II – REE capacity	20,800,000	4.15%
Component III – Research and technology development	24,400,000	4.87%
D. FOOD SECURITY	**44,665,000**	**8.91%**
Component I – Community Self-reliance for Food Security and Poverty Reduction	41,750,000	8.33%
Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base	2,915,000	0.58%
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT	**283,790,000**	**56.61%**
Component I – Water data management is improved	5,575,000	1.11%
Component II – Development of integrated water management	3,925,000	0.78%
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way	248,510,000	49.57%
Component IV – National land resource assessments are developed	6,430,000	1.28%
Component V – Productivity of lowland rice soils is improved	6,400,000	1.28%
Component VI – Productivity of upland soils for sustainable management and utilization is improved	3,125,000	0.62%
Component VII – Strengthening of smallholder land tenure security and productivity	2,625,000	0.52%
Component VIII – Strengthening of the management of state land resources	1,900,000	0.38%
Component IX - Strengthening the implementation and impact of land use and lend tenure policies	5,300,000	1.06%
F. AGRICULTURAL BUSINESS & MARKETING	**81,760,000**	**16.31%**
Component I – Inputs and farm production are improved	6,450,000	1.29%
Component II – Markets are developed and market opportunities are expanded	27,950,000	5.58%
Component III – Extension and outreach is improved	12,560,000	2.51%
Component IV – Market infrastructure is improved	34,800,000	6.94%
Total Program Budget	**489,815,000**	**97.71%**
Program Management Support	11,480,000	2.29%
Total Program Cost	**501,295,000**	**100.00%**

9 PROGRAM MANAGEMENT AND IMPLEMENTATION

9.1 Overall Structure for Program Management and Implementation

342. As noted in Section 7.1, it is envisaged that the Program will be implemented and managed within the existing organizational and management structures of MAFF and MOWRAM and with standard operating procedures being applied. Technically and operationally, the Program will be supported by a team of professional specialists assigned by MAFF and MOWRAM. The Program will be implemented by MAFF and MOWRAM with the assistance of donors and qualified Service Providers where required (organizations and institutions with proven competence in implementing similar development projects, selected by the concerned Ministries in collaboration with the respective donor partners), These entities will work closely with the concerned government line departments in project formulation and implementation under the technical and operational guidance of MAFF and MOWRAM.

343. Program Management costs of US$11.48 million (2.29 percent); see Section 8 for further details. The detailed cost breakdown by activity and year is presented in Section 16.

344. For Component implementation at the local level, the project cycle process will be carried out by provincial departments (PDA and PDWRAMs) under the overall instructions and supervision of the appropriate line ministry (MAFF, MOWRAM etc) and under the guidance of the Provincial Councils as mandated under the Organic Law. Provincial departments will identify and implement appropriate projects with funding under the SAW in accordance with the procedures and standards established by the MEF, MAFF and MOWRAM. In particular, they identify suitable projects for assistance under the Program in consultation with all levels of local authorities (village, commune, district, province), formulate and submit project proposals to the Program Secretariat for approval– once approved, they will implement the activities. It is important that provincial departments ensure that the projects funded by the SAW are consistent with the Organic Law and the decentralization and deconcentration process.

9.2 Implementation Arrangements

345. The individual projects and activities of the Program will be implemented through mainstreaming activities in line departments and contracted Service Providers selected by the concerned Ministries in collaboration with the respective donor partners. They should have proven competence and experience relevant to the Program. In particular, they need to demonstrate:

1. Capacity and experience in promoting and proving practical and sound technical support for institutional capacity building and management support.
2. Capacity and experience in designing and implementing projects in support of the mainstreaming objectives and approaches similar to the Program.
3. Experience with training and capacity building of government staff and line departments.
4. Experience and demonstrated ability to contribute to the deconcentration and decentralization process.

346. Service providers will carry out the project work from identification, proposal formulation, implementation and monitoring/reporting through contracts with MAFF and MOWRAM. They will liaise and coordinate the planning work with the provincial authorities and work closely in the implementation process with the line departments and provincial departments. Service Provider's performance in delivering the Contracts will be audited and evaluated.

10 MONITORING AND EVALUATION

10.1 Overview of the MTEF Process

347. MEF has initiated a Public Financial Management Reform Program throughout the whole of Government. The essential elements are a new chart of accounts with new economic classifications for budgeting and recording of expenditure and resources, a financial management Information System (FMIS) and the introduction of Program budgeting, utilizing the MTEF.

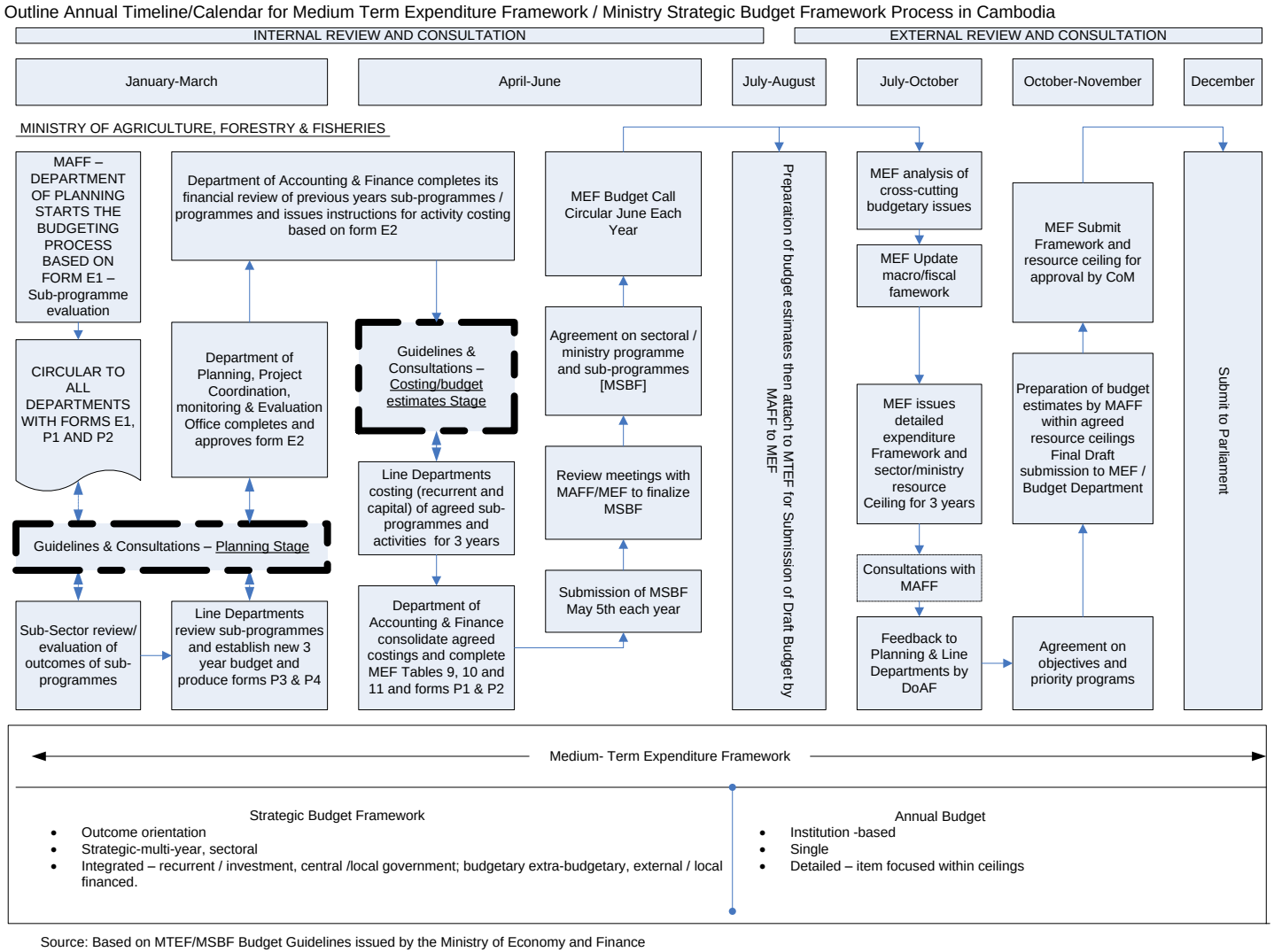
348. The introduction of Program budgeting is being undertaken on a pilot basis in a few Ministries one of which is MAFF. This work has resulted from the intention of introducing MTEF to the budgeting system; however as an interim step the government has decided to introduce the Medium Term Strategic Budgeting Framework (MSBF) to the existing Performance Against Plans (PAP) structure. This will assist ministries later on in adapting to the MTEF. The pilot has six objectives:

1. Establish a uniform approach to the identification of Programs, sub-Programs and activities derived from a common strategic planning process and specific Program budgeting guidance;
2. Streamline the MAFF PAP structure into a new simplified and more easily understood Program structure consisting of no more than five Programs with no constraint placed on the number of sub-Programs and their activities;
3. Ensure that each Program and each sub-Program has only one manager, so that budget holder lines of accountability are identified and clearly understood;
4. Design new performance indicators for these new Programs and sub-Programs capable of measuring achievement against previously determined Program and sub-Program indicators;
5. Establish the use of the new Program profile for the presentation and submission of Program budget requests; and
6. Lay the basis for the reintegration of PAP into the reformed mainstream budget procedures using the Program budget vehicle, so as to obtain an integrated and comprehensive budget preparation and budget execution process.

349. The MTEF provides the "linking framework" that allows expenditures to be "driven by policy priorities and disciplined by budget realities" (World Bank 1998, pg. 32). If the problem is that policy making, planning, and budgeting are disconnected, then a potential solution is an MTEF. Given that this disconnect between policy making, planning, and budgetary processes is a common condition of developing country governance, the MTEF has increasingly come to be regarded as a central element of PFM reform programs.

350. The value of the MTEF approach comes from integrating the top-down resource envelope with the bottom-up sector Programs. Once the strategic expenditure framework is developed, the government defines the sectoral resource allocations, which are then used by ministries to finalize its Programs, sub-Programs, activities and hence budgets; see Figure 11. Key to the review process is the notion that within the broad strategic expenditure framework, which reflects the resource constraint as well as government policy, the ministries will have autonomy to manage by making decisions that maximize technical outcomes like efficiency and effectiveness.

Figure 11 Outline of Annual Timeline for MTEF Process - MAFF



Source: Based on MTEF/MSBF Budget Guidelines issued by the Ministry of Economy and Finance

Source: (ADB 2006)

10.2 Monitoring and Evaluation (M&E) Approach

351. M&E will be employed as management tool for the purpose of (i) learning and corrective action during the Program implementation and (ii) accountability for the use of resources and the results achieved. The former purpose (learning and correction) would focus on the implementation process so as to facilitate timely corrective management actions, for which monitoring would play the major part, supplemented by an external mid-term evaluation. The latter purpose of accountability would focus on the assessing the effectiveness, including cost-effective aspect, for the Program in achieving the expected outcomes, for which evaluation, especially the terminal evaluation (also external) would play the key role.

352. In particular, monitoring would be carried out as part of the management function internal to the Program management – this is essential to facilitate the timely learning and mid-course correction. Thus, monitoring includes in-depth review of the process and the results in the implementation process. On the other hand, evaluation should assess the efficiency and effectiveness of implementation, including management actions, as well as overall relevance and cost-effectiveness of the results being achieved, including identification of main reasons for the outcome and recommendation for overall management actions on the future of the Program. It should also be an independent function carried out by external competent agent.

10.2.1 Monitoring

353. Monitoring needs to follow systematically on the key aspects of implementation process so as to detect important deviations and other problems in comparison with the implementation schedule and plans. Its key function is to provide the management at various levels timely and reliable feedback on the Program implementation, especially highlighting actions needed by the management for efficient and effective implementation. Broadly, monitoring would cover:

1. Achievement progress on the activities, outputs and progress towards objectives, including the participation of target groups and other key stakeholders in the Program. This should be captured through a reporting system (e.g. 6 monthly) by all the key units responsible for operations where the implementation progress measured against the targets and timing established in the implementation plan. Information from the reporting system would be collated and analyzed to highlight whether the implementation is moving on time with the schedule and achieving the planned results. The monitoring reports should be considered periodically by management for decision, especially on corrective actions needed to ensure satisfactory implementation. The monitoring information should feed into internal reviews, evaluations as well as overall Program management information system;
2. Progress on financial and resource use. This would monitor the actual vs. planned information, covering (i) expenditures as well as any incomes/receipts, and (b) quantity of inputs/activities/outputs, and (c) unit costs of major expenditures;
3. Progress/changes on critical success factors (strategic monitoring), such as key assumptions with high operational/technical risks and environment. The focus would be on selected but highly critical factors, progress/changes in which would have serious effects on the Program success. This information needs to be communicated to the management in a systematic manner.

354. Monitoring arrangements would be managed through the MTEF system and built into the existing organizational and management structures of MAFF and MOWRAM (refer Key Activity 1.1.7 pillar A. Policy & Regulation in the Program Logical Framework in Section 14). It would be essential that monitoring is closely linked with the implementation planning process and the unit responsible for it. Details of the structure and procedures and methodology should follow the MTEF

guidelines. Reports of monitoring, including information on management actions on the issues flagged by monitoring would be reported to MAFF and MOWRAM.

10.2.2 Evaluation

355. As noted above, evaluation will be carried out externally at the mid-term and terminal stages of the Program implementation. The mid-term evaluation will be of particular importance for the Program management as it will provide in-depth assessment of the performance of Program implementation, including analysis of strengths and weaknesses, key issues for improvement and recommendation for management action. The conclusions and recommendations as well as management response to them will be submitted to MAFF and MOWRAM for their decision/approval.

356. These exercises would be contracted to a company or a team of individuals with demonstrated competence and experience. As noted above, these evaluations will be independent in terms of their findings and recommendations, but will be guided by the terms of reference prepared by the appropriate Program and approved by MAFF and MOWRAM – in some cases, the representatives of the donor of particularly large or some special projects should be able to participate in preparing the TOR for the evaluation as well as reviewing the evaluation report. The evaluation report would be shared with the donors concerned (the exact arrangements will need to be worked out later).

357. The terminal evaluation will be carried out during the last year of the Program implementation in order to undertake an in-depth assessment of the results achieved in relation to the plan. It will focus on the Program's effectiveness in realizing the planned outcomes and progress towards achieving the goal, including how valid and realistic the Program design has been (including the assumptions), analysis of key factors that have facilitated or hindered the Program effectiveness, and recommendations for the future follow-up measures. Thus, the evaluation would be useful for management decision on the future of the Program – to continue as it stands, or modify and continue or phase out. Ideally, the terminal evaluation report should be available, by latest, some six months before the planned terminal date of the Program implementation.

10.3 Monitoring and Evaluation Frameworks within MAFF and MOWRAM

358. To enable the monitoring and evaluation approach above, the SAW program needs to adhere to the commitment outlined in the Program Logical Framework (activity 2.1.3 pillar B. Institutional Capacity Building & Human Resource Development) to align all new donor projects with the accounting and M&E systems of MTEF.

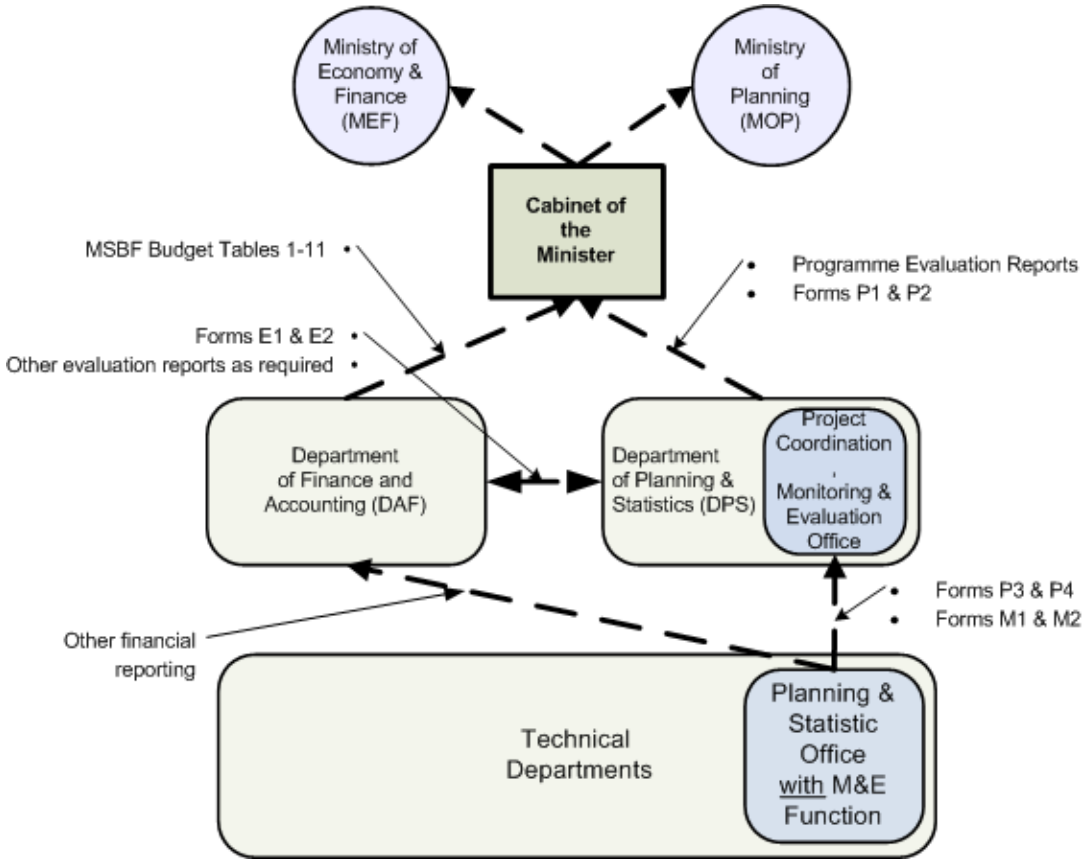
359. Under the MTEF system adopted by MAFF, the M&E manual defines and describes a complete M&E information system, including processes and procedures, for Program budgeting in MAFF. The M&E system provides MAFF the mechanism to both prepare and plan its annual budget, and to introduce performance information into budget allocation decisions. It is an important component of the whole Program budget process (ADB 2006). This M&E information system, and the coordination and budgeting process MAFF has adopted, as described in the following paragraphs, also needs to be adopted by MOWRAM to ensure a fully integrated Monitoring and Evaluation framework and operational procedures.

360. MAFF's Department of Planning and Statistics (DPS)'s Project Coordination, Monitoring & Evaluation Office (PCMEO) has the overall responsibility for the management of the M&E system for Program budgeting. They will operate in close cooperation with the Department of Accounts and Finance in preparing the annual Program budget. PCMEO is also responsible for overseeing Program evaluations and producing Program Evaluation Reports (PERs) for the Ministry of Planning to assist in tracking progress of the NSDP (ADB 2006).

361. The overall organisational structure and reporting mechanism for the M&E system in MAFF is shown in Figure 12. The M&E information system is comprised of a nine reporting forms divided into three main groups - Planning, Monitoring and Evaluation as summarised Table 5.

362. Together, the forms provide a standardised means to collect and report operational data and give the Department of Planning the information necessary to conduct evaluations. These forms are to be used in conjunction other existing reporting mechanism (financial, progress reports) that are currently being used by the MTEF pilot ministries and external projects. The timeline and departments responsible for providing this information is illustrated in Figure 13.

Figure 12 MAFF Organizational Reporting Flow for M&E Systems under MTEF



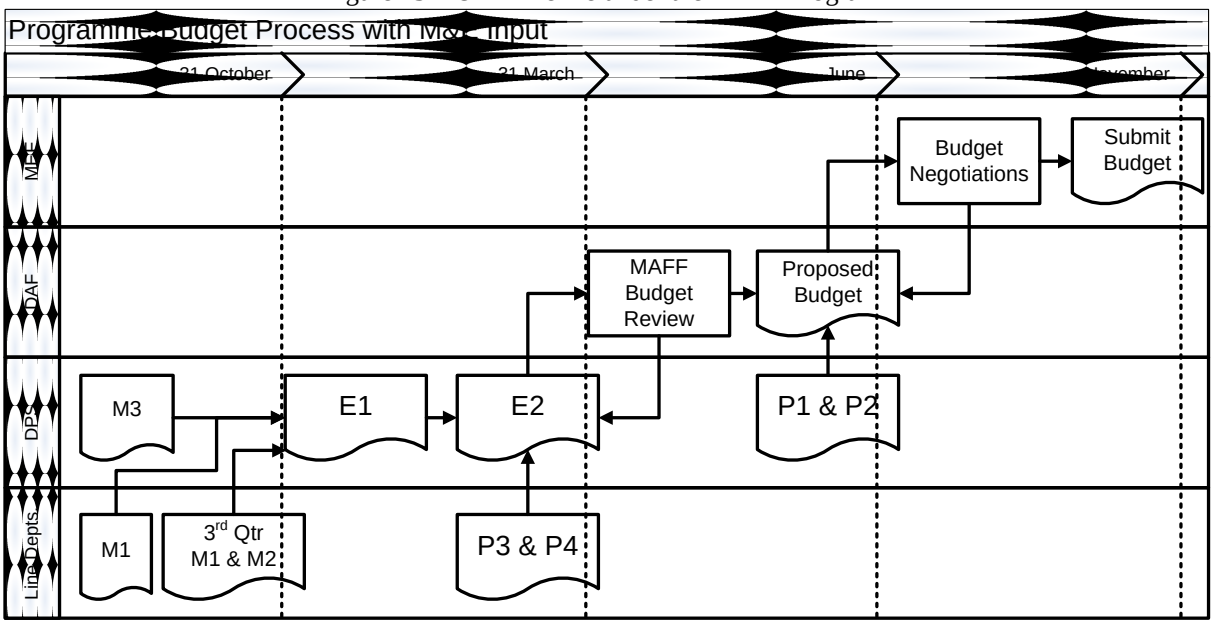
Source: (ADB 2006)

Table 5 M&E Information System under MTEF

Planning Forms	Monitoring Forms	Evaluation Forms
P1 - Ministry Program Budget Summary P2 - Program Profile P3 - Sub-Program Profile P4 - Activity Profile	**M1** - Quarterly Monitoring Report **M2** - Annual Monitoring Report **M3** - Site Visit Report	**E1** - Sub-Program Evaluation **E2** - Program Evaluation Summary

Source: (ADB 2006)

Figure 13 M&E Timeline under the MTEF Program



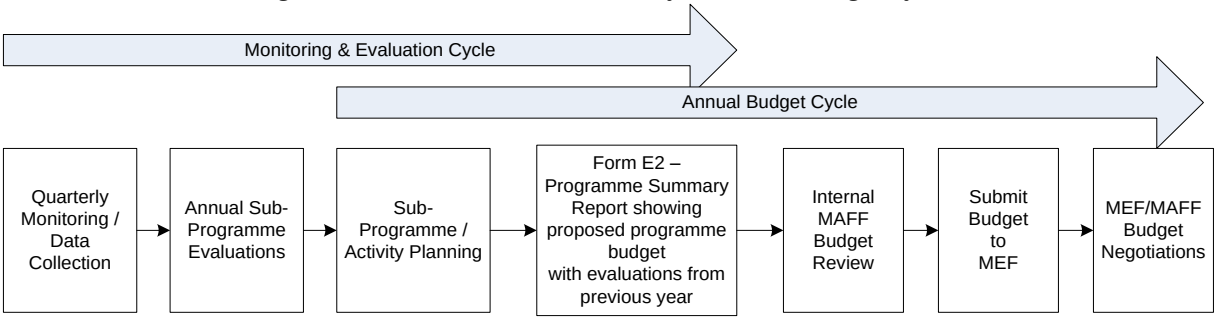
Source: (ADB 2006)

363. The planning forms, in particular P3, & P4, assist the line departments to define their budget structure and provide detail costing at the activity level. The planning forms are designed to be hierarchical with a direct information flow from the activity level to the Program level, with data being summarised at each level (ADB 2006).

364. The main monitoring forms, M1 & M2 are submitted by the line departments quarterly and annually respectively. M1 describes progress information for each activity within the sub-Program, and a review of problems encountered. M2 provides in-depth information, including a SWOT analysis, of the sub-Program's progress towards achieving its objective. The M2 report, along with cumulative M1 reports, provides the foundation for the evaluation of each sub-Program (ADB 2006).

365. The evaluation forms assist the DPS to annually review the progress reported by each sub-Program and to assess the likelihood of it achieving its objective. This feedback is summarized in E2 and submitted to DAF to assist in the MAFF budgetary review process in preparation for preparing its proposed budget to MEF; see Figure 14.

Figure 14 Interaction between M&E Cycle and the Budget Cycle



Source: (ADB 2006)

10.4 Focus Areas of M&E – Performance Indicators

366. The performance indicators (outcomes at various objective levels, including key outputs) and important assumptions identified in the Program's Logical framework (see Section 14) serves as the basis for defining the focus and scope of indicators and issues to be covered in M&E. However, monitoring will cover more operational aspects of implementation process, as indicated above, including the progress against the work plans in implementing activities and related use of funds and other resources. This will entail considerable data collection through surveys and internal system of periodic reporting – an information strategy will for M&E will be developed by the Program.

367. In terms of achieving results, focus of M&E will be on progress in the following areas:

Pillar A - POLICY & REGULATION:

1. Policy, regulatory frameworks and Law are strengthened
2. Legal framework for agricultural land management is developed
3. Legal framework for water licensing and FWUCs is developed
4. Marketing policies are strengthened

Pillar B - INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT:

1. Human Resources and Management capacity is built
2. Improve the planning, budget and financial management systems
3. Information systems strengthened at national, provincial, district levels and consolidated at central level

Pillar C - RESEARCH & EDUCATION:

1. Organizational Structure and Mechanisms in MAFF and MOWRAM is improved
2. REE capacity is built
3. Research and technology is developed

Pillar D - FOOD SECURITY:

1. Community Self-reliance for Food Security and Poverty Reduction
2. Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base

Pillar E - WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT:

1. Water data management is improved
2. Development of integrated water management
3. Continuation of the development of irrigation and water management infrastructures with a more participatory design and in a more integrated way
4. National land resource assessments are developed
5. Productivity of lowland rice soils is improved
6. Productivity of upland soils for sustainable management and utilization is improved
7. Strengthening of smallholder land tenure security and productivity
8. Strengthening of the management of state land resources
9. Strengthening the implementation and impact of land use and land tenure policies

Pillar F - AGRICULTURAL BUSINESS & MARKETING:

1. Inputs and farm production are improved
2. Markets are developed and market opportunities are expanded
3. Extension and outreach is improved
4. Market infrastructure is improved

368. A list of indicative key indicators for M&E is provided in the Program Logical framework outlined in Section 14.

11 KEY ASSUMPTIONS AND RISKS

369. As outlined in the Program Logical Framework in Section 14, there are four important assumptions regarding the proposed program design:

1. Government accords high priority to program implementation
2. Resource allocations are provided to fund the program from donor and government budgets
3. The market-economy is able to provide sufficient stimulus to increase productivity and diversify agriculture.
4. The investments outlined in the program document are net additive to the on-going or currently planned pipeline investments

370. The key assumptions are essential to the successful execution and implementation of the proposed program and if any of these are not satisfied there will be serious risks to the achievement of the program goal. The risks identified are:

1. Government's commitment waivers and resource constraints hinder implementation; and
2. MEF does not approve annual workplans and budget allocations.

12 IMPLEMENTATION PLAN AND PRIORITIES

371. The implementation schedule is presented in Section 15 and follows the Program Logical Framework activities and the detailed budget breakdown in Section 14 and Section 16. A large number of activities in the implementation pillars of D – Food Security, E – Water Resource Management and Agricultural Land Management, and F – Agricultural Business and Marketing have a 4 year duration as they are long term in nature.

372. The cross-cutting pillars of A – Policy and Regulation, B – Institutional Capacity Building and Human Resource Development, and lastly C – Research and Education, precede and/or are implemented concurrently with the implementing pillars. It is expected that activities under pillar A are to be strengthened or implemented by mid-2011, and is crucial for enabling the autonomy of the local authorities and the beneficiaries to implement activities in pillars D, E and F. In addition, financial, intellectual, human resource development, and extension services cross-cut the implementing pillars and supports the local authorities and beneficiaries to develop and sustain their skills and their autonomy.

373. The cross-cutting pillars achieve the goals of the implementing pillars, and importantly, sustain the continuing development of the agriculture and water sectors in the years beyond the 4-year duration of this program.

374. The implementing pillars have been prioritized to first meet the beneficiary's fundamental needs of securing a constant diverse and nutritional food supply. Concurrently, managing water and land resources ensures food production can be sustained for consumption and provides surplus food stocks to generate income through implementing activities in the Agricultural Business and Marketing pillar (E).

375. The sequencing of components and sub-components of the cross-cutting and implementation pillars over the 4-year program are shown in Figure 15, the Program Implementation Plan below. This high-level Plan serves to indicate projected start and end times at the sub-component level, and concurrent implementation plans. Sub-component and key activity dependences are indicated on the detailed Program Implementation plan in Section 15.

Figure 15 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
A. POLICY & REGULATION				
Component 1 - Policy, regulatory frameworks and Law are strengthened				
1.1 Policy and regulatory frameworks				
1.2 The Organic Law is implemented in selected provincial departments				
Component 2 - Legal framework for agricultural land management is developed				
2.1 Legal framework for agricultural land management to protect, conserve, and enhance the use of agricultural lands				
Component 3 - Legal framework for water licensing and FWUCs is developed				
3.1 Legal framework and an implementation plan of water licenses and fees sub-decrees				
3.2 Legal framework on PIMD				
3.3 National Action Plan for PIMD is developed by MOWRAM				
3.4 Monitoring and evaluation system for PIMD is set up in MOWRAM				
Component 4 -Marketing policies are strengthened				
4.1 Policies for agricultural development				
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT				
Component 1 - Human Resources and Management				
1.1 HRD plans				
1.2 Implementation of Salary Supplementation/Allowances in Pilot Provinces				
1.3 Increase capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning				
Component 2 - Improve the planning, budget and financial management systems				
Component 3 - Management Information Systems are implemented				
3.1 Information systems strengthened at national, provincial, district levels and consolidated at central level				
C. RESEARCH & EDUCATION				
Component 1 - Organizational Structure and Mechanisms in MAFF and MOWRAM				
1.1 Management capacities of Educational Institutes supporting MAFF and MOWRAM				
1.2 TSC becomes an Institute				
1.3 TSC certified courses in Water Resources Management and Technical services				
1.4 Department of Water Resource Management at ITC				
1.5 RUA training courses to MAFF and MOWRAM staff				
1.6 Royal School of Administration Management training courses to MAFF and MOWRAM staff				
Component 2 - REE capacity				
2.1 Human resources for REE				
2.2 REE organizational strengthening				
2.3 Existing and new institutional arrangements				
2.4 Networks with other research institutes				
2.5 Resource mobilization and coordination				

Figure 15 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
Component 3 - Research and technology development				
3.1 Pro-poor, pro-women and pro-environment technologies				
3.2 Strategic and applied research improvements				
3.3 Market oriented and niche technologies (strategic and applied)				
D. FOOD SECURITY				
Component 1 - Community Self-reliance for Food Security and Poverty Reduction				
1.1 On-farm productivity is improved through adoption of low-input technical packages				
1.2 On-farm productivity is improved through adoption of improved technical packages				
1.3 Better income through diversified income-generation opportunities				
1.4 Self-management and empowerment in farmers groups and village common works				
1.5 Access to adequate food, better nutrition practices including food preparation and preservation, improved sanitation and health				
1.6 Identification of good practices and more effective approaches to food security				
Component 2 - Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base				
2.1 Key policy makers, planners and program developers are trained in FSN concepts; integrated into policy, plans, and programs				
2.2 FSN coordination structure includes collaboration between and among concerned line ministries and agencies				
2.3 Commune councils and farmer communities (FOs, FGs, FWUCs, etc) trained in managing the project cycle and FSN integration				
2.4 Existing information and data on FSN is enhanced, used and is managed (maintained)				
2.5 Quality and scope of information and data supporting FSN in Cambodia is improved				
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT				
Component I – Water data management is improved				
1.1 CISIS irrigation scheme information system is operationalized				
1.2 Evaluate irrigation schemes suitable for future funding based on CISIS output				
1.3 Analysis and storage software are defined and used efficiently for surface and ground waters, river basins and meteorological data				
1.4 Existing water data and works are stored by the relevant government departments and available to be utilized by projects				
1.5 Observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration				
1.6 Flood and drought forecasting system is improved in collaboration with the MRC				
Component II – Development of integrated water management				
2.1 River basins are delineated and classified officially				
2.2 Water management framework plan is approved for the Tonle Sap basin				
2.3 Water resources are assessed at a nationwide scale				
2.4 Water committees are created and management plans are approved for at least 2 priority basins				
Component III – Development of irrigation and water management				

Figure 15 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
infrastructures with a participatory design and in an integrated way				
3.1 Preliminary studies taking into account environmental, social and economic factors for all irrigation projects				
3.2 Farmers are systematically and strongly involved in the design				
3.3 MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season irrigation schemes				
3.4 MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irrigation schemes				
3.5 Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation				
3.6 MOWRAM develops its maintenance activities				
3.7 MOWRAM and other service providers are able to support FWUC for operation and maintenance				
Component IV – National land resource assessments are developed				
4.1 National Land Resources Team responsible for current and future land resource management work				
4.2 Land capability and land suitability classification will be developed				
4.3 Manual for classification, identification and management of upland soils is developed				
4.4 Soils and soil map of the rice growing areas in the lowlands is updated				
4.5 Existing National Soil Database developed by CARDI will be enhanced				
4.6 Agricultural land use changes will be determined and updated country-wide				
Component V – Productivity of lowland rice soils is improved				
5.1 Sustainable best soil fertility management practices adopted				
5.2 Rice yields using integrated crop management approach (ICM) are increased				
5.3 Productivity, intensification and diversification of post-rice lowland cropping is increased				
5.4 Guiding recommendations on management of water requirement for crops is established				
Component VI – Productivity of upland soils for sustainable management and utilization is improved				
6.1 Land suitability of the main soils in upland farming systems for field crops is assessed				
Component VII – Strengthening of smallholder land tenure security and productivity				
7.1 LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification				
7.2 Customary land tenure rights at the local level in areas not covered by systematic titling is recognized				
7.3 Social Land Concession (SLC) mechanism and improving land productivity of the SLC areas is strengthened				
7.4 Communal land rights of indigenous communities according to the provision of the law is established				
7.5 Land dispute resolution mechanisms is strengthened and integrated				
Component VIII – Strengthening of the management of state land resources				
8.1 Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose				
8.2 Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established				

Figure 15 Program Implementation Plan

Components and Sub-Components	2010	2011	2012	2013
8.3 Management of Cambodia's forested land according to the law is strengthened				
Component IX – Strengthening the implementation and impact of land use and land tenure policies				
9.1 Agricultural Census will be carried out				
9.2 Methodologies for land resource utilization and data collection will be standardized				
9.3 Research on land use and land tenure impacts on development will be carried out				
F. AGRICULTURAL BUSINESS & MARKETING				
Component I – Inputs and farm production are improved				
1.1 New and improved quality and efficiency of agricultural inputs				
1.2 Agriculture is diversified				
Component II – Markets are developed and market opportunities are expanded				
2.1 Technology is transferred for bridging yield gaps				
2.2 Market research and information dissemination				
2.3 Develop the agro-tourism sector				
2.4 Marketing and business skills for emerging and expanding agri business available				
2.5 Farmers are engaged in contract farming or other supply chain agreements with high-value markets				
2.6 Traditional marketing systems are strengthened				
2.7 Market oriented and niche-specific technologies are developed and adopted for export				
Component III – Extension and outreach is improved				
3.1 Market-led extension is improved				
3.2 Rural information and communication network is strengthened				
3.3 Cost-effective financial products available to the agriculture and agri-business sector				
3.4 Make available alternative rural financial products				
Component IV – Market infrastructure is improved				
4.1 Upgrade market facilities				
4.2 Traders are aware of food standards and responsive to consumer preferences				
4.3 Improved storage of agricultural produce				
4.4 Processed agri-food products meet international standards and SPS certifications				
4.5 Processing losses decreased and quality increased				
4.6 Trade in processed agri-foods increased				
4.7 Upgrade abattoirs				

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14 ANNEX 1: PROGRAM LOGICAL FRAMEWORK

FINAL GOAL AND OUTPUT HARMONIZED LOGICAL FRAMEWORK

	Budget	**Indicators**	**Source of Verification**	**Assumptions and Risks**
Overall Goal: To contribute to poverty reduction, food security and economic growth through (a) enhancing agricultural productivity and diversification and (b) improving water resources development and management.	Program: $489,815,000 Program Management Support: $11,480,000 Total Program Cost: **$501,295,000**	• Agricultural output increased by 20% over 4 years • Beneficiary income increased by 20% over 4 years • Employment in agri-business and agro-industrial sector increased by 20% over 4 years • Area planted to cash crops increased by 20% over 4 years • Value of agricultural exports increased by 30% over 4 years • Value of formal bank loans for capital investment in agriculture increased by 25% over 4 years • Volume of imported processed agri-foods decreased by 20% over 4 years • Number of agri-business SME's increased by 10% over 4 years • The area of cropping land with access to irrigation services is increased by 100,000 hectares over 4 years • The incidence of drought or flood affected farmland is reduced by 20% over 4 years	• Annual Statistics • MAFF and MOWRAM annual reports • M&E reports	
Output A (Policy and Regulation) A sound policy and legal framework to enable development of the Agriculture and Water sectors	$6,210,000	• MAFF and MOWRAM have implemented and enforced policies, plans, laws and regulations for which they are responsible • Ministerial Prakas' are issued devolving the implementation of development programs to provincial departments, as mandated under	• MAFF and MOWRAM annual reports • Inter-Ministerial Circulars • Program	**Assumptions** • Government accords high priority to program implementation • Resource allocations are

	Budget	Indicators	Source of Verification	Assumptions and Risks
		the Organic Law	Management Support Unit reports • Steering Committee Reports • Sub-decrees / Prakas' • Technical report • Project reviews	provided to fund the program from donor and government budgets • The market-economy is able to provide sufficient stimulus to increase productivity and diversify agriculture. • The investments outlined in the program document are net additive to the on-going or currently planned pipeline investments **Risks** • Government's commitment waivers and resource constraints hinder implementation • MEF does not approve annual workplans and budget allocations
Output B (Institutional Capacity Building and Human Resource Development) A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management	$16,145,000	• Facilities and equipment are improved • An increase in performance and output in organizational capacity in planning, administration, management (financial and contract management, human resources management, information management, engineering and public works, project management, monitoring and evaluation) at the central and provincial level is observed • Information systems are implemented • A gender unit in MAFF and MOWRAM is functioning and fully funded to implement gender mainstreaming policies • Gender Action plans are updated yearly and implemented	• Procurement records • M&E reports • Graduation certifications • Training records • National and provincial annual performance reports • Inter-ministerial circulars • Ministerial strategies and development plans • Gender Action Plans	
Output C (Research and Education) A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer	$57,245,000	• Training institutes' facilities and curricula is improved • Strategic and applied research and technologies are developed and adopted that are pro-poor, pro-women and pro-	• Upgraded facilities (site visits and procurement records)	

	Budget	**Indicators**	**Source of Verification**	**Assumptions and Risks**
		environment • REE capacity is built and partnerships with national and international institutes strengthened • Training given to directors and senior staff of MAFF and MOWRAM and provincial staff as well as FWUCs • Agriculture processing technology is improved and niche products meet market needs • Commune councils and rural communities develop and implement community development plans for communal aspects of agriculture, agri-business and water management • All action plans incorporate gender policy	• Curricula • MOUs • International cooperation agreements • Agriculture processing technology center • Endorsed on-farm technology proposal • Commune Council development plans • Farmer Organization development plans • Self-Help group small-scale project implementation reports • Ministerial strategies and development plans • M&E reports	
Output D (Food Security) Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and	$44,665,000	• Beneficiary farmers are benefited by extension, technology transfer, improved production trainings and sets of low-input and improved technical packages • Beneficiary farmers organized into groups and conducting smallholder farming activities	• MAFF and MOWRAM annual reports • National and provincial annual performance	

	Budget	Indicators	Source of Verification	Assumptions and Risks
nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life		based on the principles of sustainable and Good Agricultural Practices and Natural Resources Management • Community projects are implemented using participatory planning techniques • Communities are involved in the local planning processes under the provisions of the Organic Law • Food security concepts are integrated into development programs and policy	reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • Policy review report	
Output E (Water Resource Management and Agricultural Land Management) Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context	$283,790,000	• The Tonle Sap Authority (TSA) develops and implements an Integrated Water Resource Management Plan for the Tonle Sap and connected river basins • MOWRAM and MAFF develop and implement a water resource management and agricultural resource management data collection and dissemination system • Provincial and local authorities, farmers and other stakeholders are involved in IWRM and irrigation infrastructure planning and implementation • An inventory and appraisal of land and water resources is carried out • Master plans and identified priorities for land and water resource utilization are implemented • Agricultural and economic productivity of lowland and upland areas and cropping systems are assessed and subsequent land use plans are implemented • MAFF and MOWRAM provide extension services for increased agriculture and water productivity	• Sub-Decrees, Prakas • MLMUP, MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	

	Budget	Indicators	Source of Verification	Assumptions and Risks
		• MAFF and MOWRAM provide extension services for increased agriculture and water productivity in irrigable and rain-fed croplands • 100,000 hectares of wetland and dryland irrigation is constructed and sustainable water management, harvesting and use practices are adopted by beneficiary farmers. • Land use certificates are provided to smallholder farmers • Communal land rights are provided to indigenous communities • MOWRAM and MAFF develop and implement a drought and flood forecasting system that provides timely warning to local authorities and farmers on the likely incidence and severity of events. • MOWRAM and MAFF develop and implement drought and flood mitigation measures		
Output F (Agricultural Business and Marketing) Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders	$81,760,000	• Beneficiary farmers have access to rural financial packages and contract farming agreements i.e. agricultural insurance products, long-term loans through RDB and financial institutions, and leasing arrangements, to provision agriculture and water public and private extension services to increase and sustain agricultural productivity • Beneficiary farmers, agriculture merchants, suppliers and traders, by coordination of a national network supported by the DAE, have adopted high-value crop production, appropriate farm mechanization technologies, and alternative delivery mechanisms that are	• Commercial bank long-term guarantees • Commercial bank credit lines • Rural financial systems • Alternative agricultural insurance products • Farmer Contract Law and sub-decree(s) • 10 Farmer	

	Budget	**Indicators**	**Source of Verification**	**Assumptions and Risks**
		proven to increase agricultural yields and quality • Marketplaces have the human, financial and infrastructure resources to store, grade, package, process and transport agricultural products • Farmers are linked directly with high-value markets, agri-clinics and SMEs (through ICT applications and rural networks) to enable trade in agricultural products supported by farmer marketing schools, market-led extension services, Farmer Contract Law and sub-decree(s) • Export in certified processed agri-food products that meeting international standards has increased by 20%	Marketing Schools • MoC export trade records • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • MOUs	

HARMONIZED LOGICAL FRAMEWORK – Component and Sub-Component Level

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
A. POLICY & REGULATION				
Goal : A sound policy and legal framework to enable development of the Agriculture and Water sectors				
Objectives 1. Policies, plans and legal-regulatory frameworks for MAFF and MOWRAM are fully established, maintained and coordinated 2. MAFF and MOWRAM implement the Organic Law on de-concentration and decentralization	• MAFF and MOWRAM have implemented and enforced policies, plans, laws and regulations for which they are responsible • Ministerial Prakas' are issued devolving the implementation of development programs to provincial departments, as mandated under the Organic Law	• MAFF and MOWRAM annual reports • Inter-Ministerial Circulars • Program Management Support Unit reports • Steering Committee Reports • Sub-decree • Technical report • Project reviews • MAFF and MOWRAM annual reports • Inter-Ministerial Circulars • Program Management Support Unit reports • Steering Committee Reports • Prakas • Technical report • Project reviews		**6,210,000**
Outputs: **Component I – Policy, regulatory frameworks and Law are strengthened** **1.1 Policy and regulatory frameworks are established** **1.2 The Organic Law is implemented in selected provincial departments**	• Policy and regulatory reform recommendations developed by year 2 and an action plan for policy and regulatory framework developed by year 3. Relevant Laws, Decrees, and Sub-Decrees enacted. • Rural employment program developed by year 2 • Government and donor commitment to provide a minimum of 1% of agricultural GDP to REE • Bio-security and IPR regulatory and enabling mechanisms are established by year 3 • Multi-stakeholder steering committee established for all agriculture and water programs and projects by year 1 • Provincial department staff, Provincial Rural	• Policy and regulatory reform report • Action plan • Rural employment plan • MOUs • National budget • REE policies and programs • Strategy planning and Development documents from 3 provincial departments • Infrastructure plans with priorities indicated	**Risk** • Government may not agree to allocate a percentage of AGDP to REE activities	2,400,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	Development Committees, and provincial councils meet on quarterly and yearly and are involved in their departmental strategy planning and development process by year 1			
Outputs: **Component II – Legal framework for agricultural land management is developed** **2.1 Legal framework for agricultural land management will be developed to protect, conserve, and enhance the use of agricultural lands**	• Policy options for governing agricultural lands provided by year 4 • A national policy and necessary legal framework rationalizing the conversion of forested land to agricultural uses is enacted by year 4	• Policy review report (with policy options documented) • National policy and legal framework	**Assumption** • Agricultural lands or farmlands will be well protected and conserved for production of foods, and the unused farmlands will be converted to productive and sustainable use by year 5	1,600,000
Outputs: **Component III – Legal framework for water licensing and FWUCs is developed** **3.1 The legal framework is finalized and an implementation plan of water licenses and fees sub-decrees is adopted and launched** **3.2 The legal framework on PIMD is completed** **3.3 A National Action Plan for PIMD is developed by MOWRAM** **3.4 An efficient monitoring and evaluation system for PIMD is set up in MOWRAM**	• The legal framework is approved by end year 1 • Sub-decree(s) approved by end year 2 • Number of water licenses granted by MOWRAM – 10 by year 4 • The FWUC sub-decree is approved by year 2 • The related prakas are approved by year 2 • The national action plan for PIMD is approved by the Minister by year 4 • The monitoring and evaluation system is set up by end year 1 • The FWUC information system is integrated with CSIS by mid year 2	• Legal framework • New sub-decree(s) • 10 water licenses • FWUC sub-decree • FWUC prakas • National Action Plan • M&E reports • FWUC Information System	**Assumption** • Sub-decree(s) are completed by prakas if necessary	1,710,000
Outputs: **Component IV – Marketing policies are strengthened** **4.1 Policies supportive of agricultural development promulgated**	• Relevant new policies and regulations are approved mid year 2	• New policies • New business regulations		500,000
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT				
Goal : A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management				
Objectives	• Facilities and equipment are improved • An increase in performance and output in	• Procurement records • M&E reports		**16,145,000**

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
1. A sufficient number of MAFF and MOWRAM staff and staff of PDWRAM and PDA have been trained	organizational capacity in planning, administration, management (financial and contract management, human resources management, information management, engineering and public works, project management, monitoring and evaluation) at the central and provincial level is observed	• Graduation certifications • Training records • National and provincial annual performance reports		
2. MAFF and MOWRAM have a coordinated communication and information sharing systems in place	• Information systems are implemented	• Inter-ministerial circulars		
3. Gender is mainstreamed in MAFF and MOWRAM	• A gender unit in MAFF and MOWRAM is functioning and fully funded to implement gender mainstreaming policies • Gender Action plans are updated yearly and implemented	• Ministerial strategies and development plans • Gender Action Plans • M&E reports		
Outputs: **Component I – Human Resources and Management capacity is built** **1.1 HRD plans are developed and implemented** **1.2 Salary Supplementation / Allowances are implemented in selected provincial departments** **1.3 There is increased capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning**	• Short courses in management are developed by mid year 2 • Capacity building advisors are recruited by year 2 • Gender is mainstreamed in MOWRAM and MAFF operations by year 4 • At least 75% of staff identified from the TNA results have completed management training courses by year 4 • 5 staff are operating under the Salary Supplementation / Allowances scheme in each PDWRAM and PDA by year 4 • MTEF is mainstreamed and implemented in all Line and Provincial Departments by year 2 • All new projects are implemented through Line Departments and Provincial Departments rather than through separate PMU/PIUs by year 3	• Instructional materials • Trainer Provider Contracts • Attendance lists • Participants evaluation reports • M&E report • Consultancy contracts • All MTEF reports are generated • MOUs signed between Projects and Departments	**Assumption** • RGC introduces a Salary Supplementation / Allowances scheme or another such salary incentive scheme by year 2011	13,485,000
Outputs: **Component II – Improve the planning, budget and financial management systems**	• MTEF is implemented in all departments of MAFF and MOWRAM by end year 2 • MTEF is implemented in 16 provincial PDWRAMs and PDAs by end year 3 • All new donor projects are aligned with the accounting and M&E systems of MTEF in accordance with the principles of the Paris	• Departmental reports • MTEF budget submissions to MEF • Ministry Program Budget Summary • Program Profile • Activity Profile • Quarterly and Annual Monitoring		1,050,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	Declaration by year 4	Report		
Outputs: **Component III – Management Information Systems are implemented** **3.1 Information systems strengthened at national, provincial, district levels and consolidated at central level**	• Financial information system (FIS) is integrated with MTEF chart of accounts by end year 1 • Human resource information systems (HRMIS) are developed by mid year 1 • Aims and objectives for a fully integrated MIS by early year 1 • Integrated system trialed by mid year 2 • All existing data are stored by MAFF and MOWRAM with software installed by year 2 • All data collection activities are integrated by year 3	• FIS, HRMIS, and MIS is operating • FIS, HRMIS, and MIS Development Plans approved by Minister • Hardware Procurement documents and records of installation	**Assumptions** • The challenges of developing a functional and useful MIS are fully understood • Staff capacity developed to implement information systems stay in post **Risks** • System sustainability problematic – recurrent running costs, technical expertise, maintenance of equipment and availability of consumables • Training wrongly give priority on maintaining hardware and not on the processes and management of the MIS • Lack of resource and expertise to maintain equipment	1,610,000
C. RESEARCH & EDUCATION				
Goal : A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer				
Objectives 1. A sustainable and responsive capacity for research, science and technology, consisting of facilities that are adequately resourced, well managed, coordinated, and staffed by sufficient trained and motivated scientists/ technologists	• Training institutes' facilities and curricula is improved • Strategic and applied research and technologies are developed and adopted that are pro-poor, pro-women and pro-environment	• Upgraded facilities (site visits and procurement records) • Curricula		**57,245,000**
2. An up-to-date knowledge/ information base and technological capacity, that is based on a cost-effective combination of national research and development, field experience, and information	• REE capacity is built and partnerships with national and international institutes strengthened	• MOUs • International cooperation agreements		

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
gathered from international sources				
3. An effective and comprehensive capacity for educating and training research and technical RGC staff, farmers, and others engaged in agriculture, agri-business and water management, and for transferring appropriate technology to potential beneficiaries	• Training given to directors and senior staff of MAFF and MOWRAM and provincial staff • Agriculture processing technology is improved and niche products meet market needs	• Agriculture processing technology center • Endorsed on-farm technology proposal		
4. An effective, nation-wide capacity to empower and train rural communities and commune councils to participate in and take responsibility for communal aspects of agriculture, agri-business and water management	• Commune councils and rural communities develop and implement community development plans for communal aspects of agriculture, agri-business and water management	• Commune Council development plans • Farmer Organization development plans • Self-Help group small-scale project implementation reports		
5. Gender is mainstreamed in REE	• All action plans incorporate gender policy by end year 2	• Ministerial strategies and development plans • M&E reports		
Outputs: **Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM is improved** **1.1 Management capacities of Educational Institutes supporting MAFF and MOWRAM are enhanced** **1.2 TSC becomes an Institute** **1.3 TSC provides certified courses in Water Resources Management and Technical services** **1.4 Establish Department of Water Resource Management at ITC** **1.5 RUA provides training courses to MAFF and MOWRAM staff** **1.6 Royal School of Administration (RSA) provides Management training courses to MAFF and MOWRAM staff**	• Advisory boards at RUA, CARDI, CRRI, NaVRI, FWSRI, IFReDI, TSC, PLNSA, KCNSA are established by year 2 • Directors and senior staff of training institutes identified in the TNA are trained by year 3 at TSC and RSA • TSC is a registered under the Ministry of Education and funds are secured for 3 years to conduct Certificate and Diploma training courses by year 1 • Quality assurance system operating in TSC and RUA by year 1 • Facilities upgraded and equipped in accordance with the facilities' needs analysis by year 2 • Staff in at least 16 provinces have completed TSC training courses by year 3 • Management committees of 25 FWUCs are trained at TSC in Irrigation Scheme Operations and Management (O&M) by year 3 • Funds secured for 100 students per year at ITC by end year 1 • Places for 10 MAFF, MOWRAM, PDWRAM, and	• MOUs • Training curricula • Instructional materials • Attendance lists • Participant evaluation reports • Ministry of Education Registration • Budget approved by Minister • Project Steering Committee minutes • Report to Project Steering Committee • Construction contracts and procurement records • Finance plan • Construction contracts and procurements records	**Assumptions** • Trainers are available to implement the training • Agreement from Ministry to elevate TSC to an Institute • Agreement from ITC to develop a Department of Water Resource Management • Agreement from RSA to support increase training quotas to MAFF and MOWRAM staff **Risk** • The incentives are not adequate for full participation in the training activities of the Program	12,045,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	PDA staff each at RSA is allocated per year by year 2			
Outputs: **Component II – REE capacity is built** **2.1 Human resources for REE is developed** **2.2 REE organizational strengthening** **2.3 Existing and new institutional arrangements are strengthened** **2.4 Networks with other research institutes are developed** **2.5 Resource mobilization and coordination is strengthened**	• 20 REE staff are trained in technical, analytical and communication skills, especially in new and emerging areas by year 4 • 10 REE managers are trained in resources planning and management and in M&E by year 4 • Inclusive, farmer-centered, development-oriented research agenda, university curricula and extension messages are developed by year 2 • Laboratories, equipment, teaching aids and technologies are improved by year 3 • Farmer-led and market-driven extension services are developed by year 2 • In collaboration with AWIC, the master plan for agricultural research is updated by year 2 • Priority programs and activities of AWIC implemented by year 3 • CARDI is a member of the Asia-Pacific Association of Agricultural Research Institutions (APAARI) by year 3 • Partnership arrangements in place with international REE institutions by year 2 • 5 MOUs signed with universities abroad, peer institutions, regional and international organizations, and business establishments made by year 2 • Links are established with industries, business establishments, SMEs by year 2 • A coordinating mechanism for REE funding, implementation, M&E is in place by year 3	• Training attendance and performance records • Research agenda • University curricula • Extension messages • Laboratory equipment inventory • Procurement records • Farmer-led and market-driven extension services • Agriculture research master plan • Program design documents • APAARI meeting outcome reports • International cooperation agreements • MOUs • REE program budget reports	**Assumptions** • MOWRAM will establish effective provincial and district offices and the central, provincial and district institutions and offices of both MAFF and MOWRAM will be vertically and horizontally integrated • Various stakeholders, including donors, are involved in the decision-making bodies of local institutions	20,800,000
Outputs: **Component III – Research and technology is developed** **3.1 Pro-poor, pro-women and pro-environment technologies are developed and adopted** **3.2 Strategic and applied research is improved** **3.3 Market oriented and niche technologies**	• Technologies for resource-poor men and women farmers based on on-farm technologies and those successfully adopted elsewhere are adopted by year 3 • Farmers participate in food processing, marketing and trading by year 3 • Strategic and applied A&W research programs and activities are initiated by year 2 • National food and agriculture processing	• Research and assessment records • Endorsed on-farm technology proposal • Farm accounts • Baseline/endline surveys • Program design document • Construction/renovation contracts • Procurement records		24,400,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
(strategic and applied)	technology center established by year 2 By mid year 2: • Market needs assessment conducted • Potential high yield cultivars selected, tested and purified • High yield cultivars branded and marketed • Agronomic and water management packages best practices by agro-ecological setting are established • Post-harvest technologies and production is certified • Production of high quality seed of the selected purified variety to private firms and/or pioneer farmers is contracted • District or commune level milling, grading and packaging facilities are established			
D. FOOD SECURITY				
Goal : Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life				
Objectives 1. An increasingly productive and diversified agricultural system that is capable of assuring food security for the nation and delivering an acceptable quality of life for rural communities, especially the poor	• Beneficiary farmers are benefited by extension, technology transfer, improved production trainings and sets of low-input and improved technical packages	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		**44,665,000**
2. Intensified and diversified food production by smallholder farming households, particularly those that are food-insecure, based on their own crop and grazing lands, and access to common property resources of land, fisheries and forests	• Beneficiary farmers organized into groups and conducting smallholder farming activities based on the principles of sustainable and Good Agricultural Practices and Natural Resources Management	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
3. Community groups, particularly of food-insecure households and women, who are empowered to actively develop their potentials,	• Community projects are implemented using participatory planning techniques • Communities are involved in the local planning	• MAFF and MOWRAM annual reports • National and provincial annual		

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
opportunities and minimize risks and represent their own interests in political and administrative environments	processes under the provisions of the Organic Law	performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
4. Policies and information on aspects of food security related to agriculture and water management that effectively guide public administration at all levels	• Food security concepts are integrated into development programs and policy	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • Policy review report		
Outputs: **Component I – Community Self-reliance for Food Security and Poverty Reduction** **1.1 On-farm productivity is improved through the provision of extension services for the adoption of low-input technical packages** **1.2 On-farm productivity is improved through the provision of extension services of adoption of improved technical packages** **1.3 Better income through diversified income-generation opportunities (on-farm and off-farm)** **1.4 Self-management and empowerment in farmers groups and village common works is achieved** **1.5 Access to adequate food is increased, and better nutrition practices in the use of food, including food preparation and preservation, is accompanied with improved sanitation and health** **1.6 Identification of good practices and more effective approaches to food security**	• Sets of low-input technical packages are disseminated to 4000 farmers by end of program • Sets of improved technical packages are disseminated to 4000 farmers by end of program • Participatory extension, technology transfer, and improved production trainings are initiated by year 2 and 4000 farmers are participating by end of program • Improved varieties of seeds, breeds, and other essential production inputs are used by 4000 farmers by year 3 • Improved sustainable and good agricultural practices are adopted in 4000 farmers by year 4 • Community-based natural resource management is implemented in 4000 villages by year 4 • Micro-businesses and small-scale agro-processing are developed and functioning at a basic level by year 3 • Community micro-projects are implemented by year 4 • 4000 people are trained in new and/or additional vocational skills by year 4 • 4000 FOs are registered by year 4 • Community projects are implemented by FOs using participatory planning techniques by year 3 • 4000 households are trained in home gardening techniques by year 4	• Documentation of technical packages and practices • Attendance lists and records of trainings and field trials • Farm records (production inputs used and yields) • Records of activity and yields from the community-based natural resources management (including forestry and fisheries) • Baseline / endline surveys • Records of activity of community-based self-help groups • Micro-business records • Records of activities of community micro-projects • Attendance and performance records • FO registration records	**Assumptions** • Registration of FOs becomes decentralized to the district level • There is coordination with health clinics and hospitals to determine reduction in occurrence of main diseases • Health of target population is tested using modern health screening techniques in coordination with MoH • Patient records kept at health clinics and hospitals **Risk** • Pests/diseases limit productivity or changes in supply/demand limit profits in first growing season affecting farmer interest levels in program technologies • Instances of major flooding or drought occurrences impede improvement of agricultural productivity • Farmers have trouble	41,750,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	• Food use, nutrition, and basic health care training to 4000 households conducted by year 4 • 4000 households are trained in sanitation installation and safe water use by year 4 • Indicators and monitoring systems for field interventions and policy development are developed at commencement of implementation • Food Security Program assessments disseminated at end of program		adopting several new technologies and concepts • FO's do not collect enough revenue to become self-supporting	
Outputs: **Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base** **2.1 Key policy makers, planners and program developers are trained in FSN concepts and the concepts are integrated into policy, development plans, and programs at the national and decentralized level** **2.2 The FSN coordination structure is enhanced to include collaboration between and among concerned line ministries and agencies (i.e. CARD, NCDD, and NNC)** **2.3 Members of commune councils and farmer communities (FOs, FGs, FWUCs, etc) are trained in managing the project cycle and integrate FSN issues in their development management process** **2.4 The existing information and data on FSN is enhanced, used and is managed (maintained)** **2.5 The quality and scope of information and data supporting FSN in Cambodia is improved**	• Mainstreaming tools are compiled and disseminated and are being used by various partners in field for mainstreaming FSN in development projects by year 2 • Workshops are conducted on FSN concepts and objectives training by year 2 • FSN and ToT training to key policy makers, planners and program developers at the national and provincial levels conducted by year 3 • Official FSN focal points with clear coordination responsibilities are established by year 2 • Commune council members and farmer communities are trained in FSN training subjects, including the project cycle by year 3 • FSN plans are incorporated in commune development plans by year 4 • TWGAW website information is maintained and up-to-date by year 2 • FIVIMS' compiles, analyses, maps and reports food security related information by year 3 • 1 workshop per year is conducted to promote the use of FSN information • Best practices and innovative approaches documented and disseminated by year 3 • 1 workshop per year is conducted to promote FSN policy and program formulation dialogue • FSN data is expanded and linked with ID-Poor Program in MoP by year 3 • Investment proposals under the FSSP are developed by year 3 • Leaflets developed and disseminated at commune and village meetings by year 3	• Dissemination records • M&E reports • Workshop attendance records • Attendance and performance records • MAFF and MOWRAM meeting dates and notes • FSN development plans • TWGAW website content • Integrated FIVIMS reports • Best practice documentation • FSN policy and program matrices and design • ID-Poor Program reports • Investment proposals • Records of food safety awareness activities at local level • Leaflets	**Assumptions** • Information and data needed for identifying and targeting on the food insecure and poor households and villages becomes available when implementation could be expected to begin (such as progress under the MOP project for Identification of Poor Households and WFP sponsored Integrated Food Security and Humanitarian Phase Classification) • Baseline surveys to be carried out use the methodology used by the "Identification of Poor Households Project (ID-Poor)" being implemented by the Ministry of Planning	2,915,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT				
Goal : Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context				
Objectives 1. Water resources are being developed and used in a way that considers river basins as the fundamental physical unit for management, minimizes degradation of aquatic resources and organize and regulate competition among users, and where appropriate uses of the concepts of IWRM and RBM	• The Tonle Sap Authority (TSA) develops and implements an Integrated Water Resource Management Plan for the Tonle Sap and connected river basins • MOWRAM and MAFF develop and implement a water resource management and agricultural resource management data collection and dissemination system • Provincial and local authorities, farmers and other stakeholders are involved in IWRM and irrigation infrastructure planning and implementation	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • TSA Reports		**283,790,000**
2. Land resources have been inventoried and appraised for their agricultural potential, and procedures have been developed to integrate the development and management of land, water and related resources to achieve the optimum use of all of them	• An inventory and appraisal of land and water resources is carried out • Master plans and identified priorities for land and water resource utilization are implemented	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
3. Cultivable and pastoral lands with the greatest agricultural potential have been brought into production, and are being used sustainably to produce farm products that provide the best return on investment	• Agricultural and economic productivity of lowland and upland areas and cropping systems are assessed and subsequent land use plans are implemented • MAFF and MOWRAM provide extension services for increased agriculture and water productivity	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
4. Farmers of both irrigable and predominantly rain-fed croplands are better able to manage, harvest and use water (including supplementary irrigation), over a total area that is increasing by at least 20,000 ha/year	• MAFF and MOWRAM provide extension services for increased agriculture and water productivity in irrigable and rain-fed croplands • 100,000 hectares of wetland and dryland irrigation is constructed and sustainable water management, harvesting and use practices are adopted by beneficiary farmers.	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
		• Procurement reports		
5. Farmers have secure tenure to their land	• Land use certificates are provided to smallholder farmers • Communal land rights are provided to indigenous communities	• Sub-Decrees, Prakas • MLMUP, MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
6. Rural communities are able to avoid or respond without serious loss to the adverse effects of damaging floods, droughts or unexpected dry spells	• MOWRAM and MAFF develop and implement a drought and flood forecasting system that provides timely warning to local authorities and farmers on the likely incidence and severity of events. • MOWRAM and MAFF develop and implement drought and flood mitigation measures	• Sub-Decrees, Prakas • MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
7. Agro-Ecosystems Analysis in irrigation systems, social land concession and economic land concession	• All irrigation systems, social land concessions and economic land concessions implement a Agro-Ecosystems Analysis approach to development	• MLMUP, MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
Outputs: **Component I – Water data management is improved** **1.1 The CISIS irrigation scheme information system is operationalized** **1.2 Evaluate irrigation schemes suitable for future funding based on CISIS output** **1.3 Analysis and storage software are defined**	• CISIS "best practice framework" for irrigation infrastructure and management is established by year 3 • Software development plan for refinement of CISIS is developed by mid year 1 • CISIS operations and maintenance plan is developed by mid year 1 • CISIS is refined by mid year 2 • Irrigation schemes evaluation and ranking process based on CSIS output established by end year 1	• CISIS framework • CISIS software development plan • CISIS O&M plan • CISIS design and test reports • Data reports generated by CISIS • Evaluation and ranking process • Irrigation infrastructure performance based criteria • Software and database design and testing reports	**Assumption** • Evaluation and ranking process documentation endorsed by MAFF and MOWRAM	5,575,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
and used efficiently for surface and ground waters, river basins and meteorological data **1.4 All existing water data and works are stored by the relevant government departments and available to be utilized by projects** **1.5 An observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration** **1.6 The flood and drought forecasting system is improved in collaboration with the MRC**	• Irrigation infrastructure performance based funding criteria based on CSIS developed by mid year 1 • Hydrology, meteorology, basin model, surface water quality, and ground water storage software and databases are developed by year 2 • 20 staff trained in each software package by end year 2 • All projects have water data works in the framework of the national observatory and storage system by end year 3 • Data accessible for analysis and report production by all Ministries and projects by end year 3 • Staff of relevant departments (i.e. DHRW, DRWC and DoM) are associated to project works by year 4 • The hydrology system is repaired, upgraded and reorganized by year 3 • The meteorological system is repaired, upgraded and reorganized by end year 1 • Number of real or near real time rainfall stations – 23 end of year 1, 48 by year 4 • The surface water flows and quality system is repaired, upgraded and reorganized by year 3 • Number of real of near real time water level stations – 8 end of year 1, 22 by year 4 • The ground water system is repaired, upgraded and reorganized by year 4 • The flood and drought observation stations are upgraded by year 3	• Software and database hosted on "test" and "live" servers • Training attendance and performance records • Data reports • Project reports • System design and test reports of all observing systems • Installation and maintenance records • Rainfall and water level data reports		
Outputs: **Component II – Development of integrated water management** **2.1 River basins are delineated and classified officially** **2.2 A water management framework plan is approved for the Tonle Sap basin** **2.3 Water resources are assessed at a nationwide scale**	• Water committees are created and management plans are approved for at least 2 priority basins • The river basins and the hydrological network are officially classified (sub-decree or prakas) by year 3 • Information is stored in the adequate software by year 3 • TSA Strategic Plan is developed by end year 1 • TSA White Paper developed by end year 1 • TSA Master Plan developed by end year 1 • The water management framework plan of the	• Delineation study report • New sub-decree or prakas • GIS generated reports • TSA Strategic Plan • TSA White Paper • TSA Master Plan • Endorsed Water Management Framework Plan • Monthly assessment study reports • Committee meeting attendance records	**Assumptions** • GIS is necessary • Study assesses environmental needs as a mandate • MOWRAM incorporates assessment results in the water resources training and in project implementation	3,925,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
2.4 Water committees are created and management plans are approved for at least 2 priority basins	Tonle Sap basin is approved by the Tonle Sap Authority by year 4 • A national water resources assessment study is achieved by year 4 • Water committees created – 1 end of year 1, 2 by year 4 • 200 of water management plans approved by water committees and MOWRAM by year 4	• Committee meeting notes • M&E reports • Endorsed water management plans		
Outputs: **Component III – Continuation of the development of irrigation and water management infrastructures with a more participatory design and in a more integrated way** **3.1 For all irrigation projects, preliminary studies taking into account environmental, social and economic factors are carried out** **3.2 For all irrigation projects, farmers are systematically and strongly involved in the design** **3.3 MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season irrigation schemes** **3.4 MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irrigation schemes** **3.5 Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation are developed** **3.6 MOWRAM has developed strongly its maintenance activities** **3.7 MOWRAM and other service providers are able to support FWUC for operation and maintenance**	• 100% of projects have a complete preliminary study by year 4 • 54 irrigation schemes rehabilitated by year 2, 56 irrigation schemes are constructed and/or rehabilitated by year 3 • 100% of projects have an involvement of the farmers at the design stage by year 4 • 25 FWUCs are strengthened by year 3 • Farmers are members of the steering committees of the projects by year 2 • Increase of 20,000 ha (per year) in wet season irrigation lands by year 4 (annually incremented) • Increase of 5,000 ha (per year) in dry season irrigated lands by year 4 (annually incremented) • Small-scale irrigation schemes and water harvesting devices in the villages are rehabilitated and constructed and functioning (e.g. village canals, dams, community ponds, wells, etc.) by year 3 • Community-based water resources planning is managed by FWUCs by year 3 • 14 sewage drainage systems are rehabilitated by year 3 • 5 water supply systems are constructed by year 3 • Surface covered by DSMB – 60 ha end of year 1, > 600 ha by year 4 • Increase of > 300 ha (per year) in small irrigated lands by year 4 (annually incremented) • Annual budget for maintenance is approved for 12M$ by end year 1 • PDWRAM able to support FWUC for operation and maintenance by year 3 • Network of private service providers is established by year 2	• Preliminary study reports • Agricultural development plans • Project reports • M&E reports • Commune Council development plans • Commune Council meeting notes • Steering committee membership records • On-farm water management and control community records • Project design document • Annual maintenance budget is 12M$ • PDWRAM FWUC O&M plan • Number of contractors for rehabilitation schemes	**Assumptions** • Projects make special effort to present regularly the progress to the farmers and to take their comments into account • Irrigation schemes receive funding from RGC or donors • FWUCs given funds, authority and autonomy to manage rehabilitation of irrigation schemes	248,510,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
Outputs: **Component IV – National Land resource assessments are developed** **4.1 National Land Resources Team will be formed to be responsible for current and future land resource management work for the country** **4.2 Land capability and land suitability classification will be developed** **4.3 Manual for classification, identification and management of upland soils is developed** **4.4 Soils and soil map of the rice growing areas in the lowlands is updated** **4.5 Utilization and updating of the existing National Soil Database developed by CARDI will be enhanced** **4.6 Agricultural land use changes will be determined and updated country-wide**	• National Land Resources Team formed by mid year 1 • Reconnaissance soil survey information and soil mapping at a scale of 1:250,000 for the whole country by year 4 • Detailed information on land capability and land suitability for field crops and fruit trees including crop zoning and mapping at the national level by year 4 • Land suitability and crop zoning classification map developed by mid year 2 • Manual for classification, identification and management of upland soils by year 4 • Soil classification framework and manual • Updated version of soils and soil map of the rice growing areas in the lowlands by year 4 • Enhanced utilization and updating of the National Soil database by year 4 • Updated land use changes for the whole country by year 4 • Agricultural land use changes map layers are updated every 3 years	• Meeting notes and attendance records • Soil survey reports • Agricultural land use and development plans • National soil maps • National crop zoning maps • Rice soil map • Database design plans • National soil database generated reports • Agricultural land use changes map layers	**Assumptions** • The reconnaissance survey results will provide useful information for agricultural land use and development planning • The most up-to-date FAO-UNESCO soil classification guidelines should be used • Survey to include ground true-thing of the existing soils on which the rice crop is no longer commonly grown or if the soils occur in the correct landform • Database accessible by relevant users at appropriate cost	6,430,000
Outputs: **Component V – Productivity of lowland rice soils is improved** **5.1 Sustainable best soil fertility management extension services** **5.2 Rice yields using integrated crop management approach (ICM) are increased** **5.3 Productivity, intensification and diversification of post-rice lowland cropping is increased** **5.4 Guiding recommendations on management of water requirement for crops is established**	• Best sustainable soil fertility management techniques made available for farmers by year 4 • Recommendations for sustainable soil fertility management techniques developed by year 3 • Integrated crop management approach for lowland rice introduced to farmers and rice yield increased by year 4 • Integrated soil, water, crop, and pest management approach is implemented by year 4 • Apply treatment techniques to overcome main constraints of post-rice cropping by year 4 • Recommendations for effective use and management of water based on type of crops, soil and cropping season is developed and disseminated to farmers and stakeholders by year 4 • Crop yield is increased through minimum use of water by year 4	• Soil nutrient research report • Soil fertility management report • Sustainable soil fertility management techniques • Integrated crop management assessment report • Integrated crop management plan • Baseline/endline surveys • Project implementation reports • Post-rice cropping treatment techniques manual • Water management and use recommendations report	**Assumption** • Included in the soil fertility management approach is fertilizer and pest management, good quality seed, and tillage practices • Agricultural production is increased through minimum use of water as a result of progressive cropping methods adopted	6,400,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
Outputs: **Component VI – Productivity of upland soils for sustainable management and utilization is improved** **6.1 Land suitability of the main soils in upland farming systems for field crops is assessed** **6.2 Sustainable best soil fertility, soil quality and nutrient management extension services**	• Land suitability for field crops and fruit trees in upland farming systems is determined by year 4 • Best sustainable soil fertility management techniques made available for farmers by year 4 • Recommendations for sustainable soil fertility management techniques developed by year 3	• Soil survey reports • Land and cropping suitability reports • Soil nutrient research report • Soil fertility management report • Sustainable soil fertility management techniques	**Assumption** • Methodology for assessing land suitability in Cambodia developed by CARDI is used	3,125,000
Outputs: **Component VII – Strengthening of smallholder land tenure security and productivity** **7.1 LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification as well as poverty reduction** **7.2 Customary land tenure rights at the local level in areas not covered by systematic titling is recognized** **7.3 Implementation of the Social Land Concession (SLC) mechanism and extension services** **7.4 Communal land rights of indigenous communities according to the provision of the law is established** **7.5 Land dispute resolution mechanisms is strengthened and integrated**	• A master plan identifying high priority areas for land-titling is achieved in collaboration between MLMUP, MAFF, and other key stakeholders by year 4 • A master plan to target complementary input packages in support of agricultural development (e.g. affordable credit, irrigation, extension services) along with land-titling work is achieved by year 4 • Procedures to officially recognizing land possession and use at the local level are developed by year 4 • Number of commerce-based SLCs approved and implemented – 3 end of year 1, 25 by year 4 • Relevant enabling policies, sub-decrees and/or legislation is formalized for the recognition of indigenous communities as legal communities by year 2 • Number of communal land titles issued to indigenous communities – 20 by year 4 • Action plan for strengthening land dispute resolution mechanisms is developed by mid year 1	• Land-titling recommendation report • Land-titling master plan • Agricultural input packages master plan • Land tenure rights procedure document • SLC complementary input package • Relevant enabling policies, sub-decrees and/or legislation • Communal land titles (20) • Action plan	**Assumptions** • MAFF and MOWRAM have an inter-ministerial coordination letter signed between the 3 ministries • Financial and technical support is secured for the systematic land-titling program • Land possession and land use rights begin in areas that receive irrigation infrastructure • Communal land rights have a particular focus on cases that can be coupled with the Community Forestry application process	2,625,000
Outputs: **Component VIII – Strengthening of the management of state land resources** **8.1 Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose**	• New procedures for granting ELCs are devised by year 4 • The capacity of existing state institutions such as the Council for Land Policy to oversee ELC reforms is strengthened by year 4 • 25 % of state private and public land is classified and demarcated by year 4	• ELC procedures • Project reports • National demarcation land maps • Forest Administration internal reports • Community Forestry applications procedures	**Assumption** • ELC procedures will be fully transparent and subject to public consultation • Assist communities to develop Community Forest application with technical support	1,900,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
8.2 Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established **8.3 Management of Cambodia's forested land according to the law is strengthened**	• 25% of forested land is classified and demarcated by year 4 • Number of hectares that the Forest Administration has confiscated from illegal occupants – 200,000 contest end of year 1, 5,000,000 by year 5 • Number of Community Forestry applications approved by MAFF – 264 end of year 1, 300 by year 4	• Community Forestry applications		
Outputs: **Component IX – Strengthening the implementation and impact of land use and land tenure policies** **9.1 An Agricultural Census will be carried out** **9.2 Methodologies for land resource utilization and data collection will be standardized** **9.3 Research on land use and land tenure impacts on development will be carried out**	• An agricultural census will be conducted by end year 1 and results disseminated by end year 3 • FAO guidelines on land use planning for Cambodian conditions adopted by end year 1 • Research conducted by end year 1	• Database and reports • Project Reports		5,300,000
F. AGRICULTURAL BUSINESS & MARKETING				
Goal : Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders				
Objectives 1. Provision of inputs and services, including financial services and water management services, that enable cost-effective, environmentally sustainable and profitable agricultural production	• Beneficiary farmers have access to rural financial packages and contract farming agreements i.e. agricultural insurance products, long-term loans through RDB and financial institutions, and leasing arrangements, to provision agriculture and water public and private extension services to increase and sustain agricultural productivity	• Commercial bank long-term guarantees • Commercial bank credit lines • Rural financial systems • Alternative agricultural insurance products • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		**81,760,000**
2. Adoption of "best practices" for cropping, animal husbandry, aquaculture and crop water management that achieve cost-effective	• Beneficiary farmers, agriculture merchants, suppliers and traders, by coordination of a national network supported by the DAE, have adopted	• National and provincial annual performance reports • Program Management Support		

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
production, ensure the quality and safety of products, and sustain the productive capacity and quality of soil and water resources	high-value crop production, appropriate farm mechanization technologies, and alternative delivery mechanisms that are proven to increase agricultural yields and quality	Unit reports • M&E reports • Steering Committee Reports • MOUs		
3. Facilities for product handling, post-harvest processing, and marketing that provide market access, sales opportunities, and off-farm employment for farmers and rural communities, and agri-business opportunities for the private sector and farmer organizations	• Marketplaces have the human, financial and infrastructure resources to store, grade, package, process and transport agricultural products • Farmers are linked directly with high-value markets, agri-clinics and SMEs (through ICT applications and rural networks) to enable trade in agricultural products supported by farmer marketing schools, market-led extension services, Farmer Contract Law and sub-decree(s)	• Farmer Contract Law and sub-decree(s) • 10 Farmer Marketing Schools • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
4. Practices for the quality control and quality assurance of agricultural products that ensure that product quality and safety meet the standards required by the target markets	• Export in certified processed agri-food products that meeting international standards has increased by 20%	• MoC export trade records • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports		
Outputs: **Component I – Inputs and farm production are improved** **1.1 New and improved quality and efficiency of agricultural inputs** **1.2 Agriculture is diversified through training and extension services**	• Licensing standards for agricultural merchants are established by mid year 3 • National distribution network is established by year 3 • Incidences of inputs sold through licensed agricultural merchants not meeting Law on Quality and Safety of Products and Services decreased by 50% over 3 years • Laboratory technicians trained to conduct agricultural input testing by mid year 2 • Spot testing of inputs conducted from each registered trader on an annual basis • Action plans for nurseries to propagate improved clones and appropriate farm mechanization technologies and alternative delivery mechanisms developed by year 3 • Extension advice by input suppliers and traders is provisioned by end year 2 • Training courses for commercial farmers in	• Licensing standards • # of licensed agricultural merchants • Training attendance and performance records • Test reports • Action plans • Supplier and trader contracts • Training attendance and performance records • Horticulture support program • Cattle and beef support program • Campaign attendance records • Campaign collateral • M&E records		6,450,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	specific high-value crop production are conducted by mid year 2 • Horticulture support program developed by year 3 • Cattle and beef support program developed by year 3 • Extension campaigns to encourage the emergence of private sector extension providers, to promote specific techniques, for specific crops, that are proven to increase yields and quality, and to promote on-farm post-harvest handling techniques conducted by year 3 • Matching grants for farmer groups to acquire post-harvest handling facilities provided to farmers by year 3			
Outputs: **Component II – Markets are developed and market opportunities are expanded** **2.1 Technology is transferred for bridging yield gaps** **2.2 Market research and information dissemination** **2.3 Develop the agro-tourism sector** **2.4 Marketing and business skills for emerging and expanding agri-business available** **2.5 Farmers are engaged in contract farming or other supply chain agreements with high-value markets** **2.6 Traditional marketing systems are strengthened** **2.7 Market oriented and niche-specific technologies are developed and adopted for export**	• New production technologies identified, disseminated, and locally adapted and adopted by farmers by year 3 • Increased production of certified seed of recommended variety; increased demand for appropriate fertilizers and IPM by year 3 • Market reviews and forecasts produced quarterly by year 2 • Training on business to identify new markets and products, international business practice, and developing marketing strategies is conducted by year 3 • Market reviews and forecasts are produced quarterly • Policies and strategies for marketing development formulated by year 2 • Technical norms and standardizations of agricultural products, rice and paddy standards, commodity coding, standardization of cereal crops and selected vegetables, etc are formulated by mid year 2 • Farmer marketing schools are operating in 10 provinces by end year 3 • Marketing extension and advisory services provided by year 3 • Agro-tourism partnerships are developed by year 3 • Agro-tourism policy and regulations are	• Production technology report • Dissemination records • Farm records • Project reports • M&E records • Baseline/endline studies • Training attendance and performance records • Agricultural marketing system policy and strategy • 10 Farmer marketing schools • Agro-tourism service contracts • Agro-tourism policy • Agro-tourism regulations • Agro-tourism strategy • Agro-tourism product collateral • Agro-tourism training attendance and performance records • 100 Agri-business Diplomas • Farming Contract Law and sub-decrees • BDS contracts • Value chain partnership agreements • Marketing and promotion strategies for each nice product • Marketing and promotion		27,950,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	developed by year 3 • Agro-tourism products are developed by year 3 • Agro-tourism training conducted by mid-year 3 • Training marketing and business skills training to potential BDS and private sector agri-business enterprises conducted in 10 provinces by end year 3 • Curricula for agri-business diploma level being taught in two colleges by end year 3 • 100 educated agri-business graduates enter the job market by year 4 • Farming Contract Law and sub-decrees and implementing legislation developed by mid year 2 • BDS for business planning services to assist in developing farming contracts provisioned by year 3 • Traditional value chain partnerships strengthened for 4 commodities in 10 provinces over 3 years • Marketing and promotion strategies to promote production and export of niche products identified developed by year 2 • Export of identified agricultural commodities, and other niche-specific products increases by year 4	collateral • Domestic and export records and accounts		
Outputs: **Component III – Extension and outreach is improved** **3.1 Market-led extension is improved under the coordination, facilitation and quality assurance of DAE and PDA** **3.2 Rural information and communication network is strengthened** **3.3 Cost-effective financial products available to the agriculture and agri-business sector** **3.4 Make available alternative rural financial products**	• Effective system for collection and dissemination of market information is strengthened by year 2 • Farmers are linked directly with markets, agri-clinics and SMEs and the need for intermediary transactions is reduced by mid year 2 • ICT curricula in ICT applications and rural networking is developed by year 3 • 5 staff are managing ICT applications and rural networks by year 4 • 10 village market knowledge centers are developed by year 2 • The set of extension packages and Technical Implementation Procedures (TIP) are strengthened by year 3 • Links with disseminating organizations and dissemination of extension material is improved by year 4 • Long-term loans and leasing arrangements allowing investment in agricultural infrastructure,	• Data collection system design and procedures • Communication (email, post etc) records • Project reports • M&E reports • ICT curricula • ICT application design and rural networking design documents • ICT and networking test plans • Training attendance and performance records • Reports generated by application and networks • 32 TIP documents • MOUs with disseminating partners • Financial institution loan and	**Assumption** • Banking sector is willing to diversify financial products for the agricultural sector	12,560,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	including leasing arrangements provided by mid year 2 • Loans based on inventory lending provided by mid year 2 • Land titling is prioritized by mid year 2 • Farmers and agri-businesses establish a credit history and access overdrafts by year 4 • Long-term guarantee and credit lines provided by mid year 2 • Commercially viable community-based rural financial systems are operating by year 4 • Competitive grant matching arrangements, enterprise development/challenge funds, and contract farming agreements accessed by year 3 • Support from parametric insurance experts such as the World Bank Commodity Risk Management Group is secured by year 3	leasing agreements • Investment accounts • Bank and procurement records of storage for bulk crops • Land titles • Cash books • Bank accounts • Commercial bank long-term guarantees • Commercial bank credit lines • Rural financial systems • Grant matching arrangements • Enterprise/development challenge funds • Contract farming agreements • Alternative agricultural insurance products		
Outputs: **Component IV – Market infrastructure is improved** **4.1 Upgrade market facilities** **4.2 Traders are aware of food standards and responsive to consumer preferences** **4.3 Improved storage of agricultural produce** **4.4 Processed agri-food products meet international standards and SPS certifications** **4.5 Processing losses decreased and quality increased** **4.6 Trade in processed agri-foods increased** **4.7 Upgrade abattoirs**	• Standards and laws for the management of public markets reviewed by mid year 2 • Public market management manual developed by mid year 2 • Public relations campaign targeted at traders to raise awareness about benefits of improving grading, packaging, processing and transport conducted by year 3 • Training to market traders in improved grading, packaging, processing, and transport conducted by year 3 • Grading, packaging, processing and transport services are operating by year 4 • Training to market traders in quality grades, food standards and consumer preferences conducted in 5 public markets by year 3 • Public relations campaign targeted at consumers to raise awareness about benefits of using public markets and paying extra for food safety standards conducted by year 3 • 10% increase in consumer purchases for high value product by year 4 • Matching grants for establishing storage facilities with processors and traders provisioned by year 3 • Inventory based loans for purchasing and storing	• Public market standards and law assessment report • Public market management manual • Pubic relations campaign planning documents and collateral • Project and M&E reports • Training attendance and performance records • Bank records • Storage facilities • Baseline/endline study • Campaign records • Campaign collateral • MoC export trade records • Action plan (with import substitution products identified and prioritized) • Government abattoir regulations and standards • Abattoir facilities inspections	**Assumption** • Returns on storage remain viable accounting for operating e.g. losses, deterioration, cost of financing	34,800,000

Outputs	Indicators	Source of Verification	Assumptions and Risks	Budget (total 4 year period - USD)
	commodities at harvest provided by year 3 • Number of operational storage facilities increased by 20% over 3 years • Training to Institute of Standards of Cambodia (MIME) and relevant MAFF departments to meet and apply standards for main agricultural commodities and products that are internationally compliant conducted by year 3 • Training to local government to enforce standards for weights, measures, quality and food safety at public markets and agro-processing facilities conducted by year 3 • SPS testing and certifying facilities established and equipped by year 3 • Number of certified processed agri-food products meeting international standards increased by 20% by year 4 • Standards and export SPS procedures awareness campaign is conducted by year 3 • Export in agri-food product increased by 10% by year 4 • Processing technologies are promoted through matching grants by year 3 • Reduced processing losses lead to 1% decrease in costs by year 4 • Interventions in the action plan for import substitution are implemented by year 4 • Interventions in the action plan for export of agri-food products to higher-value markets are implemented by year 4 • Value and volume of exported agri-food products increased by 10% by year 4 • Standards and regulations for abattoirs are reviewed and a management manual developed by mid year 2 • Training in butchering techniques to differentiate quality cuts of meat conducted by year 3 • Five abattoirs upgraded by year 4			

DETAILED HARMONIZED LOGICAL FRAMEWORK – ACTIVITY LEVEL

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
A. POLICY & REGULATION						
Goal : A sound policy and legal framework to enable development of the Agriculture and Water sectors						
	Objectives 1. Policies, plans and legal-regulatory frameworks for MAFF and MOWRAM are fully established, maintained and coordinated			• MAFF and MOWRAM have implemented and enforced policies, plans, laws and regulations for which they are responsible	• MAFF and MOWRAM annual reports • Inter-Ministerial Circulars • Program Management Support Unit reports • Steering Committee Reports • Sub-decree • Technical report • Project reviews	
	2. MAFF and MOWRAM implement the Organic Law on de-concentration and decentralization			• Ministerial Prakas' are issued devolving the implementation of development programs to provincial departments, as mandated under the Organic Law	• MAFF and MOWRAM annual reports • Inter-Ministerial Circulars • Program Management Support Unit reports • Steering Committee Reports • Prakas • Technical report • Project reviews	
P5 component 5	**Outputs:** **Component I – Policy, regulatory frameworks and Law are strengthened**					
	1.1 Policy and regulatory frameworks are established	1	1.1.1 Conduct a review of agriculture and water policy and regulatory framework to ensure consistency with the national strategic development plan and the rectangular strategy. For relevant legislation and regulations (e.g. Law on Agricultural	• Policy and regulatory review conducted by year 2 • Policy and regulatory reform recommendations developed by year 2	• Policy and regulatory findings report • Policy and regulatory reform report	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			Cooperatives, Law on Contracts, Law on Management of Quality and Safety of Products and Services; etc.): • Develop policy statements and national strategic action plans • Revise and upgrade decrees and laws • Develop relevant legislation and regulatory frameworks (sub-decrees, prakas, etc.)			
			1.1.2 Develop a comprehensive employment program for the rural labor force including on-farm, off-farm, and non-farm employment activities	• Rural employment program developed by year 2 • An increase of 10% employment in rural on-farm, off-farm, and non-farm people by year 4	• Rural employment plan • Baseline/endline study • M&E report	
			1.1.3 Secure sustainable investment in agriculture and water innovations	• Government and donor commitment to provide a minimum of 1% of agricultural GDP to REE	• MOUs • National budget • Bank records	**Risk** • Government may not agree to allocate a percentage of AGDP to REE activities
			1.1.4 Conduct a feasibility study on the provision of credit and insurance support for technology accession and adoption	• Feasibility study conducted by year 3	• Feasibility study	
			1.1.5 Develop an action plan for policy and regulatory framework for the provision of credit and insurance support for technology accession and adoption	• The action plan developed by year 3	• Action plan	
			1.1.6 Establish bio-security, IPR, and TRIPS regulatory and enabling mechanisms	• Bio-security and IPR regulatory and enabling mechanisms are established by year 3 • Credit and insurance support from the private sector is	• REE policies and programs • Credit schemes • Insurance schemes	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				secured by year 4		
P4 Component 2.6			1.1.7 Establish a multi-stakeholder steering committee for all agriculture and water programs and projects comprising representatives from line ministries, provincial and relevant government departments	• Steering committees established by year 1 • Committee meetings are held every six months • Number of projects co-managed – 1 end of year 1, 5 by year 4	• Meeting notes	
	1.2 The Organic Law is implemented in selected provincial departments	1	1.2.1 Recruit staff at provincial departments for departmental strategy planning and development	• Recruited staff in 3 provincial departments are involved in their departmental strategy planning and development process by year 1	• Strategy planning and Development documents from 3 provincial departments • M&E reports	
			1.2.2 Provincial Rural Development Committees and provincial councils meet on a regular basis to identify and implement development plans	• Provincial Rural Development Committees and provincial councils meet on quarterly and yearly	• Attendance records • Meeting notes	
			1.2.3 Conduct district integration workshops on a regular basis to identify and prioritize infrastructure requirements	• District integration workshops conducted on a quarterly and yearly basis	• Attendance records • Infrastructure plans with priorities indicated	
P4 component 3	**Outputs:** **Component II – Legal framework for agricultural land management is developed**					
	2.1 Legal framework for agricultural land management will be developed to protect, conserve, and enhance the use of agricultural lands	1	2.1.1 Carry out a comprehensive review of policies and constraints related to uses and management of agricultural lands	• Policy review completed by mid-year 1 • Agricultural land use and management constraints analysis completed by mid-year 1	• Policy review report • Analysis report	
			2.1.2 Develop policy options for governing agricultural lands	• Policy options for governing agricultural lands provided by	• Project reports • M&E reports	**Assumption** • Agricultural lands or

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				year 4	• Policy review report (with policy options documented)	farmlands will be well protected and conserved for production of foods, and the unused farmlands will be converted to productive and sustainable use by year 5
P4 component 8			2.1.3 Rationalize the conversion of forested land to agricultural uses according to policy	• A national policy and necessary legal framework rationalizing the conversion of forested land to agricultural uses is enacted by year 4	• National policy and legal framework	
	Outputs: Component III – Legal framework for water licensing and FWUCs is developed					
P4 component 2	**3.1 The legal framework is finalized and an implementation plan of water licenses and fees sub-decrees is adopted and launched**	1	3.1.1 Finalize the legal framework	• The legal framework is approved by end year 1	• Legal framework	
			3.1.2 Sub-decree(s) follows the process of endorsement	• Sub-decree(s) approved by end year 2	• New sub-decree(s) • Prakas (if deemed necessary)	**Assumption** • Sub-decree(s) are completed by prakas if necessary
			3.1.3 Prepare an implementation plan for water licenses and fees (staff, skill, organization, capacity building, running costs)	• Number of water licenses granted by MOWRAM – 10 by year 4 • Minimum amount of water fees collected by MOWRAM (Riels) 200 M by year 4	• 10 water licenses • MOWRAM bank accounts	
P4 component 11	**3.2 The legal framework on PIMD is completed**	3	3.2.1 Finalize and promulgate sub-decree on FWUC and subsequent Prakas	• The FWUC sub-decree is approved by year 2 • The related prakas are	• FWUC sub-decree • FWUC prakas	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				approved by year 2		
was P4 component 11	**3.3 A National Action Plan for PIMD is developed by MOWRAM**	3	3.3.1 Assess current constraints and opportunities of PIMD implementation and develop a National Action Plan for PIMD	• The national action plan for PIMD is approved by the Minister by year 4	• Assessment reports • National PIMD Action plan	
was P4 component 11	**3.4 An efficient monitoring and evaluation system for PIMD is set up in MOWRAM**	2	3.4.1 Integrate FWUC information system and standardized reporting under CSIS	• The monitoring and evaluation system is set up by end year 1 • The FWUC information system is integrated with CSIS by mid year 2	• M&E system • M&E reports • FWUC information system	
P3 component 4	**Outputs: Component IV – Marketing policies are strengthened**					
	4.1 Policies supportive of agricultural development promulgated	1	4.1.1 Conduct a study to identify business and regulatory environment enforcement issues of relevant legislation supporting agri-business development	• Study conducted and business regulatory and legislation issues identified by mid year 1	• Study report	
			4.1.2 Review and identify agri-business development policies which are distortive and non-compliant with existing trade agreements	• Review conducted and agri-business development policies which are non-compliant are identified by mid year 1	• Study report	
			4.1.3 Make recommendations for policy and regulatory improvements	• Recommendations made by end year 1	• Recommendation report	
was 4.1.1 P3			4.1.4 Prepare identified policies for approval by the National Assembly	• Relevant new policies and regulations are approved mid year 2	• New policies • New business regulations	
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT						
Goal : A sound institutional, administrative, research and education basis for effective work performance in agricultural and water resource development and management						

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	Objectives 1. A sufficient number of MAFF and MOWRAM staff and staff of PDWRAM and PDA have been trained			• Facilities and equipment are improved • An increase in performance and output in organizational capacity in planning, administration, management (financial and contract management, human resources management, information management, engineering and public works, project management, monitoring and evaluation) at the central and provincial level is observed	• Procurement records • M&E reports • Graduation certifications • Training records • National and provincial annual performance reports	
	2. MAFF and MOWRAM have a coordinated communication and information sharing systems in place			• Information systems are implemented	• Inter-ministerial circulars	
	3. Gender is mainstreamed in MAFF and MOWRAM			• A gender unit in MAFF and MOWRAM is functioning and fully funded to implement gender mainstreaming policies • Gender Action plans are updated yearly and implemented.	• Ministerial strategies and development plans • Gender Action Plans • M&E reports	
	Outputs: **Component I – Human Resources and Management capacity is built**					
P1	**1.1 HRD plans are developed and implemented**	1	1.1.1 Training needs assessment is conducted	• A training plan is developed by mid year 1	• Training Needs Assessment Plan	
			1.1.2 Develop training guidelines	• Training guidelines are developed by year 2	• Training Plan • Training Guidelines	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			1.1.3 Develop training outsourcing plan	• Training outsourcing plan is developed by year 2	• Training Outsourcing Plan	
			1.1.4 Develop short courses in management: Policy, Strategy, Legislation Drafting, Gender Mainstreaming and M&E	• Short courses in management are developed by mid year 2	• Instructional materials • Trainer Provider Contracts • Attendance lists • Participants evaluation reports • M&E report	
			1.1.5 Recruit capacity building advisors for each Ministry: • Technical Advisor on Policy/Legislation • Technical Advisor on Administration and Finance • Advisor on Gender Mainstreaming • Management Advisors in each of the 3 pilot provincial departments of PDWRAM and PDA	• Capacity building advisors are recruited by year 2	• Consultancy contracts	
			1.1.6 Create Gender Mainstreaming unit in MOWRAM and continue operations in MAFF for a duration of 5 years	• Gender is mainstreamed in MOWRAM and MAFF operations by year 4	• Development plans have integrated gender	
			1.1.7 Implement a capacity building program	• At least 75% of staff identified from the TNA results have completed management training courses by year 4 • Success criteria and Monitoring and Evaluation plans are developed by mid year 1	• Attendance lists • Participants evaluation reports • M&E report	
	1.2 Salary Supplementation / Allowances are implemented in selected	1	1.2.1 Operationalize the Salary Supplementation / Allowances	• 5 staff are operating under the Salary Supplementation / Allowance scheme in each	• M&E report	**Assumption** • RGC introduces a Salary

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	provincial departments		scheme in PDWRAM and PDA	PDWRAM and PDA by year 4		Supplementation / Allowance scheme or another such salary incentive scheme by year 2011
	1.3 There is increased capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning	1	1.3.1 Staff at Line and Provincial Departments are trained in MTEF process	• MTEF is mainstreamed and implemented in all Line and Provincial Departments by year 2	• All MTEF reports are generated	
			1.3.2 PMU/PIU structure devolved into Line and Provincial department structures	• All new projects are implemented through Line Departments and Provincial Departments rather than through separate PMU/PIUs by year 3	• MOUs signed between Projects and Departments	
P1	**Outputs: Component II – Improve the planning, budget and financial management systems**	3	2.1.1 Implement MTEF in all departments of MAFF and MOWRAM	• MTEF is implemented in all departments of MAFF and MOWRAM by end year 2	• Departmental reports • MTEF report • MTEF budget submissions to MEF • Ministry Program Budget Summary • Program Profile	
			2.1.2 Implement MTEF in 16 provincial PDWRAMs and PDAs	• MTEF is implemented in 16 provincial PDWRAMs and PDAs by end year 3	• Sub-Program Profile • Activity Profile • Quarterly Monitoring Report • Annual Monitoring Report • Site Visit Report • Sub-Program Evaluation • Program Evaluation Summary	
			2.1.3 Align all new donor projects with the accounting and M&E systems of MTEF in accordance	• All new donor projects are aligned with the accounting and M&E systems of MTEF in		

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			with the principles of the Paris Declaration	accordance with the principles of the Paris Declaration by year 4		
P1 4.1.1 now 4.1.4	**Outputs:** **Component III – Management Information Systems are implemented** **3.1 Information systems strengthened at national, provincial, district levels and consolidated at central level**	4	[3.1.1 Implement integrated MIS system] 3.1.1 Implement information systems for Finance	• Financial information system is integrated with MTEF chart of accounts by end year 1 • Review of FIS with detailed and time-related development plan completed by early year 1 • Equipment procured by end year 1 • Integrated system trialed by mid year 2	• FIS is operating • FIS Development Plan approved by Minister • Hardware Procurement documents and records of installation • Test reports and Sign-off report	**Assumptions** • The challenges of developing a functional and useful MIS are fully understood • Staff capacity developed to implement information systems stay in post
			3.1.2 Implement information systems for Human Resource Development	• Human resource information systems are developed by mid year 1 • Review of HRMIS with detailed and time-related development plan completed by early year 1 • Equipment procured by end year 1 • Integrated system trialed by mid year 2	• HRMIS is operating • HRMIS Development Plan approved by Minister • Hardware Procurement documents and records of installation • Test reports and Sign-off report by Contractor	**Risks** • Designed or procured software not adequate for the task • System sustainability problematic – recurrent running costs, technical expertise, maintenance of equipment and availability of consumables • Training wrongly give priority on maintaining hardware and not on the processes and management of the MIS

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			3.1.3 Consolidate Agricultural and Water Resource information under a central MIS system	• Aims and objectives for a fully integrated MIS by early year 1 • Review of MIS with detailed and time-related development plan completed by early year 1 • Equipment procured by end year 1 • Integrated system trialed by mid year 2 • All existing data are stored by MAFF and MOWRAM with software installed by year 2 • All data collection activities are integrated by year 3	• MIS system is operating • MIS Development Plan approved by Minister • Procurement records • Test reports and Sign-off report by Contractor	**Assumption** • There is electrical power and internet connectivity to supply the equipment **Risk** • Lack of resource and expertise to maintain equipment
			3.1.4 Integrate data collection activities of donor projects with the national MIS systems	• Data collection activities of donor projects are integrated with the national MIS systems by year 3	• Reports generated by the National MIS system	
C. RESEARCH & EDUCATION						
Goal : A comprehensive and coordinated capacity to assemble and utilize agricultural and water-related knowledge, information and technology transfer						
	Objectives • A sustainable and responsive capacity for research, science and technology, consisting of facilities that are adequately resourced, well managed, coordinated, and staffed by sufficient trained and motivated scientists/ technologists			• Training institutes' facilities and curricula is improved • Strategic and applied research and technologies are developed and adopted that are pro-poor, pro-women and pro-environment	• Upgraded facilities (site visits and procurement records) • Curricula	
	• An up-to-date knowledge/ information base and technological capacity, that is based on a cost-effective combination of national			• REE capacity is built and partnerships with national and international institutes strengthened	• MOUs • International cooperation agreements	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	research and development, field experience, and information gathered from international sources					
	• An effective and comprehensive capacity for educating and training research and technical RGC staff, farmers, and others engaged in agriculture, agri-business and water management, and for transferring appropriate technology to potential beneficiaries			• Training given to directors and senior staff of MAFF and MOWRAM and provincial staff • Agriculture processing technology is improved and niche products meet market needs	• Agriculture processing technology center • Endorsed on-farm technology proposal	
	• An effective, nation-wide capacity to empower and train rural communities and commune councils to participate in and take responsibility for communal aspects of agriculture, agri-business and water management			• Commune councils and rural communities develop and implement community development plans for communal aspects of agriculture, agri-business and water management	• Commune Council development plans • Farmer Organization development plans • Self-Help group small-scale project implementation reports	
	• Gender is mainstreamed in REE			• All action plans incorporate gender policy	• Ministerial strategies and development plans • M&E reports	
P1	**Outputs:** **Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM is improved**					
	1.1 Management capacities of Educational Institutes supporting MAFF and MOWRAM are enhanced	1	1.1.1 Designate TSC, RSA, RUA and ITC as special operating agencies	• TSC, RSA, RUA and ITC are designated as special operating agencies with Salary Supplmentation / Allowances for key staff by mid year 1	• Registrations	**Assumption** • RGC introduces a Salary Supplementation / Allowance scheme or another such salary

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
						incentive scheme by year 2011
			1.1.2 Establish advisory boards with a wide stakeholder representation at agriculture and water research institutes	• Advisory boards at RUA, CARDI, CRRI, NaVRI, FWSRI, IFReDI, TSC, PLNSA, KCNSA are established by year 2	• MOUs	
			1.1.3 Agree on Salary Supplementation / Allowance supplements for key staff		• Salary Supplementation / Allowance funds secured	**Assumption** • RGC introduces Salary Supplementation / Allowance scheme or another such salary incentive scheme by year 2011
P5 sub-component 4.1 & P1			1.1.4 Conduct training needs assessment	• TNA of staff is completed by mid year 1	• Training Needs Assessment report	
P5 sub-component 4.1 & P1			1.1.5 Review activities related to REE at national and sub-national levels	• Activities related to REE are reviewed by mid year 1	• REE activity review report	
P5 sub-component 4.2			1.1.6 Conduct an assessment of formal education and vocational training needs	• Assessment completed by mid year 1	• Assessment report	
P5 sub-component 4.2			1.1.7 Develop training guidelines and curricula, including formal and vocational with equity, food security and environmental footprints	• Training courses and curricula identified and developed by end year 1	• Training curricula • Instructional materials	
			1.1.8 Develop training outsourcing plan	• Training outsourcing plan developed by end year 1	• Training outsourcing plan	
			1.1.9 Directors and senior staff of training institutes identified in the TNA are trained	• Directors and senior staff of training institutes identified in the TNA are trained by year 3	• Attendance lists • Participant evaluation reports	**Assumption** • Trainers are available to implement the training **Risk** • The incentives are not

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
						adequate for full participation in the training activities of the Program
P5 sub-component 5.2 & P1	**1.2 TSC becomes an Institute**	1	1.2.1 Register TSC under the Ministry of Education guidelines	• TSC is a registered under the Ministry of Education guidelines by year 1	• Ministry of Education Registration	**Assumption** • Agreement from Ministry to elevate TSC to an Institute
			1.2.2 Secure funds for 5 years to conduct Certificate and Diploma training courses	• Funds are secured for 3 years to conduct Certificate and Diploma training courses by year 1	• Budget approved by Minister	
			1.2.3 Install quality assurance system TSC	• Quality assurance system operating in TSC by year 1	• Project Steering Committee minutes • Report to Project Steering Committee	
			1.2.4 Conduct facilities' needs analysis	• Facilities' needs analysis conducted by end year 1	• Needs analysis report	
			1.2.5 Upgrade facilities in accordance with the facilities needs analysis	• Facilities upgraded in accordance with the facilities needs analysis by year 2	• Construction contracts	
			1.2.6 Provide library books, furniture and equipment	• Library books, furniture and equipment provided by year 2	• Procurement reports • Review missions • Procurement and distribution records	
	1.3 TSC provides certified courses in Water Resources Management and Technical services	1	1.3.1 Conduct TSC training to staff in at least 16 provinces according to the TNA gaps identified	• Staff in at least 16 provinces have completed TSC training courses by year 3	• Attendance lists • Participants evaluation reports	
			1.3.2 Train management committees of 25 FWUCs at TSC in Irrigation Scheme Operations and Management (O&M)	• Management committees of 25 FWUCs are trained at TSC in Irrigation Scheme Operations and Management (O&M) by	• Attendance lists • Participants evaluation reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				year 3		
			1.3.3 Accredit private contractors by TSC in the management or technical service they are providing to FWUCS	• Private contractors are accredited by TSC by year 3	• Attendance lists • Participants evaluation reports	
	1.4 Establish Department of Water Resource Management at ITC		1.4.1 Audit the Water Sciences curricula in the Department of Rural Engineering and adapt requirements of full 5 year Degree in Water Resource Management	• An audit of the Water Sciences curricula in the Department of Rural Engineering is completed and adapted for the requirements of full 5 year Degree in Water Resource Management by end year 1	• Training needs analysis and training plan documents • Degree in Water Resource Management	**Assumption** • Agreement from ITC to develop a Department of Water Resource Management
			1.4.2 Establish procedures for the training curriculum	• Procedures for the training curriculum are established by mid year 1	• Procedures documentation	
			1.4.3 Develop training plans	• Training plans completed by end year 1	• Training plan	
			1.4.4 Secure funds for 100 students per year	• Funds secured for 100 students per year by end year 1	• Finance plan	
			1.4.5 Conduct facilities' needs analysis	• Facilities' needs analysis conducted by end year 1	• Report to Project Steering Committee	
			1.4.6 Upgrade facilities in accordance with the facilities needs analysis	• Facilities upgraded by year 2	• Construction contracts	
			1.4.7 Provide library books, furniture and equipment	• Library books, furniture and equipment provided by end year 2	• Procurement reports	
P5 component 1	**1.5 RUA provides training courses to MAFF and MOWRAM staff**		1.5.1 Install quality assurance system RUA	• Quality assurance system operating in RUA by year 1	• Project Steering Committee minutes	
			1.5.2 Conduct facilities' needs analysis	• Facilities' needs analysis	• Report to Project Steering Committee	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				conducted by end year 1		
			1.5.3 Upgrade facilities in accordance with the facilities needs analysis	• Facilities upgraded in accordance with the facilities needs analysis by year 2	• Construction contracts	
			1.5.4 Provide library books, furniture and equipment	• Library books, furniture and equipment provided by year 2	• Procurement reports	
	1.6 Royal School of Administration (RSA) provides Management training courses to MAFF and MOWRAM staff		1.6.1 Audit training materials and update training materials according to the HRD plan and TNA	• An audit of all training materials and training delivery is completed and training materials are updated according to the HRD plan and TNA by mid year 1	• Training needs analysis and training plan documents • Instructional materials	
			1.6.2 Establish procedures for the training curriculum	• Procedures for the training curriculum are established by end year 1	• Procedures documentation	
			1.6.3 Develop training plans	• Training plans completed by mid year 2	• Training plan	
			1.6.4 Coordinate allocation of new places for 10 MAFF, MOWRAM, PDWRAM, and PDA	• Places for 10 MAFF, MOWRAM, PDWRAM, and PDA staff each is allocated per year by year 2	• Attendance lists from training programs	**Assumption** • Agreement from RSA to support increase training quotas to MAFF and MOWRAM staff
			1.6.5 Train directors and senior staff of MAFF and MOWRAM identified in the TNA	• Directors and senior staff of MAFF and MOWRAM identified in the TNA are trained by year end year 3	• Attendance lists from training programs • Participants evaluation reports	
	Outputs: Component II – REE capacity is built					
P5 sub-component 1.1	**2.1 Human resources for REE is developed**	1	2.1.1 Training needs assessment is conducted	• A training plan is developed by mid year 1 • Success criteria and	• TNA report • Training plan • M&E plans	**Assumption** • MOWRAM will establish effective provincial and

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				Monitoring and Evaluation plans are developed by mid year 1		district offices and the central, provincial and district institutions and offices of both MAFF and MOWRAM will be vertically and horizontally integrated
			2.1.2 Develop training guidelines	• Training guidelines are developed by year 2	• Training guidelines	
			2.1.3 Develop training outsourcing plan	• Training outsourcing plan is developed by year 2	• Training outsourcing plan	
			2.1.4 Develop training courses in technical, analytical and communication skills, especially in new and emerging areas: • policy formulation • priority setting • planning and programming • program/project formulation • management • M&E • technology documentation, validation, adaptation, and impact assessment • database development and management • generation of appropriate problem-solving technologies • identification and use of REE-based solutions • creation of an integrated knowledge base to sustainably enhance agricultural and water productivity towards food security	• Short courses are developed by mid year 2	• Short courses curricula	
			2.1.5 Implement the training program	• 20 REE staff are trained in technical, analytical and communication skills,	• Training attendance and performance records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				especially in new and emerging areas by year 4		
P5 sub-component 1.2	**2.2 REE organizational strengthening**	2	2.2.1 Training needs assessment of REE managers in resources planning and management and M&E	• Training needs assessment carried out by mid year 1	• TNA report • Training plan • M&E plans	
			2.2.2 Resource planning and management, and M&E training courses developed	• Training course guidelines and manuals developed by year 2	• Training guidelines • Training manuals	
			2.2.3 Conduct training courses	• 10 REE managers are trained in resources planning and management and in M&E by year 4	• Training attendance and performance records	
			2.2.4 Develop inclusive, farmer-centered, development-oriented research agenda, university curricula and extension messages: • policy • socio-economic aspects • food security • gender • farming system dimensions • new and emerging problems such as climate change and new and renewable sources of energy • environmental issues • risk assessment • new and emerging issues such as bio-security (particularly SPS), IPR, TRIPS, bio-technology, ICT, informatics and GIS	• Inclusive, farmer-centered, development-oriented research agenda, university curricula and extension messages are developed by year 2	• Research agenda • University curricula • Extension messages	
		2	2.2.5 Improve laboratories, equipment, teaching aids and technologies	• Laboratories, equipment, teaching aids and technologies are improved by year 3	• Laboratory equipment inventory • Procurement records	
			2.2.6 Develop mechanisms for	• Mechanisms for participatory	• REE participatory	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			participatory planning, implementation, and evaluation of REE programs	planning, implementation, and evaluation of REE programs in place by year 2	planning, implementation, and evaluation procedures	
			2.2.7 Develop farmer-led, market-driven extension services • participatory problem identification and problem diagnosis • technology validation and impact assessment • gather, analyze, and disseminate market information and technology	• Farmer-led and market-driven extension services are developed by year 2	• Farmer-led and market-driven extension services	
P5 sub-component 5.2	**2.3 Existing and new institutional arrangements are strengthened**	2	2.3.1 Transform CAREC into a Agricultural and Water Innovation Council (AWIC) responsible for A&W research, education and extension	• AWIC meets annually • The master plan for agricultural research is updated by year 2	• AWIC meeting and attendance records • Agriculture research master plan	
			2.3.2 Secure funding for the AWIC	• Funding secured for priority programs and activities by year 2	• National budget allocation • Bank records • M&E reports	
			2.3.3 Develop programs and activities of AWIC at the national, provincial, district and village levels	• Priority programs and activities implemented by year 3	• Program design documents	
			2.3.4 CARDI to become a member of the Asia-Pacific Association of Agricultural Research Institutions (APAARI)	• CARDI is a member of the Asia-Pacific Association of Agricultural Research Institutions (APAARI) by year 3	• APAARI meeting outcome reports	
P5 sub-component 1.2 & 4.3	**2.4 Networks with other research institutes are developed**	2	2.4.1 Network and cooperate with relevant and international REE institutions: • APARRI • SEARCA of SEAMEO • CGIAR centers	• Partnership arrangements in place with international REE institutions by year 2	• International cooperation agreements	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
P5 sub-component 4.3			2.4.2 Link with reputed universities abroad for research and extension, peer institutions, regional and international organizations, and business establishments	• 5 MOUs signed with universities abroad, peer institutions, regional and international organizations, and business establishments made by year 2 • Increased number of highly trained Cambodian teachers and researchers by year 4	• 5 MOUs • Graduation records	**Assumption** • Various stakeholders, including donors, are involved in the decision-making bodies of local institutions
P5 sub-component 4.3			2.4.3 Establish links with industries, business establishments, SMEs and those working at the field level	• Links are established with industries, business establishments, SMEs by year 2	• MOUs	
P5 sub-component 4.3			2.4.4 Promote the strengths and possibilities of Cambodian educational institutions	• Cambodian educational institutions national marketing and awareness campaigns implemented by year 2	• Marketing and promotion plans • Promotion collateral	
P5 sub-component 5.3	**2.5 Resource mobilization and coordination is strengthened**	2	2.5.1 Establish a communication network for national and provincial stakeholders to facilitate the exchange of REE information	• A communication network for REE stakeholders is established by year 3	• APAARI meeting outcome reports	
			2.5.2 Establish a funding consortium composed of relevant line ministries and donors to support agriculture and water resources innovation	• A coordinating mechanism for REE funding, implementation, M&E is in place by year 3	• REE program budget reports	
	Outputs: **Component III – Research and technology is developed**					
P5 sub-component 2.1	**3.1 Pro-poor, pro-women and pro-environment technologies are developed and adopted**	1	3.1.1 Identify and conduct preliminary assessment of technologies developed and successfully adopted elsewhere, including: • High quality aromatic rice varieties • Appropriate early, medium and late rice varieties and sowing	• Participatory research and on-farm assessment is conducted by end year 1 • On-farm technologies are validated and recommendations available by end year 1 • Technologies for resource-poor men and women farmers based	• Research and assessment records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			densities for different agro-ecological zones and farming systems • Organic farming products • Niche-specific products • Food processing • Marketing and trading • High yielding quality rice varieties resistant to drought, flood & pests • Intensification of production, processing and marketing of upland crops, namely, maize, soybean and cassava, particularly to strengthen the rain-fed upland production • Enhancing soil fertility & water holding capacity through integrated soil-water-plant-nutrient research • On-farm water management and harvesting for increasing water and irrigation use efficiency • Conservation agriculture technologies • Pro-women farm technologies for time saving and reducing drudgery • Husbandry, particularly feeding and health of cattle, pigs and chicken • Integrated farming systems (crop-livestock-aquaculture) • Residue management, especially, recycling of rice straw for production of quality compost, sermi-composting and organic farming • Reducing pre- and post-harvest losses, agro-processing and value addition	on on-farm technologies and those successfully adopted elsewhere are adopted by year 3		

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			3.1.2 Conduct participatory research and on-farm assessment and then validate relevant technologies for resource-poor men and women farmers	• On-farm technologies are validated and recommendations available by end year 1	• Endorsed on-farm technology proposal	
			3.1.3 Train farmers in identified and prioritized technologies through appropriate extension mechanisms	• Farmers participate in food processing, marketing and trading by year 3	• Training attendance and performance records • Farm accounts • Baseline/endline surveys • M&E reports	
P5 sub-component 2.3	**3.2 Strategic and applied research is improved**	2	3.2.1 Identify critical core of human and physical resources for high caliber science-based A&W research	• Human and physical resources for high caliber science-based A&W research is identified by mid year 1	• Human resource plan • Procurement plan	
			3.2.2 Initiate strategic and applied A&W research programs and activities including: • Application of molecular plant breeding solutions (bio-technology) for developing rice and other crop varieties tolerant to biotic and abiotic stresses, such as drought and salt tolerant and water-efficient rice varieties • Genetic alchemy for coping with the climate change and market uncertainties • Establish decision support systems for analysis of crop–water-soil-nutrient interactions to provide reference for matching agro-ecological capacity with production regimes • Embark on food science and agricultural product quality research for improving food safety, quality and international	• Strategic and applied A&W research programs and activities are initiated by year 2	• Program design document • Project reports • M&E reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			acceptance • Establish an effective national bio-security system particularly establish/update diagnostic and rapid response systems for disease and pest management • Initiate a hybrid rice breeding program			
P5 sub-component 2.2	**3.3 Market oriented and niche technologies (strategic and applied)**	2	3.3.1 Establish a national food and agriculture processing technology center 3.3.2 Recruit trained and qualified researchers from REE institutions 3.3.3 Establish a research program for market-oriented and niche technologies 3.3.4 Introduce, adapt, and generate appropriate value-added technologies as per international standards, following this example: • Conduct market needs assessment • Select, test and purify potential high yield cultivars • Brand and market high yield cultivars • Establish best practices by agro-ecological setting, standardize agronomic and water management packages • Certify post-harvest technologies and production • Contract the production of high quality seed of the selected purified variety to private firms and/or pioneer farmers • Establish district or commune	• Technology center established by year 2 • REE researchers recruited by year 2 • Research program established by year 2 By mid year 2: • Market needs assessment conducted • Potential high yield cultivars selected, tested and purified • High yield cultivars branded and marketed • Agronomic and water management packages best practices by agro-ecological setting are established • Post-harvest technologies and production is certified • Production of high quality seed of the selected purified variety to private firms and/or pioneer farmers is contracted • District or commune level milling, grading and packaging facilities are established	• Construction/renovation contracts • Procurement records • Service contracts • Program design document • Budget • Market needs assessment • Laboratory testing reports • Branding strategy • Brand guidelines • Marketing strategy • Marketing collateral • Promotion strategy • Agronomic and water management best practices manual • Post-harvest technology certification • Milling facilities • Grading facilities • Packaging facilities • Project reports • M&E reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			level milling, grading and packaging facilities and distribute the product to target markets			
D. FOOD SECURITY						
Goal : Agricultural systems and community arrangements that enable poor and food insecure Cambodians to have substantially improved physical and economic access to sufficient, safe and nutritious food at all times to meet their dietary needs and food preferences for an active and healthy life						
	Objectives 1. An increasingly productive and diversified agricultural system that is capable of assuring food security for the nation and delivering an acceptable quality of life for rural communities, especially the poor			• Beneficiary farmers are benefited by extension, technology transfer, improved production trainings and sets of low-input and improved technical packages	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	2. Intensified and diversified food production by smallholder farming households, particularly those that are food-insecure, based on their own crop and grazing lands, and access to common property resources of land, fisheries and forests			• Beneficiary farmers organized into groups and conducting smallholder farming activities based on the principles of sustainable and Good Agricultural Practices and Natural Resources Management	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	3. Community groups, particularly of food-insecure households and women, who are empowered to actively develop their potentials, opportunities and minimize risks and represent their own interests in political and administrative			• Community projects are implemented using participatory planning techniques • Communities are involved in the local planning processes under the provisions of the Organic Law	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	environments 4. Policies and information on aspects of food security related to agriculture and water management that effectively guide public administration at all levels			• Food security concepts are integrated into development programs and policy	Reports • MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • Policy review report	
P5 sub-component 3.1 & P2 output 1.1	**Outputs:** **Component I – Community Self-reliance for Food Security and Poverty Reduction** **1.1 On-farm productivity is improved through the provision of extension services for the adoption of low-input technical packages**	1	1.1.1 Conduct field trials confirming promising technical packages and practices (for crops, livestock, on-farm water control, fisheries and forestry	• Field trials are initiated by year 2	• Field trial results reports	
			1.1.2 Develop extension, technology transfer, and traditional and non-traditional on-farm production training guidelines	• Training guidelines are developed by end year 1	• Training guidelines and manuals	
			1.1.3 Disseminate sets of low-input technical packages for production to farmers	• Sets of low-input technical packages are disseminated to 4000 farmers by end of program	• Documentation of technical packages and practices	
			1.1.4 Conduct extension, technology transfer, and on-farm production training to farmers under the coordination, facilitation and quality assurance of DAE and	• Participatory extension, technology transfer, and production trainings are initiated by year 2 and 4000 farmers are participating by end	• Attendance lists and records of trainings and field trials	**Risk** • Pests/diseases limit productivity or changes in supply/demand limit profits in first growing season affecting farmer

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			PDA	of program		interest levels in program technologies
P5 sub-component 3.1 & P2 output 1.2	**1.2 On-farm productivity is improved through the provision of extension services of adoption of improved technical packages**		1.2.1 Develop extension, technology transfer, and improved on-farm production training guidelines	• Training guidelines are developed by end year 1	• Training guidelines and manuals	
			1.2.2 Disseminate sets of improved technical packages for production to farmers	• Sets of improved technical packages are disseminated to 4000 farmers by end of program	• Documentation of technical packages and practices	
			1.2.3 Conduct extension, technology transfer, and improved on-farm production training to farmers under the coordination, facilitation and quality assurance of DAE and PDA	• Participatory extension, technology transfer, and improved production trainings are initiated by year 2 and 4000 farmers are participating by end of program	• Attendance lists and records of trainings and field trials	
			1.2.4 Improved, diversified, and sustainable agricultural productivity practices, techniques and management of natural resources learned through the technical training are implemented	• Improved varieties of seeds, breeds, and other essential production inputs are used by 4000 farmers by year 3 • Improved sustainable and good agricultural practices are adopted in 4000 farmers by year 4 • Community-based natural resource management is implemented in 4000 villages by year 4	• Farm records (production inputs used and yields) • M&E reports of production practices, land and water use management activities by farmers • Records of activity and yields from the community-based natural resources management (including forestry and fisheries) • Baseline / endline surveys	**Risk** • Instances of major flooding or drought occurrences impede improvement of agricultural productivity • Farmers have trouble adopting several new technologies and concepts
	1.3 Better income through diversified income-generation opportunities (on-farm and off-farm)		1.3.1 Stimulate membership of existing self-help groups (rice banks, cow banks, saving groups, and social charity groups, etc.) and form new self-help groups at	• 4000 self-help groups are organized and functioning by end year 4	• SHG meeting notes	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			the community level			
			1.3.2 Provide basic administration training to self-help groups for self-management capacity	• Basic administration training conducted within 6 months of self-help group formation	• Attendance and performance records of on and off-farm vocational skills training	
			1.3.3 Micro-businesses and small-scale agro-processing are developed and functioning at a basic level in communities	• Micro-businesses and small-scale agro-processing are developed and functioning at a basic level by year 3 • Community micro-projects are implemented by year 4	• Records of activity of community-based self-help groups • Micro-business records • Records of activities of community micro-projects • M&E records	
P5 sub-component 4.2 & P2 outcome 2			1.3.4 Develop a set of vocational training packages for on and off-farm employment opportunities	• Set of vocational training packages are developed by end year 2	• Training packages	
P5 sub-component 4.2 & P2 outcome 2			1.3.5 Train people in vocational skills and link to employment opportunities	• 4000 people are trained in new and/or additional vocational skills by year 4	• Attendance and performance records • Baseline/endline surveys	
	1.4 Self-management and empowerment in farmers groups and village common works is achieved	2	1.4.1 Facilitate the transformation of self-help groups to farmer/villager organizations (FOs)	• 4000 FOs are registered by year 4	• FO registration records • Attendance records from Self-management Capacity and Skills training	**Assumptions** • Registration of FOs becomes decentralized to the district level
			1.4.2 Conduct Participatory Planning training for the implementation of community projects including safety net activities	• Participatory Planning training conducted by year 3 • Community projects are implemented using participatory planning techniques by year 3	• Attendance records of Participatory Planning training • Community project planning documentation	**Risks** • FO's do not collect enough revenue to become self-supporting
	1.5 Access to adequate food is increased, and better nutrition practices in the use of food, including food preparation and	4	1.5.1 Conduct home gardening training to self-help groups, FOs and households, particularly to women-headed households	• 4000 households are trained in home gardening techniques by year 4	• Training and attendance records • M&E records	**Assumptions** • There is coordination with health clinics and hospitals to determine reduction in occurrence of

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	preservation, is accompanied with improved sanitation and health					main diseases • Health of target population is tested using modern health screening techniques in coordination with MoH • Patient records kept at health clinics and hospitals
			1.5.2 Conduct food use, nutrition, and basic health care training and extension	• Food use, nutrition, and basic health care training to 4000 households conducted by year 4	• Training and attendance records • M&E records	
			1.5.3 Conduct food intake and food composition studies (from own production and from purchasing at household level)	• Identification of food intake and food composition studies conducted by mid year 2	• Study reports • Baseline/endline surveys • Household food purchasing and consumption records	
			1.5.4 Conduct food production and income changes studies	• Food production and income changes studies conducted by mid year 2	• Study reports • Baseline/endline surveys	
			1.5.5 Conduct KAP studies	• KAP studies conducted by mid year 2	• KAP study report	
			1.5.6 Provide sanitation inputs to householders	• 4000 sanitation kits are provided by year 4	• Procurement records • M&E records	
			1.5.7 Conduct training to householders on household sanitation installation and safe water use	• 4000 households are trained in sanitation installation and safe water use by year 4	• Training and attendance records • M&E records	
	1.6 Identification of good practices and more effective approaches to food security		1.6.1 Conduct regular meetings and workshops to share information, knowledge and lessons learned and disseminate for future operation at policy level	• Program documentation is completed on a regular basis through the duration of the program • 6-monthly M&E studies conducted • Indicators and monitoring	• Meeting and workshop attendance lists and records • M&E reports • Records of information sharing exercises and field	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				systems for field interventions and policy development are developed at commencement of implementation • Regular meetings and workshops conducted on a yearly basis • Food Security Program assessments disseminated at end of program	interventions	
	Outputs: **Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base** **2.1 Key policy makers, planners and program developers are trained in FSN concepts and the concepts are integrated into policy, development plans, and programs at the national and decentralized level**		2.1.1 Establish an FSN trainers pool	• FSN trainers pool established by year 2	• Commune planning documentation • M&E reports generated by mainstreaming tool	
			2.1.2 Develop processes and guidelines for FSN national trainers pool	• Processes and guidelines of the FSN national trainers pool are developed by year 2	• Membership records • Meeting dates and notes	
			2.1.3 FSN national trainer establishes a portfolio of trainings	• Training portfolio established by mid year 2	• Training portfolio	
			2.1.4 Develop FSN mainstreaming tool with manuals (e.g. good practices in monitoring, planning and coordination techniques, training approaches and programs) and apply FSN mainstreaming tool to training portfolio	• Mainstreaming tool is applied in training portfolio by mid year 2	• Training portfolio	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			2.1.5 Compile and disseminate FSN mainstreaming tools for development projects to sub-national level	• Mainstreaming tools are compiled and disseminated and are being used by various partners in field for mainstreaming FSN in development projects by year 2	• Dissemination records • M&E reports	
			2.1.6 Conduct workshops on FSN concepts and objectives training to policy makers, planners, program designers, and relevant decision makers at various line ministries	• 3 workshops are conducted on FSN concepts and objectives training by year 2	• Workshop attendance records	
			2.1.7 Train key policy makers, planners and program developers at the national and provincial levels in FSN portfolio of trainings and ToT skills	• FSN and ToT training conducted by year 3	• Attendance and performance records • M&E reports	
	2.2 The FSN coordination structure is enhanced to include collaboration between and among concerned line ministries and agencies (i.e. CARD, NCDD, and NNC)		2.2.1 Establish FSN official focal points with clear responsibilities at MAFF and MOWRAM, with various line ministries and agencies, such as NCDD and NCC for actions at the provincial and commune levels	• Official focal points with clear responsibilities are established by year 2	• MAFF and MOWRAM meeting dates and notes	
	2.3 Members of commune councils and farmer communities (FOs, FGs, FWUCs, etc) are trained in managing the project cycle and integrate FSN issues in their development management process		2.3.1 Establish FSN planning and coordination teams at provincial and commune levels	• FSN teams are established mid year 3	• FSN team meeting dates and notes	
			2.3.2 FSN teams apply FSN objectives and monitoring tools into	• FSN teams have FSN objectives and monitoring tools	• FSN development plans • FSN team meeting dates	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			development plans	by year 3	and notes	
			2.3.3 Train commune council members and farmer communities in FSN training subjects in FSN portfolio, including the project cycle and FSN planning	• Commune council members and farmer communities are trained in FSN training subjects, including the project cycle by year 3 • FSN plans are incorporated in commune development plans by year 4	• Attendance and performance records • M&E reports	
	2.4 The existing information and data on FSN is enhanced, used and is managed (maintained)		2.4.1 Establish coordination and harmonization processes, roles and functions for the existing FSN agency for FSN-related information	• The existing agency roles and functions in development aspects and FSN is established by year 2	• FSN meeting dates and notes • FSN coordination plan	
			2.4.2 Improve the quality, breadth and scope of FSN information via the TWGAW website accessible to all participating agencies, e.g. TWGs especially TWG-AW, TWG-FSN	• TWGAW website information is maintained and up-to-date by year 2	• TWGAW website content	
			2.4.3 Integrate FIVIMS FSN information analysis and dissemination system with VAM, FSNIS, CamInfo, etc.	• FIVIMS' compiles, analyses, maps and reports food security related information by year 3	• Integrated FIVIMS reports	
			2.4.4 Conduct workshops to promote the use of FSN information with members of other TWGs, especially TWG-AW, TWG-FSN and TWG of the Micronutrient and Infant and Young Child Feeding	• 1 workshop per year is conducted to promote the use of FSN information	• Workshop attendance records • Meeting notes	
			2.4.5 Document and disseminate best practice and innovative FSN approaches	• Best practices and innovative approaches documented and disseminated by year 3	• Best practice documentation	
			2.4.6 Conduct FSN policy and	• 1 workshop per year is	• FSN policy and program	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			program formulation dialogue with government and development partners	conducted to promote FSN policy and program formulation dialogue	matrices and design • Meeting dates and notes	
	2.5 The quality and scope of information and data supporting FSN in Cambodia is improved		2.5.1 Link and expand existing FSN data with identification of poor communities and poor households initiatives (ID-Poor Program in MoP)	• FSN data is expanded and linked with ID-Poor Program in MoP by year 3	• ID-Poor Program reports	**Assumptions** • Information and data needed for identifying and targeting on the food insecure and poor households and villages becomes available when implementation could be expected to begin (such as progress under the MOP project for Identification of Poor Households and WFP sponsored Integrated Food Security and Humanitarian Phase Classification) • Baseline surveys to be carried out use the methodology used by the "Identification of Poor Households Project (ID-Poor)" being implemented by the Ministry of Planning
			2.5.2 Develop targeted investment proposals under the FSSP using ID-Poor Program data	• Investment proposals under the FSSP are developed by year 3	• Investment proposals	
			2.5.3 Create and disseminate leaflets on food safety awareness at commune and village meetings on food security	• Leaflets developed and disseminated at commune and village meetings by year 3	• Records of food safety awareness activities at local level • Leaflets	
			2.5.4 Conduct basic study on information flows and structure on food safety at decentralized level	• Basic study data on information flows and structure on food safety at decentralized level data is collected and stored by	• Study data	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				year 3		
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT						
Goal : Sustainable and pro-poor management of water resources, water management facilities, water-related hazards, and land resources that is integrated, efficient, and carried out in a river basin context						
	Objectives 1. Water resources are being developed and used in a way that considers river basins as the fundamental physical unit for management, minimizes degradation of aquatic resources and organize and regulate competition among users, and where appropriate uses of the concepts of IWRM and RBM			• The Tonle Sap Authority (TSA) develops and implements an Integrated Water Resource Management Plan for the Tonle Sap and connected river basins • MOWRAM and MAFF develop and implement a water resource management and agricultural resource management data collection and dissemination system • Provincial and local authorities, farmers and other stakeholders are involved in IWRM and irrigation infrastructure planning and implementation	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • TSA Reports	
	2. Land resources have been inventoried and appraised for their agricultural potential, and procedures have been developed to integrate the development and management of land, water and related resources to achieve the optimum use of all of them			• An inventory and appraisal of land and water resources is carried out • Master plans and identified priorities for land and water resource utilization are implemented	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	3. Cultivable and pastoral lands with the greatest agricultural potential have been brought into production, and are being used sustainably to produce farm products that provide the best return on			• Agricultural and economic productivity of lowland and upland areas and cropping systems are assessed and subsequent land use plans are implemented • MAFF and MOWRAM provide extension services for increased	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	investment			agriculture and water productivity	• Steering Committee Reports	
	4. Farmers of both irrigable and predominantly rain-fed croplands are better able to manage, harvest and use water (including supplementary irrigation), over a total area that is increasing by at least 25,000 ha/year			• MAFF and MOWRAM provide extension services for increased agriculture and water productivity in irrigable and rain-fed croplands • 100,000 hectares of wetland and dryland irrigation is constructed and sustainable water management, harvesting and use practices are adopted by beneficiary farmers.	• MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • Procurement reports	
	5. Farmers have secure tenure to their land			• Land use certificates are provided to smallholder farmers • Communal land rights are provided to indigenous communities	• Sub-Decrees, Prakas • MLMUP, MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	6. Rural communities are able to avoid or respond without serious loss to the adverse effects of damaging floods, droughts or unexpected dry spells			• MOWRAM and MAFF develop and implement a drought and flood forecasting system that provides timely warning to local authorities and farmers on the likely incidence and severity of events. • MOWRAM and MAFF develop and implement drought and flood mitigation measures	• Sub-Decrees, Prakas • MAFF and MOWRAM annual reports • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	7. Agro-Ecosystems Analysis in irrigation systems, social land concession and			• All irrigation systems, social land concessions and economic land concessions implement a	• MLMUP, MAFF and MOWRAM annual reports • National and provincial	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	economic land concession			Agro-Ecosystems Analysis approach to development.	annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	Outputs: **Component I – Water data management is improved**					
was originally P4 1.7	**1.1 The CISIS irrigation scheme information system is operationalized**	1	1.1.1 Agreement is sought from MOWRAM Departments and MEF that CISIS is a basis for asset management for irrigation scheme rehabilitation identification	• Agreement reached between MOWRAM Departments and MEF to use CISIS as a basis for asset management, scheme rehabilitation, and O&M funding by mid year 1	• Meeting notes • Endorsed agreement signed by MOWRAM departments and MEF	
			1.1.2 Establish infield data collection protocols and 'data collection teams' for the operationalization of the CISIS	• Infield data collection protocols and 'data collection teams' are established by year 2	• Protocol document • Data collection team membership records and meeting notes	
			1.1.3 Establish auditing framework for irrigation infrastructure assessments and conduct CISIS audit	• Auditing framework is established and CISIS audit conducted by year 2	• Audit report	
			1.1.4 CISIS is used to develop "best practice framework" for irrigation infrastructure and O&M	• CISIS "best practice framework" for irrigation infrastructure and management is established by year 3 • Software development plan for refinement of CISIS is developed by mid year 1 • CISIS operations and maintenance plan is developed by mid year 1 • CISIS is refined by mid year 2	• CISIS framework • CISIS software development plan • CISIS O&M plan • CISIS design and test reports • Data reports generated by CISIS	
	1.2 Evaluate irrigation	1	1.2.1 Establish agreed process	• Irrigation schemes evaluation	• Evaluation and ranking	**Assumption**

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	schemes suitable for future funding based on CISIS output		whereby irrigation schemes are evaluated and ranked based on CISIS database	and ranking process established by end year 1	process	• Evaluation and ranking process documentation endorsed by MAFF and MOWRAM
			1.2.2 Support/coordinate consultation process between MOWRAM departments and MEF (based on CISIS outputs) for Dept Irrigated Engineering and Dept Irrigated Agriculture to perform infrastructure rehabilitation	• Coordinated consultation process agreed by mid year 1	• Infrastructure rehabilitation consultation process and meeting notes	
			1.2.3 Develop performance based funding criteria for donors and MOWRAM for future investment in irrigation infrastructure based on CISIS analysis	• Performance based funding criteria developed by mid year 1	• Performance based criteria	
1.1.1 moved from 1.2 in original P4	**1.3 Analysis and storage software are defined and used efficiently for surface and ground waters, river basins and meteorological data**	3	1.3.1 An inventory of all existing data is carried out	• An inventory is carried out by mid year 1	• Inventory report	
			1.3.2 A study is carried out to identify adequate software and hardware and to propose an organization for the departments	• Number of software chosen (5 possible: hydrology, meteorology, basin model, surface water quality, ground water) by mid year 1	• Study report	**Assumption**: • Funds are secured to increase the availability of data for analysis
			1.3.3 Software and hardware are bought and installed	• Hardware and software installed by end year 1	• Hardware and software procurement and installation records	
			1.3.4 Develop storage software and databases for ground water, river basins and meteorological data	• Storage software and databases are developed by year 2	• Software and database design and testing reports • Software and database hosted on “test” and “live”	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
					servers	
			1.3.5 Training needs assessment of staff capacity in data analysis and storage is conducted	• Training needs assessment completed by end year 1	• TNA report	
			1.3.6 Staff in the relevant departments are trained in the software by TSC	• 20 staff trained in each software package by end year 2	• Training attendance and performance records	
	1.4 All existing water data and works are stored by the relevant government departments and available to be utilized by projects	4	1.4.1 An inventory of all existing data is carried out	• Inventory is carried out by mid year 3	• Inventory	
overlaps with P1 4.1.3 & original P1 1.5			1.4.2 Data are gathered and stored in the defined format in adequate software and integrated in the national storage system	• All projects have water data works in the framework of the national observatory and storage system by end year 3 • Data accessible for analysis and report production by all Ministries and projects by end year 3	• Data reports • Project reports	
			1.4.3 Appraise training needs for data collecting, storage and use. Train staff from DHRW, DRWC and DoM at the TSC for Irrigation Meteorology in water data management	• Training needs appraised by mid year 1. Staff from DHRW, DRWC and DoM at the TSC is trained by year 4 • Staff of relevant departments are associated to project works by year 4	• TNA reports • Training attendance and performance records	
P4 component 1.3	**1.5 An observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration**	5	1.5.1 A study is carried out to define an integrated observing system	• Number of observing systems defined (5 possible: hydrology, meteorology, surface water flows and quality, ground water, evapotranspiration) by mid year 1	• Study report	
			1.5.2 The observing system is repaired,	• The hydrology system is	• System design and test	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			upgraded and reorganized	repaired, upgraded and reorganized by year 3 • The meteorological system is repaired, upgraded and reorganized by end year 1 • Number of real or near real time rainfall stations – 23 end of year 1, 48 by year 4 • The surface water flows and quality system is repaired, upgraded and reorganized by year 3 • Number of real of near real time water level stations – 8 end of year 1, 22 by year 4 • The ground water system is repaired, upgraded and reorganized by year 4	reports of all observing systems	
			1.5.3 Conduct training needs assessment of staff capacity and train staff in observing systems	• Training needs assessment completed by end year 1 • 20 staff at national level and 2 staff in each provincial department trained by end year 2	• TNA reports • Training attendance and performance records	
1.4 was originally P4 1.6	**1.6 The flood and drought forecasting system is improved in collaboration with the MRC**	7	1.6.1 The flood forecasting model of the MRC is upgraded with the involvement of the DHRW	• The flood forecasting model is upgraded by year 2	• Model design and test reports	
			1.6.2 The observing system is improved following the recommendations of the MRC	• The observation stations are upgraded by year 3	• Installation and maintenance records • Rainfall and water level data reports	
P4 Component 2	**Outputs: Component II – Development of integrated water management**					
P4	**2.1 River basins are**	2	2.1.1 Carry out a study to define the	• A national river basins	• Delineation study report	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
Component 2.1	**delineated and classified officially**		reference river basins boundaries and classify the basins and the hydrological network	delineation study is achieved by year 4		
			2.1.2 The national classification of rivers and matching basins is made official by a sub-decree	• The river basins and the hydrological network are officially classified (sub-decree or prakas) by year 3	• New sub-decree or prakas	
			2.1.3 Store information in adequate software	• Information is stored in the adequate software by year 3	• GIS generated reports • Other software generated reports	**Assumption** • GIS is necessary
P4 Component 2.2	**2.2 A water management framework plan is approved for the Tonle Sap basin**	5	2.2.1 Develop a Strategic Plan for the Tonle Sap Authority outlining the roles, mandate and the main priority programs of the TSA	• Strategic Plan is developed by end year 1	• Strategic Plan	
			2.2.2 Develop a White Paper on the scope and role of the TSA in coordinating sectoral activities in the Tonle Sap	• White Paper developed by end year 1	• White Paper	
			2.2.3 Develop a Master Plan for the development of the Tonle Sap region and Lake	• Master Plan developed by end year 1	• Master Plan	
			2.2.4 Launch a broad study including environmental, social and economic aspects	• A general study including information on the environmental, social and economic situation, basin modeling, and proposals for development and conservation is achieved by year 4	• Study report	**Assumption** • Study results are discussed in the framework of the Tonle Sap Authority
			2.2.5 Establish a water management framework plan for the Tonle Sap Authority	• The water management framework plan of the Tonle Sap basin is approved by the Tonle Sap Authority by year 4	• Endorsed Water Management Framework Plan	
P4	**2.3 Water resources are**	6	2.3.1 Assess water resources for each	• A national water resources	• Monthly assessment	**Assumptions**

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
Component 2.3	**assessed at a nationwide scale**		basin on a monthly basis with the current available data	assessment study is achieved by year 4	study reports	• Study assesses environmental needs as a mandate • MOWRAM incorporates assessment results in the water resources training and in project implementation
			2.3.2 Produce an educational version of the assessment	• An educational version of the assessment is produced by year 4	• Educational assessment report	
P4 Component 2.4	**2.4 Water committees are created and management plans are approved for at least 2 priority basins**	3	2.4.1 Launch a study on 2 river basins including a basin modeling dealing with natural conditions, water use and flood	• All information is stored in adequate software by year 4	• Project reports • M&E reports • Data reports • Analysis study report • Water Management proposals	**Assumption** • Study analysis results of current and future problems will enable the creation of water management proposals
			2.4.2 Create a Water Management Committee	• Water committees created – 1 end of year 1, 2 by year 4	• Committee meeting attendance records • Committee meeting notes • M&E reports	
			2.4.3 Develop a water management plan and seek Government approval	• 200 of water management plans approved by water committees and MOWRAM by year 4	• Endorsed water management plans	
P4 Component 10	**Outputs:** **Component III – Continuation of the development of irrigation and water management infrastructures with a more participatory design and in a more integrated way**					
P4 Component 10.1	**3.1 For all irrigation projects, preliminary studies taking into**	2	3.1.1 Carry out preliminary studies dealing with water resources, soil conditions, agricultural	• 100% of projects have a complete preliminary study by	• Preliminary study reports • Project reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	account environmental, social and economic factors are carried out		potential, market dynamics, social environment, economic profitability and maintenance before all the projects	year 4	• M&E reports	
			3.1.2 Implement irrigation projects where agricultural development plans exist	• Irrigation projects are implemented by year 4 • 54 irrigation schemes rehabilitated by year 2, 56 irrigation schemes are constructed and/or rehabilitated by year 3	• Agricultural development plans • Project reports • M&E reports	
P4 Component 10.2	**3.2 For all irrigation projects, farmers are systematically and strongly involved in the design**	1	3.2.1 TSC staff train farmers involved with the projects in Farmers Participation for Sustainability of Irrigation Schemes and Water Management and Development	• 100% of projects have an involvement of the farmers at the design stage by year 4 • 25 FWUCs are strengthened by year 3	• Training attendance and performance records • Commune Council development plans • Commune Council meeting notes • Project reports • M&E reports	**Assumption** • Projects make special effort to present regularly the progress to the farmers and to take their comments into account
			3.2.2 Representatives of the farmers are members of the steering committees of the projects	• Farmers are members of the steering committees of the projects by year 2	• Steering committee membership records • Project reports • M&E reports	
P4 Component 10.3	**3.3 MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season irrigation schemes**	2	3.3.1 Rehabilitate or build Increase of > 20,000 ha (per year) in wet season irrigation lands	• Increase of 20,000 ha (per year) in wet season irrigation lands by year 4	• Commune development plans • Project designs • Project reports • M&E reports	**Assumption** • Irrigation schemes receive funding from RGC or donors
was P2 output 1.2			3.3.2 FWUCs rehabilitate, construct and manage small-scale irrigation schemes and water harvesting devices in the villages (e.g. village canals, dams, community ponds, wells, etc.)	• Small-scale irrigation schemes and water harvesting devices in the villages are rehabilitated and constructed and functioning (e.g. village canals, dams, community ponds, wells, etc.) by year 3 • Community-based water resources planning is managed	• On-farm water management and control community records	**Assumption** • FWUCs given funds, authority and autonomy to manage rehabilitation of irrigation schemes

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				by FWUCs by year 3 • 14 sewage drainage systems are rehabilitated by year 3 • 5 water supply systems are constructed by year 3		
P4 Component 10.4	**3.4 MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irrigation schemes**	1	3.4.1 Rehabilitate or build Increase of 5,000 ha (per year) in dry season irrigation lands	• Increase of 5,000 ha (per year) in dry season irrigated lands by year 4	• Commune development plans • Project designs • Project reports • M&E reports	**Assumption** • Irrigation schemes receive funding from RGC or donors
was P2 output 1.2			3.4.2 FWUCs rehabilitate, construct and manage small-scale irrigation schemes and water harvesting devices in the villages (e.g. village canals, dams, community ponds, wells, etc.)	• Small-scale irrigation schemes and water harvesting devices in the villages are rehabilitated and constructed and functioning (e.g. village canals, dams, community ponds, wells, etc.) by year 3 • Community-based water resources planning is managed by FWUCs by year 3	• On-farm water management and control community records	**Assumption** • FWUCs given funds, authority and autonomy to manage rehabilitation of irrigation schemes
P4 Component 10.5	**3.5 Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation are developed**	3	3.5.1 Launch research programs into DSMB and small-scale irrigation	• Research programs are coordinated by year 2	• Research reports	
			3.5.2 Identify best practice pilot farm sites	• Pilot farm sites identified by end year 2	• Best practice pilot site recommendation report	
			3.5.3 Conduct a study of conditions for large-scale adoption of DSMB and small-scale irrigation	• A study of conditions for large adoption is conducted by end year 3	• Study reports	
			3.5.4 Implement water management technologies in direct sowing in mulch based cropping systems and small irrigation	• Surface covered by DSMB – 60 ha end of year 1, > 600 ha by year 4 • Increase of > 300 ha (per year)	• Project design document • Project reports • M&E reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				in small irrigated lands by year 4		
merged with P1 2.3	**3.6 [The skill of the FWUC department and provincial departments staff is strengthened]**					
	3.7 MOWRAM has developed strongly its maintenance activities		3.7.1 Develop a budgetary plan for maintenance, increased de-concentrated budget, signature of FWUC/MOWRAM agreements on maintenance	• Annual budget for maintenance is approved for 12M$ by end year 1	• Annual maintenance budget is 12M$ • M&E reports	
			3.7.2 Conduct routine maintenance on newly built or rehabilitated schemes under the O&M budget	• Newly built or rehabilitated schemes are under routine maintenance	• Project reports • M&E reports	
	3.8 MOWRAM and other service providers are able to support FWUC for operation and maintenance		3.8.1 MOWRAM strengthens its concerned departments at national and provincial level to support FWUC O&M	• PDWRAM able to support FWUC for operation and maintenance by year 3	• PDWRAM FWUC O&M plan • Project reports • M&E reports	
			3.8.2 Establish network of private service providers level to support FWUC O&M	• Network of private service providers is established by year 2	• Number of contractors for rehabilitation schemes	
P4 Component 4	**Outputs: Component IV – National land resource assessments are developed**					
P4 Component 4.1	**4.1 National Land Resources Team will be formed to be responsible for current and future land resource management work for the country**	1	4.1.1 Form a National Land Resources Team	• National Land Resources Team formed by mid year 1	• Meeting notes and attendance records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			4.1.2 Develop and conduct soil surveys and soil classification surveys to update land resource inventory of the whole country	• Reconnaissance soil survey information and soil mapping at a scale of 1:250,000 for the whole country by year 4	• Soil survey reports • Agricultural land use and development plans • National soil maps	**Assumptions** • The reconnaissance survey results will provide useful information for agricultural land use and development planning • The most up-to-date FAO-UNESCO soil classification guidelines should be used
P4 Component 4.2	**4.2 Land capability and land suitability classification will be developed**	3	4.2.1 Conduct detailed soil surveys and identify soil limiting factors for crop production mostly in the upland farming systems	• Detailed information on land capability and land suitability for field crops and fruit trees including crop zoning and mapping at the national level by year 4	• Soil survey reports • National crop zoning maps	
			4.2.2 Develop land suitability and crop zoning classification map	• Land suitability and crop zoning classification map developed by mid year 2	• National crop zoning maps	
P4 Component 4.3	**4.3 Manual for classification, identification and management of upland soils is developed**	2	4.3.1 Develop a framework for classifying and identifying the major upland soils	• Framework is developed by year 2	• Upland soils classification framework	**Assumption** • Upland soil classification, identification and management to be based on CASC system
			4.3.2 Develop an upland soil classification manual	• Manual for classification, identification and management of upland soils by year 4	• Soil classification framework and manual	
P4 Component 4.4	**4.4 Soils and soil map of the rice growing areas in the lowlands is updated**	4	4.4.1 Survey and identify soils in other rice-growing areas not appearing in the rice soil map and update soil map	• Updated version of soils and soil map of the rice growing areas in the lowlands by year 4	• Soil survey reports • Rice soil map	**Assumption** • Survey to include ground true-thing of the existing soils on which the rice crop is no longer commonly grown or if the soils occur in the correct landform

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
P4 Component 4.5	**4.5 Utilization and updating of the existing National Soil Database developed by CARDI will be enhanced**	6	4.5.1 Mandate the responsibility for the maintenance of the national soil database to a specific department and manager	• Department responsible for maintenance of the national soil database is mandated by year 3	• Inter-ministerial documentation	
			4.5.2 Update database with new soil survey data on a continuing basis	• Enhanced utilization and updating of the National Soil database by year 4	• Database design plans • National soil database generated reports	**Assumption** • Database accessible by relevant users at appropriate cost
P4 Component 4.6	**4.6 Agricultural land use changes will be determined and updated country-wide**	5	4.6.1 Develop action plan to conduct regular agricultural land use surveys on a rolling 3 year basis	• Action plan developed by year 3	• Action plan	
			4.6.2 Conduct surveys on a continuing basis to determine agricultural land use changes	• Updated land use changes for the whole country by year 4	• Land use survey reports • National agricultural land use plan	
			4.6.3 Update country-wide agricultural land use changes map layers on a continued basis	• Agricultural land use changes map layers are updated every 3 years	• Agricultural land use changes map layers	
	Outputs: **Component V – Productivity of lowland rice soils is improved**					
P5 component 3 & P4 component 5.1	**5.1 Sustainable best soil fertility management extension services**	2	5.1.1 Conduct research and demonstrations on improved soil nutrient management techniques that enhance nutrient use efficiency by rice crops	• Best sustainable soil fertility management techniques made available for farmers by year 4	• Soil nutrient research report • Soil fertility management report	**Assumption** • Included in the soil fertility management approach is fertilizer and pest management, good quality seed, and tillage practices
			5.1.2 Develop sustainable soil fertility management techniques materials	• Sustainable soil fertility management techniques developed by year 2	• Sustainable soil fertility management techniques	
			5.1.3 Disseminate sustainable soil	• Recommendations developed	• Sustainable soil fertility	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			fertility management techniques materials to farmers via extension services under the coordination, facilitation and quality assurance of DAE and PDA	by year 3	management techniques • Dissemination records	
P4 component 5.2	**5.2 Rice yields using integrated crop management approach (ICM) are increased**	1	5.2.1 Assess and develop integrated crop management approach (variety, nutrients and pest) for lowland rice cropping	• Integrated crop management approach for lowland rice introduced to farmers and rice yield increased by year 4	• Integrated crop management assessment report • Integrated crop management plan • Baseline/endline surveys	
P4 component 5.3	**5.3 Productivity, intensification and diversification of post-rice lowland cropping is increased**	4	5.3.1 Assess soil constraints limiting field crop production after rice cropping	• Soil analysis report made available by year 3	• Soil analysis reports	**Assumption** • This research will facilitate the intensification and diversification of lowland rice cropping after rice
			5.3.2 Develop integrated soil, water, crop, and pest management approach	• Integrated soil, water, crop, and pest management approach is developed and implemented according to soil constraints identified by year 3	• Integrated soil, water, crop and pest management plan	
			5.3.3 Implement integrated soil, water, crop, and pest management plan	• Integrated soil, water, crop, and pest management approach is implemented by year 4	• Project implementation reports • M&E reports	
			5.3.4 Apply treatment techniques to overcome main constraints of post-rice cropping	• Apply treatment techniques to overcome main constraints of post-rice cropping by year 4	• Post-rice cropping treatment techniques manual • Project reports • M&E reports	
P4 component 5.4	**5.4 Guiding recommendations on management of water requirement for crops**	3	5.4.1 Assess water requirements for rice and other crops based on type of soil, cropping season, progressive stage of crop and	• Recommendations for effective use and management of water based on type of crops, soil and cropping season is developed and disseminated to farmers	• Assessment report • Water management and use recommendations report	**Assumption** • Agricultural production is increased through minimum use of water as a result of progressive

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	is established		cropping methods	and stakeholders by year 4 • Crop yield is increased through minimum use of water by year 4	• M&E reports • Baseline/endline surveys	cropping methods adopted
			5.4.2 Develop recommendations for effective use and management of water	• Recommendations developed by year 3	• Recommendations report	
P4 component 6	**Outputs: Component VI – Productivity of upland soils for sustainable management and utilization is improved**					
P4 component 6.1	**6.1 Land suitability of the main soils in upland farming systems for field crops is assessed**	1	6.1.1 Identify soil characteristics determining soil qualities which affect field crop production	• Land suitability for field crops and fruit trees in upland farming systems is determined by year 4	• Soil survey reports • Land and cropping suitability reports	**Assumption** • Methodology for assessing land suitability in Cambodia developed by CARDI is used
P5 component 3 & P4 component 6.2	**6.2 Sustainable best soil fertility, soil quality and nutrient management extension services**	2	6.2.1 Conduct research and demonstrations on improved soil nutrient management techniques that enhance nutrient use efficiency by field crops	• Best sustainable soil fertility management techniques made available for farmers by year 4	• Soil nutrient research report • Soil fertility management report	
			6.2.2 Develop sustainable soil fertility management techniques materials	• Sustainable soil fertility management techniques developed by year 2	• Sustainable soil fertility management techniques	
			6.2.3 Disseminate sustainable soil fertility management techniques materials to farmers via extension services under the coordination, facilitation and quality assurance of DAE and PDA	• Recommendations developed by year 3	• Sustainable soil fertility management techniques • Dissemination records	
P4 component 7	**Outputs: Component VII – Strengthening of smallholder**					

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	land tenure security and productivity					
P4 component 7.1	**7.1 LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification as well as poverty reduction**	2	7.1.1 Identify high priority areas for land titling	• A master plan identifying high priority areas for land-titling is achieved in collaboration between MLMUP, MAFF, and other key stakeholders by year 4	• Land-titling recommendation report • Land-titling master plan	**Assumption** • MAFF and MOWRAM have an inter-ministerial coordination letter signed between the 3 ministries
			7.1.2 Develop a master plan to target complementary input packages in support of agricultural development (e.g. affordable credit, irrigation, extension services) along with land-titling work	• A master plan to target complementary input packages in support of agricultural development (e.g. affordable credit, irrigation, extension services) along with land-titling work is achieved by year 4	• Agricultural input packages master plan	**Assumption** • Financial and technical support is secured for the systematic land-titling program
P4 component 7.2	**7.2 Customary land tenure rights at the local level in areas not covered by systematic titling is recognized**	1	7.2.1 Develop mechanisms to officially recognize customary land tenure arrangements at the local level	• Procedures to officially recognizing land possession and use at the local level are developed by year 4	• Land tenure rights procedure document	**Assumption** • Land possession and land use rights begin in areas that receive irrigation infrastructure
P5 component 3 & P4 component 7.3	**7.3 Implementation of the Social Land Concession (SLC) mechanism and extension services**	3	7.3.1 Develop more efficient procedures for providing SLCs to the poor	• Procedures for providing SLCs to the poor developed by end year 1	• SLCs procedures documentation • Project reports • M&E reports	**Assumption** • SLC procedures based on land law, land policy framework and SLC sub-decree
			7.3.2 Deliver complementary input package to facilitate the best use of land such as credits, irrigation farming techniques, and extension services under the coordination, facilitation and quality assurance of DAE and PDA, to SLC recipients, especially in the existing SLC	• Number of commerce-based SLCs approved and implemented – 3 end of year 1, 25 by year 4 • Complementary input package delivered by year 3	• SLC complementary input package	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			areas			
P4 component 7.4	**7.4 Communal land rights of indigenous communities according to the provision of the law is established**	2	7.4.1 Initiate formal recognition of indigenous communities as legal communities	• Relevant enabling policies, sub-decrees and/or legislation is formalized by year 2	• Relevant enabling policies, sub-decrees and/or legislation	
			7.4.2 Issue communal land titles	• Number of communal land titles issued – 20 by year 4	• Communal land titles	**Assumption** • Communal land rights have a particular focus on cases that can be coupled with the Community Forestry application process
P4 component 7.5	**7.5 Land dispute resolution mechanisms is strengthened and integrated**	1	7.5.1 Research scope and scale of land disputes and constraints on land distribution process	• A study regarding the scope and scale of land disputes and how they are addressed by the various land dispute resolution mechanisms is achieved by mid year 1	• Land dispute and constraints research study report • Land dispute procedures	**Assumption** • The study has a focus on poor and vulnerable rural households obtaining equal access to land use and justice according to the law
			7.5.2 Develop an action plan for strengthening land dispute resolution mechanisms	• Action plan is developed by mid year 1	• Action plan	
P4 component 8	**Outputs: Component VIII – Strengthening of the management of state land resources**					
P4 component 8.1	**8.1 Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose**	1	8.1.1 Conduct a review of the ELCs that examines the contributions of ELCs to job creation, government revenues, and poverty reduction and complies with the 2001 Land Law and subsequent implementing sub-decrees [See Pillar A,	• A review of the ELCs is achieved by year 4	• ELC review report	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			Component 1]			
			8.1.2 Improve procedures for granting ELCs	• New procedures for granting ELCs are devised by year 4	• ELC procedures	**Assumption** • ELC procedures will be fully transparent and subject to public consultation
			8.1.3 Strengthen the capacity to oversee ELC reforms	• The capacity of existing state institutions such as the Council for Land Policy to oversee ELC reforms is strengthened by year 4	• Project reports • M&E reports	
P4 component 8.2	**8.2 Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established**	2	8.2.1 Develop demarcation and mapping of State Land, Forest Estate, protected areas, and national parks	• 25 % of state private and public land is classified and demarcated by year 4 • 25% of forested land is classified and demarcated by year 4	• National demarcation land maps	
P4 component 8.3	**8.3 Management of Cambodia's forested land according to the law is strengthened**	3	8.3.1 Undertake legal actions to secure the return of state lands by medium and large-scale land grabbing	• Number of hectares that the Forest Administration has confiscated from illegal occupants – 200,000 contest end of year 1, 5,000,000 by year 5	• Forest Administration internal reports	
			8.3.2 Develop guidelines and procedures for streamlining the application and approval process for Community Forestry	• Number of Community Forestry applications approved by MAFF – 264 end of year 1, 300 by year 4	• Community Forestry applications procedures • Community Forestry applications	**Assumption** • Assist communities to develop Community Forest application with technical support
P4 component 9	**Outputs:** **Component IX – Strengthening the implementation and impact of land use and land tenure policies**					

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
P4 component 9.1	**9.1 An Agricultural Census will be carried out**	2	9.1.1 Agricultural Census will be carried out	• An agricultural census will be conducted by end year 1 and results disseminated by end year 3	• Database and Reports	
P4 component 9.2	**9.2 Methodologies for land resource utilization and data collection will be standardized**	3	9.2.1 Adapt FAO guidelines on land use planning for Cambodian conditions	• FAO guidelines adopted by end year 1	• Project Reports	
P4 component 9.3	**9.3 Research on land use and land tenure impacts on development will be carried out**	1	9.3.1 Conduct research on rural-rural migration and its impact on land use and land use change 9.3.2 Conduct research on gender aspects of rural land tenure 9.3.3 Conduct research on water resource management and land tenure 9.3.4 Conduct research on land disputes and resolution mechanisms	• Research conducted by end year 1	• Project Reports	
F. AGRICULTURAL BUSINESS & MARKETING						
Goal : Agriculture and agri-business that make effective use of inputs and market opportunities, are steadily intensifying and diversifying production, and deliver full benefits to farmers, rural communities, and other stakeholders						
	Objectives • Provision of inputs and services, including financial services and water management services, that enable cost-effective, environmentally sustainable and profitable agricultural production			• Beneficiary farmers have access to rural financial packages and contract farming agreements i.e. agricultural insurance products, long-term loans through RDB and financial institutions, and leasing arrangements, to provision agriculture and water public and private extension services to increase and sustain agricultural productivity	• Commercial bank long-term guarantees • Commercial bank credit lines • Rural financial systems • Alternative agricultural insurance products • National and provincial annual performance reports • Program Management Support Unit reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
					• M&E reports • Steering Committee Reports	
	• Adoption of "best practices" for cropping, animal husbandry, aquaculture and crop water management that achieve cost-effective production, ensure the quality and safety of products, and sustain the productive capacity and quality of soil and water resources			• Beneficiary farmers, agriculture merchants, suppliers and traders, by coordination of a national network supported by the DAE, have adopted high-value crop production, appropriate farm mechanization technologies, and alternative delivery mechanisms that are proven to increase agricultural yields and quality	• National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports • MOUs	
	• Facilities for product handling, post-harvest processing, and marketing that provide market access, sales opportunities, and off-farm employment for farmers and rural communities, and agri-business opportunities for the private sector and farmer organizations			• Marketplaces have the human, financial and infrastructure resources to store, grade, package, process and transport agricultural products • Farmers are linked directly with high-value markets, agri-clinics and SMEs (through ICT applications and rural networks) to enable trade in agricultural products supported by farmer marketing schools, market-led extension services, Farmer Contract Law and sub-decree(s)	• Farmer Contract Law and sub-decree(s) • 10 Farmer Marketing Schools • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	
	• Practices for the quality control and quality assurance of agricultural products that ensure that product quality and safety meet the standards required by the target markets			• Export in certified processed agri-food products that meeting international standards has increased by 20%	• MoC export trade records • National and provincial annual performance reports • Program Management Support Unit reports • M&E reports • Steering Committee Reports	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
	Outputs: **Component I – Inputs and farm production are improved**					
	1.1 New and improved quality and efficiency of agricultural inputs	3	1.1.1 Conduct fertilizer and agro-chemical import and private sector distribution feasibility study	• Feasibility study completed by year 2	• BAMS inspection reports	
			1.1.2 Develop an action plan for agro-chemical import and private sector distribution	• Action plan developed by year 2	• Action plan	
			1.1.3 Establish licensing standards for agricultural merchants	• Licensing standards are established by mid year 3	• Licensing standards	
			1.1.4 Establish a national distribution network of licensed agricultural merchants	• National distribution network is established by year 3	• # of licensed agricultural merchants	
			1.1.5 BAMS and DAL conduct a workshop with licensed agricultural merchants raise awareness about standards, obligations, and the Law on Quality and Safety of Products and Services	• Workshop conducted by year 3 • Incidences of inputs sold through licensed agricultural merchants not meeting Law on Quality and Safety of Products and Services decreased by 50% over 3 years	• Workshop attendance records • M&E reports	
			1.1.6 Equip provincial MAFF departments with laboratory facilities to conduct agricultural input testing	• Laboratory facilities equipped by year 2	• Procurement records	
			1.1.7 Develop training guidelines for testing agricultural inputs	• Training guidelines developed by year 2	• Training guidelines	
			1.1.8 Train laboratory technicians to test agricultural inputs	• Laboratory technicians trained by mid year 2	• Training attendance and performance records	
			1.1.9 Conduct a provincial public awareness campaign to farmers	• Public awareness campaign conducted by year 3	• Attendance records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			of licensing standards of input providers to establish trust in the inputs and the providers		• M&E records	
			1.1.10 BAMS and DAL conduct regular spot testing of inputs	• Spot testing of inputs conducted from each registered trader on an annual basis	• Test reports	
			1.1.11 Conduct a study on important cash crop seed requirements e.g. vegetables and rubber, considering factors such as prevailing soils and agro-environmental conditions, to identify appropriate varieties and quantities for import	• Study conducted by mid year 2	• Study report	
			1.1.12 Develop an action plan for nurseries to propagate improved clones	• Action plan developed by year 3	• Action plan	
			1.1.13 Conduct a study on appropriate farm mechanization technologies and alternative delivery mechanisms, such as contracting services	• Study conducted by mid year 2	• Study report	
			1.1.14 Develop an action plan for appropriate farm mechanization technologies and alternative delivery mechanisms	• Action plan developed by year 3	• Action plan	
P5 component 3 & P3 output 1.2.1	**1.2 Agriculture is diversified through training and extension services**	3	1.2.1 Develop extension and training materials to promote specific technologies and techniques or address specific constraints, such as diseases for specific crops	• Extension and training materials developed by year 2	• Training guidelines and manuals	
			1.2.2 Train MAFF and private sector extension agents on the technologies under the coordination, facilitation and	• Training conducted by mid year 2	• Training attendance and performance records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			quality assurance of DAE and PDA			
			1.2.3 Facilitate the provision of extension advice by input suppliers and traders to beneficiary farmers under the coordination, facilitation and quality assurance of DAE and PDA	• Extension advice by input suppliers and traders is provisioned by end year 2	• Contracts	
			1.2.4 Conduct a MAFF commissioned study to identify technologies for high-value crop production e.g. adapted varieties, controlled environment off-season vegetable production, tube wells and drip irrigation	• Study conducted by year 2	• Study report	
			1.2.5 Commission public/private partnerships to conduct short-duration training courses for commercial farmers in specific high-value crop production	• Training courses are conducted by mid year 2	• Training attendance and performance records	
			1.2.6 Conduct extension campaign nationwide, under the coordination, facilitation and quality assurance of DAE and PDA, to encourage the emergence of private sector extension providers and to promote specific techniques, for specific crops, that are proven to increase yields and quality	• Extension campaign conducted by year 3	• Campaign attendance records • Campaign collateral	
			1.2.7 Develop a horticulture support program with a value-chain approach, including supply chain management considerations important for perishable commodities for targeted research, development and	• Horticulture support program developed by year 3	• Horticulture support program	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			extension			
			1.2.8 Conduct a MAFF commissioned study on the demand and comparative cost advantages of producing quality beef in Cambodia	• Study conducted by mid year 2	• Study report	
			1.2.9 Develop a beef cattle support program for targeted research, development and extension (under the coordination, facilitation and quality assurance of DAE and PDA) for appropriate breeds and raising systems	• Cattle and beef support program developed by year 3	• Cattle and beef support program	
			1.2.10 Establish public/private partnerships for strategic extension campaigns, under the coordination, facilitation and quality assurance of DAE and PDA, to promote on-farm post-harvest handling techniques e.g. drying, cleaning, grading, storage, packaging, transport for specific cash crops	• Extension campaign conducted by year 3	• Campaign attendance records • Campaign collateral	
			1.2.11 Provision competitive matching grants for farmer groups to acquire post-harvest handling facilities	• Matching grants provided to farmers by year 3	• M&E records	
	Outputs: **Component II – Markets are developed and market opportunities are expanded**					
P5 sub-component 3.1	**2.1 Technology is transferred for bridging yield gaps**	2	2.1.1 Conduct on-farm assessment and validate on-farm technologies	• On-farm technologies are validated and recommendations available by end year 1	• On-farm assessment and recommendation report	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			2.1.2 Identify and disseminate and new demand-driven production technologies	• New production technologies identified, disseminated, and locally adapted and adopted by farmers by year 3	• Production technology report • Dissemination records	
			2.1.3 Identify recommended certified seed, appropriate fertilizers and IPM	• Increased production of certified seed of recommended variety; increased demand for appropriate fertilizers and IPM by year 3	• Farm records • Project reports • M&E records • Baseline/endline studies	
	2.2 Market research and information dissemination	2	2.2.1 Establish market research and new product development systems in MAFF	• Four market research studies completed every year • Market reviews and forecasts produced quarterly by year 2	• Market research report • Market reviews and forecasts • Project reports	
			2.2.2 Develop training guidelines to train MAFF and private sector agri-business to identify new markets and products, international business practice, and developing marketing strategies	• Training guidelines are developed by mid year 2	• Training guidelines	
			2.2.3 Conduct training to MAFF and private sector agri-business	• Training is conducted by year 3	• Training attendance and performance records	
			2.2.4 Conduct economic/ marketing research and studies annually to identify new markets and products, find out marketing constraints and solutions; analyze marketing costs and margins by participants in marketing chains	• Economic/marketing research studies are conducted by year mid year 3	• Economic/ marketing research studies	
			2.2.5 Analyze and interpret price movement and variables of agricultural products in domestic and international markets	• Market reviews and forecasts are produced quarterly	• Market reviews and forecasts	
			2.2.6 Formulate policies and strategies	• Policies and strategies for	• Agricultural marketing	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			for market development and strengthen the agricultural marketing system	marketing development formulated by year 2	system policy and strategy	
			2.2.7 Formulate the technical norms and standardizations of agricultural products, rice and paddy standards, commodity coding, standardization of cereal crops and selected vegetables, etc	• Technical norms and standardizations are formulated by mid year 2	• Agricultural product standards documentation	
			2.2.8 Produce marketing extension materials for extension workers, including marketing information leaflets and brochures, price charts, crop trends and patterns, etc	• Marketing extension materials are produced by end year 2	• Marketing extension materials	
was P3 2.1.1			2.2.9 Provision public/private partnerships for marketing extension services under the coordination, facilitation and quality assurance of DAE and PDA	• Marketing extension materials are provisioned by end year 2	• Marketing extension materials	
			2.2.10 Establish farmer marketing schools	• Farmer marketing schools are operating in 10 provinces by end year 3	• 10 Farmer marketing schools • Membership records • Meeting records and notes	
			2.2.11 Provide advisory services to farmers and traders on post-harvest technologies, such as storage, packaging, processing distribution and group marketing	• Advisory services provided by year 3	• Collateral	
	2.3 Develop the agro-tourism sector	2	2.3.1 Undertake market research and analysis of potential agro-tourism ventures in collaboration with Ministry of Tourism	• Market research and analysis completed by year 2	• Collateral	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			2.3.2 Develop agro-tourism strategy in collaboration with Ministry of Tourism	• Agro-tourism strategy developed by mid year 2	• Agro-tourism strategy	
			2.3.3 Develop partnerships between key stakeholders in the tourism industry to achieve interventions identified in the strategy	• Partnerships are developed by year 3	• Service contracts	
			2.3.4 Develop agro-tourism policies, strategies and regulations at national and provincial levels	• Agro-tourism policy and regulations are developed by year 3	• Agro-tourism policy • Agro-tourism regulations • Agro-tourism strategy	
			2.3.5 Develop agro-tourism products	• Agro-tourism products are developed by year 3	• Agro-tourism product collateral	
			2.3.6 Develop agro-tourism product training guidelines	• Agro-tourism product training guidelines are developed by mid year 3	• Agro-tourism training guidelines and manuals	
			2.3.7 Conduct agro-tourism training package to national, provincial and community stakeholders	• Agro-tourism training conducted by mid-year 3	• Agro-tourism training attendance and performance records	
2.1.3 P3 has been merged with 2.4	**2.4 Marketing and business skills for emerging and expanding agri-business available**	1	2.4.1 Develop training guidelines and marketing and business skills manuals for potential business development service providers (BDS) in the following subjects: • Market research • Market matching e.g. facilitating contract farming agreements • Developing marketing strategies • Business appraisal and planning • Policy and advocacy • Training and technical assistance • Technology and product	• Training guidelines and marketing business skills manuals for BDS developed by year 2	• Training guidelines and manuals	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			development • Financing mechanisms			
was 2.1.3 P3			2.4.2 Conduct marketing and business skills training to existing and potential BDS and private sector agri-business enterprises	• Training conducted in 10 provinces by end year 3	• Training attendance and performance records	
			2.4.3 Establish cost sharing agreements with BDS until sufficient demand exists for self-sustainable operations	• Cost-sharing agreements established by year 3	• Cost-sharing agreements	**Assumption** • There is sufficient demand and willingness to pay for private sector marketing and business development services
			2.4.4 Develop agricultural marketing and agri-business TNA and curricula for vocational and technical colleges	• TNA and curricula developed by mid year 2	• Training needs assessment • Agricultural marketing and agri-business curricula • Vocational and technical colleges curricula	
P5 sub-component 4.2			2.4.5 Train students at the vocational and technical colleges	• Curricula for diploma level being taught in two colleges by end year 3 • 100 educated agri-business graduates enter the job market by year 4	• Training attendance and performance records • 100 Diplomas	
	2.5 Farmers are engaged in contract farming or other supply chain agreements with high-value markets	1	2.5.1 Develop the Contract Farming law and subsequent sub-decrees and implementing legislation [See Pillar A, Component 1]	• Farming Contract Law and sub-decrees and implementing legislation developed by mid year 2	• Farming Contract Law and sub-decrees	
			2.5.2 Develop training guidelines in organizational, contract farming arrangements with suppliers and buyers, commodity clustering strategies	• Training guidelines developed by mid year 2	• Training guidelines and manuals	
			2.5.3 Provision BDS for business planning services to assist in	• BDS provisioned by year 3	• BDS contracts	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			developing farming contracts			
			2.5.4 Train farmer groups in organizational, contract farming arrangements with suppliers and buyers, commodity clustering strategies	• Training conducted by year 3	• Training attendance and performance records	
			2.5.5 Develop inventories of demand by province/district for linking to production areas and farmer groups	• Inventories are developed by year 3	• Inventory records	
was 2.3.2 P3	**2.6 Traditional marketing systems are strengthened**	1	2.6.1 Facilitate value chain partnerships between input suppliers, producers and market traders in the traditional marketing system	• Traditional value chain partnerships strengthened for 4 commodities in 10 provinces over 3 years	• Value chain partnership agreements	
	2.7 Market oriented and niche-specific technologies are developed and adopted for export	1	2.7.1 Identify high quality niche products with a unique Cambodian identity/brand for export	• High quality niche products identified by end year 1	• Product recommendation report	
			2.7.2 Develop marketing strategies to promote production and export of niche products identified	• Marketing strategies developed by year 2 • Promotion strategies developed by year 2	• Marketing and promotion strategies for each nice product	
			2.7.3 Implement domestic and export marketing and promotion campaigns	• Export of identified agricultural commodities, and other niche-specific products increases by year 4	• Marketing and promotion collateral • Domestic and export records and accounts	
P5 component 3 3.1 merged with P3 2.1	**Outputs: Component III – Extension and outreach is improved** **3.1 [Technology transfer to bridge yield gaps]**					
P5 sub-	**3.1 Market-led extension is**	2	3.1.1 Assess market-led	• Market need technologies are	• Assessment report	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
component 3.2	**improved under the coordination, facilitation and quality assurance of DAE and PDA**		technologies: • linking farmers to markets • ICT-enabled agricultural development initiatives	assessed by end year 1		
			3.1.2 Conduct training in market-led technologies under the coordination, facilitation and quality assurance of DAE and PDA	• Training in market need technologies is conducted by year 2	• Training attendance and performance records	
			3.1.3 Continue strengthening an effective system for collection and dissemination of market information	• Effective system for collection and dissemination of market information is strengthened by year 2	• Data collection system design and procedures • Communication (email, post etc) records	
			3.1.4 Link farmers directly with markets, agri-clinics, and SMEs	• Farmers are linked directly with markets, agri-clinics and SMEs and the need for intermediary transactions is reduced by mid year 2	• Project reports • M&E reports	
P5 sub-component 3.3	**3.2 Rural information and communication network is strengthened**	2	3.2.1 Training needs assessment for ICT applications and rural networking is conducted	• TNA is completed by mid year 3	• TNA assessment report	
			3.2.2 Develop training guidelines and training course	• Training guidelines are developed by mid year 3	• Training guidelines	
			3.2.3 Train staff in ICT applications and rural networking	• ICT curricula is developed by year 3 • 5 staff are managing ICT applications and rural networks by year 4	• ICT curricula • ICT application design and rural networking design documents • ICT and networking test plans • Training attendance and performance records • Reports generated by application and networks	
			3.2.4 Establish rural ICT centers	• 10 village market knowledge	• 10 market knowledge	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				centers are developed by year 2	centers	
			3.2.5 Provide further training to DAE staff in mass media and broadcasting extension messages	• Staff capacity is further enhanced by year 3	• Human resource plans • Training plans • Media and broadcasting scripts	
			3.2.6 Update content of extension packages and Technical Implementation Procedures (TIP)	• The set of extension packages and Technical Implementation Procedures (TIP) are strengthened by year 3 • The quality of extension materials, content, messages and information capsules is improved by year 3	• 32 TIP documents	
			3.2.7 Strengthen links with disseminating organizations and continue to improve dissemination of extension material	• Links with disseminating organizations and dissemination of extension material is improved by year 4	• MOUs with disseminating partners	
P3 2.4.1	**3.3 Cost-effective financial products available to the agriculture and agri-business sector**	2	3.3.1 Establish criteria on types of activities to be funded and develop a scoring mechanism to rank proposals submitted by beneficiaries for funding	• Funding criteria and scoring mechanism established by mid year 2	• Criteria and scoring mechanisms documented	
			3.3.2 Provide long-term loans through RDB and financial institutions allowing investment in agricultural infrastructure, including leasing arrangements for both small-scale and commercial scale farmers.	• Long-term loans and leasing arrangements provided by mid year 2	• Financial institution loan and leasing agreements • Investment accounts	**Assumption** • Banking sector is willing to diversify financial products for the agricultural sector
			3.3.3 Provide loans through RDB and financial institutions for bulk buying crops for storage based on inventory lending	• Loans based on inventory lending provided by mid year 2	• Financial institution loan agreements based on inventory lending • Bank and procurement records of storage for bulk crops	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			3.3.4 Prioritize and fast track land titling in commercial agriculture areas through the LMAP program for use as collateral	• Land titling is prioritized by mid year 2	• Land titles	
			3.3.5 Provide financial management training to MSME managers to promote use of bank accounts amongst farmers and agri-businesses as a cash book to build up a credit history and access overdraft facilities	• Financial management training is conducted by mid year 2 • Farmers and agri-businesses establish a credit history and access overdrafts by year 4	• Training guidelines and manuals • Training attendance and performance records • Cash books • Bank accounts	
			3.3.6 MAFF/DPs to provide long-term guarantee and credit lines to commercial banks, MFIs, MSMEs to promote commercially viable community-based rural financial systems	• Long-term guarantee and credit lines provided by mid year 2 • Commercially viable community-based rural financial systems are operating by year 4	• Commercial bank long-term guarantees • Commercial bank credit lines • Rural financial systems	
			3.3.7 Develop mechanisms for funding agricultural investments through competitive grant matching arrangements, enterprise development/challenge funds, and contract farming agreements	• Funding mechanisms for investment developed by mid year 2 • Competitive grant matching arrangements, enterprise development/challenge funds, and contract farming agreements accessed by year 3	• Grant matching arrangements • Enterprise/development challenge funds • Contract farming agreements • Bank accounts	
P3 2.4.2	**3.4 Make available alternative rural financial products**	2	3.4.1 MAFF, MOWRAM and MEF assess and cost the required investments into alternative agricultural insurance schemes i.e. weather index insurance, crop insurance for priority commodities	• Investment assessment completed by mid year 2	• Investment assessment and recommendation report	
			3.4.2 Introduce alternative agricultural insurance products through the commercial banking sector	• Support from parametric insurance experts such as the World Bank Commodity Risk Management Group is secured	• Alternative agricultural insurance products	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
				by year 3		
	Outputs: **Component IV – Market infrastructure is improved**					
P3 3.1.1	**4.1 Upgrade market facilities**	3	4.1.1 Review standards and laws for the management of public markets and develop management manual for local authorities	• Standards and laws reviewed by mid year 2 • Public market management manual developed by mid year 2	• Public market standards and law assessment report • Public market management manual	
			4.1.2 Conduct exposure visits for market staff to well managed markets in the region	• Market exposure visits conducted by mid year 2	• Project reports • Attendance records	
			4.1.3 Provide funding to improve market place facilities for product handling and storage	• Funding granted by mid year 2	• Bank records	
			4.1.4 Develop training guidelines and manuals for improved grading, packaging, processing, and transport for market places	• Training guidelines and manuals developed by mid year 2	• Training guidelines and manuals	
was 3.1.1 P3			4.1.5 Conduct a public relations campaign targeted at traders to raise awareness about benefits of improving grading, packaging, processing and transport	• Public relations campaign conducted by year 3	• Pubic relations campaign planning documents and collateral • Project and M&E reports	
was 3.1.1 P3			4.1.6 Provide training to market traders in improved grading, packaging, processing, and transport	• Training conducted by year 3 • Grading, packaging, processing and transport services are operating by year 4	• Training attendance and performance records • Project and M&E records	
	4.2 Traders are aware of food standards and responsive to consumer preferences	3	4.2.1 Develop training guidelines and manuals for food quality grades, food standards and consumer preferences	• Training guidelines and manuals developed by mid year 2	• Training guidelines and manuals	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			4.2.2 Train market traders in quality grades, food standards and consumer preferences	• Training conducted in 5 public markets by year 3	• Training attendance and performance records • Project and M&E records	
			4.2.3 Conduct a public relations campaign targeted at consumers to raise awareness about benefits of using public markets and paying extra for food safety standards	• Public relations campaign conducted by year 3 • 10 % increase in consumer purchases for high value product by year 4	• Pubic relations campaign planning documents and collateral • Baseline/endline studies • Project and M&E reports	
	4.3 Improved storage of agricultural produce	3	4.3.1 Conduct a study on financial viability of storage for priority crops and commodities for year-round availability and speculative storage	• Study conducted by mid year 2	• Study and recommendation report	
			4.3.2 Provision competitive matching grants for establishing storage facilities with processors and traders	• Matching grants and provisioned by year 3 • Number of operational storage facilities increased by 20% over 3 years	• Bank records • M&E reports • Storage facilities	
			4.3.3 Provide producers inventory based loans for purchasing and storing commodities at harvest	• Inventory based loans provided by year 3 • Number of operational storage facilities increased by 20% over 3 years	• Bank records • M&E reports • Storage facilities	**Assumption** • Returns on storage remain viable accounting for operating e.g. losses, deterioration, cost of financing
merged with 4.2 P3	**4.4 Processed agri-food products meet international standards and SPS certifications**	3	4.4.1 Conduct research and development of agro-industrial products, convenience foods and packaging, and quality that meets international standards	• Research conducted by mid year 2	• Research report	
			4.4.2 Provide training to Institute of Standards of Cambodia (MIME) and relevant MAFF departments to meet and apply standards for main agricultural commodities	• Training conducted by year 3	• Training guidelines and manuals • Training attendance and performance records	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			and products that are internationally compliant			
was P3 3.3.1			4.4.3 Provide training to local government to enforce standards for weights, measures, quality and food safety at public markets and agro-processing facilities	• Training conducted by year 3	• Training guidelines and manuals • Training attendance and performance records	
			4.4.4 Establish and equip accredited SPS testing and certifying facilities	• SPS testing and certifying facilities established and equipped by year 3	• SPS facilities construction / renovation records • Procurement records	
			4.4.5 Develop SPS testing training guidelines and manuals	• SPS training guidelines and manuals developed by year 3	• Training guidelines and manuals	
			4.4.6 Train SPS technicians	• SPS technicians are trained by mid year 3 • Number of certified processed agri-food products meeting international standards increased by 20% by year 4	• Training attendance and performance records • Baseline/endline study	
			4.4.7 Conduct standards and export SPS procedures awareness raising campaign to exporters	• Standards and export SPS procedures awareness campaign is conducted by year 3 • Export in agri-food product increased by 10% by year 4	• Campaign records • Campaign collateral • MoC export trade records	
	4.5 Processing losses decreased and quality increased	3	4.5.1 Conduct a study to identify processed or agri-food products in demand that Cambodia could supply, and identify energy efficient processing technologies for those products	• Study conducted by mid year 2	• Campaign records • Campaign collateral • MoC export trade records	
			4.5.2 Promote appropriate efficient processing technologies for rice, cassava and maize etc. through	• Processing technologies are promoted through matching grants by year 3	• Bank records • M&E reports • Baseline/endline study	

Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			competitive matching grants	• Reduced processing losses lead to 1% decrease in costs by year 4		
	4.6 Trade in processed agri-foods increased	3	4.6.1 Conduct a study on the potential for import substitution of agri-food products eg, noodles, baby food, refined sugar	• Study is conducted by mid year 2 • Import substitution products identified by mid year 2	• Study report	
			4.6.2 Develop an action plan for import substitution	• Action plan is developed by mid year 2	• Action plan (with import substitution products identified and prioritized)	
			4.6.3 Implement action plan for import substitution	• Interventions in the action plan are implemented by year 4	• Project reports • M&E reports	
			4.6.4 Conduct a study on the potential for export of agri-food products to higher-value markets eg fish paste	• Study conducted by mid year 2	• Study report	
			4.6.5 Develop an action plan for export of agri-food products to higher-value markets	• Action plan is developed by mid year 2	• Action plan	
			4.6.6 Implement action plan for export of agri-food products to higher-value markets	• Interventions in the action plan are implemented by year 4 • Value and volume of exported agri-food products increased by 10% by year 4	• Project reports • M&E reports • MoC trade records • Baseline/endline study	
	4.7 Upgrade abattoirs	3	4.7.1 Review standards and regulations for abattoirs and develop management manual for local Government	• Standards and regulations are reviewed and a management manual developed by mid year 2	• Government abattoir regulations and standards • Management manual	**Assumption** • Local government committed to upgrading abattoirs
			4.7.2 Develop training guidelines and manuals for butchering techniques to differentiate quality	• Training guidelines and manuals are developed by mid year 2	• Training guidelines and manuals	

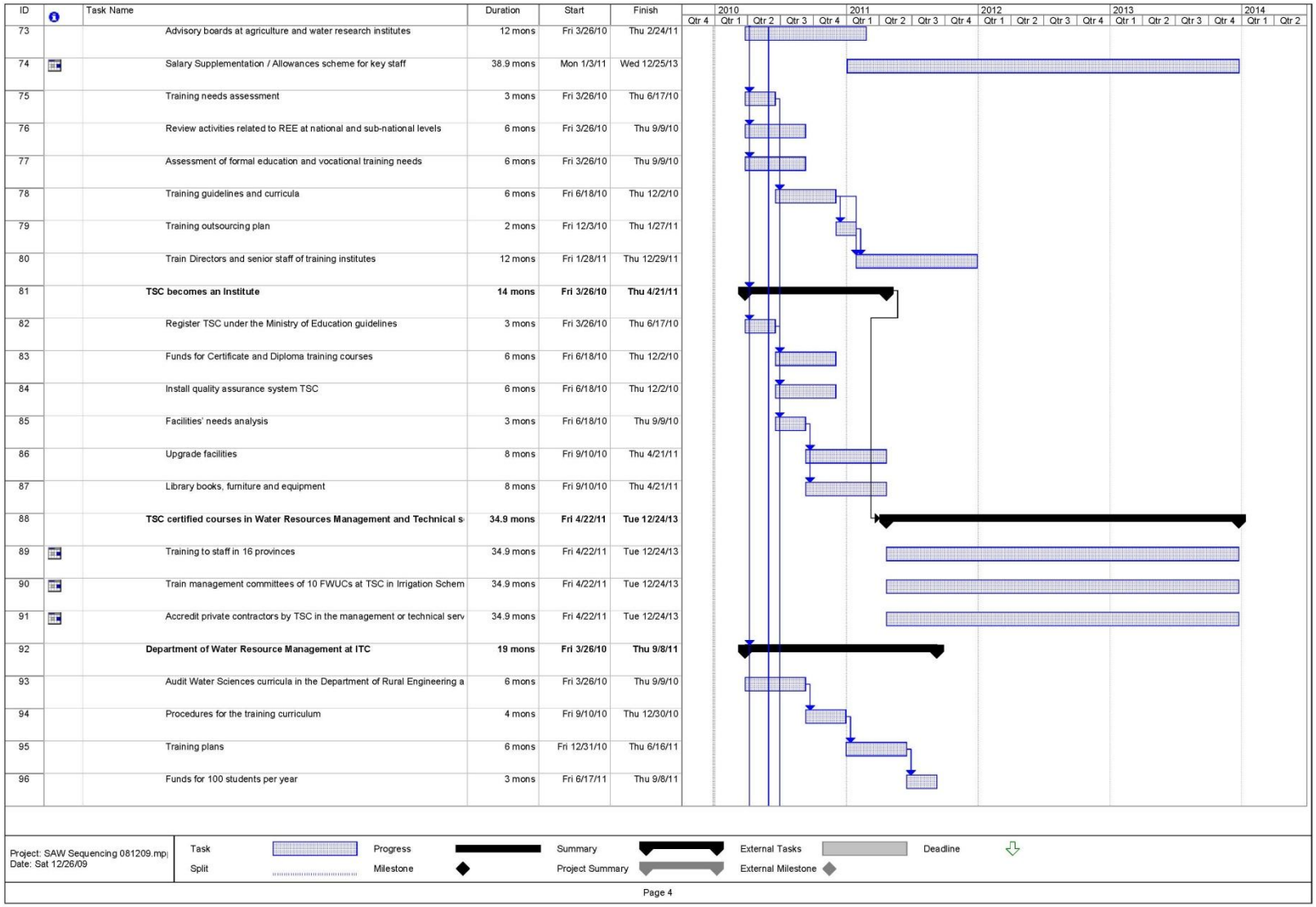
Original Component Source	Outputs	Priority Ranking	Key Activities	Indicators	Source of Verification	Assumptions and Risks
			cuts of meat			
			4.7.3 Conduct training in butchering techniques to differentiate quality cuts of meat	• Training conducted by year 3	• Training attendance and performance records	
was 3.3.4 P3			4.7.4 Research and develop cold storage, packaging and marketing of meat	• Five abattoirs upgraded by year 4	• Facilities inspections • Procurement records • Baseline/endline study	

15 ANNEX 2: DETAILED IMPLEMENTATION CHART

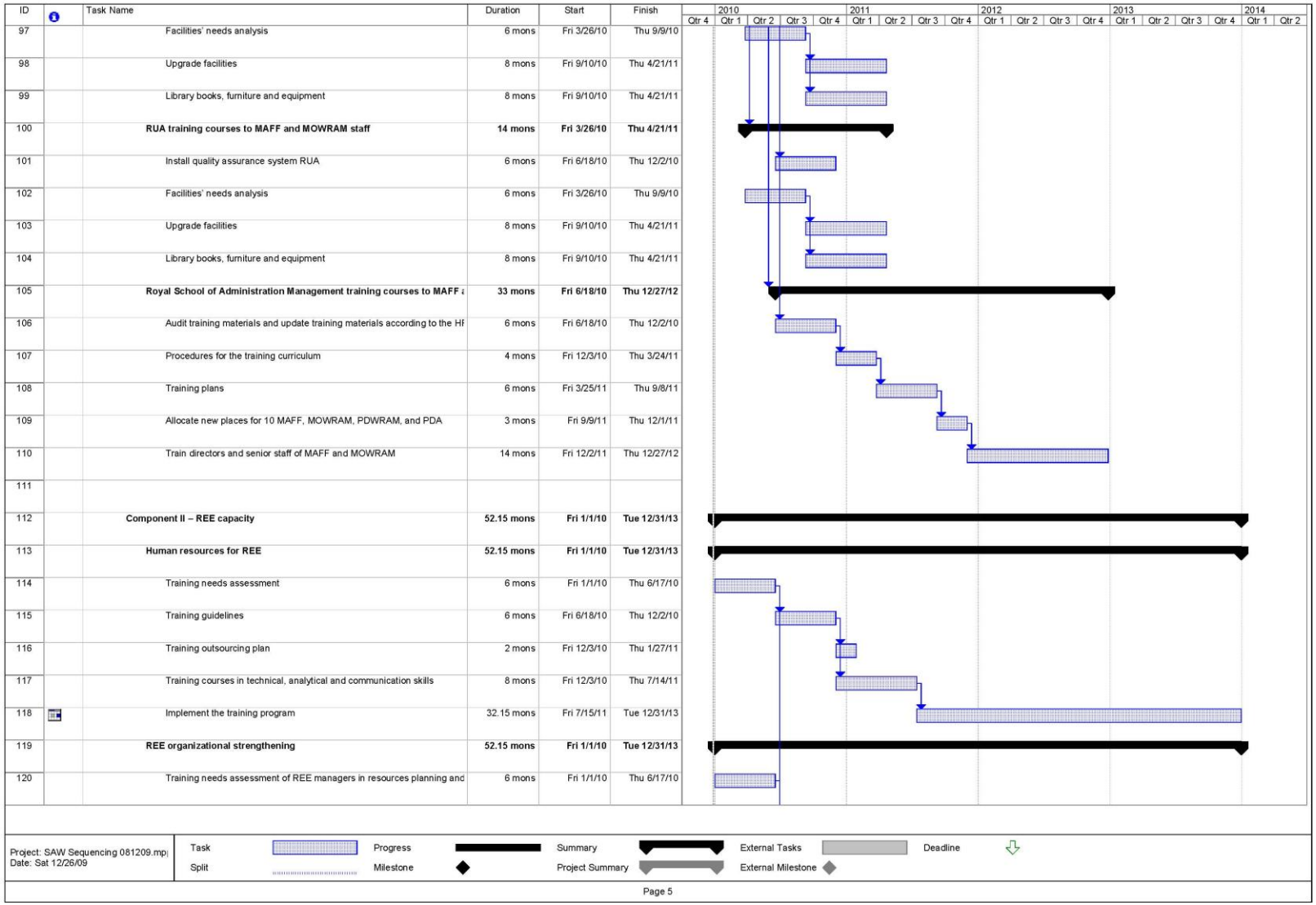
ID	Task Name	Duration	Start	Finish
1	**Strategy for Agriculture and Water (SAW)**	**53.3 mons**	**Fri 1/1/10**	**Fri 1/31/14**
2				
3	**A. POLICY & REGULATION**	**52.65 mons**	**Fri 1/1/10**	**Tue 1/14/14**
4	**Component 1 - Policy, regulatory frameworks and Law are strengthened**	**52.65 mons**	**Fri 1/1/10**	**Tue 1/14/14**
5	**Policy and regulatory frameworks**	**14 mons**	**Fri 1/1/10**	**Thu 1/27/11**
6	Review of agriculture and water policy and regulatory framework	6 mons	Fri 1/1/10	Thu 6/17/10
7	Employment program for the rural labour force	6 mons	Mon 2/1/10	Fri 7/16/10
8	Feasibility study on the provision of credit and insurance support for tech	3 mons	Fri 6/18/10	Thu 9/9/10
9	Action plan for policy and regulatory framework for the provision of credit	3 mons	Fri 9/10/10	Thu 12/2/10
10	Bio-security, IPR, and TRIPS regulatory and enabling mechanisms	3 mons	Fri 9/10/10	Thu 12/2/10
11	Establish a multi-stakeholder steering committee for all agriculture and w	2 mons	Fri 12/3/10	Thu 1/27/11
12	**The Organic Law is implemented in selected provincial departments**	**52.65 mons**	**Fri 1/1/10**	**Tue 1/14/14**
13	Recruit staff at provincial departments for departmental strategy planning	6 mons	Fri 1/1/10	Thu 6/17/10
14	PRDC & provincial councils identify and implement development plans	6 mons	Fri 6/18/10	Thu 12/2/10
15	District integration workshops (25) to identify and prioritize infrastructure	6 mons	Fri 12/3/10	Tue 1/14/14
16				
17	**Component II – Legal framework for agricultural lands is developed**	**15 mons**	**Fri 6/18/10**	**Thu 8/11/11**
18	**Legal framework for agricultural lands to protect, conserve, and enhanc**	**15 mons**	**Fri 6/18/10**	**Thu 8/11/11**
19	Review of policies and constraints related to uses and management of a	6 mons	Fri 6/18/10	Thu 12/2/10
20	Policy options for governing agricultural lands	6 mons	Fri 12/3/10	Thu 5/19/11
21	Rationalize the conversion of forested land to agricultural uses according	3 mons	Fri 5/20/11	Thu 8/11/11
22				
23	**Component III – Legal framework for water licensing and FWUCs is develope**	**18 mons**	**Fri 1/1/10**	**Thu 5/19/11**
24	**Legal framework and an implementation plan of water licenses and fees**	**18 mons**	**Fri 1/1/10**	**Thu 5/19/11**

ID	Task Name	Duration	Start	Finish
25	Finalize the legal framework	6 mons	Fri 1/1/10	Thu 6/17/10
26	Sub-decree(s) follows the process of endorsement	6 mons	Fri 6/18/10	Thu 12/2/10
27	Implementation plan for water licenses and fees (staff, skill, organization	6 mons	Fri 12/3/10	Thu 5/19/11
28	**Legal framework on PIMD**	**6 mons**	**Fri 1/1/10**	**Thu 6/17/10**
29	Finalize and promulgate sub-decree on FWUC and subsequent Prakas	6 mons	Fri 1/1/10	Thu 6/17/10
30	**National Action Plan for PIMD is developed by MOWRAM**	**6 mons**	**Fri 1/1/10**	**Thu 6/17/10**
31	Assess current constraints and opportunities of PIMD implementation an	6 mons	Fri 1/1/10	Thu 6/17/10
32	**Monitoring and evaluation system for PIMD is set up in MOWRAM**	**8 mons**	**Fri 1/1/10**	**Thu 8/12/10**
33	Integrate FWUC information system and standardized reporting under C	8 mons	Fri 1/1/10	Thu 8/12/10
34				
35	**Component IV – Marketing policies are strengthened**	**14 mons**	**Fri 6/18/10**	**Thu 7/14/11**
36	**Policies for agricultural development**	**14 mons**	**Fri 6/18/10**	**Thu 7/14/11**
37	Study to identify business and regulatory environment enforcement issue	6 mons	Fri 6/18/10	Thu 12/2/10
38	Review and identify agri-business development policies which are non-c	6 mons	Fri 6/18/10	Thu 12/2/10
39	Recommendations for policy and regulatory improvements	2 mons	Fri 12/3/10	Thu 1/27/11
40	Policies for approval by the National Assembly	6 mons	Fri 1/28/11	Thu 7/14/11
41				
42	**B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
43	**Component I – Human Resources and Management**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
44	**HRD plans**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
45	Training needs assessment	4 mons	Fri 1/1/10	Thu 4/22/10
46	Training guidelines	6 mons	Fri 4/23/10	Thu 10/7/10
47	Training outsourcing plan	2 mons	Fri 10/8/10	Thu 12/2/10
48	Short courses in management: Policy, Strategy, Legislation Drafting, Ger	6 mons	Fri 10/8/10	Thu 3/24/11

ID	Task Name	Duration	Start	Finish
49	Implement a capacity building program: advisors for each Ministry	36.15 mons	Fri 3/25/11	Tue 12/31/13
50	Create Gender Mainstreaming unit in MOWRAM and continue operation	52.15 mons	Fri 1/1/10	Tue 12/31/13
51	**Implementation of Salary Supplementation / Allowances in Pilot Provinces**	**37.9 mons**	**Tue 2/1/11**	**Thu 12/26/13**
52	Operationalize the Salary Supplementation / Allowance scheme in PDWRAM and PDA	37.9 mons	Tue 2/1/11	Thu 12/26/13
53	**Increase capacity in the Administrative departments: Administration an**	**51.8 mons**	**Fri 1/1/10**	**Fri 12/20/13**
54	Line and Provincial Departments are trained in MTEF process	15 mons	Fri 1/1/10	Thu 2/24/11
55	PMU/PIU structure devolved into Line and Provincial department structu	39.9 mons	Wed 12/1/10	Fri 12/20/13
56				
57	**Component II – Improve the planning, budget and financial management sys**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
58	Implement MTEF in all departments of MAFF and MOWRAM	12 mons	Fri 1/1/10	Thu 12/2/10
59	Implement MTEF in 16 provincial PDWRAMs and PDAs	38 mons	Wed 2/3/10	Tue 1/1/13
60	Align new donor projects with the accounting and M&E systems of MTEF	40.15 mons	Fri 12/3/10	Tue 12/31/13
61				
62	**Component III – Management Information Systems are implemented**	**26 mons**	**Fri 1/1/10**	**Thu 12/29/11**
63	**Information systems strengthened at national, provincial, district levels**	**26 mons**	**Fri 1/1/10**	**Thu 12/29/11**
64	Implement information systems for Finance	12 mons	Fri 1/1/10	Thu 12/2/10
65	Implement information systems for Human Resource Development	12 mons	Fri 1/1/10	Thu 12/2/10
66	Consolidate Agricultural and Water Resource information under a centra	18 mons	Fri 1/1/10	Thu 5/19/11
67	Integrate data collection activities of donor projects with the national MIS	8 mons	Fri 5/20/11	Thu 12/29/11
68				
69	**C. RESEARCH & EDUCATION**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
70	**Component I - Organizational Structure and Mechanisms in MAFF and MOWI**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
71	**Management capacities of Educational Institutes supporting MAFF and I**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
72	Designate TSC, RSA, RUA and ITC as special operating agencies	3 mons	Fri 1/1/10	Thu 3/25/10

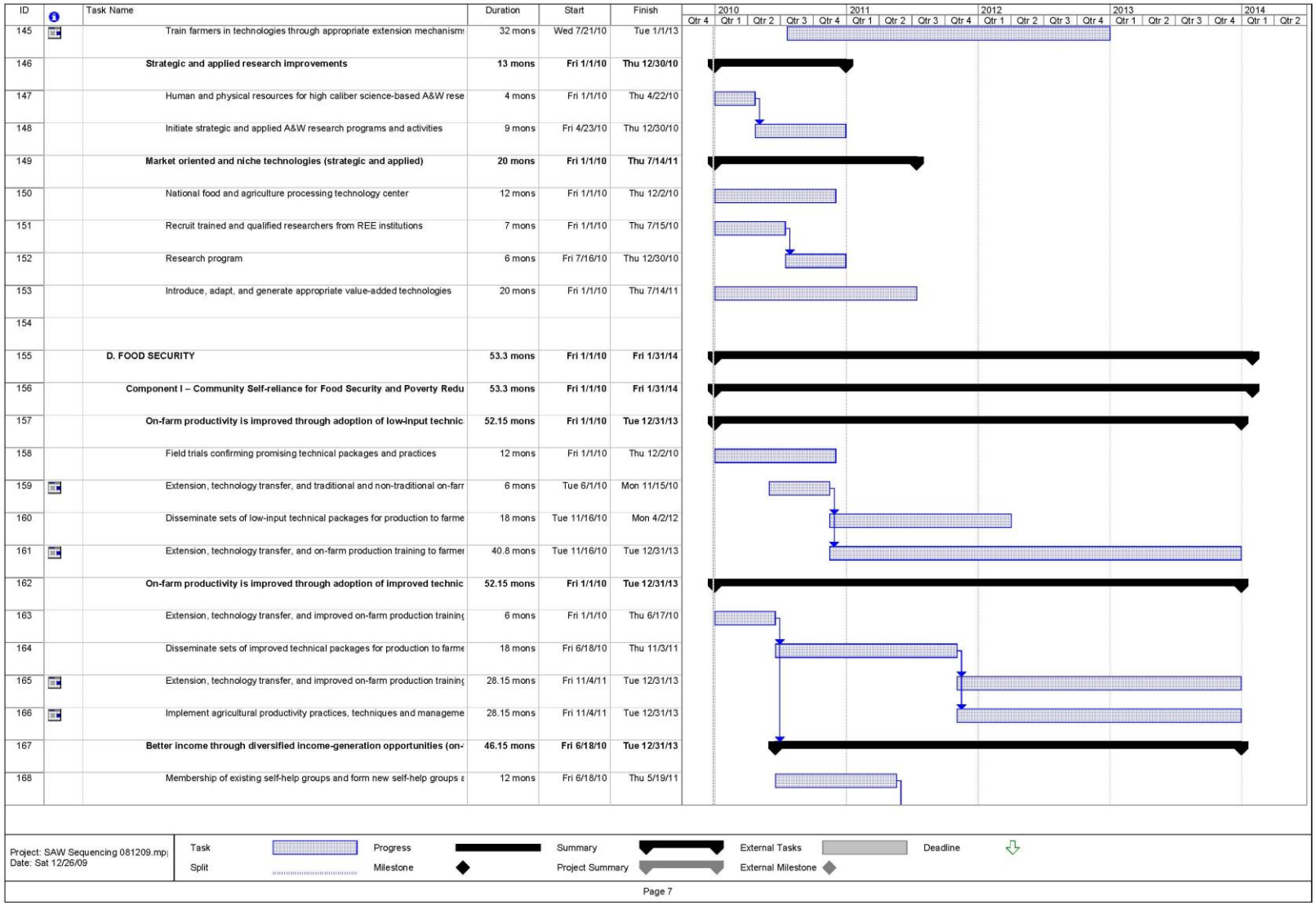


ID	Task Name	Duration	Start	Finish
73	Advisory boards at agriculture and water research institutes	12 mons	Fri 3/26/10	Thu 2/24/11
74	Salary Supplementation / Allowances scheme for key staff	38.9 mons	Mon 1/3/11	Wed 12/25/13
75	Training needs assessment	3 mons	Fri 3/26/10	Thu 6/17/10
76	Review activities related to REE at national and sub-national levels	6 mons	Fri 3/26/10	Thu 9/9/10
77	Assessment of formal education and vocational training needs	6 mons	Fri 3/26/10	Thu 9/9/10
78	Training guidelines and curricula	6 mons	Fri 6/18/10	Thu 12/2/10
79	Training outsourcing plan	2 mons	Fri 12/3/10	Thu 1/27/11
80	Train Directors and senior staff of training institutes	12 mons	Fri 1/28/11	Thu 12/29/11
81	**TSC becomes an Institute**	**14 mons**	**Fri 3/26/10**	**Thu 4/21/11**
82	Register TSC under the Ministry of Education guidelines	3 mons	Fri 3/26/10	Thu 6/17/10
83	Funds for Certificate and Diploma training courses	6 mons	Fri 6/18/10	Thu 12/2/10
84	Install quality assurance system TSC	6 mons	Fri 6/18/10	Thu 12/2/10
85	Facilities' needs analysis	3 mons	Fri 6/18/10	Thu 9/9/10
86	Upgrade facilities	8 mons	Fri 9/10/10	Thu 4/21/11
87	Library books, furniture and equipment	8 mons	Fri 9/10/10	Thu 4/21/11
88	**TSC certified courses in Water Resources Management and Technical s**	**34.9 mons**	**Fri 4/22/11**	**Tue 12/24/13**
89	Training to staff in 16 provinces	34.9 mons	Fri 4/22/11	Tue 12/24/13
90	Train management committees of 10 FWUCs at TSC in Irrigation Schem	34.9 mons	Fri 4/22/11	Tue 12/24/13
91	Accredit private contractors by TSC in the management or technical serv	34.9 mons	Fri 4/22/11	Tue 12/24/13
92	**Department of Water Resource Management at ITC**	**19 mons**	**Fri 3/26/10**	**Thu 9/8/11**
93	Audit Water Sciences curricula in the Department of Rural Engineering a	6 mons	Fri 3/26/10	Thu 9/9/10
94	Procedures for the training curriculum	4 mons	Fri 9/10/10	Thu 12/30/10
95	Training plans	6 mons	Fri 12/31/10	Thu 6/16/11
96	Funds for 100 students per year	3 mons	Fri 6/17/11	Thu 9/8/11



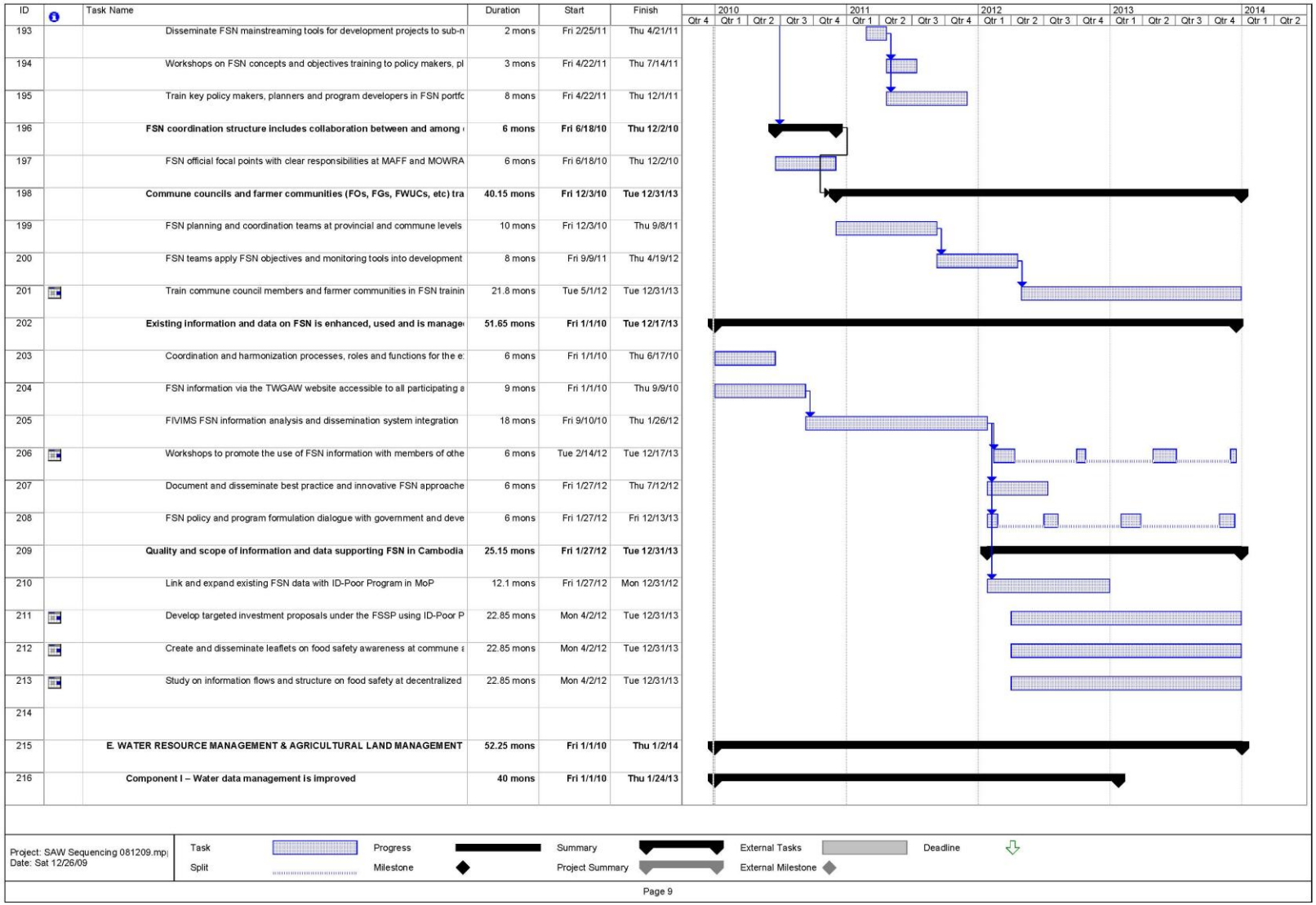
ID	Task Name	Duration	Start	Finish
97	Facilities' needs analysis	6 mons	Fri 3/26/10	Thu 9/9/10
98	Upgrade facilities	8 mons	Fri 9/10/10	Thu 4/21/11
99	Library books, furniture and equipment	8 mons	Fri 9/10/10	Thu 4/21/11
100	**RUA training courses to MAFF and MOWRAM staff**	**14 mons**	**Fri 3/26/10**	**Thu 4/21/11**
101	Install quality assurance system RUA	6 mons	Fri 6/18/10	Thu 12/2/10
102	Facilities' needs analysis	6 mons	Fri 3/26/10	Thu 9/9/10
103	Upgrade facilities	8 mons	Fri 9/10/10	Thu 4/21/11
104	Library books, furniture and equipment	8 mons	Fri 9/10/10	Thu 4/21/11
105	**Royal School of Administration Management training courses to MAFF**	**33 mons**	**Fri 6/18/10**	**Thu 12/27/12**
106	Audit training materials and update training materials according to the HI	6 mons	Fri 6/18/10	Thu 12/2/10
107	Procedures for the training curriculum	4 mons	Fri 12/3/10	Thu 3/24/11
108	Training plans	6 mons	Fri 3/25/11	Thu 9/8/11
109	Allocate new places for 10 MAFF, MOWRAM, PDWRAM, and PDA	3 mons	Fri 9/9/11	Thu 12/1/11
110	Train directors and senior staff of MAFF and MOWRAM	14 mons	Fri 12/2/11	Thu 12/27/12
111				
112	**Component II – REE capacity**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
113	**Human resources for REE**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
114	Training needs assessment	6 mons	Fri 1/1/10	Thu 6/17/10
115	Training guidelines	6 mons	Fri 6/18/10	Thu 12/2/10
116	Training outsourcing plan	2 mons	Fri 12/3/10	Thu 1/27/11
117	Training courses in technical, analytical and communication skills	8 mons	Fri 12/3/10	Thu 7/14/11
118	Implement the training program	32.15 mons	Fri 7/15/11	Tue 12/31/13
119	**REE organizational strengthening**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
120	Training needs assessment of REE managers in resources planning and	6 mons	Fri 1/1/10	Thu 6/17/10

ID	Task Name	Duration	Start	Finish
121	Resource planning and management, and M&E training courses	6 mons	Fri 6/18/10	Thu 12/2/10
122	Conduct training courses	40.15 mons	Fri 12/3/10	Tue 12/31/13
123	Inclusive, farmer-centered, development-oriented research agenda, univ	12 mons	Fri 1/1/10	Thu 12/2/10
124	Laboratories, equipment, teaching aids and technologies	18 mons	Fri 12/3/10	Thu 4/19/12
125	Mechanisms for participatory planning, implementation, and evaluation c	12 mons	Fri 1/1/10	Thu 12/2/10
126	Farmer-led, market-driven extension services	6 mons	Fri 12/3/10	Thu 5/19/11
127	**Existing and new institutional arrangements**	**26 mons**	**Fri 1/1/10**	**Thu 12/29/11**
128	Transform CAREC into a Agricultural and Water Innovation Council (AW	8 mons	Fri 1/1/10	Thu 8/12/10
129	Funding for AWIC	3 mons	Fri 8/13/10	Thu 11/4/10
130	Programs and activities of AWIC at the national, provincial, district and vi	15 mons	Fri 11/5/10	Thu 12/29/11
131	CARDI becomes member of APAARI	6 mons	Tue 6/1/10	Mon 11/15/10
132	**Networks with other research institutes**	**8 mons**	**Fri 6/18/10**	**Thu 1/27/11**
133	Network and cooperate with international REE institutions	8 mons	Fri 6/18/10	Thu 1/27/11
134	Link with universities, peer institutions, regional and international organiz	8 mons	Fri 6/18/10	Thu 1/27/11
135	Link with industries, business establishments, SMEs and those working	8 mons	Fri 6/18/10	Thu 1/27/11
136	Promote strengths and possibilities of Cambodian educational institution	8 mons	Fri 6/18/10	Thu 1/27/11
137	**Resource mobilization and coordination**	**13.15 mons**	**Fri 12/30/11**	**Tue 1/1/13**
138	Communication network for national and provincial stakeholders to facilit	8 mons	Fri 12/30/11	Thu 8/9/12
139	Funding consortium to support agriculture and water resources innovatio	4 mons	Wed 9/12/12	Tue 1/1/13
140				
141	**Component III – Research and technology development**	**39.15 mons**	**Fri 1/1/10**	**Tue 1/1/13**
142	**Pro-poor, pro-women and pro-environment technologies**	**39.15 mons**	**Fri 1/1/10**	**Tue 1/1/13**
143	Preliminary assessment of technologies developed and successfully ado	6 mons	Fri 1/1/10	Thu 6/17/10
144	Participatory research and on-farm assessment, validate relevant techno	6 mons	Fri 1/1/10	Thu 6/17/10

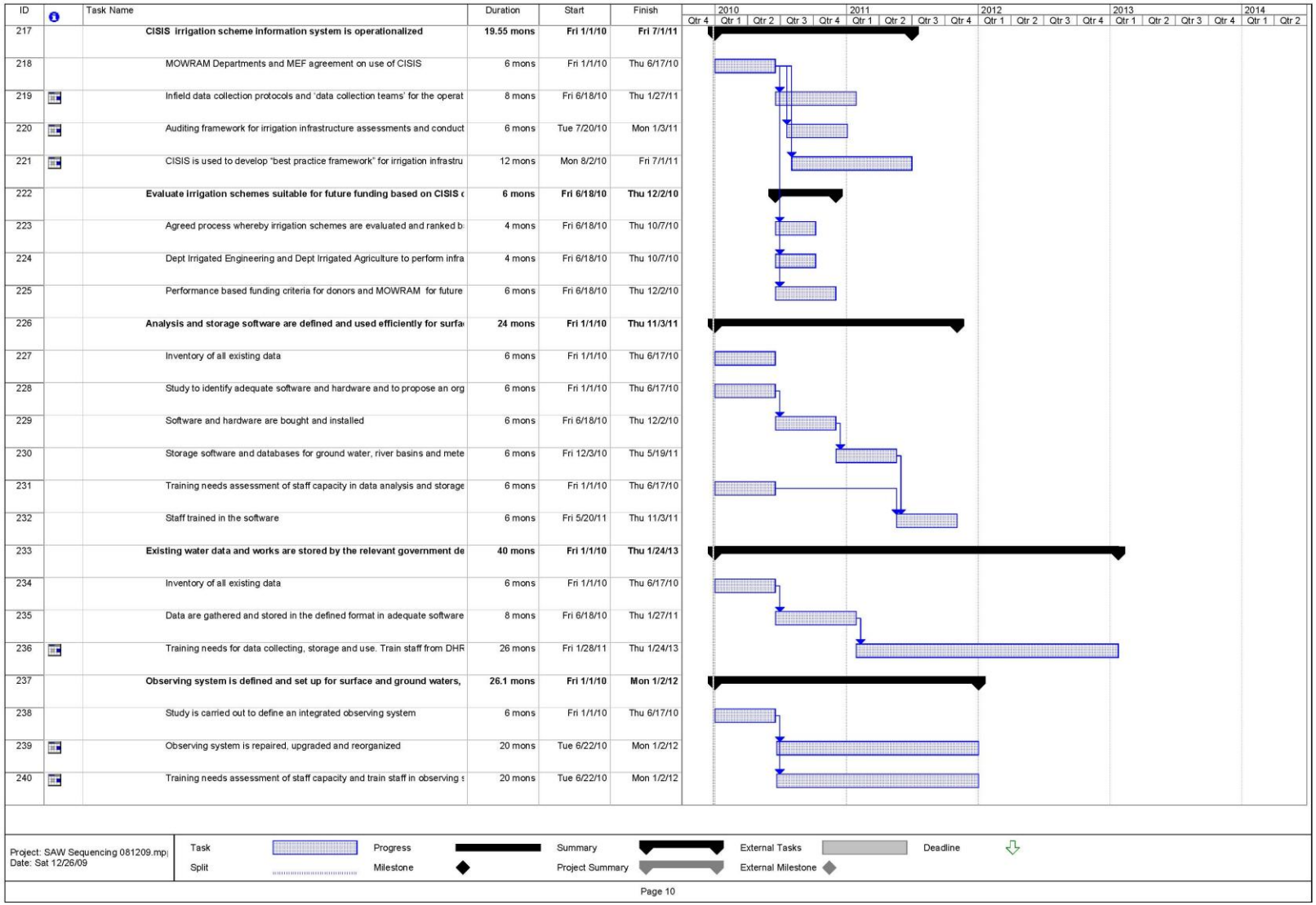


ID	Task Name	Duration	Start	Finish
145	Train farmers in technologies through appropriate extension mechanism:	32 mons	Wed 7/21/10	Tue 1/1/13
146	**Strategic and applied research improvements**	**13 mons**	**Fri 1/1/10**	**Thu 12/30/10**
147	Human and physical resources for high caliber science-based A&W rese	4 mons	Fri 1/1/10	Thu 4/22/10
148	Initiate strategic and applied A&W research programs and activities	9 mons	Fri 4/23/10	Thu 12/30/10
149	**Market oriented and niche technologies (strategic and applied)**	**20 mons**	**Fri 1/1/10**	**Thu 7/14/11**
150	National food and agriculture processing technology center	12 mons	Fri 1/1/10	Thu 12/2/10
151	Recruit trained and qualified researchers from REE institutions	7 mons	Fri 1/1/10	Thu 7/15/10
152	Research program	6 mons	Fri 7/16/10	Thu 12/30/10
153	Introduce, adapt, and generate appropriate value-added technologies	20 mons	Fri 1/1/10	Thu 7/14/11
154				
155	**D. FOOD SECURITY**	**53.3 mons**	**Fri 1/1/10**	**Fri 1/31/14**
156	**Component I – Community Self-reliance for Food Security and Poverty Redu**	**53.3 mons**	**Fri 1/1/10**	**Fri 1/31/14**
157	**On-farm productivity is improved through adoption of low-input technic**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
158	Field trials confirming promising technical packages and practices	12 mons	Fri 1/1/10	Thu 12/2/10
159	Extension, technology transfer, and traditional and non-traditional on-farr	6 mons	Tue 6/1/10	Mon 11/15/10
160	Disseminate sets of low-input technical packages for production to farme	18 mons	Tue 11/16/10	Mon 4/2/12
161	Extension, technology transfer, and on-farm production training to farmer	40.8 mons	Tue 11/16/10	Tue 12/31/13
162	**On-farm productivity is improved through adoption of improved technic**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
163	Extension, technology transfer, and improved on-farm production training	6 mons	Fri 1/1/10	Thu 6/17/10
164	Disseminate sets of improved technical packages for production to farme	18 mons	Fri 6/18/10	Thu 11/3/11
165	Extension, technology transfer, and improved on-farm production training	28.15 mons	Fri 11/4/11	Tue 12/31/13
166	Implement agricultural productivity practices, techniques and manageme	28.15 mons	Fri 11/4/11	Tue 12/31/13
167	**Better income through diversified income-generation opportunities (on-**	**46.15 mons**	**Fri 6/18/10**	**Tue 12/31/13**
168	Membership of existing self-help groups and form new self-help groups a	12 mons	Fri 6/18/10	Thu 5/19/11

ID	Task Name	Duration	Start	Finish
169	Basic administration training to self-help groups for self-management cap	6 mons	Fri 5/20/11	Thu 11/3/11
170	Micro-businesses and small-scale agro-processing at a basic level in cor	15.1 mons	Fri 11/4/11	Mon 12/31/12
171	Set of vocational training packages for on and off-farm employment oppo	6 mons	Fri 6/18/10	Thu 12/2/10
172	Train people in vocational skills and link to employment opportunities	40.15 mons	Fri 12/3/10	Tue 12/31/13
173	**Self-management and empowerment in farmers groups and village com**	**26.1 mons**	**Sun 1/1/12**	**Tue 12/31/13**
174	Transformation of self-help groups to farmer/villager organizations (FOs)	26.1 mons	Sun 1/1/12	Tue 12/31/13
175	Participatory Planning training for the implementation of community proje	20.95 mons	Thu 5/24/12	Tue 12/31/13
176	**Access to adequate food, better nutrition practices including food prep**	**53.3 mons**	**Fri 1/1/10**	**Fri 1/31/14**
177	Home gardening training to self-help groups, FOs and households	39.1 mons	Mon 1/3/11	Tue 12/31/13
178	Food use, nutrition, and basic health care training and extension	40.25 mons	Mon 1/3/11	Fri 1/31/14
179	Food intake and food composition studies	7.2 mons	Mon 1/3/11	Thu 2/7/13
180	Food production and income changes studies	6 mons	Mon 1/3/11	Fri 2/1/13
181	KAP studies	6.58 mons	Mon 1/3/11	Fri 2/1/13
182	Sanitation inputs to householders	52.15 mons	Fri 1/1/10	Tue 12/31/13
183	Training to householders on household sanitation installation and safe w	46.8 mons	Tue 6/1/10	Tue 12/31/13
184	**Identification of good practices and more effective approaches to food s**	**14.1 mons**	**Mon 12/3/12**	**Tue 12/31/13**
185	Meetings and workshops to share information, knowledge and lessons le	14.1 mons	Mon 12/3/12	Tue 12/31/13
186				
187	**Component II – Enhancement of Institutional and Policy Environment for Foo**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
188	**Key policy makers, planners and program developers are trained in FSN**	**25 mons**	**Fri 1/1/10**	**Thu 12/1/11**
189	FSN trainers pool	6 mons	Fri 1/1/10	Thu 6/17/10
190	Processes and guidelines for FSN national trainers pool	6 mons	Fri 6/18/10	Thu 12/2/10
191	FSN national trainer establishes a portfolio of trainings	9 mons	Fri 6/18/10	Thu 2/24/11
192	FSN mainstreaming tool with manuals and apply FSN mainstreaming too	3 mons	Fri 12/3/10	Thu 2/24/11

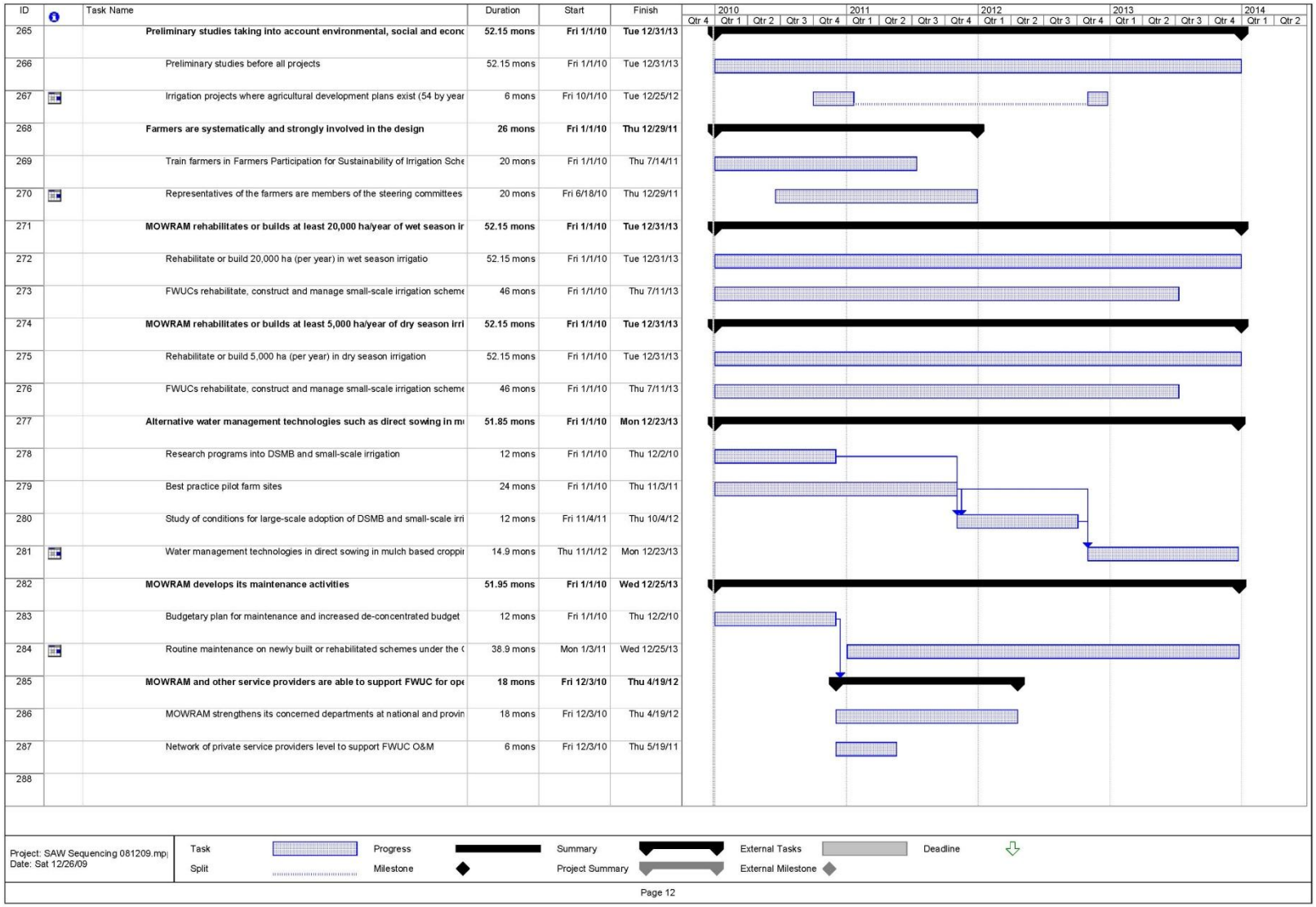


ID	Task Name	Duration	Start	Finish
193	Disseminate FSN mainstreaming tools for development projects to sub-n	2 mons	Fri 2/25/11	Thu 4/21/11
194	Workshops on FSN concepts and objectives training to policy makers, pl	3 mons	Fri 4/22/11	Thu 7/14/11
195	Train key policy makers, planners and program developers in FSN portfc	8 mons	Fri 4/22/11	Thu 12/1/11
196	**FSN coordination structure includes collaboration between and among**	**6 mons**	**Fri 6/18/10**	**Thu 12/2/10**
197	FSN official focal points with clear responsibilities at MAFF and MOWRA	6 mons	Fri 6/18/10	Thu 12/2/10
198	**Commune councils and farmer communities (FOs, FGs, FWUCs, etc) tra**	**40.15 mons**	**Fri 12/3/10**	**Tue 12/31/13**
199	FSN planning and coordination teams at provincial and commune levels	10 mons	Fri 12/3/10	Thu 9/8/11
200	FSN teams apply FSN objectives and monitoring tools into development	8 mons	Fri 9/9/11	Thu 4/19/12
201	Train commune council members and farmer communities in FSN trainin	21.8 mons	Tue 5/1/12	Tue 12/31/13
202	**Existing information and data on FSN is enhanced, used and is manage**	**51.65 mons**	**Fri 1/1/10**	**Tue 12/17/13**
203	Coordination and harmonization processes, roles and functions for the e	6 mons	Fri 1/1/10	Thu 6/17/10
204	FSN information via the TWGAW website accessible to all participating a	9 mons	Fri 1/1/10	Thu 9/9/10
205	FIVIMS FSN information analysis and dissemination system integration	18 mons	Fri 9/10/10	Thu 1/26/12
206	Workshops to promote the use of FSN information with members of othe	6 mons	Tue 2/14/12	Tue 12/17/13
207	Document and disseminate best practice and innovative FSN approache	6 mons	Fri 1/27/12	Thu 7/12/12
208	FSN policy and program formulation dialogue with government and deve	6 mons	Fri 1/27/12	Fri 12/13/13
209	**Quality and scope of information and data supporting FSN in Cambodia**	**25.15 mons**	**Fri 1/27/12**	**Tue 12/31/13**
210	Link and expand existing FSN data with ID-Poor Program in MoP	12.1 mons	Fri 1/27/12	Mon 12/31/12
211	Develop targeted investment proposals under the FSSP using ID-Poor P	22.85 mons	Mon 4/2/12	Tue 12/31/13
212	Create and disseminate leaflets on food safety awareness at commune a	22.85 mons	Mon 4/2/12	Tue 12/31/13
213	Study on information flows and structure on food safety at decentralized	22.85 mons	Mon 4/2/12	Tue 12/31/13
214				
215	**E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT**	**52.25 mons**	**Fri 1/1/10**	**Thu 1/2/14**
216	**Component I – Water data management is improved**	**40 mons**	**Fri 1/1/10**	**Thu 1/24/13**

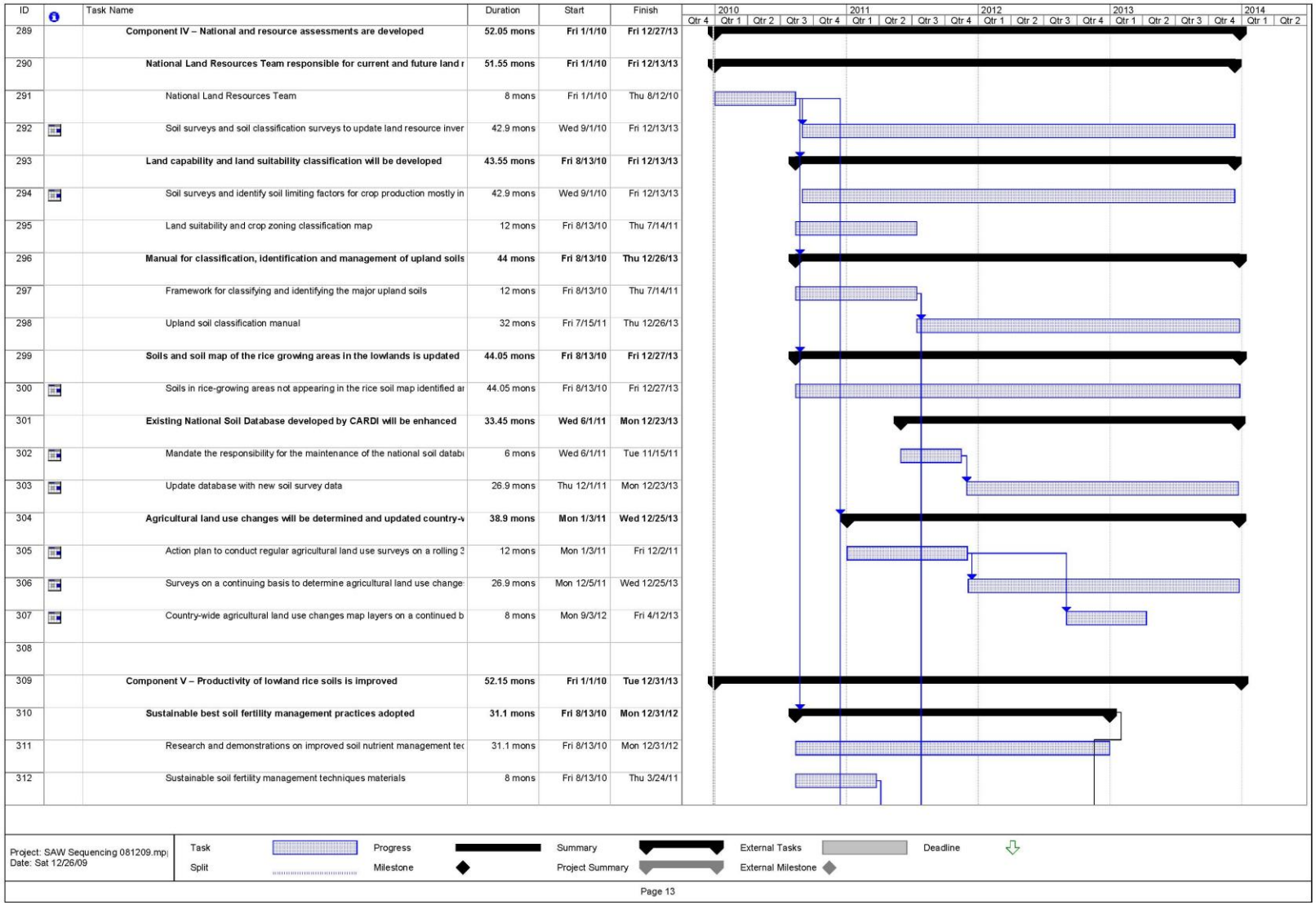


ID	Task Name	Duration	Start	Finish
217	**CISIS irrigation scheme information system is operationalized**	**19.55 mons**	**Fri 1/1/10**	**Fri 7/1/11**
218	MOWRAM Departments and MEF agreement on use of CISIS	6 mons	Fri 1/1/10	Thu 6/17/10
219	Infield data collection protocols and 'data collection teams' for the operat	8 mons	Fri 6/18/10	Thu 1/27/11
220	Auditing framework for irrigation infrastructure assessments and conduct	6 mons	Tue 7/20/10	Mon 1/3/11
221	CISIS is used to develop "best practice framework" for irrigation infrastru	12 mons	Mon 8/2/10	Fri 7/1/11
222	**Evaluate irrigation schemes suitable for future funding based on CISIS**	**6 mons**	**Fri 6/18/10**	**Thu 12/2/10**
223	Agreed process whereby irrigation schemes are evaluated and ranked b	4 mons	Fri 6/18/10	Thu 10/7/10
224	Dept Irrigated Engineering and Dept Irrigated Agriculture to perform infra	4 mons	Fri 6/18/10	Thu 10/7/10
225	Performance based funding criteria for donors and MOWRAM for future	6 mons	Fri 6/18/10	Thu 12/2/10
226	**Analysis and storage software are defined and used efficiently for surfa**	**24 mons**	**Fri 1/1/10**	**Thu 11/3/11**
227	Inventory of all existing data	6 mons	Fri 1/1/10	Thu 6/17/10
228	Study to identify adequate software and hardware and to propose an org	6 mons	Fri 1/1/10	Thu 6/17/10
229	Software and hardware are bought and installed	6 mons	Fri 6/18/10	Thu 12/2/10
230	Storage software and databases for ground water, river basins and mete	6 mons	Fri 12/3/10	Thu 5/19/11
231	Training needs assessment of staff capacity in data analysis and storage	6 mons	Fri 1/1/10	Thu 6/17/10
232	Staff trained in the software	6 mons	Fri 5/20/11	Thu 11/3/11
233	**Existing water data and works are stored by the relevant government de**	**40 mons**	**Fri 1/1/10**	**Thu 1/24/13**
234	Inventory of all existing data	6 mons	Fri 1/1/10	Thu 6/17/10
235	Data are gathered and stored in the defined format in adequate software	8 mons	Fri 6/18/10	Thu 1/27/11
236	Training needs for data collecting, storage and use. Train staff from DHR	26 mons	Fri 1/28/11	Thu 1/24/13
237	**Observing system is defined and set up for surface and ground waters,**	**26.1 mons**	**Fri 1/1/10**	**Mon 1/2/12**
238	Study is carried out to define an integrated observing system	6 mons	Fri 1/1/10	Thu 6/17/10
239	Observing system is repaired, upgraded and reorganized	20 mons	Tue 6/22/10	Mon 1/2/12
240	Training needs assessment of staff capacity and train staff in observing s	20 mons	Tue 6/22/10	Mon 1/2/12

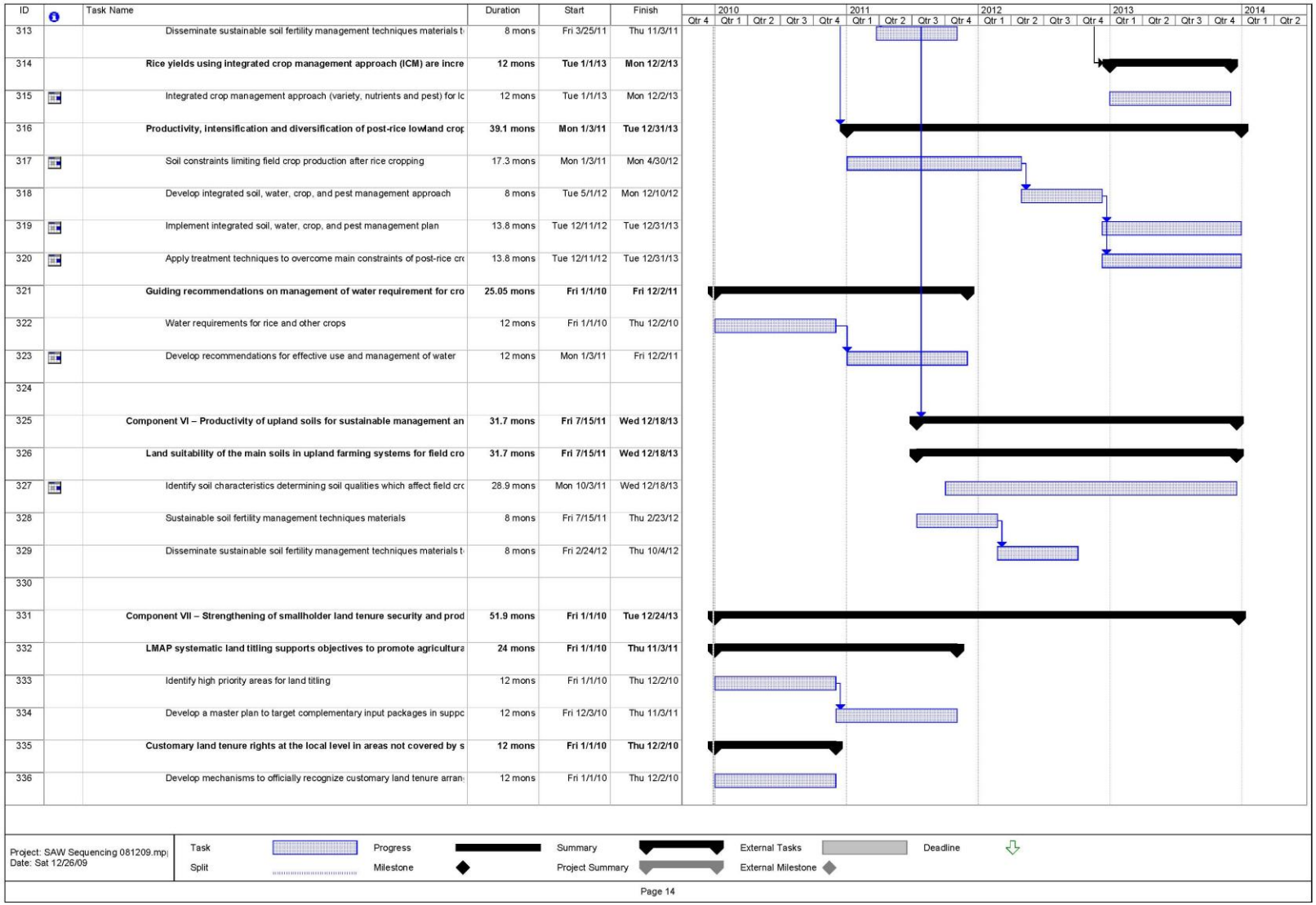
ID	Task Name	Duration	Start	Finish
241	**Flood and drought forecasting system is improved in collaboration with**	**24.95 mons**	**Tue 2/2/10**	**Fri 12/30/11**
242	Flood forecasting model of the MRC is upgraded with the involvement of	12 mons	Tue 2/2/10	Mon 1/3/11
243	Observing system is improved following the recommendations of the MR	12 mons	Mon 1/31/11	Fri 12/30/11
244				
245	**Component II – Development of integrated water management**	**52.25 mons**	**Fri 1/1/10**	**Thu 1/2/14**
246	**River basins are delineated and classified officially**	**32 mons**	**Tue 3/2/10**	**Mon 8/13/12**
247	Study to define the reference river basins boundaries and classify the ba	24 mons	Tue 3/2/10	Mon 1/2/12
248	National classification of rivers and matching basins is made official by a	8 mons	Tue 1/3/12	Mon 8/13/12
249	Store information in adequate software	6 mons	Tue 1/3/12	Mon 6/18/12
250	**Water management framework plan is approved for the Tonle Sap basin**	**32 mons**	**Fri 1/1/10**	**Thu 6/14/12**
251	Develop Strategic Plan for the Tonle Sap Authority	8 mons	Tue 6/1/10	Mon 1/10/11
252	Develop White Paper for TSA to coordinate sectoral activities in Tonle Si	8 mons	Tue 6/1/10	Mon 1/10/11
253	Develop Master Plan for development of Tonle Sap region and Lake	8 mons	Tue 6/1/10	Mon 1/10/11
254	Study including environmental, social and economic aspects	18 mons	Fri 1/1/10	Thu 5/19/11
255	Water management framework plan for the Tonle Sap Authority	14 mons	Fri 5/20/11	Thu 6/14/12
256	**Water resources are assessed at a nationwide scale**	**18.15 mons**	**Tue 8/14/12**	**Thu 1/2/14**
257	Assess water resources for each basin on a monthly basis with the curre	18.05 mons	Tue 8/14/12	Tue 12/31/13
258	Educational version of the assessment	12 mons	Fri 2/1/13	Thu 1/2/14
259	**Water committees are created and management plans are approved for**	**18.1 mons**	**Tue 8/14/12**	**Wed 1/1/14**
260	Study on 2 river basins including a basin modeling dealing with natural c	6 mons	Tue 8/14/12	Mon 1/28/13
261	Create a Water Management Committee (1 committee year 1, 2 committ	6 mons	Wed 1/30/13	Wed 1/1/14
262	Water management plan and seek Government approval	6 mons	Tue 1/29/13	Mon 7/15/13
263				
264	**Component III – Development of irrigation and water management infrastruc**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**



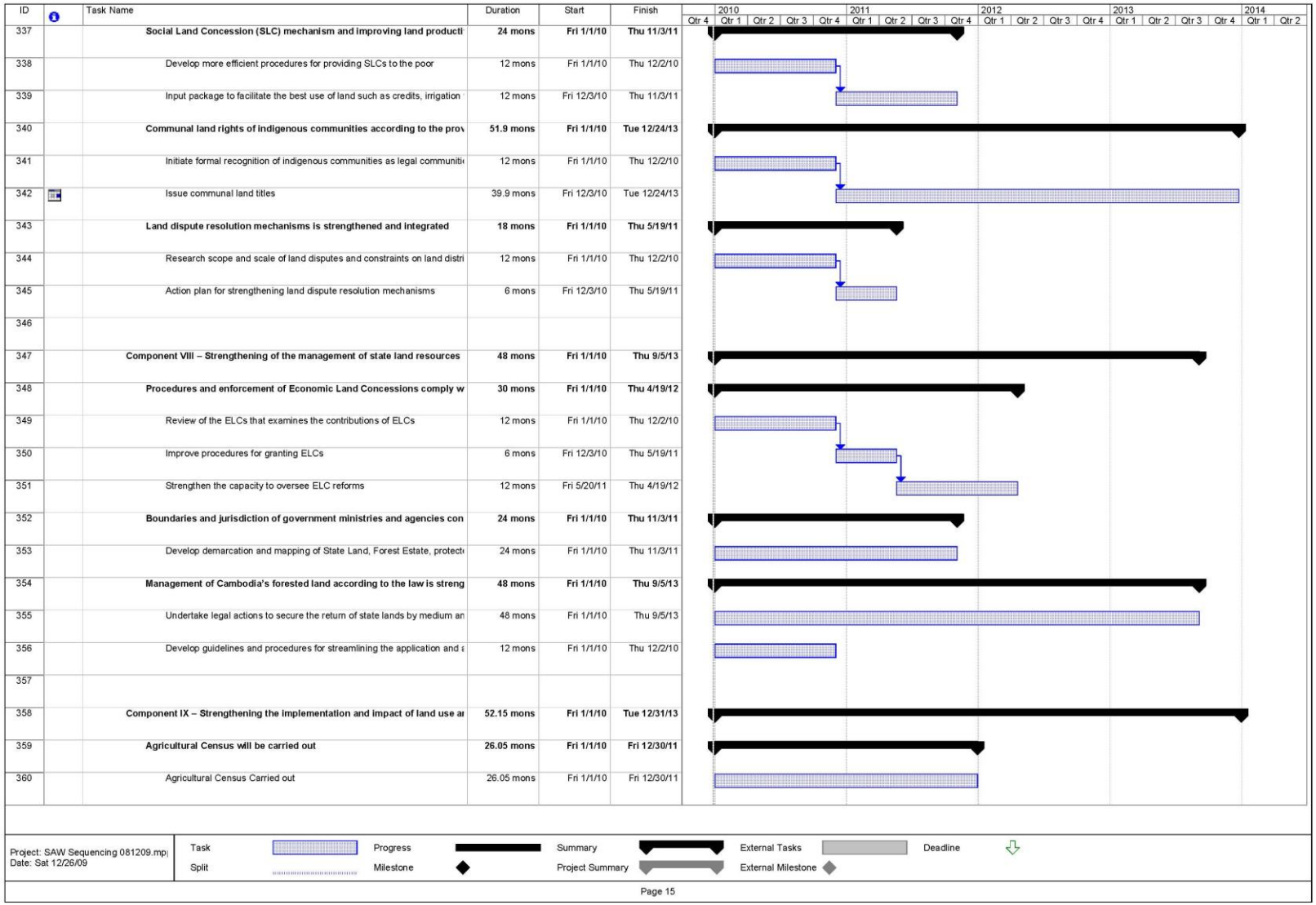
ID	Task Name	Duration	Start	Finish
265	**Preliminary studies taking into account environmental, social and econc**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
266	Preliminary studies before all projects	52.15 mons	Fri 1/1/10	Tue 12/31/13
267	Irrigation projects where agricultural development plans exist (54 by year	6 mons	Fri 10/1/10	Tue 12/25/12
268	**Farmers are systematically and strongly involved in the design**	**26 mons**	**Fri 1/1/10**	**Thu 12/29/11**
269	Train farmers in Farmers Participation for Sustainability of Irrigation Sche	20 mons	Fri 1/1/10	Thu 7/14/11
270	Representatives of the farmers are members of the steering committees	20 mons	Fri 6/18/10	Thu 12/29/11
271	**MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season ir**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
272	Rehabilitate or build 20,000 ha (per year) in wet season irrigatio	52.15 mons	Fri 1/1/10	Tue 12/31/13
273	FWUCs rehabilitate, construct and manage small-scale irrigation scheme	46 mons	Fri 1/1/10	Thu 7/11/13
274	**MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irri**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
275	Rehabilitate or build 5,000 ha (per year) in dry season irrigation	52.15 mons	Fri 1/1/10	Tue 12/31/13
276	FWUCs rehabilitate, construct and manage small-scale irrigation scheme	46 mons	Fri 1/1/10	Thu 7/11/13
277	**Alternative water management technologies such as direct sowing in m**	**51.85 mons**	**Fri 1/1/10**	**Mon 12/23/13**
278	Research programs into DSMB and small-scale irrigation	12 mons	Fri 1/1/10	Thu 12/2/10
279	Best practice pilot farm sites	24 mons	Fri 1/1/10	Thu 11/3/11
280	Study of conditions for large-scale adoption of DSMB and small-scale irri	12 mons	Fri 11/4/11	Thu 10/4/12
281	Water management technologies in direct sowing in mulch based croppir	14.9 mons	Thu 11/1/12	Mon 12/23/13
282	**MOWRAM develops its maintenance activities**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
283	Budgetary plan for maintenance and increased de-concentrated budget	12 mons	Fri 1/1/10	Thu 12/2/10
284	Routine maintenance on newly built or rehabilitated schemes under the (	38.9 mons	Mon 1/3/11	Wed 12/25/13
285	**MOWRAM and other service providers are able to support FWUC for ope**	**18 mons**	**Fri 12/3/10**	**Thu 4/19/12**
286	MOWRAM strengthens its concerned departments at national and provin	18 mons	Fri 12/3/10	Thu 4/19/12
287	Network of private service providers level to support FWUC O&M	6 mons	Fri 12/3/10	Thu 5/19/11
288				



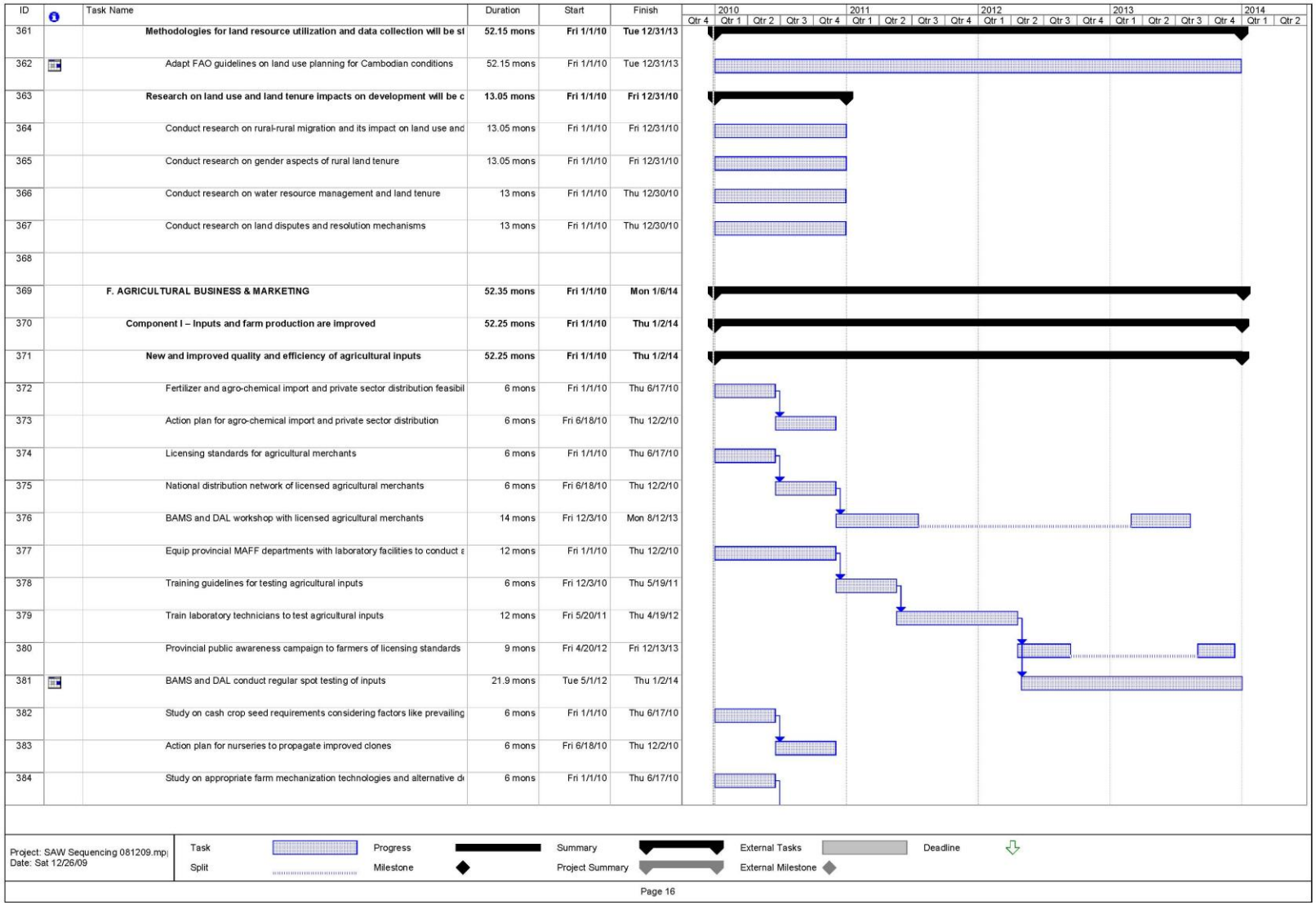
ID	Task Name	Duration	Start	Finish
289	**Component IV – National and resource assessments are developed**	**52.05 mons**	**Fri 1/1/10**	**Fri 12/27/13**
290	**National Land Resources Team responsible for current and future land r**	**51.55 mons**	**Fri 1/1/10**	**Fri 12/13/13**
291	National Land Resources Team	8 mons	Fri 1/1/10	Thu 8/12/10
292	Soil surveys and soil classification surveys to update land resource inver	42.9 mons	Wed 9/1/10	Fri 12/13/13
293	**Land capability and land suitability classification will be developed**	**43.55 mons**	**Fri 8/13/10**	**Fri 12/13/13**
294	Soil surveys and identify soil limiting factors for crop production mostly in	42.9 mons	Wed 9/1/10	Fri 12/13/13
295	Land suitability and crop zoning classification map	12 mons	Fri 8/13/10	Thu 7/14/11
296	**Manual for classification, identification and management of upland soils**	**44 mons**	**Fri 8/13/10**	**Thu 12/26/13**
297	Framework for classifying and identifying the major upland soils	12 mons	Fri 8/13/10	Thu 7/14/11
298	Upland soil classification manual	32 mons	Fri 7/15/11	Thu 12/26/13
299	**Soils and soil map of the rice growing areas in the lowlands is updated**	**44.05 mons**	**Fri 8/13/10**	**Fri 12/27/13**
300	Soils in rice-growing areas not appearing in the rice soil map identified ar	44.05 mons	Fri 8/13/10	Fri 12/27/13
301	**Existing National Soil Database developed by CARDI will be enhanced**	**33.45 mons**	**Wed 6/1/11**	**Mon 12/23/13**
302	Mandate the responsibility for the maintenance of the national soil databi	6 mons	Wed 6/1/11	Tue 11/15/11
303	Update database with new soil survey data	26.9 mons	Thu 12/1/11	Mon 12/23/13
304	**Agricultural land use changes will be determined and updated country-v**	**38.9 mons**	**Mon 1/3/11**	**Wed 12/25/13**
305	Action plan to conduct regular agricultural land use surveys on a rolling 3	12 mons	Mon 1/3/11	Fri 12/2/11
306	Surveys on a continuing basis to determine agricultural land use change	26.9 mons	Mon 12/5/11	Wed 12/25/13
307	Country-wide agricultural land use changes map layers on a continued b	8 mons	Mon 9/3/12	Fri 4/12/13
308				
309	**Component V – Productivity of lowland rice soils is improved**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
310	**Sustainable best soil fertility management practices adopted**	**31.1 mons**	**Fri 8/13/10**	**Mon 12/31/12**
311	Research and demonstrations on improved soil nutrient management tec	31.1 mons	Fri 8/13/10	Mon 12/31/12
312	Sustainable soil fertility management techniques materials	8 mons	Fri 8/13/10	Thu 3/24/11



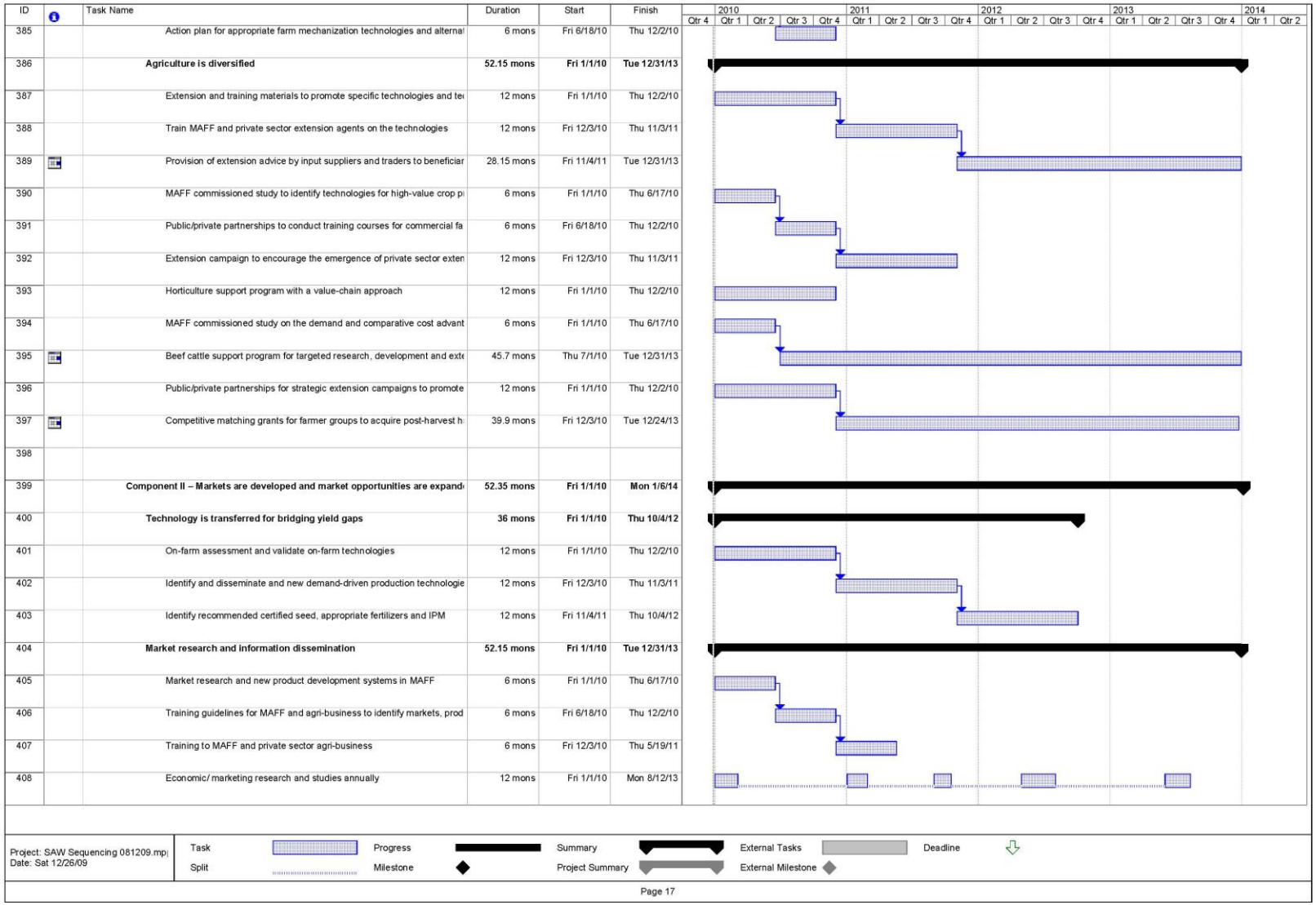
ID	Task Name	Duration	Start	Finish
313	Disseminate sustainable soil fertility management techniques materials t	8 mons	Fri 3/25/11	Thu 11/3/11
314	**Rice yields using integrated crop management approach (ICM) are incre**	**12 mons**	**Tue 1/1/13**	**Mon 12/2/13**
315	Integrated crop management approach (variety, nutrients and pest) for lc	12 mons	Tue 1/1/13	Mon 12/2/13
316	**Productivity, intensification and diversification of post-rice lowland crop**	**39.1 mons**	**Mon 1/3/11**	**Tue 12/31/13**
317	Soil constraints limiting field crop production after rice cropping	17.3 mons	Mon 1/3/11	Mon 4/30/12
318	Develop integrated soil, water, crop, and pest management approach	8 mons	Tue 5/1/12	Mon 12/10/12
319	Implement integrated soil, water, crop, and pest management plan	13.8 mons	Tue 12/11/12	Tue 12/31/13
320	Apply treatment techniques to overcome main constraints of post-rice cr	13.8 mons	Tue 12/11/12	Tue 12/31/13
321	**Guiding recommendations on management of water requirement for cro**	**25.05 mons**	**Fri 1/1/10**	**Fri 12/2/11**
322	Water requirements for rice and other crops	12 mons	Fri 1/1/10	Thu 12/2/10
323	Develop recommendations for effective use and management of water	12 mons	Mon 1/3/11	Fri 12/2/11
324				
325	**Component VI – Productivity of upland soils for sustainable management an**	**31.7 mons**	**Fri 7/15/11**	**Wed 12/18/13**
326	**Land suitability of the main soils in upland farming systems for field cro**	**31.7 mons**	**Fri 7/15/11**	**Wed 12/18/13**
327	Identify soil characteristics determining soil qualities which affect field crc	28.9 mons	Mon 10/3/11	Wed 12/18/13
328	Sustainable soil fertility management techniques materials	8 mons	Fri 7/15/11	Thu 2/23/12
329	Disseminate sustainable soil fertility management techniques materials t	8 mons	Fri 2/24/12	Thu 10/4/12
330				
331	**Component VII – Strengthening of smallholder land tenure security and prod**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
332	**LMAP systematic land titling supports objectives to promote agricultura**	**24 mons**	**Fri 1/1/10**	**Thu 11/3/11**
333	Identify high priority areas for land titling	12 mons	Fri 1/1/10	Thu 12/2/10
334	Develop a master plan to target complementary input packages in suppc	12 mons	Fri 12/3/10	Thu 11/3/11
335	**Customary land tenure rights at the local level in areas not covered by s**	**12 mons**	**Fri 1/1/10**	**Thu 12/2/10**
336	Develop mechanisms to officially recognize customary land tenure arran	12 mons	Fri 1/1/10	Thu 12/2/10



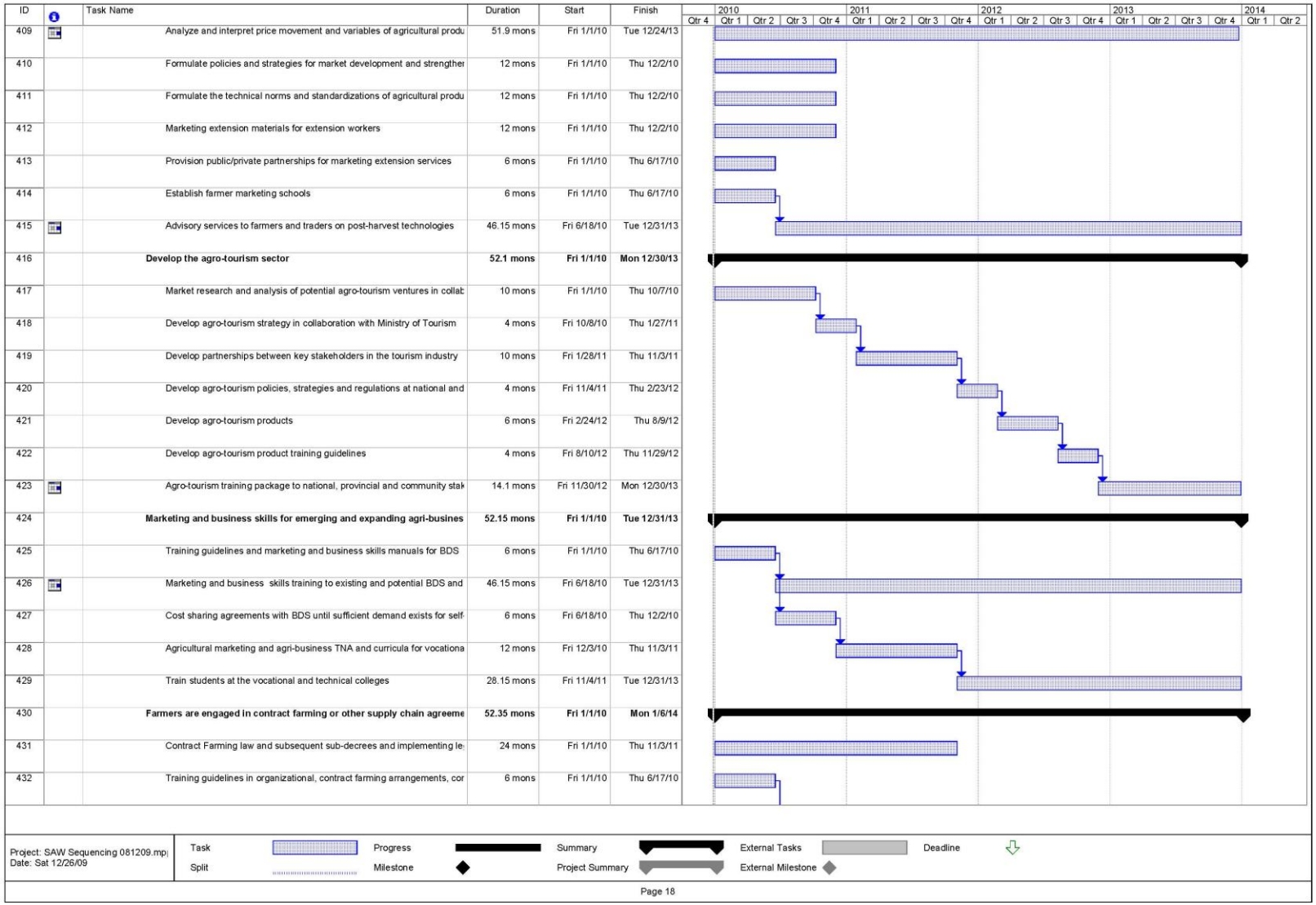
ID	Task Name	Duration	Start	Finish
337	**Social Land Concession (SLC) mechanism and improving land producti**	**24 mons**	**Fri 1/1/10**	**Thu 11/3/11**
338	Develop more efficient procedures for providing SLCs to the poor	12 mons	Fri 1/1/10	Thu 12/2/10
339	Input package to facilitate the best use of land such as credits, irrigation	12 mons	Fri 12/3/10	Thu 11/3/11
340	**Communal land rights of indigenous communities according to the prov**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
341	Initiate formal recognition of indigenous communities as legal communiti	12 mons	Fri 1/1/10	Thu 12/2/10
342	Issue communal land titles	39.9 mons	Fri 12/3/10	Tue 12/24/13
343	**Land dispute resolution mechanisms is strengthened and integrated**	**18 mons**	**Fri 1/1/10**	**Thu 5/19/11**
344	Research scope and scale of land disputes and constraints on land distri	12 mons	Fri 1/1/10	Thu 12/2/10
345	Action plan for strengthening land dispute resolution mechanisms	6 mons	Fri 12/3/10	Thu 5/19/11
346				
347	**Component VIII – Strengthening of the management of state land resources**	**48 mons**	**Fri 1/1/10**	**Thu 9/5/13**
348	**Procedures and enforcement of Economic Land Concessions comply w**	**30 mons**	**Fri 1/1/10**	**Thu 4/19/12**
349	Review of the ELCs that examines the contributions of ELCs	12 mons	Fri 1/1/10	Thu 12/2/10
350	Improve procedures for granting ELCs	6 mons	Fri 12/3/10	Thu 5/19/11
351	Strengthen the capacity to oversee ELC reforms	12 mons	Fri 5/20/11	Thu 4/19/12
352	**Boundaries and jurisdiction of government ministries and agencies con**	**24 mons**	**Fri 1/1/10**	**Thu 11/3/11**
353	Develop demarcation and mapping of State Land, Forest Estate, protect	24 mons	Fri 1/1/10	Thu 11/3/11
354	**Management of Cambodia's forested land according to the law is streng**	**48 mons**	**Fri 1/1/10**	**Thu 9/5/13**
355	Undertake legal actions to secure the return of state lands by medium an	48 mons	Fri 1/1/10	Thu 9/5/13
356	Develop guidelines and procedures for streamlining the application and a	12 mons	Fri 1/1/10	Thu 12/2/10
357				
358	**Component IX – Strengthening the implementation and impact of land use ar**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
359	**Agricultural Census will be carried out**	**26.05 mons**	**Fri 1/1/10**	**Fri 12/30/11**
360	Agricultural Census Carried out	26.05 mons	Fri 1/1/10	Fri 12/30/11



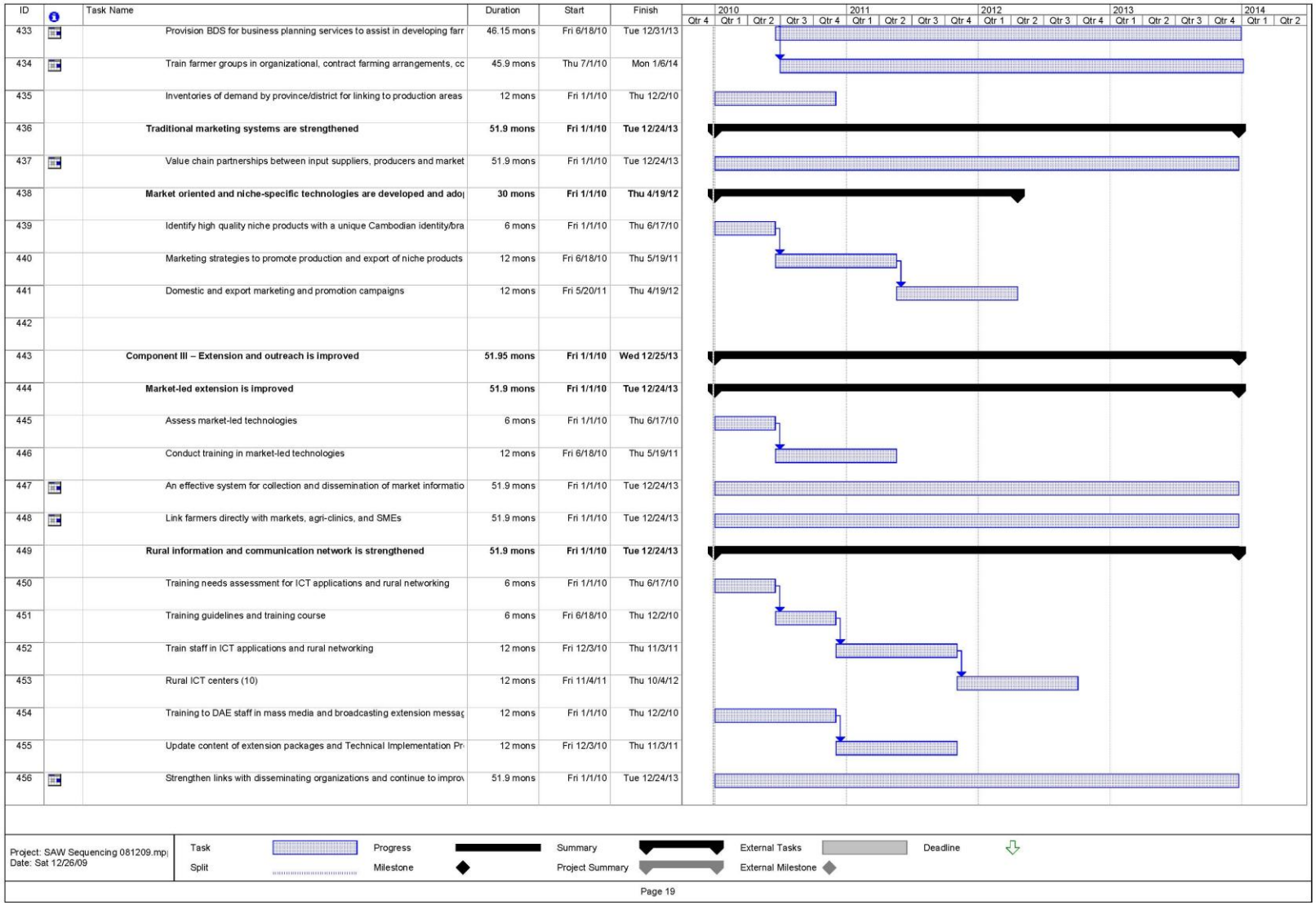
ID	Task Name	Duration	Start	Finish
361	**Methodologies for land resource utilization and data collection will be st**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
362	Adapt FAO guidelines on land use planning for Cambodian conditions	52.15 mons	Fri 1/1/10	Tue 12/31/13
363	**Research on land use and land tenure impacts on development will be c**	**13.05 mons**	**Fri 1/1/10**	**Fri 12/31/10**
364	Conduct research on rural-rural migration and its impact on land use and	13.05 mons	Fri 1/1/10	Fri 12/31/10
365	Conduct research on gender aspects of rural land tenure	13.05 mons	Fri 1/1/10	Fri 12/31/10
366	Conduct research on water resource management and land tenure	13 mons	Fri 1/1/10	Thu 12/30/10
367	Conduct research on land disputes and resolution mechanisms	13 mons	Fri 1/1/10	Thu 12/30/10
368				
369	**F. AGRICULTURAL BUSINESS & MARKETING**	**52.35 mons**	**Fri 1/1/10**	**Mon 1/6/14**
370	**Component I – Inputs and farm production are improved**	**52.25 mons**	**Fri 1/1/10**	**Thu 1/2/14**
371	**New and improved quality and efficiency of agricultural inputs**	**52.25 mons**	**Fri 1/1/10**	**Thu 1/2/14**
372	Fertilizer and agro-chemical import and private sector distribution feasibil	6 mons	Fri 1/1/10	Thu 6/17/10
373	Action plan for agro-chemical import and private sector distribution	6 mons	Fri 6/18/10	Thu 12/2/10
374	Licensing standards for agricultural merchants	6 mons	Fri 1/1/10	Thu 6/17/10
375	National distribution network of licensed agricultural merchants	6 mons	Fri 6/18/10	Thu 12/2/10
376	BAMS and DAL workshop with licensed agricultural merchants	14 mons	Fri 12/3/10	Mon 8/12/13
377	Equip provincial MAFF departments with laboratory facilities to conduct a	12 mons	Fri 1/1/10	Thu 12/2/10
378	Training guidelines for testing agricultural inputs	6 mons	Fri 12/3/10	Thu 5/19/11
379	Train laboratory technicians to test agricultural inputs	12 mons	Fri 5/20/11	Thu 4/19/12
380	Provincial public awareness campaign to farmers of licensing standards	9 mons	Fri 4/20/12	Fri 12/13/13
381	BAMS and DAL conduct regular spot testing of inputs	21.9 mons	Tue 5/1/12	Thu 1/2/14
382	Study on cash crop seed requirements considering factors like prevailing	6 mons	Fri 1/1/10	Thu 6/17/10
383	Action plan for nurseries to propagate improved clones	6 mons	Fri 6/18/10	Thu 12/2/10
384	Study on appropriate farm mechanization technologies and alternative d	6 mons	Fri 1/1/10	Thu 6/17/10



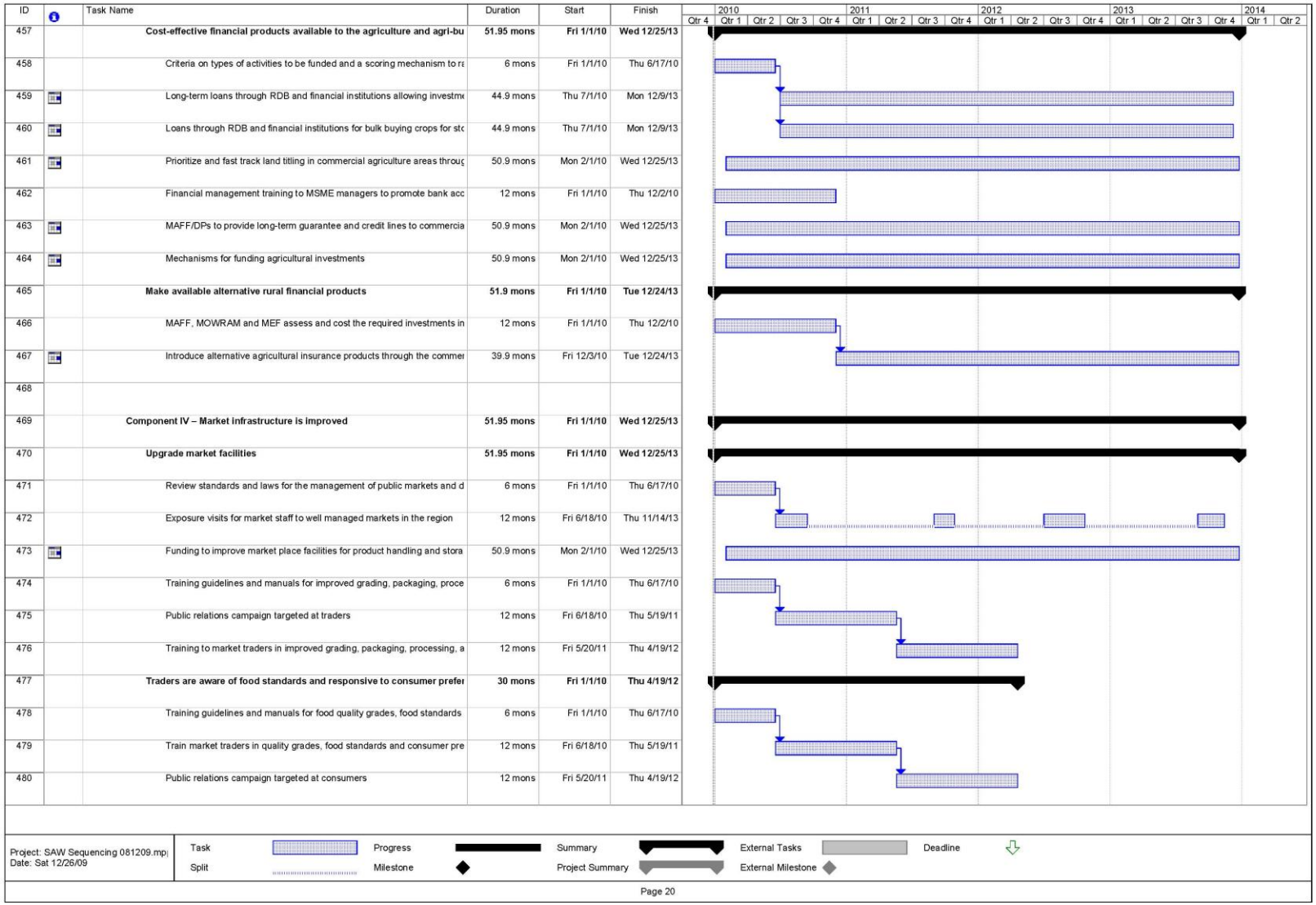
ID	Task Name	Duration	Start	Finish
385	Action plan for appropriate farm mechanization technologies and alternat	6 mons	Fri 6/18/10	Thu 12/2/10
386	**Agriculture is diversified**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
387	Extension and training materials to promote specific technologies and te	12 mons	Fri 1/1/10	Thu 12/2/10
388	Train MAFF and private sector extension agents on the technologies	12 mons	Fri 12/3/10	Thu 11/3/11
389	Provision of extension advice by input suppliers and traders to beneficiar	28.15 mons	Fri 11/4/11	Tue 12/31/13
390	MAFF commissioned study to identify technologies for high-value crop pi	6 mons	Fri 1/1/10	Thu 6/17/10
391	Public/private partnerships to conduct training courses for commercial fa	6 mons	Fri 6/18/10	Thu 12/2/10
392	Extension campaign to encourage the emergence of private sector exten	12 mons	Fri 12/3/10	Thu 11/3/11
393	Horticulture support program with a value-chain approach	12 mons	Fri 1/1/10	Thu 12/2/10
394	MAFF commissioned study on the demand and comparative cost advant	6 mons	Fri 1/1/10	Thu 6/17/10
395	Beef cattle support program for targeted research, development and exte	45.7 mons	Thu 7/1/10	Tue 12/31/13
396	Public/private partnerships for strategic extension campaigns to promote	12 mons	Fri 1/1/10	Thu 12/2/10
397	Competitive matching grants for farmer groups to acquire post-harvest h	39.9 mons	Fri 12/3/10	Tue 12/24/13
398				
399	**Component II – Markets are developed and market opportunities are expand**	**52.35 mons**	**Fri 1/1/10**	**Mon 1/6/14**
400	**Technology is transferred for bridging yield gaps**	**36 mons**	**Fri 1/1/10**	**Thu 10/4/12**
401	On-farm assessment and validate on-farm technologies	12 mons	Fri 1/1/10	Thu 12/2/10
402	Identify and disseminate and new demand-driven production technologie	12 mons	Fri 12/3/10	Thu 11/3/11
403	Identify recommended certified seed, appropriate fertilizers and IPM	12 mons	Fri 11/4/11	Thu 10/4/12
404	**Market research and information dissemination**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
405	Market research and new product development systems in MAFF	6 mons	Fri 1/1/10	Thu 6/17/10
406	Training guidelines for MAFF and agri-business to identify markets, prod	6 mons	Fri 6/18/10	Thu 12/2/10
407	Training to MAFF and private sector agri-business	6 mons	Fri 12/3/10	Thu 5/19/11
408	Economic/ marketing research and studies annually	12 mons	Fri 1/1/10	Mon 8/12/13



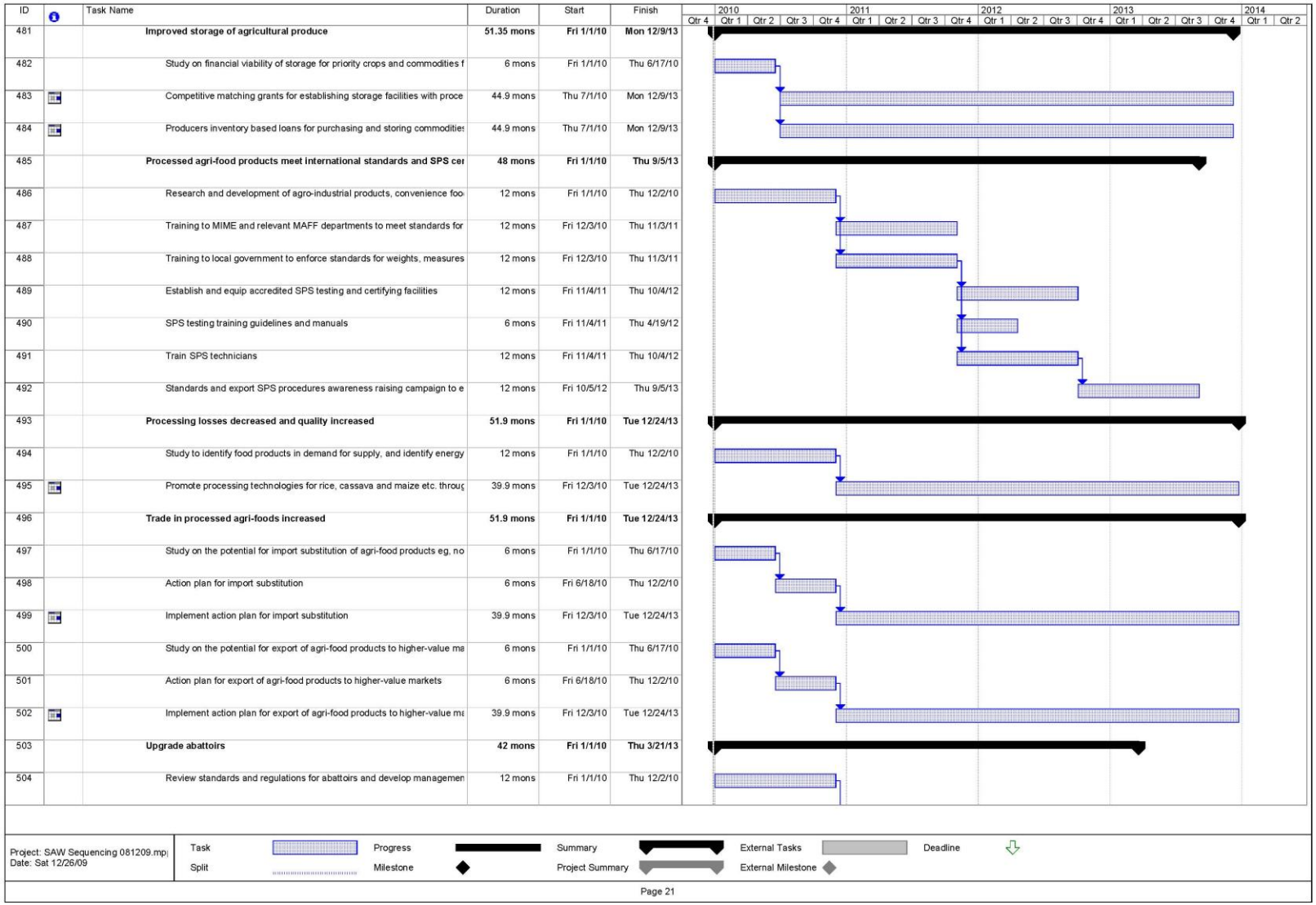
ID	Task Name	Duration	Start	Finish
409	Analyze and interpret price movement and variables of agricultural produ	51.9 mons	Fri 1/1/10	Tue 12/24/13
410	Formulate policies and strategies for market development and strengther	12 mons	Fri 1/1/10	Thu 12/2/10
411	Formulate the technical norms and standardizations of agricultural produ	12 mons	Fri 1/1/10	Thu 12/2/10
412	Marketing extension materials for extension workers	12 mons	Fri 1/1/10	Thu 12/2/10
413	Provision public/private partnerships for marketing extension services	6 mons	Fri 1/1/10	Thu 6/17/10
414	Establish farmer marketing schools	6 mons	Fri 1/1/10	Thu 6/17/10
415	Advisory services to farmers and traders on post-harvest technologies	46.15 mons	Fri 6/18/10	Tue 12/31/13
416	**Develop the agro-tourism sector**	**52.1 mons**	**Fri 1/1/10**	**Mon 12/30/13**
417	Market research and analysis of potential agro-tourism ventures in collab	10 mons	Fri 1/1/10	Thu 10/7/10
418	Develop agro-tourism strategy in collaboration with Ministry of Tourism	4 mons	Fri 10/8/10	Thu 1/27/11
419	Develop partnerships between key stakeholders in the tourism industry	10 mons	Fri 1/28/11	Thu 11/3/11
420	Develop agro-tourism policies, strategies and regulations at national and	4 mons	Fri 11/4/11	Thu 2/23/12
421	Develop agro-tourism products	6 mons	Fri 2/24/12	Thu 8/9/12
422	Develop agro-tourism product training guidelines	4 mons	Fri 8/10/12	Thu 11/29/12
423	Agro-tourism training package to national, provincial and community stak	14.1 mons	Fri 11/30/12	Mon 12/30/13
424	**Marketing and business skills for emerging and expanding agri-busines**	**52.15 mons**	**Fri 1/1/10**	**Tue 12/31/13**
425	Training guidelines and marketing and business skills manuals for BDS	6 mons	Fri 1/1/10	Thu 6/17/10
426	Marketing and business skills training to existing and potential BDS and	46.15 mons	Fri 6/18/10	Tue 12/31/13
427	Cost sharing agreements with BDS until sufficient demand exists for self-	6 mons	Fri 6/18/10	Thu 12/2/10
428	Agricultural marketing and agri-business TNA and curricula for vocationa	12 mons	Fri 12/3/10	Thu 11/3/11
429	Train students at the vocational and technical colleges	28.15 mons	Fri 11/4/11	Tue 12/31/13
430	**Farmers are engaged in contract farming or other supply chain agreeme**	**52.35 mons**	**Fri 1/1/10**	**Mon 1/6/14**
431	Contract Farming law and subsequent sub-decrees and implementing le:	24 mons	Fri 1/1/10	Thu 11/3/11
432	Training guidelines in organizational, contract farming arrangements, cor	6 mons	Fri 1/1/10	Thu 6/17/10



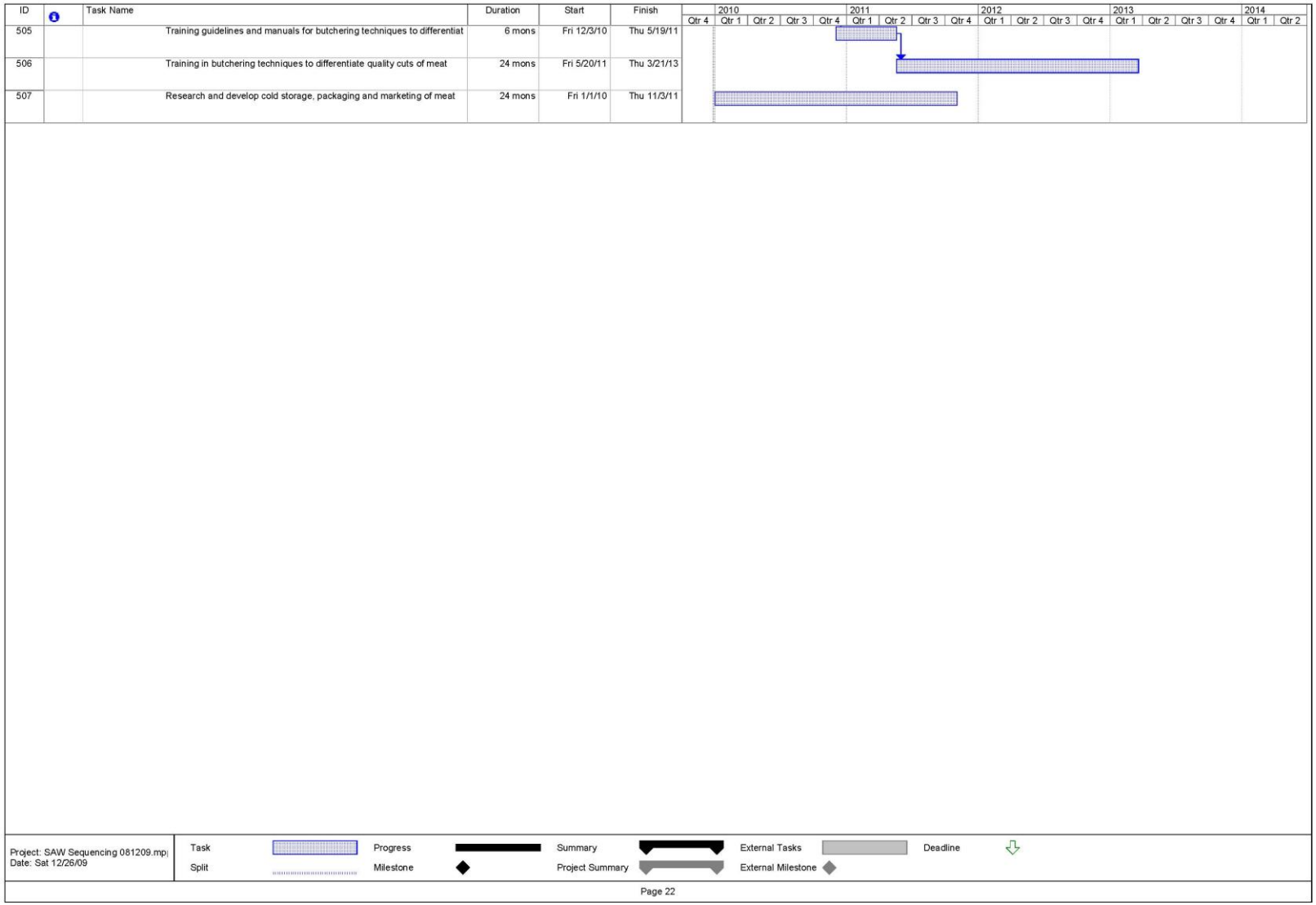
ID	Task Name	Duration	Start	Finish
433	Provision BDS for business planning services to assist in developing farr	46.15 mons	Fri 6/18/10	Tue 12/31/13
434	Train farmer groups in organizational, contract farming arrangements, cc	45.9 mons	Thu 7/1/10	Mon 1/6/14
435	Inventories of demand by province/district for linking to production areas	12 mons	Fri 1/1/10	Thu 12/2/10
436	**Traditional marketing systems are strengthened**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
437	Value chain partnerships between input suppliers, producers and market	51.9 mons	Fri 1/1/10	Tue 12/24/13
438	**Market oriented and niche-specific technologies are developed and ado**	**30 mons**	**Fri 1/1/10**	**Thu 4/19/12**
439	Identify high quality niche products with a unique Cambodian identity/bra	6 mons	Fri 1/1/10	Thu 6/17/10
440	Marketing strategies to promote production and export of niche products	12 mons	Fri 6/18/10	Thu 5/19/11
441	Domestic and export marketing and promotion campaigns	12 mons	Fri 5/20/11	Thu 4/19/12
442				
443	**Component III – Extension and outreach is improved**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
444	**Market-led extension is improved**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
445	Assess market-led technologies	6 mons	Fri 1/1/10	Thu 6/17/10
446	Conduct training in market-led technologies	12 mons	Fri 6/18/10	Thu 5/19/11
447	An effective system for collection and dissemination of market informatio	51.9 mons	Fri 1/1/10	Tue 12/24/13
448	Link farmers directly with markets, agri-clinics, and SMEs	51.9 mons	Fri 1/1/10	Tue 12/24/13
449	**Rural information and communication network is strengthened**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
450	Training needs assessment for ICT applications and rural networking	6 mons	Fri 1/1/10	Thu 6/17/10
451	Training guidelines and training course	6 mons	Fri 6/18/10	Thu 12/2/10
452	Train staff in ICT applications and rural networking	12 mons	Fri 12/3/10	Thu 11/3/11
453	Rural ICT centers (10)	12 mons	Fri 11/4/11	Thu 10/4/12
454	Training to DAE staff in mass media and broadcasting extension messag	12 mons	Fri 1/1/10	Thu 12/2/10
455	Update content of extension packages and Technical Implementation Pr	12 mons	Fri 12/3/10	Thu 11/3/11
456	Strengthen links with disseminating organizations and continue to impro	51.9 mons	Fri 1/1/10	Tue 12/24/13



ID	Task Name	Duration	Start	Finish
457	**Cost-effective financial products available to the agriculture and agri-bu**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
458	Criteria on types of activities to be funded and a scoring mechanism to ra	6 mons	Fri 1/1/10	Thu 6/17/10
459	Long-term loans through RDB and financial institutions allowing investme	44.9 mons	Thu 7/1/10	Mon 12/9/13
460	Loans through RDB and financial institutions for bulk buying crops for stc	44.9 mons	Thu 7/1/10	Mon 12/9/13
461	Prioritize and fast track land titling in commercial agriculture areas throug	50.9 mons	Mon 2/1/10	Wed 12/25/13
462	Financial management training to MSME managers to promote bank acc	12 mons	Fri 1/1/10	Thu 12/2/10
463	MAFF/DPs to provide long-term guarantee and credit lines to commercia	50.9 mons	Mon 2/1/10	Wed 12/25/13
464	Mechanisms for funding agricultural investments	50.9 mons	Mon 2/1/10	Wed 12/25/13
465	**Make available alternative rural financial products**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
466	MAFF, MOWRAM and MEF assess and cost the required investments in	12 mons	Fri 1/1/10	Thu 12/2/10
467	Introduce alternative agricultural insurance products through the commer	39.9 mons	Fri 12/3/10	Tue 12/24/13
468				
469	**Component IV – Market infrastructure is improved**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
470	**Upgrade market facilities**	**51.95 mons**	**Fri 1/1/10**	**Wed 12/25/13**
471	Review standards and laws for the management of public markets and d	6 mons	Fri 1/1/10	Thu 6/17/10
472	Exposure visits for market staff to well managed markets in the region	12 mons	Fri 6/18/10	Thu 11/14/13
473	Funding to improve market place facilities for product handling and stora	50.9 mons	Mon 2/1/10	Wed 12/25/13
474	Training guidelines and manuals for improved grading, packaging, proce	6 mons	Fri 1/1/10	Thu 6/17/10
475	Public relations campaign targeted at traders	12 mons	Fri 6/18/10	Thu 5/19/11
476	Training to market traders in improved grading, packaging, processing, a	12 mons	Fri 5/20/11	Thu 4/19/12
477	**Traders are aware of food standards and responsive to consumer prefer**	**30 mons**	**Fri 1/1/10**	**Thu 4/19/12**
478	Training guidelines and manuals for food quality grades, food standards	6 mons	Fri 1/1/10	Thu 6/17/10
479	Train market traders in quality grades, food standards and consumer pre	12 mons	Fri 6/18/10	Thu 5/19/11
480	Public relations campaign targeted at consumers	12 mons	Fri 5/20/11	Thu 4/19/12



ID	Task Name	Duration	Start	Finish
481	**Improved storage of agricultural produce**	**51.35 mons**	**Fri 1/1/10**	**Mon 12/9/13**
482	Study on financial viability of storage for priority crops and commodities f	6 mons	Fri 1/1/10	Thu 6/17/10
483	Competitive matching grants for establishing storage facilities with proce	44.9 mons	Thu 7/1/10	Mon 12/9/13
484	Producers inventory based loans for purchasing and storing commodities	44.9 mons	Thu 7/1/10	Mon 12/9/13
485	**Processed agri-food products meet international standards and SPS cer**	**48 mons**	**Fri 1/1/10**	**Thu 9/5/13**
486	Research and development of agro-industrial products, convenience foo	12 mons	Fri 1/1/10	Thu 12/2/10
487	Training to MIME and relevant MAFF departments to meet standards for	12 mons	Fri 12/3/10	Thu 11/3/11
488	Training to local government to enforce standards for weights, measures	12 mons	Fri 12/3/10	Thu 11/3/11
489	Establish and equip accredited SPS testing and certifying facilities	12 mons	Fri 11/4/11	Thu 10/4/12
490	SPS testing training guidelines and manuals	6 mons	Fri 11/4/11	Thu 4/19/12
491	Train SPS technicians	12 mons	Fri 11/4/11	Thu 10/4/12
492	Standards and export SPS procedures awareness raising campaign to e	12 mons	Fri 10/5/12	Thu 9/5/13
493	**Processing losses decreased and quality increased**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
494	Study to identify food products in demand for supply, and identify energy	12 mons	Fri 1/1/10	Thu 12/2/10
495	Promote processing technologies for rice, cassava and maize etc. throug	39.9 mons	Fri 12/3/10	Tue 12/24/13
496	**Trade in processed agri-foods increased**	**51.9 mons**	**Fri 1/1/10**	**Tue 12/24/13**
497	Study on the potential for import substitution of agri-food products eg, no	6 mons	Fri 1/1/10	Thu 6/17/10
498	Action plan for import substitution	6 mons	Fri 6/18/10	Thu 12/2/10
499	Implement action plan for import substitution	39.9 mons	Fri 12/3/10	Tue 12/24/13
500	Study on the potential for export of agri-food products to higher-value ma	6 mons	Fri 1/1/10	Thu 6/17/10
501	Action plan for export of agri-food products to higher-value markets	6 mons	Fri 6/18/10	Thu 12/2/10
502	Implement action plan for export of agri-food products to higher-value ma	39.9 mons	Fri 12/3/10	Tue 12/24/13
503	**Upgrade abattoirs**	**42 mons**	**Fri 1/1/10**	**Thu 3/21/13**
504	Review standards and regulations for abattoirs and develop managemen	12 mons	Fri 1/1/10	Thu 12/2/10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2010
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505
Training guidelines and manuals for butchering techniques to differentiat
6 mons
Fri 12/3/10
Thu 5/19/11
506
Training in butchering techniques to differentiate quality cuts of meat
24 mons
Fri 5/20/11
Thu 3/21/13
507
Research and develop cold storage, packaging and marketing of meat
24 mons
Fri 1/1/10
Thu 11/3/11
Project: SAW Sequencing 081209.mp
Date: Sat 12/26/09
Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline
Page 22

16 ANNEX 3: PROGRAM DETAILED BUDGET ESTIMATES

Summary Program Cost/Budget by Components - 4 year period

Component	Year 1	Year 2	Year 3	Year 4	Total (US$)	%
A. POLICY & REGULATION						
Component I - Policy, regulatory frameworks and Law are strengthened	1,300,000	500,000	300,000	300,000	2,400,000	0.48 %
Component II – Legal framework for agricultural land management is developed	300,000	1,300,000	-	-	1,600,000	0.32 %
Component III – Legal framework for water licensing and FWUCs is developed	360,000	650,000	350,000	350,000	1,710,000	0.34 %
Component IV – Marketing policies are strengthened	450,000	50,000	-	-	500,000	0.10 %
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT						
Component I – Human Resources and Management	1,240,000	4,280,000	4,020,000	3,945,000	13,485,000	2.69 %
Component II – Improve the planning, budget and financial management systems	450,000	200,000	200,000	200,000	1,050,000	0.21 %
Component III – Management Information Systems are implemented	840,000	290,000	240,000	240,000	1,610,000	0.32 %
C. RESEARCH & EDUCATION						
Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM	4,200,000	2,615,000	2,615,000	2,615,000	12,045,000	2.40 %
Component II – REE capacity	4,150,000	5,350,000	5,650,000	5,650,000	20,800,000	4.15 %
Component III – Research and technology development	6,850,000	5,850,000	5,850,000	5,850,000	24,400,000	4.87 %
D. FOOD SECURITY						
Component I – Community Self-reliance for Food Security and Poverty Reduction	3,350,000	13,550,000	12,550,000	12,300,000	41,750,000	8.33 %
Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base	405,000	800,000	1,275,000	435,000	2,915,000	0.58 %
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT						
Component I – Water data management is improved	1,375,000	1,500,000	1,350,000	1,350,000	5,575,000	1.11 %
Component II – Development of integrated water management	1,375,000	750,000	1,310,000	490,000	3,925,000	0.78

Summary Program Cost/Budget by Components - 4 year period

Component	Year 1	Year 2	Year 3	Year 4	Total (US$)	%
						%
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way	58,365,000	63,865,000	63,515,000	62,765,000	248,510,000	49.57 %
Component IV – National land resource assessments are developed	2,115,000	1,595,000	1,360,000	1,360,000	6,430,000	1.28 %
Component V – Productivity of lowland rice soils is improved	1,550,000	2,150,000	1,450,000	1,250,000	6,400,000	1.28 %
Component VI – Productivity of upland soils for sustainable management and utilization is improved	1,050,000	1,400,000	425,000	250,000	3,125,000	0.62 %
Component VII – Strengthening of smallholder land tenure security and productivity	625,000	1,000,000	500,000	500,000	2,625,000	0.52 %
Component VIII – Strengthening of the management of state land resources	850,000	350,000	350,000	350,000	1,900,000	0.38 %
Component IX - Strengthening the implementation and impact of land use and lend tenure policies	2,550,000	2,450,000	150,000	150,000	5,300,000	1.06 %
F. AGRICULTURAL BUSINESS & MARKETING						
Component I – Inputs and farm production are improved	2,550,000	1,550,000	1,150,000	1,200,000	6,450,000	1.29 %
Component II – Markets are developed and market opportunities are expanded	6,200,000	7,800,000	8,350,000	5,600,000	27,950,000	5.58 %
Component III – Extension and outreach is improved	3,700,000	3,070,000	3,170,000	2,620,000	12,560,000	2.51 %
Component IV – Market infrastructure is improved	9,750,000	8,300,000	8,600,000	8,150,000	34,800,000	6.94 %
Total Program Budget	115,950,000	131,215,000	124,730,000	117,920,000	489,815,000	97.71 %
Program Management Support	2,970,000	2,770,000	2,920,000	2,820,000	11,480,000	2.29 %
Total Program Cost	118,920,000	133,985,000	127,650,000	120,740,000	501,295,000	100.0 %

Summary Program Cost/Budget by Components and

Component	**Total (US$)**	
Sub-component	**Sub-Total**	%
A. POLICY & REGULATION		
Component I - Policy, regulatory frameworks and Law are strengthened	**2,400,000**	**0.48%**
Policy and regulatory frameworks	2,000,000	0.40%
The Organic Law is implemented in selected provincial departments	400,000	0.08%
Component II – Legal framework for agricultural land management is developed	**1,600,000**	**0.32%**
Legal framework for agricultural land management to protect, conserve, and enhance the use of agricultural lands	1,600,000	0.32%
Component III – Legal framework for water licensing and FWUCs is developed	**1,710,000**	**0.34%**
Legal framework and an implementation plan of water licenses and fees sub-decrees	1,160,000	0.23%
Legal framework on PIMD	50,000	0.01%
Component IV – Marketing policies are strengthened	**500,000**	**0.10%**
Policies for agricultural development	500,000	0.10%
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT		
Component I – Human Resources and Management	**13,485,000**	**2.69%**
HRD plans	12,140,000	2.42%
Implementation of Salary Supplementation / Allowances in Pilot Provinces	345,000	0.07%
Increase capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning	1,000,000	0.20%
Component II – Improve the planning, budget and financial management systems	**1,050,000**	**0.21%**
Planning, Budget and Financial Management Systems are strengthened	1,050,000	0.21%
Component III – Management Information Systems are implemented	**1,610,000**	**0.32%**
Information systems strengthened at national, provincial, district levels and consolidated at central level	1,610,000	0.32%
C. RESEARCH & EDUCATION		
Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM	**12,045,000**	**2.40%**
Management capacities of Educational Institutes supporting MAFF and MOWRAM	1,955,000	0.39%
TSC becomes an Institute	5,240,000	1.05%
TSC certified courses in Water Resources Management and Technical services	1,600,000	0.32%
Department of Water Resource Management at ITC	2,000,000	0.40%
RUA training courses to MAFF and MOWRAM staff	300,000	0.06%
Royal School of Administration Management training courses to MAFF and MOWRAM staff	950,000	0.19%
Component II – REE capacity	**20,800,000**	**4.15%**
Human resources for REE	6,000,000	1.20%
REE organizational strengthening	11,300,000	2.25%
Existing and new institutional arrangements	1,900,000	0.38%
Networks with other research institutes	1,000,000	0.20%
Resource mobilization and coordination	600,000	0.12%
Component III – Research and technology development	**24,400,000**	**4.87%**
Pro-poor, pro-women and pro-environment technologies	8,900,000	1.78%
Strategic and applied research improvements	7,600,000	1.52%
Market oriented and niche technologies (strategic and applied)	7,900,000	1.58%
D. FOOD SECURITY		
Component I – Community Self-reliance for Food Security and Poverty Reduction	**41,750,000**	**8.33%**
On-farm productivity is improved through adoption of low-input technical packages	6,950,000	1.39%
On-farm productivity is improved through adoption of improved technical packages	15,000,000	2.99%
Better income through diversified income-generation opportunities (on-farm and off-farm)	7,350,000	1.47%
Self-management and empowerment in farmers groups and village common works	4,000,000	0.80%

Access to adequate food, better nutrition practices including food preparation and preservation, improved sanitation and health		7,850,000	1.57%
Identification of good practices and more effective approaches to food security		600,000	0.12%
Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base	**2,915,000**		**0.58%**
Key policy makers, planners and program developers are trained in FSN concepts; integrated into policy, plans, and programs		365,000	0.07%
FSN coordination structure includes collaboration between and among concerned line ministries and agencies		85,000	0.02%
Commune councils and farmer communities (FOs, FGs, FWUCs, etc) trained in managing the project cycle and FSN integration		500,000	0.10%
Existing information and data on FSN is enhanced, used and is managed (maintained)		1,115,000	0.22%
Quality and scope of information and data supporting FSN in Cambodia is improved		850,000	0.17%
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT			
Component I – Water data management is improved	**5,575,000**		**1.11%**
CISIS irrigation scheme information system is operationalized		1,520,000	0.30%
Evaluate irrigation schemes suitable for future funding based on CISIS output		60,000	0.01%
Analysis and storage software are defined and used efficiently for surface and ground waters, river basins and meteorological data		615,000	0.12%
Existing water data and works are stored by the relevant government departments and available to be utilized by projects		450,000	0.09%
Observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration		1,030,000	0.21%
Flood and drought forecasting system is improved in collaboration with the MRC		1,900,000	0.38%
Component II – Development of integrated water management	**3,925,000**		**0.78%**
River basins are delineated and classified officially		720,000	0.14%
Water management framework plan is approved for the Tonle Sap basin		1,525,000	0.30%
Water resources are assessed at a nationwide scale		280,000	0.06%
Water committees are created and management plans are approved for at least 2 priority basins		1,400,000	0.28%
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way	**248,510,000**		**49.57%**
Preliminary studies taking into account environmental, social and economic factors for all irrigation projects		5,000,000	1.00%
Farmers are systematically and strongly involved in the design		260,000	0.05%
MOWRAM rehabilitates or builds at least 20,000 ha/year of wet season irrigation schemes		100,000,000	19.95%
MOWRAM rehabilitates or builds at least 5,000 ha/year of dry season irrigation schemes		73,000,000	14.56%
Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation		10,250,000	2.04%
MOWRAM develops its maintenance activities		49,500,000	9.87%
MOWRAM and other service providers are able to support FWUC for operation and maintenance		10,500,000	2.09%
Component IV – National land resource assessments are developed	**6,430,000**		**1.28%**
National Land Resources Team responsible for current and future land resource management work		2,150,000	0.43%
Land capability and land suitability classification will be developed		1,240,000	0.25%
Manual for classification, identification and management of upland soils is developed		750,000	0.15%
Soils and soil map of the rice growing areas in the lowlands is updated		250,000	0.05%
Existing National Soil Database developed by CARDI will be enhanced		280,000	0.06%
Agricultural land use changes will be determined and updated country-wide		1,760,000	0.35%
Component V – Productivity of lowland rice soils is improved	**6,400,000**		**1.28%**
Sustainable best soil fertility management practices adopted		2,500,000	0.50%
Rice yields using integrated crop management approach (ICM) are increased		1,400,000	0.28%
Productivity, intensification and diversification of post-rice lowland cropping is increased		1,300,000	0.26%
Guiding recommendations on management of water requirement for crops is established		1,200,000	0.24%
Component VI – Productivity of upland soils for sustainable management and utilization is improved	**3,125,000**		**0.62%**
Land suitability of the main soils in upland farming systems for field crops is assessed		1,600,000	0.32%
Sustainable best soil fertility management practices		1,525,000	0.30%
Component VII – Strengthening of smallholder land tenure security and productivity	**2,625,000**		**0.52%**
LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification		300,000	0.06%
Customary land tenure rights at the local level in areas not covered by systematic titling is recognized		100,000	0.02%
Social Land Concession (SLC) mechanism and improving land productivity of the SLC areas is strengthened		1,200,000	0.24%

Communal land rights of indigenous communities according to the provision of the law is established		675,000		0.13%
Land dispute resolution mechanisms is strengthened and integrated		350,000		0.07%
Component VIII – Strengthening of the management of state land resources	**1,900,000**		**0.38%**	
Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose		200,000		0.04%
Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established		900,000		0.18%
Management of Cambodia's forested land according to the law is strengthened		800,000		0.16%
Component IX - Strengthening the implementation and impact of land use and lend tenure policies	**5,300,000**		**1.06%**	
Agricultural Census will be carried out		4,300,000		0.86%
Methodologies for land resource utilization and data collection will be standardized		600,000		0.12%
Research on land use and land tenure impacts on development will be carried out		400,000		0.08%
F. AGRICULTURAL BUSINESS & MARKETING				
Component I – Inputs and farm production are improved	**6,450,000**		**1.29%**	
New and improved quality and efficiency of agricultural inputs		1,700,000		0.34%
Agriculture is diversified		4,750,000		0.95%
Component II – Markets are developed and market opportunities are expanded	**27,950,000**		**5.58%**	
Technology is transferred for bridging yield gaps		9,000,000		1.80%
Market research and information dissemination		4,750,000		0.95%
Develop the agro-tourism sector		1,000,000		0.20%
Marketing and business skills for emerging and expanding agri-business available		3,000,000		0.60%
Farmers are engaged in contract farming or other supply chain agreements with high-value markets		4,400,000		0.88%
Traditional marketing systems are strengthened		3,800,000		0.76%
Market oriented and niche-specific technologies are developed and adopted for export		2,000,000		0.40%
Component III – Extension and outreach is improved	**12,560,000**		**2.51%**	
Market-led extension is improved		7,100,000		1.42%
Rural information and communication network is strengthened		1,900,000		0.38%
Cost-effective financial products available to the agriculture and agri-business sector		3,250,000		0.65%
Make available alternative rural financial products		310,000		0.06%
Component IV – Market infrastructure is improved	**34,800,000**		**6.94%**	
Upgrade market facilities		7,350,000		1.47%
Traders are aware of food standards and responsive to consumer preferences		550,000		0.11%
Improved storage of agricultural produce		16,350,000		3.26%
Processed agri-food products meet international standards and SPS certifications		4,400,000		0.88%
Processing losses decreased and quality increased		1,500,000		0.30%
Trade in processed agri-foods increased		3,000,000		0.60%
Upgrade abattoirs		1,650,000		0.33%
Total Program Budget	**489,815,000**		**97.71%**	
Program Management Support	**11,480,000**		**2.29%**	
Total Program Cost	**501,295,000**		**100.00%**	

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
A. POLICY & REGULATION							
Component I - Policy, regulatory frameworks and Law are strengthened			**1,300,000**	**500,000**	**300,000**	**300,000**	**2,400,000**
	Policy and regulatory frameworks						
		Review of agriculture and water policy and regulatory framework	200,000				200,000
		Employment program for the rural labor force	200,000				200,000
		Sustainable investment in agriculture and water innovations		200,000			200,000
		Feasibility study on the provision of credit and insurance support for technology accession and adoption	200,000				200,000
		Action plan for policy and regulatory framework for the provision of credit and insurance support	200,000				200,000
		Bio-security, IPR, and TRIPS regulatory and enabling mechanisms	200,000				200,000
		Joint MOWRAM and MAFF Steering committee for every water and agriculture related project	200,000	200,000	200,000	200,000	800,000
	The Organic Law is implemented in selected provincial departments						
		Recruit staff at provincial departments for departmental strategy planning and development	50,000	50,000	50,000	50,000	200,000
		PRDC & provincial councils identify and implement development plans	25,000	25,000	25,000	25,000	100,000
		District integration workshops (25) to identify and prioritize infrastructure requirements	25,000	25,000	25,000	25,000	100,000
Component II – Legal framework for agricultural lands is developed			**300,000**	**1,300,000**			**1,600,000**
	Legal framework for agricultural lands to protect, conserve, and enhance the use of agricultural lands						
		Review of policies and constraints related to uses and management of agricultural lands	300,000				300,000
		Policy options for governing agricultural lands		350,000			350,000
		Rationalize the conversion of forested land to agricultural uses according to policy		950,000			950,000
Component III – Legal framework for water licensing and FWUCs is developed			**360,000**	**650,000**	**350,000**	**350,000**	**1,710,000**
	Legal framework and an implementation plan of water licenses and fees sub-decrees						
		Finalize the legal framework	50,000				50,000
		Sub-decree(s) follows the process of endorsement	10,000				10,000
		Implementation plan for water licenses and fees (staff, skill, organization, capacity building, running costs)					
		1. Staff		100,000	100,000	100,000	300,000
		2. Capacity building		100,000	50,000	50,000	200,000
		3. Organization		100,000	100,000	100,000	300,000
		4. Running costs		100,000	100,000	100,000	300,000
	Legal framework on PIMD						
		Finalize and promulgate sub-decree on FWUC and subsequent Prakas	50,000				50,000
	National Action Plan for PIMD is developed by MOWRAM						
		Assess current constraints and opportunities of PIMD implementation and develop a National Action Plan for PIMD	150,000	150,000			300,000
	Monitoring and evaluation system for PIMD is set up in MOWRAM						
		Integrate FWUC information system and standardized reporting under CSIS	100,000	100,000			200,000
Component IV – Marketing policies are strengthened			**450,000**	**50,000**			**500,000**
	Policies for agricultural development						
		Study to identify business and regulatory environment enforcement issues supporting agri-business development	200,000				200,000
		Review and identify agri-business development policies which are non-compliant with existing trade agreements	150,000				150,000
		Recommendations for policy and regulatory improvements	100,000				100,000
		Policies for approval by the National Assembly		50,000			50,000
B. INSTITUTIONAL CAPACITY BUILDING & HUMAN RESOURCE DEVELOPMENT							
Component I – Human Resources and Management			**1,240,000**	**4,280,000**	**4,020,000**	**3,945,000**	**13,485,00**

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
							0
	HRD plans						
		Training needs assessment	55,000	25,000	25,000	25,000	130,000
		Training guidelines	25,000	10,000	5,000	5,000	45,000
		Training outsourcing plan	25,000	10,000	5,000	5,000	45,000
		Short courses in management: Policy, Strategy, Legislation Drafting, Gender Mainstreaming and M&E	50,000	15,000	15,000	10,000	90,000
		Implement a capacity building program: advisors for each Ministry:					
		Staff Training		150,000	150,000	150,000	450,000
		Policy / Legislation TA		500,000	500,000	500,000	1,500,000
		Administration and Finance TA		500,000	500,000	500,000	1,500,000
		Gender TA		500,000	500,000	500,000	1,500,000
		Provincial Management TA		1,000,000	1,000,000	1,000,000	3,000,000
		Create Gender Mainstreaming unit in MOWRAM and continue operations in MAFF for a duration of 5 years					
		Office Equipment	80,000				80,000
		Vehicles and Motorbikes	50,000				50,000
		Staff Costs	150,000	150,000	150,000	150,000	600,000
		Training					
		1. Gender awareness	20,000	20,000	20,000	15,000	75,000
		2. Capacity building	20,000	20,000	20,000	15,000	75,000
		3. Workshops	150,000	150,000	150,000	90,000	540,000
		4. Study tours	70,000	70,000	70,000	70,000	280,000
		5. Women Farmer Livelihood Activities	75,000	75,000	75,000	75,000	300,000
		Data Bank	20,000	20,000	20,000	20,000	80,000
		Publications and Dissemination	250,000	250,000	250,000	250,000	1,000,000
		Implementation Costs	200,000	200,000	200,000	200,000	800,000
	Implementation of Salary Supplementation / Allowances in Pilot Provinces						
		Operationalize the Salary Supplementation / Allowances scheme in PDWRAM and PDA		115,000	115,000	115,000	345,000
	Increase capacity in the Administrative departments: Administration and Human Resources, Finance, and Planning						
		Line and Provincial Departments are trained in MTEF process		250,000	125,000	125,000	500,000
		PMU/PIU structure devolved into Line and Provincial department structures		250,000	125,000	125,000	500,000
Component II – Improve the planning, budget and financial management systems			**450,000**	**200,000**	**200,000**	**200,000**	**1,050,000**
	Planning, Budget and Financial Management Systems are strengthened						
		Implement MTEF in all departments of MAFF and MOWRAM	350,000				350,000
		Implement MTEF in 16 provincial PDWRAMs and PDAs	100,000	100,000	100,000	100,000	400,000
		Align new donor projects with the accounting and M&E systems of MTEF		100,000	100,000	100,000	300,000
Component III – Management Information Systems are implemented			**840,000**	**290,000**	**240,000**	**240,000**	**1,610,000**
	Information systems strengthened at national, provincial, district levels and consolidated at central level						
		Implement information systems for Finance (FIS)					
		Software development, equipment procurement	100,000				100,000
		Data collection and entry	50,000				50,000
		Design and implementation of Training Plan	100,000				100,000

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Implementation of FIS	70,000	70,000	70,000	70,000	280,000
		Implement information systems for Human Resource Development (HRMIS)					
		Software development, equipment procurement	100,000				100,000
		Data collection and entry	50,000				50,000
		Design and implementation of Training Plan	100,000				100,000
		Implementation of HRMIS	70,000	70,000	70,000	70,000	280,000
		Consolidate Agricultural and Water Resource information under a central MIS system	200,000	50,000	50,000	50,000	350,000
		Integrate data collection activities of donor projects with the national MIS systems		100,000	50,000	50,000	200,000
C. RESEARCH & EDUCATION							
Component I - Organizational Structure and Mechanisms in MAFF and MOWRAM			**4,200,000**	**2,615,000**	**2,615,000**	**2,615,000**	**12,045,000**
	Management capacities of Educational Institutes supporting MAFF and MOWRAM						
		Designate TSC, RSA, RUA and ITC as special operating agencies	25,000				25,000
		Salary Supplementation / Allowances scheme for key staff		155,000	155,000	155,000	465,000
		Training needs assessment	70,000	40,000	40,000	40,000	190,000
		Review activities related to REE at national and sub-national levels	300,000				300,000
		Assessment of formal education and vocational training needs	200,000				200,000
		Training guidelines and curricula	60,000	20,000	20,000	20,000	120,000
		Training outsourcing plan	15,000	5,000	5,000	5,000	30,000
		Train Directors and senior staff of training institutes	160,000	155,000	155,000	155,000	625,000
	TSC becomes an Institute						
		Training and Mainstreaming	940,000	940,000	940,000	940,000	3,760,000
		Register TSC under the Ministry of Education guidelines	10,000				10,000
		Funds for Certificate and Diploma training courses	300,000	300,000	300,000	300,000	1,200,000
		Install quality assurance system TSC	50,000				50,000
		Facilities' needs analysis	20,000				20,000
		Upgrade facilities	125,000				125,000
		Library books, furniture and equipment	75,000				75,000
	TSC certified courses in Water Resources Management and Technical services						
		Training to staff in 16 provinces	300,000	300,000	300,000	300,000	1,200,000
		Train management committees of 25 FWUCs at TSC in Irrigation Scheme Operations and Management (O&M)	50,000	50,000	50,000	50,000	200,000
		Accredit private contractors by TSC in the management or technical service they are providing to FWUCS	50,000	50,000	50,000	50,000	200,000
	Department of Water Resource Management at ITC						
		Audit Water Sciences curricula in the Department of Rural Engineering and 5 year Degree in WRM	50,000				50,000
		Procedures for the training curriculum	50,000				50,000
		Training plans	50,000				50,000
		Funds for 100 students per year	400,000	400,000	400,000	400,000	1,600,000
		Facilities' needs analysis	50,000				50,000
		Upgrade facilities	125,000				125,000
		Library books, furniture and equipment	75,000				75,000
	RUA training courses to MAFF and MOWRAM staff						
		Install quality assurance system RUA	50,000				50,000
		Facilities' needs analysis	50,000				50,000
		Upgrade facilities	125,000				125,000
		Library books, furniture and equipment	75,000				75,000

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
	Royal School of Administration Management training courses to MAFF and MOWRAM staff						
		Audit training materials and update training materials according to the HRD plan and TNA	50,000				50,000
		Procedures for the training curriculum	50,000				50,000
		Training plans	50,000				50,000
		Allocate new places for 10 MAFF, MOWRAM, PDWRAM, and PDA					
		Train directors and senior staff of MAFF and MOWRAM	200,000	200,000	200,000	200,000	800,000
Component II – REE capacity			**4,150,000**	**5,350,000**	**5,650,000**	**5,650,000**	**20,800,000**
	Human resources for REE						
		Training needs assessment	300,000				300,000
		Training guidelines	1,000,000				1,000,000
		Training outsourcing plan	200,000				200,000
		Training courses in technical, analytical and communication skills		500,000	500,000	500,000	1,500,000
		Implement the training program		1,000,000	1,000,000	1,000,000	3,000,000
	REE organizational strengthening						
		Training needs assessment of REE managers in resources planning and management and M&E	300,000				300,000
		Resource planning and management, and M&E training courses	500,000				500,000
		Conduct training courses		500,000	500,000	500,000	1,500,000
		Inclusive, farmer-centered, development-oriented research agenda, university curricula and extension messages	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
		Laboratories, equipment, teaching aids and technologies		500,000	500,000	500,000	1,500,000
		Mechanisms for participatory planning, implementation, and evaluation of REE programs	500,000				500,000
		Farmer-led, market-driven extension services		1,000,000	1,000,000	1,000,000	3,000,000
	Existing and new institutional arrangements						
		Transform CAREC into a Agricultural and Water Innovation Council (AWIC)	50,000				50,000
		Funding for AWIC		100,000	100,000	100,000	300,000
		Programs and activities of AWIC at the national, provincial, district and village levels		500,000	500,000	500,000	1,500,000
		CARDI becomes member of APAARI	50,000				50,000
	Networks with other research institutes						
		Network and cooperate with international REE institutions	100,000	100,000	100,000	100,000	400,000
		Link with universities, peer institutions, regional and international organizations, and business establishments	50,000	50,000	50,000	50,000	200,000
		Link with industries, business establishments, SMEs and those working at the field level	50,000	50,000	50,000	50,000	200,000
		Promote strengths and possibilities of Cambodian educational institutions	50,000	50,000	50,000	50,000	200,000
	Resource mobilization and coordination						
		Communication network for national and provincial stakeholders to facilitate the exchange of REE information			100,000	100,000	200,000
		Funding consortium to support agriculture and water resources innovation			200,000	200,000	400,000
Component III – Research and technology development			**6,850,000**	**5,850,000**	**5,850,000**	**5,850,000**	**24,400,000**

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
	Pro-poor, pro-women and pro-environment technologies						
		Preliminary assessment of technologies developed and successfully adopted elsewhere	500,000				500,000
		Participatory research and on-farm assessment, validate relevant technologies	1,500,000	1,500,000	1,500,000	1,500,000	6,000,000
		Train farmers in technologies through appropriate extension mechanisms	600,000	600,000	600,000	600,000	2,400,000
	Strategic and applied research improvements						
		Human and physical resources for high caliber science-based A&W research	400,000	400,000	400,000	400,000	1,600,000
		Initiate strategic and applied A&W research programs and activities	1,500,000	1,500,000	1,500,000	1,500,000	6,000,000
	Market oriented and niche technologies (strategic and applied)						
		National food and agriculture processing technology center	1,000,000	500,000	500,000	500,000	2,500,000
		Recruit trained and qualified researchers from REE institutions	250,000	250,000	250,000	250,000	1,000,000
		Research program	500,000	500,000	500,000	500,000	2,000,000
		Introduce, adapt, and generate appropriate value-added technologies	500,000	500,000	500,000	500,000	2,000,000
		Advisory boards at agriculture and water research institutes	100,000	100,000	100,000	100,000	400,000
D. FOOD SECURITY							
Component I – Community Self-reliance for Food Security and Poverty Reduction			**3,350,000**	**13,550,000**	**12,550,000**	**12,300,000**	**41,750,000**
	On-farm productivity is improved through adoption of low-input technical packages						
		Field trials confirming promising technical packages and practices	500,000	500,000			1,000,000
		Extension, technology transfer, and traditional and non-traditional on-farm production training guidelines	700,000	700,000	700,000	700,000	2,800,000
		Disseminate sets of low-input technical packages for production to farmers		350,000	350,000	350,000	1,050,000
		Extension, technology transfer, and on-farm production training to farmers		700,000	700,000	700,000	2,100,000
	On-farm productivity is improved through adoption of improved technical packages						
		Extension, technology transfer, and improved on-farm production training guidelines	500,000				500,000
		Disseminate sets of improved technical packages for production to farmers		500,000	500,000	500,000	1,500,000
		Extension, technology transfer, and improved on-farm production training to farmers		2,000,000	1,500,000	1,500,000	5,000,000
		Implement agricultural productivity practices, techniques and management of natural resources		4,000,000	2,000,000	2,000,000	8,000,000
	Better income through diversified income-generation opportunities (on-farm and off-farm)						
		Membership of existing self-help groups and form new self-help groups at the community level	100,000	100,000	100,000	50,000	350,000
		Basic administration training to self-help groups for self-management capacity		100,000	100,000	100,000	300,000
		Micro-businesses and small-scale agro-processing at a basic level in communities		2,000,000			

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
					2,000,000	2,000,000	6,000,000
		Set of vocational training packages for on and off-farm employment opportunities	100,000				100,000
		Train people in vocational skills and link to employment opportunities	150,000	150,000	150,000	150,000	600,000
	Self-management and empowerment in farmers groups and village common works						
		Transformation of self-help groups to farmer/villager organizations (FOs)			1,250,000	1,250,000	2,500,000
		Participatory Planning training for the implementation of community projects including safety net activities			750,000	750,000	1,500,000
	Access to adequate food, better nutrition practices including food preparation and preservation, improved sanitation and health						
		Home gardening training to self-help groups, FOs and households		150,000	150,000	150,000	450,000
		Food use, nutrition, and basic health care training and extension		200,000	200,000	200,000	600,000
		Food intake and food composition studies		200,000	200,000	200,000	600,000
		Food production and income changes studies		200,000	200,000	200,000	600,000
		KAP studies		200,000	200,000	200,000	600,000
		Sanitation inputs to householders	900,000	900,000	900,000	700,000	3,400,000
		Training to householders on household sanitation installation and safe water use	400,000	400,000	400,000	400,000	1,600,000
	Identification of good practices and more effective approaches to food security						
		Meetings and workshops to share information, knowledge and lessons learned and disseminate at policy level		200,000	200,000	200,000	600,000
Component II – Enhancement of Institutional and Policy Environment for Food Security and Nutrition (FSN) and an Improved Information Base			**405,000**	**800,000**	**1,275,000**	**435,000**	**2,915,000**
	Key policy makers, planners and program developers are trained in FSN concepts; integrated into policy, plans, and programs						
		FSN trainers pool	10,000	10,000	10,000	10,000	40,000
		Processes and guidelines for FSN national trainers pool	60,000				60,000
		FSN national trainer establishes a portfolio of trainings	60,000				60,000
		FSN mainstreaming tool with manuals and apply FSN mainstreaming tool to training portfolio	25,000	25,000	25,000	25,000	100,000
		Disseminate FSN mainstreaming tools for development projects to sub-national level		10,000	10,000		20,000
		Workshops on FSN concepts and objectives training to policy makers, planners, program designers, and line ministries		20,000	20,000	20,000	60,000
		Train key policy makers, planners and program developers in FSN portfolio of trainings and ToT skills		25,000			25,000
	FSN coordination structure includes collaboration between and among concerned line ministries and agencies						
		FSN official focal points with clear responsibilities at MAFF and MOWRAM	85,000				85,000
	Commune councils and farmer communities (FOs, FGs, FWUCs, etc) trained in managing the project cycle and FSN integration						
		FSN planning and coordination teams at provincial and commune levels	50,000	50,000			100,000
		FSN teams apply FSN objectives and monitoring tools into development plans	50,000	50,000			100,000
		Train commune council members and farmer communities in FSN training subjects in FSN portfolio		100,000	100,000	100,000	300,000
	Existing information and data on FSN is enhanced, used and is managed (maintained)						
		Coordination and harmonization processes, roles and functions for the existing FSN agency	15,000				15,000
		FSN information via the TWGAW website accessible to all participating agencies	50,000				50,000
		FIVIMS FSN information analysis and dissemination system integration		375,000	375,000		750,000
		Workshops to promote the use of FSN information with members of other TWGs		75,000	75,000		150,000
		Document and disseminate best practice and innovative FSN approaches		60,000	60,000		120,000
		FSN policy and program formulation dialogue with government and development partners				30,000	30,000
	Quality and scope of information and data supporting FSN in Cambodia is improved						
		Link and expand existing FSN data with ID-Poor Program in MoP			300,000		300,000

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Develop targeted investment proposals under the FSSP using ID-Poor Program data			150,000	150,000	300,000
		Create and disseminate leaflets on food safety awareness at commune and village meetings on food security			100,000	50,000	150,000
		Study on information flows and structure on food safety at decentralized level			50,000	50,000	100,000
E. WATER RESOURCE MANAGEMENT & AGRICULTURAL LAND MANAGEMENT							
Component I – Water data management is improved			**1,375,000**	**1,500,000**	**1,350,000**	**1,350,000**	**5,575,000**
	CISIS irrigation scheme information system is operationalized						
		MOWRAM Departments and MEF agreement on use of CISIS	20,000				20,000
		Infield data collection protocols and 'data collection teams' for the operationalization of the CISIS	300,000	300,000	300,000	300,000	1,200,000
		Auditing framework for irrigation infrastructure assessments and conduct CISIS audit	50,000	50,000	50,000	50,000	200,000
		CISIS is used to develop "best practice framework" for irrigation infrastructure and O&M	100,000				100,000
	Evaluate irrigation schemes suitable for future funding based on CISIS output						
		Agreed process whereby irrigation schemes are evaluated and ranked based on CISIS database	20,000				20,000
		Coordination between MOWRAM & MEF for Dept Irrigated Engineering and Dept Irrigated Agriculture to perform infrastructure rehabilitation	20,000				20,000
		Performance based funding criteria for donors and MOWRAM for future investment in irrigation infrastructure	20,000				20,000
	Analysis and storage software are defined and used efficiently for surface and ground waters, river basins and meteorological data						
		Inventory of all existing data	50,000				50,000
		Study to identify adequate software and hardware and to propose an organization for the departments	50,000				50,000
		Software and hardware are bought and installed	50,000				50,000
		Storage software and databases for ground water, river basins and meteorological data		150,000			150,000
		Training needs assessment of staff capacity in data analysis and storage	15,000				15,000
		Staff trained in the software		100,000	100,000	100,000	300,000
	Existing water data and works are stored by the relevant government departments and available to be utilized by projects						
		Inventory of all existing data	50,000				50,000
		Data are gathered and stored in the defined format in adequate software and integrated in the national storage system	100,000				100,000
		Training needs for data collecting, storage and use. Train staff from DHRW, DRWC and DoM in water data management		100,000	100,000	100,000	300,000
	Observing system is defined and set up for surface and ground waters, meteorological data, and evapotranspiration						
		Study is carried out to define an integrated observing system	15,000				15,000
		Observing system is repaired, upgraded and reorganized	250,000	250,000	250,000	250,000	1,000,000
		Training needs assessment of staff capacity and train staff in observing systems	15,000				15,000
	Flood and drought forecasting system is improved in collaboration with the MRC						
		Flood forecasting model of the MRC is upgraded with the involvement of the DHRW	250,000	250,000	250,000	250,000	1,000,000
		Observing system is improved following the recommendations of the MRC		300,000	300,000	300,000	900,000
Component II – Development of integrated water management			**1,375,000**	**750,000**	**1,310,000**	**490,000**	**3,925,000**
	River basins are delineated and classified officially						
		Study to define the reference river basins boundaries and classify the basins and the hydrological network	300,000	300,000			600,000
		National classification of rivers and matching basins is made official by a sub-decree			20,000		20,000
		Store information in adequate software			50,000	50,000	100,000
	Water management framework plan is approved for the Tonle Sap basin						

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Develop Strategic Plan for the Tonle Sap Authority	100,000				100,000
		Develop White Paper for TSA to coordinate sectoral activities in Tonle Sap	50,000				50,000
		Develop Master Plan for development of Tonle Sap region and Lake	400,000				400,000
		Study including environmental, social and economic aspects	75,000				75,000
		Water management framework plan for the Tonle Sap Authority	450,000	450,000			900,000
	Water resources are assessed at a nationwide scale						
		Assess water resources for each basin on a monthly basis with the current available data			120,000	120,000	240,000
		Educational version of the assessment			20,000	20,000	40,000
	Water committees are created and management plans are approved for at least 2 priority basins						
		Study on 2 river basins including a basin modeling dealing with natural conditions, water use and flood			800,000		800,000
		Create a Water Management Committee			50,000	50,000	100,000
		Water management plan and seek Government approval			250,000	250,000	500,000
Component III – Development of irrigation and water management infrastructures with a participatory design and in an integrated way			**58,365,000**	**63,865,000**	**63,515,000**	**62,765,000**	**248,510,000**
	Preliminary studies taking into account environmental, social and economic factors for all irrigation projects						
		Preliminary studies before all projects	250,000	250,000	250,000	250,000	1,000,000
		Irrigation projects where agricultural development plans exist	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
	Farmers are systematically and strongly involved in the design						
		Train farmers in Farmers Participation for Sustainability of Irrigation Schemes and Water Management and Development	100,000	100,000			200,000
		Representatives of the farmers are members of the steering committees of the projects	15,000	15,000	15,000	15,000	60,000
	MOWRAM rehabilitates or builds at least 10,000 ha/year of wet season irrigation schemes						
		Rehabilitate or build Increase of > 10,000 ha (total) in wet season irrigation lands	24,000,000	24,000,000	24,000,000	24,000,000	96,000,000
		FWUCs rehabilitate, construct and manage small-scale irrigation schemes and water harvesting devices in the villages	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
	MOWRAM rehabilitates or builds at least 2,000 ha/year of dry season irrigation schemes						
		Rehabilitate or build Increase of > 2,000 ha (total) in dry season irrigation lands	17,500,000	17,500,000	17,500,000	17,500,000	70,000,000
		FWUCs rehabilitate, construct and manage small-scale irrigation schemes and water harvesting devices in the villages	750,000	750,000	750,000	750,000	3,000,000
	Alternative water management technologies such as direct sowing in mulch based cropping systems and small irrigation						
		Research programs into DSMB and small-scale irrigation	1,000,000	1,000,000			2,000,000
		Best practice pilot farm sites		1,250,000	1,250,000	1,250,000	3,750,000
		Study of conditions for large-scale adoption of DSMB and small-scale irrigation		750,000	750,000		1,500,000
		Water management technologies in direct sowing in mulch based cropping systems and small irrigation			1,500,000	1,500,000	3,000,000
	MOWRAM develops its maintenance activities						
		Budgetary plan for maintenance and increased de-concentrated budget	750,000	750,000			1,500,000
		Routine maintenance on newly built or rehabilitated schemes under the O&M budget	12,000,00	12,000,00	12,000,00	12,000,00	48,000,00

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
			0	0	0	0	0
	MOWRAM and other service providers are able to support FWUC for operation and maintenance						
		MOWRAM strengthens its concerned departments at national and provincial level to support FWUC O&M		2,000,000	2,000,000	2,000,000	6,000,000
		Network of private service providers level to support FWUC O&M		1,500,000	1,500,000	1,500,000	4,500,000
Component IV – National land resource assessments are developed			**2,115,000**	**1,595,000**	**1,360,000**	**1,360,000**	**6,430,000**
	National Land Resources Team responsible for current and future land resource management work						
		National Land Resources Team	250,000	100,000	100,000	100,000	550,000
		Soil surveys and soil classification surveys to update land resource inventory	400,000	400,000	400,000	400,000	1,600,000
	Land capability and land suitability classification will be developed						
		Soil surveys and identify soil limiting factors for crop production mostly in the upland farming systems	180,000	180,000	180,000	180,000	720,000
		Land suitability and crop zoning classification map	260,000	260,000			520,000
	Manual for classification, identification and management of upland soilsis developed						
		Framework for classifying and identifying the major upland soils	250,000				250,000
		Upland soil classification manual	250,000	250,000			500,000
	Soils and soil map of the rice growing areas in the lowlands is updated						
		Soils in rice-growing areas not appearing in the rice soil map identified and update soil map	125,000	125,000			250,000
	Existing National Soil Database developed by CARDI will be enhanced						
		Mandate the responsibility for the maintenance of the national soil database	40,000				40,000
		Update database with new soil survey data	60,000	60,000	60,000	60,000	240,000
	Agricultural land use changes will be determined and updated country-wide						
		Action plan to conduct regular agricultural land use surveys on a rolling 3 year basis	300,000				300,000
		Surveys on a continuing basis to determine agricultural land use changes		220,000	220,000	220,000	660,000
		Country-wide agricultural land use changes map layers on a continued basis			400,000	400,000	800,000
Component V – Productivity of lowland rice soils is improved			**1,550,000**	**2,150,000**	**1,450,000**	**1,250,000**	**6,400,000**
	Sustainable best soil fertility management practices adopted						
		Research and demonstrations on improved soil nutrient management techniques	200,000	200,000	200,000		600,000
		Develop sustainable soil fertility management techniques materials	100,000	100,000	100,000	100,000	400,000
		Disseminate sustainable soil fertility management techniques materials		500,000	500,000	500,000	1,500,000
	Rice yields using integrated crop management approach (ICM) are increased						
		Integrated crop management approach (variety, nutrients and pest) for lowland rice cropping	350,000	350,000	350,000	350,000	1,400,000
	Productivity, intensification and diversification of post-rice lowland cropping is increased						
		Soil constraints limiting field crop production after rice cropping	150,000				150,000
		Develop integrated soil, water, crop, and pest management approach	150,000	100,000			250,000
		Implement integrated soil, water, crop, and pest management plan		200,000	200,000	200,000	600,000
		Apply treatment techniques to overcome main constraints of post-rice cropping		100,000	100,000	100,000	300,000
	Guiding recommendations on management of water requirement for crops is established						
		Water requirements for rice and other crops	350,000	350,000			700,000
		Develop recommendations for effective use and management of water	250,000	250,000			500,000
Component VI – Productivity of upland soils for sustainable management and utilization is improved				**1,400,000**	**425,000**	**250,000**	

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
			1,050,000				**3,125,000**
	Land suitability of the main soils in upland farming systems for field crops is assessed						
		Identify soil characteristics determining soil qualities which affect field crop production	800,000	800,000			1,600,000
	Sustainable best soil fertility management practices						
		Research and demonstrations on improved soil nutrient management techniques	250,000	175,000			425,000
		Sustainable soil fertility management techniques materials		175,000	175,000		350,000
		Disseminate sustainable soil fertility management techniques materials to farmers via extension services		250,000	250,000	250,000	750,000
Component VII – Strengthening of smallholder land tenure security and productivity			**625,000**	**1,000,000**	**500,000**	**500,000**	**2,625,000**
	LMAP systematic land titling supports objectives to promote agricultural production, productivity, and diversification						
		Identify high priority areas for land titling	100,000				100,000
		Develop a master plan to target complementary input packages in support of agricultural development		200,000			200,000
	Customary land tenure rights at the local level in areas not covered by systematic titling is recognized						
		Develop mechanisms to officially recognize customary land tenure arrangements at the local level	100,000				100,000
	Social Land Concession (SLC) mechanism and improving land productivity of the SLC areas is strengthened						
		Develop more efficient procedures for providing SLCs to the poor	150,000	150,000			300,000
		Input package to facilitate the best use of land such as credits, irrigation farming techniques, and extension services		300,000	300,000	300,000	900,000
	Communal land rights of indigenous communities according to the provision of the law is established						
		Initiate formal recognition of indigenous communities as legal communities	75,000				75,000
		Issue communal land titles		200,000	200,000	200,000	600,000
	Land dispute resolution mechanisms is strengthened and integrated						
		Research scope and scale of land disputes and constraints on land distribution process	200,000				200,000
		Action plan for strengthening land dispute resolution mechanisms		150,000			150,000
Component VIII – Strengthening of the management of state land resources			**850,000**	**350,000**	**350,000**	**350,000**	**1,900,000**
	Procedures and enforcement of Economic Land Concessions comply with the law and achieve their stated purpose						
		Review of the ELCs that examines the contributions of ELCs	50,000				50,000
		Improve procedures for granting ELCs	50,000				50,000
		Strengthen the capacity to oversee ELC reforms	25,000	25,000	25,000	25,000	100,000
	Boundaries and jurisdiction of government ministries and agencies concerning State Private and State Public Land is established						
		Develop demarcation and mapping of State Land, Forest Estate, protected areas, and national parks	225,000	225,000	225,000	225,000	900,000
	Management of Cambodia's forested land according to the law is strengthened						
		Undertake legal actions to secure the return of state lands by medium and large-scale land grabbing	100,000	100,000	100,000	100,000	400,000
		Develop guidelines and procedures for streamlining the application and approval process for Community Forestry	400,000				400,000
Component IX - Strengthening the implementation and impact of land use and lend tenure policies			**2,550,000**	**2,450,000**	**150,000**	**150,000**	**5,300,000**
	Agricultural Census will be carried out						
		Agricultural Census will be carried out	2,000,000	2,300,000			4,300,000
	Methodologies for land resource utilization and data collection will be standardized						
		Adapt FAO guidelines on land use planning for Cambodian conditions	150,000	150,000	150,000	150,000	600,000
	Research on land use and land tenure impacts on development will be carried out						
		Conduct research on rural-rural migration and its impact on land use and land use change	100,000				100,000
		Conduct research on gender aspects of rural land tenure	100,000				100,000

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Conduct research on water resource management and land tenure	100,000				100,000
		Conduct research on land disputes and resolution mechanisms	100,000				100,000
F. AGRICULTURAL BUSINESS & MARKETING							
Component I – Inputs and farm production are improved			**2,550,000**	**1,550,000**	**1,150,000**	**1,200,000**	**6,450,000**
	New and improved quality and efficiency of agricultural inputs						
		Fertilizer and agro-chemical import and private sector distribution feasibility study	200,000				200,000
		Action plan for agro-chemical import and private sector distribution	50,000				50,000
		Licensing standards for agricultural merchants	100,000				100,000
		National distribution network of licensed agricultural merchants	100,000				100,000
		BAMS and DAL workshop with licensed agricultural merchants		50,000		50,000	100,000
		Equip provincial MAFF departments with laboratory facilities to conduct agricultural input testing	500,000				500,000
		Training guidelines for testing agricultural inputs		50,000			50,000
		Train laboratory technicians to test agricultural inputs		100,000			100,000
		Provincial public awareness campaign to farmers of licensing standards of input providers			50,000	50,000	100,000
		BAMS and DAL conduct regular spot testing of inputs			50,000	50,000	100,000
		Study on cash crop seed requirements considering factors like prevailing soils and agro-environmental conditions	100,000				100,000
		Action plan for nurseries to propagate improved clones	50,000				50,000
		Study on appropriate farm mechanization technologies and alternative delivery mechanisms	100,000				100,000
		Action plan for appropriate farm mechanization technologies and alternative delivery mechanisms	50,000				50,000
	Agriculture is diversified						
		Extension and training materials to promote specific technologies and techniques or address specific constraints	200,000				200,000
		Train MAFF and private sector extension agents on the technologies		100,000	100,000	100,000	300,000
		Provision of extension advice by input suppliers and traders to beneficiary farmers			100,000	100,000	200,000
		MAFF commissioned study to identify technologies for high-value crop production	200,000				200,000
		Public/private partnerships to conduct training courses for commercial farmers in specific high-value crop production	100,000				100,000
		Extension campaign to encourage the emergence of private sector extension and to promote specific techniques		100,000			100,000
		Horticulture support program with a value-chain approach	300,000	300,000			600,000
		MAFF commissioned study on the demand and comparative cost advantages of producing quality beef	200,000				200,000
		Beef cattle support program for targeted research, development and extension for appropriate breeds and raising systems		400,000	400,000	400,000	1,200,000
		Public/private partnerships for strategic extension campaigns to promote on-farm post-harvest handling techniques		150,000	150,000	150,000	450,000
		Competitive matching grants for farmer groups to acquire post-harvest handling facilities	300,000	300,000	300,000	300,000	1,200,000
Component II – Markets are developed and market opportunities are expanded			**6,200,000**	**7,800,000**	**8,350,000**	**5,600,000**	**27,950,000**
	Technology is transferred for bridging yield gaps						
		On-farm assessment and validate on-farm technologies	1,000,000				1,000,000
		Identify and disseminate and new demand-driven production technologies		2,000,000	2,000,000		4,000,000
		Identify recommended certified seed, appropriate fertilizers and IPM			2,000,000	2,000,000	4,000,000
	Market research and information dissemination						
		Market research and new product development systems in MAFF	200,000	200,000			400,000

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Training guidelines for MAFF and agri-business to identify markets, products, and marketing strategies	200,000	200,000			400,000
		Training to MAFF and private sector agri-business		300,000	300,000	300,000	900,000
		Economic/ marketing research and studies annually	50,000	50,000	50,000	50,000	200,000
		Analyze and interpret price movement and variables of agricultural products in domestic and international markets	50,000	50,000	50,000	50,000	200,000
		Formulate policies and strategies for market development and strengthen the agricultural marketing system		250,000			250,000
		Formulate the technical norms and standardizations of agricultural products		200,000			200,000
		Marketing extension materials for extension workers		150,000	150,000		300,000
		Provision public/private partnerships for marketing extension services	300,000	300,000	300,000	300,000	1,200,000
		Establish farmer marketing schools			200,000	200,000	400,000
		Advisory services to farmers and traders on post-harvest technologies		100,000	100,000	100,000	300,000
	Develop the agro-tourism sector						
		Market research and analysis of potential agro-tourism ventures in collaboration with Ministry of Tourism	200,000				200,000
		Develop agro-tourism strategy in collaboration with Ministry of Tourism	100,000				100,000
		Develop partnerships between key stakeholders in the tourism industry		100,000			100,000
		Develop agro-tourism policies, strategies and regulations at national and provincial levels		100,000			100,000
		Develop agro-tourism products			200,000		200,000
		Develop agro-tourism product training guidelines			100,000		100,000
		Agro-tourism training package to national, provincial and community stakeholders				200,000	200,000
	Marketing and business skills for emerging and expanding agri-business available						
		Training guidelines and marketing and business skills manuals for BDS	200,000				200,000
		Marketing and business skills training to existing and potential BDS and private sector agri-business enterprises	250,000	250,000	250,000	250,000	1,000,000
		Cost sharing agreements with BDS until sufficient demand exists for self-sustainable operations	300,000				300,000
		Agricultural marketing and agri-business TNA and curricula for vocational and technical colleges	300,000				300,000
		Train students at the vocational and technical colleges		400,000	400,000	400,000	1,200,000
	Farmers are engaged in contract farming or other supply chain agreements with high-value markets						
		Contract Farming law and subsequent sub-decrees and implementing legislation	150,000	150,000			300,000
		Training guidelines in organizational, contract farming arrangements, commodity clustering strategies	300,000				300,000
		Provision BDS for business planning services to assist in developing farming contracts	500,000	500,000	500,000	500,000	2,000,000
		Train farmer groups in organizational, contract farming arrangements, commodity clustering strategies		300,000	300,000	300,000	900,000
		Inventories of demand by province/district for linking to production areas and farmer groups	900,000				900,000
	Traditional marketing systems are strengthened						
		Value chain partnerships between input suppliers, producers and market traders in the traditional marketing system	950,000	950,000	950,000	950,000	3,800,000
	Market oriented and niche-specific technologies are developed and adopted for export						
		Identify high quality niche products with a unique Cambodian identity/brand for export	250,000	250,000			500,000
		Marketing strategies to promote production and export of niche products identified		500,000			500,000
		Domestic and export marketing and promotion campaigns		500,000	500,000		1,000,000
Component III – Extension and outreach is improved	**Market-led extension is improved**		**3,700,000**	**3,070,000**	**3,170,000**	**2,620,000**	**12,560,000**

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
		Assess market-led technologies	300,000				300,000
		Conduct training in market-led technologies	400,000	400,000	400,000	400,000	1,600,000
		An effective system for collection and dissemination of market information	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
		Link farmers directly with markets, agri-clinics, and SMEs	300,000	300,000	300,000	300,000	1,200,000
	Rural information and communication network is strengthened						
		Training needs assessment for ICT applications and rural networking	100,000				100,000
		Training guidelines and training course	100,000				100,000
		Train staff in ICT applications and rural networking		100,000			100,000
		Rural ICT centers (10)			500,000		500,000
		Training to DAE staff in mass media and broadcasting extension messages	100,000				100,000
		Update content of extension packages and Technical Implementation Procedures (TIP)		200,000			200,000
		Strengthen links with disseminating organizations and continue to improve dissemination of extension material	200,000	200,000	200,000	200,000	800,000
	Cost-effective financial products available to the agriculture and agri-business sector						
		Criteria on types of activities to be funded and a scoring mechanism to rank proposals	150,000				150,000
		Long-term loans through RDB and financial institutions allowing investment in agricultural infrastructure	150,000	150,000	150,000	150,000	600,000
		Loans through RDB and financial institutions for bulk buying crops for storage based on inventory lending	400,000	400,000	400,000	400,000	1,600,000
		Prioritize and fast track land titling in commercial agriculture areas through the LMAP program for use as collateral	100,000	100,000			200,000
		Financial management training to MSME managers to promote bank accounts amongst farmers and agri-businesses	100,000	100,000	100,000	50,000	350,000
		MAFF/DPs to provide long-term guarantee and credit lines to commercial banks, MFIs, and MSMEs	50,000	50,000	50,000	50,000	200,000
		Mechanisms for funding agricultural investments	150,000				150,000
	Make available alternative rural financial products						
		MAFF, MOWRAM and MEF assess and cost the required investments into alternative agricultural insurance schemes	30,000				30,000
		Introduce alternative agricultural insurance products through the commercial banking sector	70,000	70,000	70,000	70,000	280,000
Component IV – Market infrastructure is improved			**9,750,000**	**8,300,000**	**8,600,000**	**8,150,000**	**34,800,000**
	Upgrade market facilities						
		Review standards and laws for the management of public markets and develop management manual for local authorities	300,000				300,000
		Exposure visits for market staff to well managed markets in the region	100,000	100,000	100,000	100,000	400,000
		Funding to improve market place facilities for product handling and storage	2,000,000	1,200,000	1,200,000	1,200,000	5,600,000
		Training guidelines and manuals for improved grading, packaging, processing, and transport for market places	150,000				150,000
		Public relations campaign targeted at traders	150,000	100,000	100,000	100,000	450,000
		Training to market traders in improved grading, packaging, processing, and transport		150,000	150,000	150,000	450,000
	Traders are aware of food standards and responsive to consumer preferences						
		Training guidelines and manuals for food quality grades, food standards and consumer preferences	100,000				100,000
		Train market traders in quality grades, food standards and consumer preferences		150,000	150,000		300,000
		Public relations campaign targeted at consumers		50,000	50,000	50,000	150,000
	Improved storage of agricultural produce						
		Study on financial viability of storage for priority crops and commodities for year-round availability and storage	350,000				350,000
		Competitive matching grants for establishing storage facilities with processors and traders		2,000,000			

Component	Sub-component	Activity	Year 1	Year 2	Year 3	Year 4	Total (US$)
			2,000,000		2,000,000	2,000,000	8,000,000
		Producers inventory based loans for purchasing and storing commodities at harvest	2,000,000	2,000,000	2,000,000	2,000,000	8,000,000
	Processed agri-food products meet international standards and SPS certifications						
		Research and development of agro-industrial products, convenience foods and packaging, and quality	400,000				400,000
		Training to MIME and relevant MAFF departments to meet standards for agricultural commodities and products		100,000	100,000	100,000	300,000
		Training to local government to enforce standards for weights, measures, quality and food safety		100,000	100,000	100,000	300,000
		Establish and equip accredited SPS testing and certifying facilities		800,000	800,000	800,000	2,400,000
		SPS testing training guidelines and manuals	100,000				100,000
		Train SPS technicians		100,000	100,000	100,000	300,000
		Standards and export SPS procedures awareness raising campaign to exporters			300,000	300,000	600,000
	Processing losses decreased and quality increased						
		Study to identify food products in demand for supply, and identify energy efficient processing technologies	300,000				300,000
		Promote processing technologies for rice, cassava and maize etc. through competitive matching grants		400,000	400,000	400,000	1,200,000
	Trade in processed agri-foods increased						
		Study on the potential for import substitution of agri-food products eg, noodles, baby food, refined sugar	300,000				300,000
		Action plan for import substitution	300,000				300,000
		Implement action plan for import substitution		300,000	300,000	300,000	900,000
		Study on the potential for export of agri-food products to higher-value markets	300,000				300,000
		Action plan for export of agri-food products to higher-value markets	300,000				300,000
		Implement action plan for export of agri-food products to higher-value markets		300,000	300,000	300,000	900,000
	Upgrade abattoirs						
		Review standards and regulations for abattoirs and develop management manual for local Government	200,000				200,000
		Training guidelines and manuals for butchering techniques to differentiate quality cuts of meat	100,000				100,000
		Training in butchering techniques to differentiate quality cuts of meat		150,000	150,000	150,000	450,000
		Research and develop cold storage, packaging and marketing of meat	300,000	300,000	300,000		900,000
Total Program Budget			**115,950,000**	**131,215,000**	**124,730,000**	**117,920,000**	**489,815,000**
				2,770,000			
Program Management Support			**2,970,000**		**2,920,000**	**2,820,000**	**11,480,000**
				2,500,000			
	Personnel and Staffing		2,500,000		2,500,000	2,500,000	10,000,000
	Vehicles and Transport		200,000	50,000	50,000	50,000	350,000
	Meetings and Workshops		20,000	20,000	20,000	20,000	80,000
	M&E and Reviews		100,000	50,000	200,000	100,000	450,000
	Operating Costs		150,000	150,000	150,000	150,000	600,000
Total Program Cost			**118,920,000**	**133,985,000**	**127,650,000**	**120,740,000**	**501,295,000**