UNDP Project Document

Government of Cambodia

United Nations Development Programme

PIMS no. 3867
Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia

Brief description

The proposed project is based on priority interventions outlined in the Cambodian NAPA and focuses on climate change-resilient agricultural water management. The impacts of climate change on Cambodian agriculture, particularly on rice cultivation, are predicted to adversely affect food production and –security in rural areas. At present, there is emerging evidence that agriculture-based livelihoods and overall food security in Cambodia are affected by increased frequency and severity of floods, dry spells and drought events. A major constraint in moving from a focus on post-disaster relief management to anticipatory agricultural and water resources planning is the limited institutional and individual capacity in both government agencies and community organizations to understand potential climate change impacts on irrigation systems, communal freshwater availability and agricultural production, and to internalize a perspective of longer-term resilience into sectoral policy and development planning processes. LDCF support will be used to systematically address institutional and individual capacity gaps in affected rural communities to manage agricultural water resources in a changing climate, and to demonstrate resilient irrigation, freshwater management, and farming options. As Cambodia has been undertaking a concerted effort of decentralization, these efforts will primarily focus on provincial, district and communal planning systems, which include Planning and Budgeting Committees, Communal Councils and Farmer Water-Use Committees. The project will work in two contrasting agricultural districts, selected for their high vulnerability as well as for differences in agro-ecological and socio-economic circumstances. Lessons learned from the project will be systematically replicated in other high risk areas within Cambodia, and made accessible to other countries in the region which face similar climate risk projections for their agriculture-based economies.

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Acronyms

ADB	Asian Development Bank
AFD	Agence Française pour Développement
ALM	Adaptation Learning Mechanism
ASDP	Agricultural Sector Development Planning
AusAID	Australia Assistant for International Development
BCPR	Bureau for Crisis Prevention and Reduction
CAA	Community Aid Abroad (Oxfam Australia)
CAVAC	Cambodian Agriculture Value Added Chain
CBA	Community-based Adaptation programme
CCA	Climate Change Adaptation
CDCF	Cambodia Development Cooperation Forum
CDRI	Cambodian Development Resource Institute
CEDAC	Cambodian Centre for Study and Development in Agriculture
CF	Community Fisheries
CIDA	Canada International Development Agency
CMDGs	Cambodia Millennium Development Goals
CNMC	Cambodian National Mekong River Committee
DHRW	Department of Hydrology and River Works
ECOSORN	Economic and Social Re-launch of the Northwest Provinces in Cambodia
EPA	Environmental Performance Assessement
EU	European Union
FAO	Food and Agriculture Organisation
FSP	Full-size project
FWUC	Farmer Water User's community
GDCC	Government-Donor Coordination Committee
GEF	Global Environmental Facility
GTZ	German Development Agency
IFAD	International fund for agricultural development
INC	Initial National Communication
ISF	Irrigation Service Fee
IWMI	International Water Resource Management Institute
IWRM	Integrated Water Resource Management
JICA	Japanese International Cooperation Agency
JMIs	Joint Monitoring Indicators
LDCF	Least Developed Countries Fund
MAFF	Ministry of Agriculture, Forestry and Fisheries
LWF	Lutheran World Federation
MoE	Ministry of Environment
MOWRAM	Ministry of Water Resource and Meteorology
MRD	Ministry of Rural Development
NAPA	National Adaptation Program of Action to Climate Change
NPD	National Project Director
NPM	National Project Manager
NPSDD	National Programme for Sub-national Democratic Development
NGOs	Non-Governmental Organisation
NPRS	National Poverty Reduction Strategy
NSDP	National Strategic Development Plan

O&M	Operations and Maintenance
PBC	Planning and Budgeting Committes
PDA	Provincial Department of Agriculture
PDOWRAM	Provincial Department of Water Resource and Meteorology
PIMD	Participatory Irrigation Management and Development
PMU	Project Management Unit
PPG	Project Preparation Grant
PSDD	Project to Support Democratic Development through Decentralisation and Deconcentration reform
RGC	Royal Government of Cambodia
RS	Rectangle Strategy
SPPA	Senior Provincial programme advisor
SRAL	Special Rehabilitation Assistance Loan
SRI	System of Rice Intensification
SWAp	Sector-wide approach
TS	Triangular Strategy
TWGAW	Technical Working Group on Agriculture and Water
TWGs	Technical Working Groups
UNDP	United Nation Development Programme
UNFCC	United Nations Framework Convention on Climate Change
USAID	United State Agency for International Development
VRA	Vulnerability Reduction Analysis
WB	World Bank
WRMRCDP	Water Resources Management Research Capacity Development Programme

SECTION I: Elaboration of the Narrative

PART I: Situation Analysis

Summary

1. The proposed project is based on priority interventions outlined in the Cambodian NAPA and focuses on climate change-resilient agricultural water management. The impacts of climate change on Cambodian agriculture, particularly on rice cultivation, are predicted to adversely affect food production and –security in rural areas. At present, there is emerging evidence that agriculture-based livelihoods and overall food security in Cambodia are affected by increased frequency and severity of floods, dry spells and drought events. Various climate models depict different trends in annual precipitation, with some predicting substantial increases in total precipitation (i.e. more intensive rainfall events following after longer dry spells), and some predicting a rise, followed by a fall[1]. Such dynamic climate trends do not find appropriate reflection in the government's planning and decision-making processes, which is mainly due to the fact that climate change challenges in Cambodia are predominantly addressed through post-disaster relief operations after extreme weather events.

2. A major constraint in moving from a focus on post-disaster relief management to anticipatory agricultural and water resources planning is the limited institutional and individual capacity in both government agencies and community organizations to understand potential climate change impacts and to internalize a perspective of longer-term resilience and preparedness into sectoral policy and development planning processes. Although Cambodia is curently implementing a number of programmes and projects that strengthen capacity for development planning in general terms, these activities aim to strengthen the governance system under *current* climatic conditions and do not analyze long-term resilience and/or vulnerability of these development interventions with regards to changing environmental and climatic conditions.

3. This is especially critical in the water resources and agriculture sector, where the majority of donor-supported projects focus on the rehabilitation of reservoirs and irrigation channels and on the extension of irrigation to larger areas. Although many of these projects take an integrated approach, they largely ignore information provided by climate change models and scenarios, which in turn put the outputs of these projects at risk. Reservoirs and irrigation channels designed for current rainfall patterns are e.g. not designed to handle predicted larger peak flows, which is likely to result in physical damage to infrastructure and reduction of the overall areas under irrigation. Other projects aim at an improvement of agricultural productivity, for example, through promoting the System of Rice Intensification (SRI)[2] in many areas. While productivity under current climatic conditions can be dramatically improved, specific elements of the SRI system may not be appropriate under changed climatic conditions, and indeed some of the innovations being proposed under SRI may compromise long-term crop yields. The planting of rice seedlings at wider spacing may e.g. increase vulnerability to soil erosion, especially if more intense rainfall events are experienced earlier in the rainy season.

4. The project will cover the additional activities required to ensure that projects and programmes aimed at capacity building of relevant government institutions in Cambodia take future climate change impacts into account. Part of the requested LDCF funding will be used to increase the adaptive capacity

[1] Easthen, Judy et al (2008) Mekong River Basin Water Resource Assessment: Water for healthy country flagship. A paper presented during the international workshop on "Mekong Basin Focal Project", held in Vientiane, June 16-18, 2008, organized by Challenge Program on Water and Food, Stockhom Environment Institute (SEI), MRC and CSIRO.

[2] Around 820,000 farmers were using System of Rice Intensification (SRI) in Cambodia, of which 60,000 farmers are directly supported from Cambodian Center for Study and Development in Agriculture (CEDAC).

of key national and sub-national institutions, especially provincial and district departments of agriculture and water resources and metorology, commune councils, and farmer water-use committees, and ensure that they are able to efficiently design, monitor and manage climate-resilient water resource management and rural development projects. The project will develop expertise of district agricultural extension teams in the management of climate risks with respect to water management, and train Commune Councils and Planning and Budgeting Committes (PBCs) in two target districts in climate risk management approaches. In addition, key stakeholders at the community level (including religious leaders and indigenous elders) in both districts will be involved and actively enabled to support community-based adaptation planning processes.

5. The project will demonstrate climate-resilient rainwater harvesting techniques at both the household and village level. By diversifying the sources of water used for different purposes (agriculture, sanitation and consumption), overall access to water resources in changing climatic conditions will be improved, as will conditons for human health. Other demonstrations of community-based adaptation options will address climate-risk resilient conservation and management of fish stocks, adapting the technical elements of SRI, introducing modifications such as inter-cropping and mutliple variety cultivation to reduce the potential for soil erosion, and promoting the maintenance of higher levels of genetic diversity within crops so as to maintain the capacity to adapt to future climatic conditions through participatory breeding. The project will replicate experiences from the target districts in other parts of the country and incorporate a significant learning component in its project design, using monitoring and evaluation good practices. Rigorous evaluation will enable the project proponents and UNDP to measure progress in this project and learn how to strengthen its adaptation portfolio in the agricultural sector. The UNDP's Adaptation Learning Mechanism (ALM) will facilitate this learning process.

Context

6. Cambodia has adopted a range of policies to address issues of climate change risk and adaptation. The country ratified the United Nations Framework Convention on Climate Change (UNFCCC) on 18 December 1995 and acceded to its Kyoto Protocol in 2002. In this regard, the threats and established facts around climate change are fully recognized by the Cambodian government, both at national and international level. In 2006, the Cambodia National Adaptation Programme of Action to Climate Change (NAPA) has presented a range of priority projects to address urgent and immediate needs and concerns of people at the grassroots level for adaptation in key sectors such as agriculture, water resources, coastal zone management and public health. These projects are aligned with Cambodia's development objectives as outlined in the "Rectangular Strategy for Growth, Employment, Equity and Efficiency" (adopted in July 2004), as well as in the "National Strategic Development Plan 2006-2010". The NSDP calls for financial support to implement Cambodia NAPA, which stresses the need to improve agricultural productivity through climate-resilient expansion of irrigation and improved management of freshwater resources to ultimately reduce vulnerability of rural farmers to hydro-meteorological hazards. The NAPA consists of 39 adaptation projects which were identified based on gap and policy analysis, results of a field survey, national and provincial consultations, expert review, and inter-ministerial review. 20 of these projects focus on issues of water resources and agriculture.

Climate-related context

7. Cambodia's climate is subject to extreme wet and dry seasons with temperature variations between 10°C and 38°C. The wet season, characterized by heavy rain, runs from May to October, while the dry season, when there is little or no precipitation, runs from November to April. The extreme seasonality in rainfall generates corresponding variability in water supply with flooding in the wet season and water shortages in the dry season. Thus, the development of irrigation and flood control facilities are

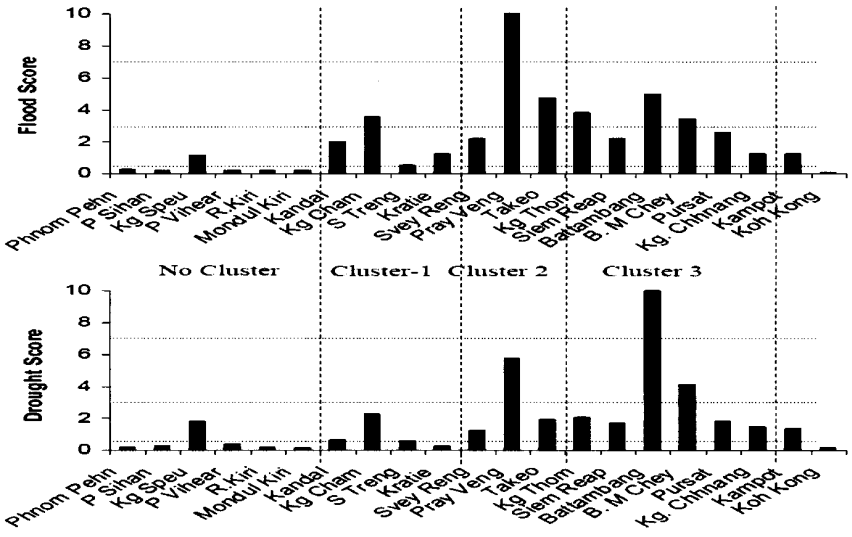
perceived as very important in the context of water sector planning and development in Cambodia (JICA and MOWRAM 2007).

8. In 2005, Cambodia performed a survey of 684 households in 17 provinces to obtain baseline data for the National Adaptation Programme of Action (NAPA). Some key findings showed that:

- 81% of households suffer from water shortages for agricultural uses
- 54% suffer from water shortages for personal uses
- In coping with drought, 24% of villagers organize religious ceremonies in the hope that they will bring rain
- 16% plant crops as usual, hoping that the rain will come in time
- 17% of households reduce water consumption by limiting the amount of water used for personal hygiene

9. Flooding and drought are the two main extreme climate events that occur every year in a number of provinces. A comprehensive study carried out by MoE (2005) on Vulnerability and Adaptation to Climate Harzards and Climate Change has classified four different clusters of geographical areas[3]; Flood and drought charecteristics in each cluster are quite different, but records of drought and floods from 1982 to 2002 indicate a range of provinces that are vulnerable to both floods and droughts (Figure 1).

Figure 1: level of Vulnerability to Drought and Floods by Province



10. There are two types of flooding in Cambodia:

(1) Flooding that results from an overflow of the Mekong and Tonle Sap Rivers, and
(2) Flooding that results from extreme local rainfall.

[3] Cluster 1 includes: north of Phnom Penh, upstream along the Mekong, and Tonle Sap Rivers: Stung Treng, Kratie, Kampong Cham and Kandal. Cluster 2: South of Phnom Penh, downstream along the Mekong and Tonle Basac Rivers including Prey Veng, Svay Rieng and Takeo province, Cluster 3 includes provinces around Tonle Sap Lake: Siem Reap, Kampong Chhang, Kampong Thom, Pursat , Battambang and Banteay Meanchey, and Cluster 4 includes costal provinces: Kampot, Koh Kong and Sihanouk Ville.

Most provinces in Cambodia, i.e. Stung Treng, Kratie, Kampong Cham, Kandal, Kampong Thom, Kampong Chhnang, Battambang, Siem Reap, Prey Veng, Svay Rieng, and Takeo located along the Mekong and Tonle Sap tributaries are affected by the first type of flooding (MoE 2005).

11. The impact from flood and drought events in the past has resulted in a high number of casualties and destruction of infrastructure, property, crops, and livestock. MoE (2005, 2006) reports that the most severe floods, which occurred in 2000, killed some 350 people and caused US$150 million in damages to crops and infrastructure; The most severe drought, which subsequently occurred in 2002, affected more than 2 million people and destroyed more than 100,000 ha of paddy fields. The worst affected provinces were Prey Veng, Battambang, Kandal, Kampong Cham, Kampong Speu, Pursat and Takeo. These facts indicate that the agricultural production centre of Cambodia is very vulnerable to extreme climate events, and that efforts to increase the adaptive capacity of agriculture to climate change are therefore urgently required.

12. Cambodia's Initial National Communication (INC) to the UNFCC has examined the country's vulnerability to climate change. The frequency and intensity of floods is projected to increase with rising temperature, causing severe damage to rice harvests. Successions and combinations of drought and floods have resulted in a significant number of fatalities and considerable economic losses, which have been further exacerbated by deforestation. Floods have accounted for 70% of rice production losses between 1998 and 2002, while drought accounted for 20% of losses[4]. In terms of the magnitude of possible changes, the INC predicts:

- Mean annual temperatures in Cambodia could increase between 0.3 to 0.6°C by 2025 and 1.6 to 2.0°C by 2100;
- Mean annual rainfall in Cambodia could increase between 3% to 35% by year 2100 with the magnitude of change varying with time and location. Lowland areas would have higher increase in rainfall than highlands.
- There are no predictions on changes in climate variability between years, within seasons and on different locations. The projections are in changes in the average.

13. Similarly, an analysis of Climate change screening of Danish development cooperation with Cambodia concluded that "*Addressing the flood and drought regimes controlled by the monsoon rains is a key element for livelihoods in Cambodia. The consequences of climate-sensitive human health impacts (water and insect borne diseases), access (disruption of infrastructure) and food security (e.g. impacts of agricultural pests) are likely but the link to climate change is not yet widely documented or common knowledge. The ability to address current climate variability is a further indication of coping capacity vis-à-vis future climate change. Currently there may already be an adaptation deficit, i.e. a lack of capacity and capability to adapt and avoid impacts of current climate variation.*"[5]

14. Cambodia's INC highlights the impacts of climate change on rice production and water availability for agriculture, where estimates were that 70% of rice production losses were due to floods, and 20% due to droughts (see Annex 8).

15. In addition, both according to Cambodia's INC and the DANIDA study, vector-borne diseases, in particular malaria, may become more widespread under changing climatic conditions. With some 800

[4] National Adaptation Programme for Action to Climate Change (NAPA). Ministry of Environment. October 2006. Pg. 2.

[5] Ministry of Foreign Affairs of Denmark, Danish International Development Assistance (Danida); 104.DAN.4-52-9-2. Climate change screening of Danish development cooperation with Cambodia; 26 June 2008: http://www.danidadevforum.um.dk/NR/rdonlyres/F4FEDB72-1D66-48F2-A31B-8D672910DD1C/0/Cambodia.pdf

deaths per year, Cambodia already has the highest fatality rate from malaria in Asia[6]. High rates of vector borne diseases, which will be particularly evident in rural areas may reduce the resilience of the rural poor to other impacts of climate change and compound the climate-related pressures on livelihoods that are heavily dependant on agricultural and water resources.

Management of water resources for agriculture

16. The recent Environmental Protection Agency (EPA) report conducted by the ADB shows Cambodia's economy is agrarian with about 85% of its population living in rural areas and most of them engaged in rainfed and subsistence agriculture with one crop a year. Water plays an important role in agriculture productivity – it is largely drawn from rainfall and water extraction from the Mekong River.[7] In 2006, MOWRAM estimated water resources from the Mekong and tributaries to be about 500 km^3 per year, with total withdrawals of water estimated to be a mere 0.75km^3 per year (of which 94% is for agricultural purposes).

17. The Participatory Irrigation Management and Development (PIMD) project has involved the International Water Management Institute (IWMI) in assisting MOWRAM to allow farmers to take over the management of their irrigation systems, in order to increase productivity, incomes and living conditions. In 2006, a comprehensive assessment on the performance of the PIMD was carried out by the Technical Working Group on Agriculture and Water (TWGAW)[8]. The assessment found that the overall quality of the communal water management organization can be assessed through several indicators such as (i) institutional links between the management body, users, and local authorities, (ii) the assessment of the operation process, with or without an operation plan, (iii) the assessment of the maintenance process, with or without a maintenance plan, and (iv) the assessment of the rules and regulations settled on the scheme and the capacity of the management body to enforce them.

18. The report concludes that the success of irrigation schemes in Cambodia is greatly influenced by the interaction between the resources available (soil quality, water availability, access to land and water), the type and shape of irrigation infrastructure, and the collective organization for the management of irrigation activities. The study also suggested that to improve the implementation of PIMD policy nationwide, there is a need to mobilize additional (financial and human) resources to accompany the development of Farmer Water User's communities (FWUC), provide decentralized support to FWUC, closely monitor and evaluate the performances of FWUC, and strengthen the capacity of FWUC as service providers.

19. The main causes for an overall poor performance of water management in Cambodia were found to be related to the following problems:

(i) Weak institutional link between the water management body, users and local authorities;
(ii) Lack of an operational plan;
(iii) Lack of a maintenance plan for irrigation systems, and
(iv) Written rules which are not enforced.

[6] Centre for Parasitology, Entomology and Malaria Control, 2003. Annual Progress Report. Phnom Penh: CNM
[7] Cambodia National Environmental Performance Assessment (EPA) Report. December 2006. Pg. 44.
[8] Technical Working Group on Agriculture and Water (TWGAW) is the joint donor and government agencies which aims at "identifying sector priorities, harmonizing activities, improving the utilization and mobilization of resources and supporting efforts to strengthen the agriculture and water sector's capacity to contribute to economic growth. The working group has reviewed PIMD experiences on 22 irrigation schemes in 13 provinces by focusing on (1) water management organization, (ii) socio-economic results of the irrigated agriculture, through household interviews, (iii) farmers perspectives on issues related to irrigate agricultures.

Baseline analysis

20. JICA (2006) has identified five key ways in which Cambodia can benefit from proper planning and management of water resources. These include: (i) improving livelihoods and food security from agricultural development, (ii) reducing risk associated with drought and flooding; (iii) increasing availability of safe drinking water for animal feeding, sanitation, bathing, recreation and other domestic needs; (iv) developing sustainable inland fresh capture fisheries; and (v) increasing transportation facilities for people and goods.

21. One challenge for water resource planning and development in the agricultural sector are insufficient meteorological and hydrological records (JICA and MOWRAM 2007[9]). Agricultural technology remains under-developed and there are insufficient extension services. Unstable rice production results in part from a lack of proper and sufficient irrigation. This results from the long period of severe social and economic unrest, followed by institutional short-comings in identifying responsibility for restoring irrigation infrastructure, and a lack of financial resources.

22. In addition, baseline activities to address the vulnerabilities of Cambodia's agricultural sector to climate-induced changes in water resources availability are limited. At present, the Cambodia government is unable, on its own, to bear the total cost of safeguarding food security in the country. Although commune councils have been charged with a greater role in development planning as part of the RGC's decentralization process, thus far, climate risk reduction and adaptation issues have not been addressed by commune council planning at all.

23. Given these conditions, the following initiatives, programmes and projects are currently under implementation or being planned, and are relevant to the issue of water resources management in the agricultural sector:

- The **Participatory Irrigation Management and Development (PIMD)** programme is seeking to devolve responsibility for all aspects of scheme operations to Farmer Water User Communities (FWUCs), which constitute the focal institutional mechanism of PIMD. The PIMD has provided the overall framework for the formation of FWUCs and irrigation management transfer (IMT) to the FWUCs. Since the adoption of PIMD, 328 FWUCs have been established of which 114 have been officially recognized by MOWRAM. The Pracas (declaration) 306 accepts the FWUC as essential in irrigation development and management and provides the required Statute for the formation of FWUCs.

- **Economic and Social Re-launch of the Northwest Provinces in Cambodia (ECOSORN)** is a five-year project, funded by a contribution of € 25,000,000 from the European Commission (EC), and € 1,000,000 from the Royal Government of Cambodia (RGC). ECOSORN aims to reduce rural poverty through facilitating increased household income, agricultural productivity and local community empowerment. The project, currently, is implemented by the Ministry of Agriculture, Forestry and Fisheries, through its provincial departments in three provinces - Siem Reap, Banteay Meanchey, and Battambang. Other ministerial members of the Steering Committee include: MRD, MOWRAM, MOI, MOWA and MLMUPC. The project focuses on Integrated Rural Development in target communes/villages, using a participatory approach with beneficiaries and stakeholders. Four types of farming system will be developed with pilot farmers: lowland rainfed rice, irrigated rice, upland crops, and specialized productions (e.g. vegetables). One project component is to improve physical access to available social amenities and markets and greater access to potable water supplies;

[9] JICA and MOWRAM (2007) Interim Report on Basin-Wide Basic Irrigation and Drainage Master Plan Study in the Kingdom of Cambodia.

This includes the construction of 1,200 water points, construction of 500 latrines, rehabilitation of 300 km of rural roads, and the provision of access to credit and saving services for 16,000 villagers of the three provinces.

- The **Northwest Irrigation Sector Project** is co-funded by AFD and ADB in order to support the government effort to reduce poverty in rural areas of northwest Cambodia through enhanced agricultural production, thereby alleviating food insecurity and improving farming household incomes. The project consists of three components: (1) Institutional strengthening, which focuses on water resources policy and strategic frameworks, regulatory frameworks for irrigation management and transfer, and the promotion of an IWRM approach in river basins; (2) Development and management of irrigation infrastructure, which focuses on irrigation development and FWUC / O&M support; and (3) Development of irrigated agriculture through improved agriculture extension, improved rice seed production, livestock production, and better access to rural credit. The project is executed by MOWRAM and adopts an IWRM approach to river basin development. It finances water resource assessments and water use studies in selected priority basins to better understand the link between water and land resource uses, the environment and sustainable development at the basin level. Currently, AFD/ADB are still working with MOWRAM to identify priority projects for implementation in the four provinces of Pursat, Battambang, Banteay Meanchey and Siem Reap.

- The ADB's **"Piloting River Basin Approach to IWRM in Eastern Cambodia"** project seeks to use a participative approach to develop and create provincial, district and local institutional arrangements to support IWRM, with one key output being clear operating guidelines for implementation of IWRM. A river basin approach has now been adopted for implementation of the ADB/AFD NW Irrigation programme, which will reduce food insecurity and improve farming household incomes through: (i) a comprehensive policy and strategic framework to be applied in developing water resources; (ii) a better understanding, knowledge and application of the integrated water resource management approach in a river basin context; (iii) improved water resource management through rehabilitated/upgraded small to medium-scale irrigation schemes and other water control infrastructure; (iv) a strengthened capacity of communities and institutions to plan, implement, manage, and maintain such infrastructure; and (v) improved agricultural support services to the beneficiary water users.

- The **Cambodian Development Research Institute (CDRI)** undertakes research related to water resources management on six main issues: Coordination, scarcity, allocation, participation, evaluation processes and assumptions, and impact. To deal with these issues, physical, governance, economic and legal approaches are considered in the research framework of the Water Resources Management Research Capacity Development Programme (WRMRCDP). The research sites are clustered in the six provinces surrounding Tonle Sap Lake by choosing 17 irrigation schemes as the case studies. These irrigation schemes are: Trapaing Trabek, Tang Krasang, Svay Chek , Pok Paen, Damnak Ampil, Watt Leap, Kampang, Kamping Puoy, Thnal Dach, Por Pideum, Trapaing Thmar, Omao, West Baray, Makara, Roluos, Osvay, and Stung Chinit irrigation scheme. CDRI has also received supported from ADB to establish the Tonle Sap Learning Resource Center to provide more information about Tonle Sap Lake

- The Cambodia Center for Study and Development in Agriculture (CEDAC) and the Groupe de Recherche et d'Echanges Technologiques (GRET) have recently begun planning to establish a **"Service Center" for Farmer Water User Communities** (SCFWUC) with funding support from AFD (EURO 400,000) for a three year period starting from January 2009 onward. The programme is based in Kampong Thom Province by using the Stung Chinit Irrigation scheme office of the main base. The vision of this centre is to create a pool of professionals with a practical experience of

irrigation management issues, to provide affordable quality services to Farmer Water User Communities (FWUC) which are of good quality, professional, adapted to particular local needs, affordable and sustainable. Currently, there are 370 FWUCs established, but only 114 have received legal recognition from the Ministry of Water Resource and Meteorology (MOWRAM). Even though, FWUC'S capacity to manage the scheme in all provinces is still poor and mostly did not work in terms of Irrigation Service Fees (ISF) and O&M. The project will work with FWUC throughout the country and will use the experience from the Stung Chinit irrigation scheme as the foundation background for training and mobilizing farmers and networking the FWUC. It is expected that by the year 2010, 20 to 30 FWUCs will have formed a federation or network coordinated by CEDAC

- **Caritas-Cambodia** is supporting community based organization and cooperative development at grassroots level, focusing on sustainable agriculture, public health, and disaster risk management. In Battambang, the organization is supporting 4200 beneficiary families. These include 2500 families in Bavel, 800 families in Ratanak Mondul, and 900 families in Samloth district. Caritas Battambang currently has an operating budget of US$ 190,000 ($40,000 for Ratanak Mondul district, $50,000 for Samlot, and $100,000 for Bavel; for further details, please see Annex 1)

- **Association for Development and Our Village Right (ADVIR).** The organization consists of five staff working in the Ampel commune, Oddor Meanchey province, (covering 14 villages). ADVIR has been active in integrated rural development issues including agriculture, literacy education, primary health education, and micro-credit. At present, the organisation is working with around 1300 poor families. ADVIR's emergency programme includes food for work (digging ponds and canals), education of children who drop out from school, health care (including malaria prevention, water & sanitation, and a village health volunteer programme). The project currently employs 5 staff with funding support from Church World Service (CWS) and Development Partnership for Action (DPA). The current operating budget is around US$ 13,000/year.

- **Lutheran World Federation (LWF).** In Battambang province, LWF has been actively involved in integrated rural development and agricultural water management issues. This includes the digging of irrigation canals, construction of reservoirs and ponds, and community-based afforestation.. LWF is currently working in 45 villages, of which 20 villages and two communes are located in Bavel district. LWF is also working on environmental, disaster management and micro-development projects at individual household level (family pond construction, small canal, pumping well)s. LWF is willing to support the proposed project in the district and willing to provide parallel co-financing. The program is currently managing project activities with a total fund of US$450,000 in three districts with total 40 staff.

24. In summary, the baseline in Cambodia with regard to climate-induced changes in water resource availability is characterized as follows:

- Although the RGC has taken a firm stance to support the promulgation of the Kyoto Protocol, current national policies and programmes do not address anticipatory climate risk management and long-term climate change adaptation. Policies and programmes of MAFF and MOWRAM do not incorporate climate change projections and scenarios into current plans and strategies;
- Most ongoing programmes related to climate hazards focus on reactive emergency relief rather than forward-looking risk reduction, preparedness and adapatation;
- Existing climate change-related programmes focus on capacity building at the national level and do not take the importance of capacity building at the local level into account, which is crucial for a predominantly agrarian society like Cambodia;

- Although a large number of districts have been identified as vulnerable to climate-related flooding and drought hazards, actual assistance coverage is rather limited;
- A survey of 684 households in 17 provinces has identified that all surveyed provinces suffer from a destructive interplay between both floods and droughts, which is projected to intensify with changing climatic conditions.

25. Without LDCF support, development of the agriculture sector in Cambodia is at substantial risk of being ineffective in the face of dynamic and changing climatic conditions. A range of projects currently implemented in the agricultural water sector is not designed in a forward-looking and anticipatory manner and will become vulnerable to projected long-term changes in the patterns and intensities of precipitation and extreme weather events. By funding the additional costs of interventions necessary to meet the urgent and immediate adaptation needs identified in the NAPA, the project will contribute to safeguarding baseline development initiatives in the agricultural sector against projected adverse climate impacts. The project will ensure that the risks of climate change, including variability, are integrated into key agriculture management practices at the community and national level and that the overall governance mechanisms guiding development processes in rural areas of Cambodia have sufficient capacity to integrate anticipatory planning into their extension and decision making practices.

Institutional, sectoral and policy context

Institutional context

26. Cambodia has made significant efforts in building institutions to support sustainable development. In 1996 the **Ministry of Environment (MoE)** was officially established with a broad mandate to promote environmental protection and conservation of natural resources throughout the country. New ministries with direct mandates to support rational use of natural resources were created after the 1998 election: The **Ministry of Water Resources and Meteorology (MOWRAM)** and the **Ministry of Land Use Management, Urban Planning and Construction**. MOWRAM has full responsibility for water management - related activities in the country, which includes the rehabilitation of irrigation systems, construction of new schemes, and necessary planning and program development. The ministry has developed various laws and regulations, and introduced models of water resource management, mainly concerned with irrigation, with technical support from external donors and development partners The **Ministry of Agriculture, Forestry and Fisheries (MAFF)** has a significant role to play in sustainable development in Cambodia since its mandate covers the management of forests and fisheries resources.

27. MAFF and MOWRAM do not deal specifically with climate change policy even though the RGC has taken a firm stance to support the promulgation of the Kyoto Protocol and signed this instrument of Accession to the Kyoto Protocol on 04 July 2002, indicating its commitments to the global efforts in addressing climate change issues. To ensure effective and successful implementation of sustainable development related programmes, the RGC has established a number of cross-sectoral National Committees, including one for Climate Change.

28. The RGC has embraced a "sector-wide approach" (SWAp) as the most effective means of maximizing impact through partnership with bilateral and multi-lateral agencies. Starting with SWAps in the health and education sectors, lessons are being incorporated into the development of similar approaches in other sectors, including the environment. The **Cambodia Development Cooperation Forum (CDCF)** provides government, donors and civil society with an opportunity for dialogue on public policy processes and the associated government financing framework in the context of the NSDP.

The **Government-Donor Coordination Committee (GDCC)** is the operational arm of the CDCF, providing a mechanism for in-country coordination, review and monitoring to ensure optimal and effective utilisation of all external assistance and RGC funds to achieve desired impact for meeting overall goals and targets specified in NSDP. Meeting not more than three times a year, it also serves as a forum to develop and follow-up on a set of Joint Monitoring Indicators (JMIs), endorsed by the annual Cambodia Development Cooperation Forum. Under the GDCC are 18 Technical Working Groups (TWGs), which are "technical" and operational forums to discuss, agree upon and pursue clearly defined and measurable targets at the sector level, contributing in turn to those at national level.

29. The **Technical Working Group on Agriculture and Water (TWGAW)**, coordinated by external donors (ADB, AFD, AusAID, CIDA, EU, FAO, GTZ, IFAD, JICA and WB) and two ministries (MAFF and MOWRAM) aims at "identifying sector priorities, harmonizing activities, improving the utilization and mobilization of resources and supporting efforts to strengthen the agriculture and water sector's capacity to contribute to economic growth", and has produced an inter-agency national strategy with five thematic programmes, namely Institutional Capacity Building; Food Security Support Programme; Agribusiness and Market Development; Water Resources, Irrigation Management and Land; and Research Education and Extension. This project will make a significant contribution to several of these programmes.

Government Policies

30. Since the start of the **Social and Economic Development Plan (SEDP) II** in 2001, three major, important and forward looking developments have taken place. First, following the historic United Nations Millennium Summit in 2000 which declared broad Millennium Development Goals (MDGs) to be achieved by all countries by year 2015, Cambodia developed its own set of MDGs called **Cambodia Millennium Development Goals (CMDGs)** focusing on poverty alleviation and human development[10]. These are the highest priorities before the RGC, and were arrived at by a highly consultative process. Second, a **National Poverty Reduction Strategy (NPRS)** was prepared and adopted in December 2002 through a similar inclusive process. Third, the very first thing the newly elected RGC did in 2004 was to adopt a comprehensive, sharp and focused Strategy for future development, called the **"Rectangular Strategy" (RS)** for growth, employment, equity and efficiency. The RS is presented in a figurative form with its core related to good governance surrounded by the overall environment in which it takes place and four strategic growth rectangles. The government's development strategy in the third mandate, as reflected in the Rectangular Strategy (RS), draws on the **Triangular Strategy** (1998-2003).

31. The **National Strategic Development Plan** 2006-2010 (NSDP) was prepared by combining the SEDP II and NPRS processes and integrating it with the CMDGs. The NSDP (2006-2010) is rooted in the RS, and recognizes the need to address rural development. It makes improving the lives and livelihoods of the rural poor a top priority, and makes a point that accelerating poverty reduction in Cambodia is largely about raising agricultural productivity and income. One of its key commitments is therefore the development of a resilient and productive agricultural sector.

32. The process of integrating climate change concerns into economic and social development policies and plans is still in an embryonic stage. The first national plan on climate change has identified a number of existing or proposed plans in agriculture, forestry, energy and transport, health, and coastal zone, into which climate change objectives can be integrated.

[10] The RGC has added an additional goal related to humanitarian de-mining. Also, the CMDGs set up monitoring indicators for environmental sustainability with the focus on people's participation in the management of natural resources.

a) Agriculture sector

33. In the **Agricultural Sector Strategic Development Plan 2006-2010**[11], the main sectoral goal is to ensure food security, increase income, create employment and improve the nutrition status for all people. This is to be achieved by improving the productivity, diversity and commercialization of agricultural products while maintaining protection of the environment and food safety. In order to achieve this goal, MAFF has established seven specific objectives with total estimated budget of US$153,275,000:

- Ensure food security; increase income and improve livelihoods for rural poor population by improving productivity and diversification of agriculture;
- Ensure the protection and sustainable use of land resources and access to land for rural poor farmers by promoting land reforms (e.g. improving state land management, land tenure security, land market, and reduce land disputes);
- Ensure sustainable economic growth and market access by improving market opportunities and access for agricultural products, and improving agricultural safety standards;
- Ensure work performance of MAFF in production and provision of services on natural resources management and conservation by improving capacity building of human resources;
- Ensure adequate and efficient institutional management and legislation standards by improving and strengthening institutional and legislation frameworks;
- Ensure sustainable access to fisheries resources for rural people by encouraging fisheries reform;
- Ensure sustainable forestry management and access to forestry resources for rural poor people by promoting forestry reform.

34. The goal of the current **National Development Framework** is to "achieve and ensure food security and conserve the natural resources". In order to achieve these development objectives with regard to wetlands and natural resource management, the RGC proposes some agriculture policies/strategies as follows (MAFF, 2005a, p:15).

- To create a favourable environment conductive to private sector participation in the agriculture sector by accelerating land distribution and the issuance of security land titles within social land concession;
- To improve irrigation facilities and water resources management by improving the existing irrigation systems and establishing and strengthening of farmer water communities in order to reduce the effects of natural disasters;
- To promote distribution of farming inputs including seeds, fertilizers and rural credit in order to increase agricultural productivity.

35. In order to achieve the NSDP (2006-2010) as well as MAFF's goals (2006-2010), MAFF aims to implement a total of 96 actions/programs within the period of 2006-2010. However, not all of these activities are nationally funded. The main 11 actions/programs that would take the wetlands/water resources dimension into consideration, are summarized as follows (MAFF, 2005a, p: 19-28):

- Improve 100,000 ha irrigation systems in potential production areas of irrigated and rain-fed areas;
- Improve & promote rice and other crops intensification by using integrated crop management,

[11] The total cost in this project was estimated about US$ 153 million to implement and achieved all national priority goals.

IPM and SRI techniques (aim to reduce the use of agro-chemicals);

- Implement a participatory water management program in existing irrigation systems (in 20% of cultivated area);
- Promote an integrated farming system program combining cropping systems, agro-forestry, crop-livestock and fish culture;
- Develop legislation frameworks and mapping of agricultural land use planning;
- Strengthen agricultural land concession management;
- Develop a national land use master plan and provincial and community land use plans;
- Promote community-based land use planning;
- Promote a community-based forestry management program;
- Promote reforestation and rehabilitation of degraded forest areas;
- Develop a program for protected and conservation forest areas including watershed management.

b) Water Resources

36. Based on the RS, the **National Water Resources Policy (NWRP)** was formulated by MOWRAM in 2004. This policy covers all water resources including sea water and marine products. Water for agriculture was given as high priority in the NWRP, and five policies have been identified:

- To provide farmers with the quantity of water they need, when and where they need it, and within the limits of available water resources and technology;
- To promote the rehabilitation and construction of irrigation, drainage, and flood management infrastructure,
- To promote the development and extension of appropriate water management technologies such as water harvesting, improvements to the moisture-holding capacities of soils and use of farm ponds;
- To strengthen and expand Farmer Water User Communities, to enable them to participate in water management and allocation and to maintain irrigation infrastructure with effectiveness and sustainability; and
- To minimize the impact on the water resources caused by the uses of chemical substances in agricultural production by encouraging people to implement diversified agriculture (MOWRAM, 2004, p:6).

37. The **Strategic Development Plan for the Water Sector (SDP-WS)** presents MOWRAM's planned objectives, outputs and activities during the period 2006-2010, and constitutes MOWRAM's input to the Third National Strategic Development Plan. MOWRAM has a mandate to manage all aspects of the Nation's water resources, to ensure that there is a sustainable basis for socioeconomic development in water-related sub-sectors such as urban and rural water supply, electric power generation, and fisheries. MOWRAM has been instructed to place a particular emphasis on the management and control of water for agricultural production. The SDP-WS therefore includes many elements that relate to this area of activity. In the SDP-WS five principle working themes are identified; two of them target support to communities in order to contribute directly to achieving National Priority Goals as part of the Rectangular Strategy. The others seek to develop MOWRAM's capacity to carry out its mandate. The total cost was estimated at about US$112 million to implement and achieve all national priority goals

c) Sectoral Cross-cutting Policies

38. Based on the National Strategic Development Plan 2006-2010; the National Poverty Reduction Strategy, the Royal Government's Strategic Framework for Decentralization and Deconcentration reform and existing MAFF and MOWRAM strategies, a proposed **Medium Term Strategy for Agriculture and**

Water (2006-2010) has been formulated by members of TWGAW. It was approved by two Ministers, Minister of MAFF and MOWRAM on 30th March 2007.

39. This medium term strategy incorporates five main program areas: (i) The Institutional Capacity Building and Management and Support Program for Agriculture and Water Resources; (ii) The Food Security Support Program; (iii) The Agricultural and Agri-business Program; (iv) The Water Resources, Irrigation and Land Management Program, and (v) Agricultural and Water Resources and Land Management Program.

40. Program four, dealing with Water, Irrigation and Land Management, aims to assist farmers and rural communities to increase food security and income generation, reduce vulnerability, increase surplus of agricultural products for processing and exports, and promote sustainable management and development of land, irrigation and water resources. The proposed program will require capital investments of up to US$ 151,850,000 from 2006-2010 (this will shortly be approved by government and submitted for donor for funding and loan) in ten components, which will flow into: (i) improvement of water data management, (ii) development of integrated water management, (iii) development of national land resources assessment, (iv) improving the productivities of lowland rice soils, (v) assessing upland soils for sustainable utilization, (vi) strengthen smallholder land tenure security and productivity, (vii) to strengthen the management of state land resources, (viii) to provide information for monitoring the implementation and impact of land use and land tenure policies, (ix) continuation of the development of irrigation and water management infrastructures with a more participatory design and in a more integrated way, and (x) improvement of the maintenance of water management infrastructure through a transfer to, or a shared management with, the FWUCs. Components (ix) and (x) remain top priority for an investment plan with an estimated budget around US$ 127,350,000.

41. In terms of water for irrigation, recognizing that of the total area available for rice cultivation, only 1 percent is fully irrigated and about 19% receive some form of supplemental irrigation, the RGC has set the following priorities for the next 5 years (RGC, 2005b, p: 63-64):

- Rehabilitate and reconstruct existing irrigation and drainage systems, particularly in high poverty incidence areas and along the border areas;
- Expand surface water storage capacity and promote water harvesting technology;
- Promote effective and sustainable development of ground water resources, in areas with scarce surface water availability;
- Develop and apply measures on flood- and drought-mitigation and management;
- Strengthen and expand FWUCs with increasing membership and participation of women;
- Promote investment by private sector in irrigation, drainage and other aspects of agricultural water management;
- Improve and install nationwide hydro-meteorological observing and monitoring systems to be able to provide to the public high quality, effective and real-time hydro-meteorological forecasts;
- Promote appropriate and effective river basin management and water allocation systems

42. Cambodia has also adopted the concept of participatory irrigation management in recognition of the need for community participation and ownership of irrigation schemes in order to improve the performance of irrigation systems and to achieve operational sustainability and economic development. The **Participatory Irrigation Management and Development (PIMD)** programme is helping to develop national policy in this regard.

43. Climate change is increasingly recognized as a major human security issue that poses serious threats to human development including women empowerment and gender equality. Already in several

countries, women experience the impacts of climate change through increased frequency, intensity and impacts of floods, droughts and cyclones. This changing nature also has an impact on their ability to cope, and therefore has major consequences on their security and that of their families.

44. In rural areas of Cambodia, with an average poverty rate of 40 percent, farm work is consistently more important for women. In larger households: in rural households with five or more family members, 69 percent of the population in female-headed households with no adult males and is poor compared to 50 percent in female-headed households with at least one adult male and 45 percent in male-headed household. As a result of climate change, these women headed households are most likely to bear the heaviest burdens when natural disasters strike. At the same time, women are more often overlooked as potential contributors to climate change solutions, and thus to the security of all human beings.

45. In Cambodia, women face numerous constraints because agricultural technologies they use are still primitive. This has tremendous impact on the rural economy particularly on economic activities of women who primarily carry the burden of agricultural production and the family's daily subsistence. Limited access to resources and technologies has a significant negative impact on women's food security. The agricultural production system remains highly vulnerable to natural disasters and pest damage, leading to large fluctuations in yields. The result is food deficits in nearly half of the 24 provinces and municipalities.

Barriers analysis

46. As discussed above and reported in Cambodia's INC, the country is vulnerable to the impacts of climate change, particularly in relation to rural livelihoods, with their strong dependence on water resources. Yet there has been little progress in building the adaptive capacity of rural communities to cope with current climate variability or the risks associated with future climate change.

47. The project will address this issue by developing capacity for mainstreaming Climate Risk Reduction into planning at the local level, demonstrating practical Climate Change Adaptation options, and ensuring conditions are met to allow up-scaling and replication. The main barriers which currently prevent progress in securing these outcomes are:

- **Institutional issues** (to be addressed through Outcome 1) - The MOE has not been active in the Technical Working Group on Water and Agriculture (TWGAW), which therefore largely failed to take into account the priorities identified by the NAPA in developing the Agriculture and Water Strategy. Some people in MAFF and MOWRAM are familiar with the NAPA, but it is viewed by those ministries as being a MOE document, and therefore of little relevance to them. The fact that MOE is not represented on the TWGAW limits their influence in this regard.

- **Local institutional capacity** (to be addressed through Outcome 1) – Although the policy of decentralization is placing more responsibility in the hands of local institutions like provincial and district departments of agriculture and water resources and meteorology, and with commune councils, efforts to develop their capacity have been limited thus far.

- **Individual capacity** (to be addressed through Outcome 1) - Strengthening of FWUCs at the commune level is very important. It is still unclear how and where community level water management can be done, but there is a need to educate farmers in rainwater harvesting.

- **Lack of coordination** (to be addressed through Outcome 1) - The creation of the Technical Working Group on Water and Agriculture was partly in response to the recognition that there are

problems with duplication of effort and lack of coordination in the programmes of both RGC agencies and international development partners, and this is one reason why certain schemes in Cambodia experience cost overruns while generating limited benefits.

- **Lack of awareness and technical capacity in identifying and implementing practical adaptation options** (to be addressed through Outcome 2) – As local stakeholders remain largely unaware of the potential impacts of climate change, there are no incentives to explore or develop appropriate solutions.

- **Isolation of potential solutions** (to be addressed through Outcome 3) – Despite the previous barriers, there are isolated examples of initiatives that will be effective in adapting to the impacts of climate change, but there are no effective mechanisms for dissemination of such lessons, or up-scaling of locally developed solutions.

Stakeholder Analysis

48. Consultations undertaken during the PPG phase yielded the following analysis of stakeholders involved in water resource use in the agricultural sector, and therefore with this project.

Stakeholders	Interests/issues
Ministry of Agriculture, Fisheries and Forestry (MAFF)	MAFF is engaged in the development of policies and strategies for agriculture, forestry and fisheries that have significant implications for the management of the water resources required for irrigation and capture fisheries/aquaculture. MAFF responsibilities for forestry also have relevance to catchment conditions, hydrological regime and water quality issues. MAFF is also responsible for organizing and supporting the establishment of farmer associations after the construction of irrigation scheme and reservoir and the agricultural practice and extension services.
Ministry of Water Resources and Meteorology (MOWRAM)	MOWRAM has prepared the Strategic Development Plan for the Water Sector (SDP-WS) in May 2005, which presents the objectives, outputs and activities of MOWRAM during 2006 to 2010. MOWRAM with technical and final support from JICA has established the Technical Service Center (TSC) for Irrigation and Drainage. MOWRAM is also responsible for construction of reservoirs and irrigation systems and formation of Farmer Water-use Committees (FWUC). The ministry focuses on ensuring the safety of water-related infrastructure and on the overall monitoring and evaluation of irrigation systems with a view to determine its overall performance. The ministry also has a mandate to focus on capacity building for these issues.
Ministry of Environment (MOE)	The GEF Operational Focal Point is located within MOE. The ministry has also established a Climate Change office and was responsible for coordination of the NAPA process with approval from Council of Ministers. MOE also chairs of Climate Change Inter-ministerial Steering Committee to review and endorse CC related policies and strategies The MOE has not been active in the TWGAW, which therefore largely failed to take into account the priorities identified by the NAPA in developing the Agriculture and Water Strategy. Some people in MAFF and MOWRAM are familiar with the NAPA, but it is viewed by those ministries as being a MOE document, and therefore of little relevance to them. The fact that MOE is not represented on the TWGAW limits their influence in this regard. However, MOE climate change office is willing to play certain roles within the project. These include: (i) assist in policy coordination, ensure technical and scientific knowledge and model in relation to climate change, (ii) assist in policy advocacy, (iii) sharing knowledge and good practice of climate change, and (iii) conducted vulnerability

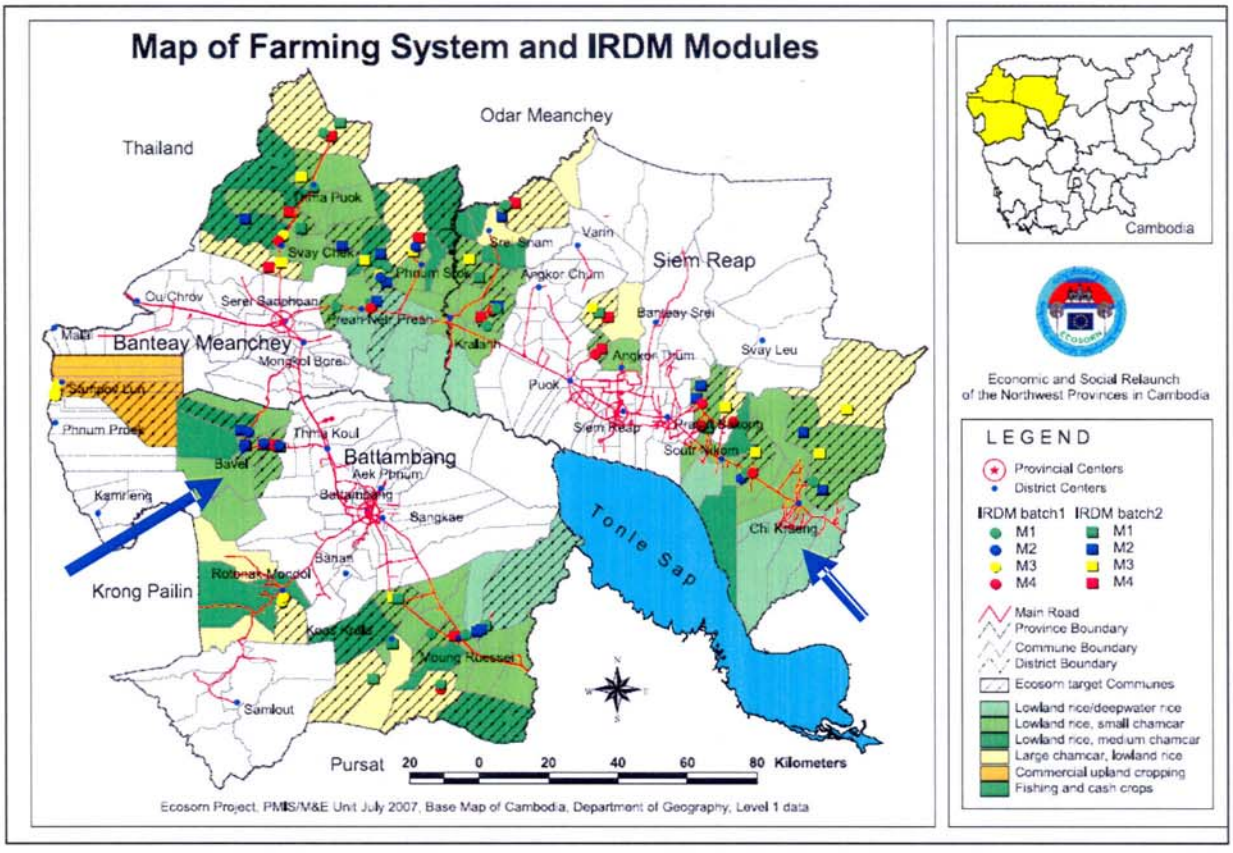
	assessment in the selected target sites.
Ministry of Rural Development (MRD)	This ministry is responsible for water-related (including hydro-geological) data collection and archiving, responsible for providing access to clean water, sanitation and rural rod construction in rural areas. Providing rural water sanitation is also overlaps with the MOWRAM.
Ministry of Industry, Mines and Energy (MIME)	In the water resources sector, MIME has responsibility for planning industrial water uses and hydropower, water supply provision to provincial towns and administration of single-purpose schemes involving hydro-power.
Cambodian Development Research Institute (CDRI)	In cooperation with the University of Sydney (Australia) and the Royal University of Phnom Penh (RUPP), CDRI is launching the Water Resources Management Research Capacity Development Programme (WRMRCDP), which focuses on irrigation development and management, and water management in its wider catchments context. CDRI's contribution to the project as technical inputs into Technical Advisory Group and share experience and lesson learned in dissemination/learning workshops to be organized by the project.
Groupe de Recherche et d'Echanges Technologiques (GRET) Cambodian Center for Study and Development in Agriculture (CEDAC)	As two NGOs engaged in building local capacity for agricultural development, GRET and CEDAC are important partners in this project. Many of the local educational, awareness and training activities will build upon initiatives currently planned or being developed by GRET and CEDAC, particularly in relation to the introduction and up-scaling of SRI and training of FWUCs, and farmer networks throughout the country. CEDAC is strongly promoting agricultural development planning under the context of climate change induced.
Cambodian National Mekong Committee (CNMC)	Responsible for coordinating and strengthening cooperation between ministries, agencies, local authorities and communality for the protection and sustainable management of Tonle Sap Biosphere reserve. In term of water related activities, this institution is responsible for (i) advising the Cambodian representative to the MRC Council on all matters relating to activities within the Mekong River basin that could affect Cambodian interests; (ii) review proposals prepared by RGC agencies in the light of the Mekong Agreement, and (iii) liaise between MRC and RGC agencies.
Provincial Departments of Agriculture	Responsible for agricultural research and extension, improving agricultural productivity and promoting animal raising techniques and practices. The department is also responsible for establishing farmer associations according to the royal decree.
Provincial Departments of Water Resources and Meteorology	Responsible for building and maintaining irrigation schemes with less than 200 ha. Acts as key player for irrigation reservoir management and maintenance, and scheme maintenance after construction (mostly for main canals and reservoirs). Responsible for establishing Farmer Water User Communities and submission of FWUC proposals for approval to MOWRAM.
District offices	The district level has its own district development communities and district disaster management and mitigation which involve all line districts offices chaired by district chiefs. They welcome and strongly support the project implementation in their district that is in Chikreng of Siem Reap province and Bavel district of Battambang province.
Commune Councils	Responsible for local water management within the communal boundary. This includes ensuring local security, solving conflict issues, preparing communal development plans and investment decisions every 3 and 5 years. The communal development plan focuses on socio-economic, social, environmental and gender issues; Each sector of development planning encompasses various activities which need to be implemented with local NGOS, CBOs, IOs and line provincial departments.

PART II: Strategy

49. Recognizing the need to reduce the country's vulnerability to climate-induced changes in rural water availability, the RGC seeks to integrate long-term climate risk management into the existing water management framework and re-adjust it with a view on greater effectiveness and longer-term planning. The project will integrate climate risk projections into existing water management practices and implement corresponding capacity development measures at the local level. It will demonstrate practical measures to reduce climate-induced scarcity in water resources availability, and ensure that existing water management systems in Cambodia, which are not equipped to handle more frequent successions of longer dry spells/draught periods and more intensive rainfall events, are expanded and adjusted to address this growing risk. Lessons learned from this initiative will enable up-scaling of early warning flood and draught systems in potentially hazardous regions, and facilitate replication in other high risk areas, both within and outside Cambodia. The project will focus on capacity development, targeting government staff and organizations such as MAFF and MORAM at central, provincial and community levels.

50. The project will work in two contrasting agricultural districts, selected for their high vulnerability as well as for differences in agro-ecological and socio-economic circumstances. The two pilot sites (see Figure 3) are:

Figure 3: Map showing Chi Kreng District in Siem Reap and Bavel District in Battambang province



- **Chi Kreng District** in Siem Reap, which consists of 12 communes, 154 villages. The district consists of 22,994 families with 127,032 people (64,807 women) of which 21,832 families are

farmers. This district is located in the flood-plain of the Tonle Sap, with a high proportion of fishermen, deepwater and paddy rice cultivation, some cash crops on the dry season lake shore, but otherwise a low proportion of non-rice crops. Cultivated land in the district are 38,950 ha of which 2100 ha are floating rice, 350 ha are farmland, 33,700 ha are wet rice, 2800 ha are recession rice, other 1300 ha are cultivated by other crops. The district has one big irrigation scheme built during the Pol Pot regime across the Chi Kreng tributary (with a catchment area of 2,750 km^2). The spillways have been renovated by MOWRAM to enable storage of around 20 million m3 of water, which could provide supplemented irrigation to 9 communes during the wet season. Chi Kreng is a target district for ECOSORN, and a candidate site for the NW Irrigation programme (see above). It is less than one hour southeast of Siem Reap by road.

- **Bavel District**, Battambang Province, which consists of 6 communes with a total of 18,842 families (95,847 people of which 48,731 are women. Of these households, 17,100 undertake wet rice cultivation, and 1595 families are involved with other types of farming. Rice cultivation in the dry season takes place on 841 ha of land, of which 22 ha are used to plant recession rice, 184 ha under irrigated conditions and 206 ha as dry season rice. Wet rice is on 32,703 ha, all of which are rainfed. This district is outside the Tonle Sap flood-plain, with few fishermen, paddy and non-irrigated rice cultivation and a fairly high proportion of non-rice crops. It is a target district for ECOSORN, and a candidate site for the NW Irrigation programme (see above). Stung Mongkul Borey tributary (with a catchment area of 11,350 km^2) flows across the district. This tributary is one of 12 that flow to Tonle Sap Lake. The main water source for the district comes from Thailand, and then flows through Banteay Meanchey to Bavel and on to Tonle Sap Lake. An irrigation system built during the French colonial still exists in the district, with an additional one planned by the current ECOSORN project. Bavel district is about 2½ hours from Siem Reap by road.

51. The pilot sites were also selected because of the potential to partner with existing initiatives that address basic development needs, allowing LDCF funding to function as additional support to a range of baseline activities that require climate resilience components to achieve resilience in the face of changing climatic conditions. These initiatives are the Economic and Social Re-launch of the Northwest Provinces in Cambodia (ECOSORN), and the AFD and ADB-funded Northwest Irrigation Sector project, which are described in greater detail under the 'Baseline' section of this project document (paragraph 24).

Project Rationale and Policy Conformity

52. Consistent with the Conference of Parties (COP-9), the project will implement priority interventions in Cambodia's NAPA and therefore satisfy criteria outlined in UNFCCC Decision 7/CP.7 and GEF/C.28/18. It will catalyze and leverage additional co-financing resources from bilateral and other multilateral sources. The project requests the LDCF to finance the additional costs of achieving sustainable development imposed on the LDCF-eligible countries by the impacts of climate change. It is country-driven, cost-effective, and will integrate climate change risk considerations into UNDP/DFID/CIDA funded programme on Project Support to Decentralization and Decentralization and AFD funded agriculture and water resources related project, which are priority interventions eligible under the LDCF guidelines. The project focus of safeguarding Cambodia's food security against future climate risk by pursuing a range of adaptation measures in the field of agricultural water management is aligned with the scope of expected interventions as articulated in the LDCF programming paper and decision 5/CP.9. As climate impacts fall disproportionately on the poor, the project recognizes the link between adaptation and poverty reduction (GEF/C.28/18, 1(b), 29), although the actual relationship can be very complex and may require further scientific research.

53. Taking into consideration all the different dimensions of climate vulnerability, the NAPA process in Cambodia has recommended a climate change-resilient agricultural water management strategy as top priority, followed by adaptation to the projected consequences of climate change on hydrology and water resources, agriculture and food security, terrestrial and freshwater ecosystems, costal zones and marine ecosystems, and human health. The key adverse impacts of climate change identified in the NAPA include increased flood and drought magnitude and frequency, reduction of rain-fed crop yields, long-term decrease of water availability, and an increase in the number of people exposed to vector and water-borne diseases.

54. Based on the principle that adaptation will be more successful if it accounts for both current and future climate risks, this project is drawing on the hazard-based and adaptive capacity approaches of the Adaptation Policy Framework (APF), while providing a clear linkage to sectoral policy. The project takes the existing risks to vulnerable communities from floods and droughts into account and considerably expands the planning horizon and risk management scope for Cambodia's agricultural water management.

Project Goal, Objective, Outcomes and Outputs/activities

55. The **Objective** of the project is "*to reduce the vulnerability of Cambodia's agricultural sector to climate–induced changes in water resources availability*". This will contribute to the broader **Goal** of "*enhancing adaptive capacity to prevent climate change-induced food insecurity in Cambodia*".

OUTCOME 1: Improved Capacity within local institutions to manage agricultural water resources in a changing climate

56. This Outcome will build the technical capacity of local institutions to plan for better adaption to the impact of climate change and adapt livelihood strategies to increase community resilience, focusing on two contrasting districts in north-western Cambodia. It will also build the social capacity, through empowerment of local institutions such as the FWUCs, to ensure sustainability of the project results.
57.
Without LDCF intervention (baseline)

58. Cambodia is only now developing the necessary institutional and individual capacities for water resources and water use planning, and in many parts of the country, these capacities are still missing. Stakeholder consultations with the Provincial Department of Water Resource and Meteorology (PDOWRAM) in Kampot and other provinces indicate that reservoir and irrigation renovation work is based on urgent needs rather than on any strategic planning. In those areas where capacity has been built, no account has been taken of existing climate variability, not to speak of the projected impacts of climate change. For example, in stakeholder consultations in Takeo province, comments were made that the issue of climate change "is new to us in terms of policy and planning in the province – up to now we know only about evaporation and the need for cover crops".

59. This is true not only at provincial levels, but also at the national level. The Agriculture and Water Strategy, an inter-agency national strategy led by the Technical Working Group on Agriculture and Water (TWGAW), has five thematic programmes, namely Institutional Capacity Building; Food Security Support Programme; Agribusiness and Market Development; Water Resources, Irrigation Management and Land; and Research Education and Extension. None of these programmes explicitly addresses climate change-related risks, and in fact some of the programmes (e.g. the Water Resources, Irrigation Management and Land programme) incorporate risks and assumptions that clearly demonstrate that climate change adaptation is considered to be external to the programme. The Food Security Support

Programme explicitly notes that strengthening the capacity of poor communities against natural disasters [mainly climate--related floods and droughts] has not been taken account of. Thus, the current climate change adaptation baseline, both at the national level and the provincial level (and below) can be assumed to be negligible.

With LDCF intervention (adaptation alternative)

60. LDCF support will be used to build systemic, institutional and individual capacity to plan for water resources use in the agricultural sector under conditions of climate change (based on consideration of a range of possible future scenarios). As Cambodia has been undertaking a concerted effort of decentralization, many of these efforts will focus on local (provincial, district and commune) planning systems, such as planning and budgeting committees and FWUC's. The project will work with programmes and partners already engaged in capacity building in the water and agriculture sectors, with LDCF support targeted at capacity development in relation to anticipatory climate risk management and climate change adaptation. The project will contribute towards setting up systems to continuously analyze how climate change would impact water management and thereby affect local and national level development goals. Tools such as the Action Impact Matrix (AIM)[12] will be used assist in the integration of practical and specific climate-resilient policy changes into a national sustainable water development strategy in Cambodia. The AIM would be helpful to prioritise sectors, policies and goals that need most attention. Such analysis may also be helpful to identify the specific types of capacity building at the institutional level.

Outputs and Indicative Activities

Output 1.1 – Commune Council Plans and budgets address inherent climate risks in target districts

61. The process of development planning in Cambodia is a combination of "bottom-up" and "top-down" processes, in which provincial agencies respond to national-level policies while Commune Councils prepare plans in response to their grassroots needs. These two processes are reconciled through "District Integration Workshops", at which Commune Councils, civil society organizations and provincial agencies meet to coordinate the planning processes. These workshops are facilitated by the Provincial Rural Development Council, chaired by the provincial governor. Technical support to the process is provided through Senior Provincial Programme Advisors, many of which are funded through UNDP's "Project to Support Democratic Development through Decentralization and Deconcentration". The Provincial Rural Development Councils work closely with provincial line agencies to ensure support to Districts and Communes in implementing projects in support of improved livelihoods. In order to ensure that adaptation to climate change is effectively mainstreamed into the development process in Cambodia, it is therefore essential not only to work with the Commune Councils, but also with the Provincial Rural Development Councils.

62. Indicative activities under Output 1.1 include:

- Conducting training needs assessments, preparation of training plans and implementation of training events for Provincial Facilitation Teams and District Facilitation Teams in climate risk management and long-term climate change adaptation issues;
- Facilitating climate-considerate formulation of Commune Development Plans;
- Monitoring the performance and capacity of Commune Councils with regards to addressing climate risk management issues;

[12] MIND (2005) *Action Impact Matrix (AIM) Application to Climate Change - Users Guide*, Munasinghe Institute for Development, Colombo.

- Coordinating and promoting effective collaboration between Commune Councils and all ministries, institutions, departments, NGOs/IOs, private sector and other development partners to support capacity development of the Commune in issues related to adaptation to climate change;
- Collaborating and coordinating with the Units of the Executive Committee of the Provincial Rural Development Councils and line departments to support the implementation of climate change adaptation activities;
- Providing technical advice to the Provincial/Municipal Governor and the Executive Committee on matters related to implementation of climate change adaptation and climate risk reduction activities;
- At the request of other departments and agencies, providing technical support services to rural infrastructure projects related to reducing exposure to climate risks.

Output 1.2 - FWUCs and MOWRAM engineers trained in climate-resilient irrigation design

63. While District chiefs and the Provincial Departments of Water Resources and Meteorology are responsible for maintenance of the main irrigation canals, FWUC's assume responsibility for secondary and tertiary canals. FWUC's are governed by a council which includes one representative of each Commune Council covered by the irrigation scheme. The project will partner with other initiatives, especially those led by CEDAC and GRET, in building capacity in FWUC's to ensure that climate resilience elements can be incorporated into operation and maintenance-related day-to-day activities. GRET and CEDAC are developing a "Centre of Services for Water Use Communities" with AFD funding (€400,000 for three years), which will serve as a training and learning centre for FWUCs. The proposed project will link with this initiative to ensure that the Centre also provides training and other services related to climate change adaptation.

64. Results from the formation of FWUC's in Cambodia have shown that unless both institutional and individuals' capacities are developed, the FWUC's frequently collapse after the termination of the donor-funded initiative. Therefore, activities will include measures to minimize operational costs of the FWUC's while developing adequate individual capacities. Because the partner agencies are long-standing and inherently sustainable entities, the results of the Output will also be sustainable.

65. Indicative Activities under Output 1.2 include:
- Development of guidance for climate-resilient irrigation design;
- Assessment of training needs in FWUCs with regards to climate risk management;
- Implementation of targeted training programmes for FWUCs on resilient irrigation design and maintenance;
- Involvement of existing FWUC, water user community, local authorities, extension staff from PDA and PDOWRAM in training events;
- Post-training assessment of knowledge uptake and impact;
- Design and consolidation of re-training activities;
- Development of awareness, outreach and training materials for FWUC members;
- Organization of field visits in project areas / pilot communities by FWUC members from other districts

Output 1.3 - Conflict potential in areas prone to climate-induced water shortages assessed and conflict prevention measures supported

66. It is expected that conflicts over water use will emerge as the impacts of climate change become felt. Consequently, there is a clear need to develop mechanisms to avoid conflicts over water resources, and to resolve any conflicts which arise equitably and quickly. Mechanisms have already been developed to deal with land titling / land use issues, and lessons can be adapted to deal with water-related conflicts, noting the difference in scale between the two issues, with land-related conflicts typically occurring between individuals, whereas water conflicts are more common among communities, FWUCs, or between these entities and industrial entities (such as hydro-electric developments

67. In the case of land conflicts, a national cadastral commission, supported by provincial and commune-level cadastral administrations, serves to deal with conflicts, supported by mobile teams whose role is to mediate before conflicts arise. Legal education is also important to ensure that poor stakeholders are aware of their legal rights in dealing with more influential parties. The conflict avoidance and resolution initiatives already underway to deal with land titling issues can provide lessons for the project in developing mechanisms for the water sector (but do not constitute part of the adaptation baseline, since there are essentially no current measures to address water conflicts).

68. Indicative Activities under Output 1.3 include:

- Analysis of water use needs and projections in target districts and communities as climatic trends become better known and more apparent;
- Categorization of water users and formation of user groups;
- Assessment of potential spatial and temporal conflict points as climate changes;
- Design of mechanisms to resolve potential disputes (e.g. district and commune level water use commissions);
- Provision of training in conflict resolution to officials from PDOWRAM and PDA, local authorities and FWUCs;
- Provision of legal advice and education to communes and FWUC's.

Output 1.4 – A community-based climate information systems on flooding and drought events established

69. Communities must be at the heart of efforts to build their resilience to climate change because adaptation is inherently local. Currently, the information available to farmers and other community members is minimal, and is not available in a form that is useful to or easily understood by community members. Communities' adaptation efforts will only be effective if they are backed up by national strategies and policies including the capacity to provide reliable information on the likely impacts of climate change, and on early warning and forecasts, delivered in ways that communities and policy makers can understand and respond to.

70. Indicative Activities under Output 1.4 include:

- Assessment of current coping strategies in target communities in times of flooding and drought;
- Vulnerability assessment of water and agriculture-livelihoods in target districts with a view on current climatic conditions and projected trends (scenario-analysis);
- Analysis of information gaps in access to, and application of, hydro-meteorological information in time to prevent losses of agriculture cultivation;
- Definition of current and required climate information flows, communication roles and appropriate signal/user interfaces to ensure timely information about expected climate hazards;
- Introduction of community-based, low-tech information dissemination mechanisms, linked to local and central offices of MOWRAM.

OUTCOME 2: Locally appropriate adaptation options demonstrated to reduce exposure to climate change - induced risks

71. This Outcome will result in the demonstration of locally, socially and economically appropriate adaptation measures in the target rural districts of this project. As such, project activities and outputs will be closely aligned with on-going rural economic and social development programmes. Therefore, the project will pay specific attention to developing appropriate adaptation technologies that address specific women needs.

Without LDCF intervention (baseline)

72. Currently, many land use developments in rural areas of Cambodia serve to increase exposure to climate-induced risks, and in the absence of the project such developments would continue and probably accelerate. Examples include clearance of trees and forest, intensification of agriculture through use of a small number of high-yielding crop varieties, thus narrowing of the genetic base, and reliance on surface water resources. These developments are driven by an increasing focus on commercial farming and maximization of income. In the absence of the project, these pressures would continue, resulting in more common maladaptation and increasing longer-term vulnerability of communities to the impacts of climate change.

With LDCF intervention (adaptation alternative)

73. The project will work in partnership with other development initiatives to demonstrate and pilot specific community-based climate change adaptation measures that are relevant to the socio-economic conditions of the target sites. By partnering with other initiatives, the basic development measures will be 'climate-proofed', meaning that LDCF resources will be used only to ensure that such measures take account of the impacts of climate change and climate variability and support measures that improve their long-term resilience. Partnerships will be developed with the private sector in the design and provision of water pumps and rainwater collection materials, such as storage containers. Particular attention will be paid to assisting women in developing and implementing adaptation measures, as women are particularly vulnerable to climate change (but at the same time extraordinary agents to promote greater resilience in communities). Their limited adaptive capacities arises from prevailing social inequalities and ascribed social and economic roles that manifest themselves in differences in property rights, access to information, lack of employment and unequal access to resources. Women are often responsible for water collection in their communities and are therefore more affected when the quantity and/or accessibility of water changes.

Outputs and Indicative Activities

Output 2.1 – Improved rainwater harvesting facilities demonstrated in (30) target villages

74. While historically, rainwater collection was a feature of agrarian Khmer society, there are relatively few examples of efficient rainwater collection systems existent today. The potential for rainwater collection, however, is immense. Options include household-based collection from roofs, using large earthenware containers for storage, and community-based collection using the roofs of schools and temples, with storage in earthenware containers or specially built ponds.

75. The promotion of rainwater collection is not only an adaptation to more unpredictable and reduced amounts of precipitation, but also a human health measure. Domestic water collected from surface water sources such as streams, hand-dug ponds and shallow wells, combined with a low level of knowledge about sanitation practices, means that water-borne health problems such as diarrhea are far

more prevalent than they should be. In rural Cambodia it is estimated that only around 17% of the population use adequate sanitation facilities.

76. The project will promote widespread adoption of household and community rainwater collection activities in the pilot sites, based on an assessment of existing coping mechanisms and needs undertaken during the PPG.

77. Indicative Activities under Output 2.1 include:

- Assessment of existing rainwater harvesting measures and costs and benefits of individual setups / options;
- Analysis of social and economic costs associated with water use needs in relation to women;
- Community-based problem analyses to identify optimal rainwater harvesting solutions;
- Promotion of existing women groups in water harvesting at the household level;
- Demonstration of appropriate solutions for critical infrastructure (e.g. rain harvesting reservoirs in village centre, pagoda, primary schools, health centre);
- Awareness raising on water technologies relevant for adaptive freshwater management (e.g. use of water purifiers);
- Development of management mechanisms for community ponds and drilled well constructions.

Output 2.2 – Resilient farming methods to climate-induced changes in rainfall intensity and -distribution demonstrated

78. Agricultural and land use practices in rural Cambodia may generate short-term benefits (financial or otherwise), but without consideration of climate change risks they are likely to reduce adaptive capacity in the long run. In addition, agricultural practices that require large amounts of water, cutting of trees and forest, drainage of wetlands for cultivations, and the filling in of natural ponds make farmers inherently more vulnerable to the impacts of climate change. Alternative prescriptions that reduce this kind of vulnerability are obvious local adaptation options. One example is SRI, form the French "*Systéme de Riziculture Intensive*" which promotes increased productivity of irrigated rice cultivation by changing the management of plants, soil, water and nutrients. SRI practices lead to healthier, more productive soil and plants by supporting greater root growth and by nurturing the abundance and diversity of soil organisms. In Cambodia, CEDAC has spurred the adoption of SRI - by early 2008, 820,000 farmers were using System of Rice Intensification (SRI) in Cambodia, of which 60,000 farmers are directly supported from CEDAC. SRI has now been adopted into national strategies and is strongly promoted by government and NGOs. Other options include Direct sowing in Mulch based Cropping Systems (DMC), for rain-fed agriculture, and the adoption of more diverse farming systems, including the diversification of crop varieties to allow farmers to adapt to future climate conditions. The project will promote the adoption of these and other agricultural options to reduce vulnerability of the agriculture sector locally to the likely impacts of climate change. The project will also ensure that climate change risks on the environment are recognized in selected pilot sites. In this endeavour, the project will coordinate with other initiatives, including GEF-funded initiatives such as the Tonle Sap Conservation Project.

79. Indicative Activities under Output 2.2 include:

- Review the vulnerability of existing agricultural prescriptions (including SRI and DMC) to the impacts of climate variability and climate change;
- Analyze economic and social costs and benefits of options for modified agricultural prescriptions that are less vulnerable to impacts of climate variability and climate change;
- Undertake trial implementation of modified prescriptions in (30) target communities;
- Develop training materials for scaling-up and adoption of modified prescriptions;

- Support CEDAC, Caritas and Lutheran World Federation [LWF] to integrate project lessons on resilient farming practices into agricultural extension activities in the target districts;
- Introduce diversified agricultural crops appropriate to local climate to at least 30 communities;
- Support and strengthen farmer associations and production groups in target districts in promoting and adopting resilient agricultural methods and techniques;
- Undertake participatory mapping of climate change risks on key ecosystems in target districts and an inventory of practices that are likely to affect the delivery of environmental services under a range of climate change future scenarios;
- Develop joint education and awareness raising activities with existing ecosystem conservation projects, highlighting the implications of the effectiveness of resilient naturaql resource management practices in the context of climate change.

Output 2.3 – Resilient design and management of reservoirs, irrigation canals, ponds and dykes demonstrated

80. There are numerous shortcomings with the current process of planning and implementation of measures to manage water resources. Many provinces and districts do not undertake any planning process at all, simply responding to urgent needs, such as when irrigation channels require repairs. Even at the central level, MOWRAM is unable to take into account 50-year or 100-year precipitation events (or dry periods that require spare storage capacity in irrigation systems) to plan the construction or renovation of irrigation systems accordingly. Similarly, planning of dams proposed for irrigation schemes and/or hydro-power fails to take account of climate change projections.

81. At the local level, the project will pilot measures to reduce vulnerability of such infrastructure to the impacts of climate change, for example, by construction of irrigation canals, dykes and communal ponds to regulate run-off more effectively, and the construction of security hills for times of flooding. The project will also partner with research projects such as the "Water and Climate Change in the Lower Mekong Basin: Diagnosis and recommendations for adaptation" project, funded by the Ministry for Foreign Affairs of Finland, which is undertaking both hydrological and livelihoods modelling to assess the impacts of climate change. The project will use results from this and other research projects to influence policy and practice concerning design of dams and irrigations channels.

82. Indicative Activities under Output 2.3 include:
- Develop comparative checklists of existing and new designs of irrigation schemes and their impact/performance under different climatic scenarios, but also in relation to soil structure and other framework conditions;
- Analyze costs and benefits of modifications to existing irrigation systems to increase storage capacity under conditions of climate change;
- Identify pilot sites within the target districts to demonstrate modifications (based on an assessment of community capacity and willingness to cooperate);
- Implement awareness raising activities on costs and benefits of pilot site modifications;
- Measure effectiveness of modifications, and integrate into modelling of hydrological processes and livelihood impacts undertaken by Helsinki University of Technology on climate change scenarios for the Mekong region and Tonle Sap Lake;
- Inform and involve policy makers in dissemination of research results.

OUTCOME 3: Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia

83. This Outcome will ensure that lessons learned form the target districts are up-scaled and replicated to other parts of Cambodia. The link to the ALM will also ensure a contribution to global learning related to Climate Change Adaptation and the required enabling environment for the implementation of community-based adaptation activities in predominantly agricultural countries.

Without LDCF intervention (baseline)

84. Although local innovations would undoubtedly be developed to deal with climate-related impacts such as floods and droughts in the absence of the project, the development of such innovations would be *ad hoc*, unsystematic, and unplanned approach to disseminate lessons learned within Cambodia and beyond. This would mean that communities and individual farmers would need to "re-discover" methods of addressing climate change that had already been developed, in a similar form, elsewhere in Cambodia, leading to immense inefficiencies.

With LDCF intervention (adaptation alternative)

85. LDCF support will ensure that experiences and lessons generated at the pilot sites are systematically collected, analyzed and disseminated throughout the country (with a specific emphasis on flood- and drought-prone rural areas), and that existing institutions that support learning in the agricultural sector have the capacity to promote learning on community-based climate change adaptation.

Outputs and Indicative Activities

Output 3.1 – Increased public awareness and environmental education programmes on climate risk reduction designed and implemented

86. Support for climate change adaptation actions among the general public is important for consolidating capacity built through the project. Wetlands Day and Environmental Day are good venues for such education, as many events are organised in communities across the country on these days. In addition, information will be disseminated through print and elecronic media, and additional educational events organized in schools and communes. The formation of farmer groups as a contribution to this Output is an approach that is also supported through the SGP, and is therefore consistent with UNDP's Community-based Adaptation programme. At the provincial and national levels, the project will aim to have lessons learned replicated and upsacled to other parts of the country.This includes, the expansion of the community-based climate information system to the national level, replication of modifications to irrigation structures, and wider dissemination of modified agricultural prescriptions, including diversification of cropping systems. This outputs will be supported through a UNDP/BCPR supported Disaster Risk Reduction programme and the Second National Communication to the UNFCCC.

87. Indicative Activities under Output 3.1 include:

- Assessment of awareness and education gaps in communities on climate-related risks;
- Review of experiences in delivery of environmental awareness and education in Cambodia;
- Design of awareness and education materials on climate impacts and community-based risk reduction;
- Organization of special climate change-related events associated with Wetlands and Environment Days;
- Formation of farmer groups [SRI] and organization of demonstration days for climate-resilient farming and community-based adaptation;

- Report on public awareness and climate change education to the technical working group on agriculture and water (TWGAW);

Output 3.2 –Learning networks for climate-resilient farming practices established

88. CEDAC has developed farmer learning networks as a means to disseminate knowledge of SRI (see above, Output 2.2). This model will be used by the project to ensure that lessons learned at the pilot sites are effectively disseminated to other vulnerable areas of Cambodia. As the CEDAC farmer learning networks are already established and have demonstrated sustainability, these same networks will assume responsibility for maintaining and continuing dissemination of knowledge following completion of the project, supported by CEDAC.

89. Indicative Activities under Output 3.2 include:

- Continuous documentation and inventory of successful adaptation methods, technologies and practices for replication
- Preparation and dissemination of adaptation-related training and awareness raising materials for farmer learning networks;
- Continued training of MAFF and CEDAC agricultural extension workers in community-based adaptation practices and lessons learned from the project;
- Organization of regular learning events on community-based adaptation for participants in learning networks;
- Integration of project-related awareness and training materials into existing rural development and farmer learning networks.

Output 3.3 – Media Supported (TV, radio) dissemination of project lessons

90. An existing UNDP umbrella project "Strengthening Democracy and Electoral Processes in Cambodia", with funding support form other donors such as SIDA, CIDA and AUSAID, and in partnership with the State channels TVK, has developed news and current affairs programming called Equity Programmes, broadcasting on TVK. Equity Weekly, an ongoing current affairs TV show, broadcasts every Sunday after the evening news, and has aired 55 shows on topics concerning society, politics and economics. The project will take advantage of this popular programme to ensure widespread exposure of lessons from the project. Other media opportunities, such as the print media, will also be used

91. Indicative Activities under Output 3.4 include:

- Development of socially appropriate media programmes dealing about climate change adaptation issues in Cambodia and lessons generated through the project;
- Engagement with media to ensure regular broadcasts;
- Submission of articles covering project lessons for publication in print media.

Output 3.4 – Review of national policies on CC adaptation based on lessons generated by the project

92. In addition to up-scaling activities from the target districts to other districts and provinces in Cambodia, lessons learnt from the project will also be used in reviewing and, if necessary, modifying Cambodia's national strategy on climate change adaptation. Responsibility for developing national policy documents falls under the Climate Change Office of the Ministry of Environment. The project will support the Climate Change Office in the process of policy review and modification.

93. Indicative activities under Output 3.5 include:

- Organization of regular, multi-stakeholder lessons learnt workshops with MoE and MAFF;
- Identification of existing policy gaps and inconsistencies that became apparent during project implementation;
- Drafting of suggested revisions to relevant national policy documents to increase the efficiency of climate risk reduction in rural areas;
- Organization of consultative workshops to review and advise on proposed revisions;
- Support to the process of enactment of policy changes.

Output 3.5 - Experiences generated contribute to the Adaptation Learning Mechanism (ALM)

94. The project will contribute to the ALM's Output 2.1 *(A functional, active network of stakeholders for ALM support and facilitation)*, led by the ALM Project Management Unit at SEI-Asia, which will assist the project to engage existing networks such as the Regional and International Networking Group of sustainable development institutes (RING), the Vulnerability and Adaptation Resource Group (VARG), VulnerabiltyNet.org, and the IISD-IUCN-SEI-B-Intercooperation Task Force on Climate Change and Livelihoods. The project will also contribute to the ALM Output 2.2 (*A functional knowledge base and learning process for support of ALM activities*) by contributing examples of good practice, which will be used in the ALM's archive of good practices and assist in developing criteria for future project approval. As such, the information will be made accessible to climate change adaptation practitioners through the ALM's web-based interface, on-line dialogues, decision-making tools and printed material. The ALM's learning template (see Annex 2) will be used in cataloguing and reporting lessons.

95. Indicative Activities under Output 3.6 include:

- Capturing of lessons learned from the project on a continuous and systematic basis;
- Synthesizing of project impact from Outputs 2.4 and 3.4 and publication on the ALM platform;[13]
- Organization and hosting of (2) national workshops and (1) international symposium;
- Facilitation of an on-line discussion group on CCA, IWRM, and agricultural development in the Mekong region).

Cost-effectiveness

96. This project strategy is based on lessons learned in many projects dealing with rural development in Cambodia. These lessons have emphasized the need to engage at the grass-roots level in order to effect change and particularly to ensure sustainability of results in Cambodia. Indeed, it is in large part such lessons from numerous previous initiatives that helped to formulate the government's current policy of decentralization. The project will partners with agencies engaged over a long period with rural development, such as agricultural extension teams, and local NGO's such as CEDAC and GRET. These agencies have enormous experience in determining the optimum and most cost-effective approaches to building local capacity. Moreover, the interventions are based on those identified in the NAPA. Multi-criteria analysis was used to prioritise these interventions according to potential for positive effects on economic development, social capital and environmental management. Cost effectiveness was one of the criteria measuring economic development. As such, the actions proposed are not only the most urgent and most pressing, but are also judged to be cost effective.

[13] http://www.adaptationlearning.net

Project Indicators, Risks and Assumptions

97. The main risk to project success is the fragmented nature of governance in Cambodia, typified by a lack of cooperation and coordination among different secotral agencies. This problem has been encountered previously in UNDP/GEF projects in Cambodia (e.g. the Tonle Sap Conservation Project). The design of project implementation arrangements has taken this into account by avoiding previous models of shared implementation. Instead, project implementation will rely on an overall Project Management Unit, supported by a mutli-agency Project Board, which assigns specific Outputs and activities to agencies with a comparative advantage to deliver the results.

98. Another risk stems from the possibility of a lack of uptake of infrastructure modifications designed to reduce vulnerability to the impacts of climate change. This risk arises due to local stakeholders failing to assign costs to non-adaptive behaviour. For example, members of many households may face a journey of many hours every day simply to collect water during the dry season, but this is not necessarily viewed as a constraint on their livelihoods. The project will partner with several experienced national NGOs working with rural communities to ensure that adaptation options are explored in ways that relate to the views and culture of the target communities.

99. As availability of water resources becomes less predictable, there is a risk of conflict between competing or potentially competing users. This risk is explicitly recognized in the project design in the form of Output 1.4, which will develop mechanisms to avoid and to manage potential conflicts.

100. Project indicators at the Objective and Outcome level include the following (For additional indicators at the Output level, see Section II, Part I, below). The VRA, to be used in the indicator of Objective, is the Vulnerabiltiy Reduction Assessment, developed by UNDP for use in its Community-based Adaptation programme, and subsequently adopted for use in several other CCA projects. VRA combines information from quantitative and qualitative indicators to measure impact. Quantitative data will be collected using a simple tool - the "H-form" developed by Inglis in 1997[14]. The H-form is particularly useful for ranking and prioritising actions, and for evaluating the effectiveness of projects.

- Objective: To safeguard food security in Cambodia by reducing the vulnerability of Cambodia's agricultural sector to climate–induced changes in water resources availability; Indicator and target: At the end of the project the average VRA value as determined from interviews with central government and local agencies and stakeholders in pilot communities is at least 35% lower than the baseline value (to be determined in the first 6 months of project implementation)

- Outcome 1: Improved Capacity within local institutions to manage agricultural water resources in a changing climate; Indicator and target 1: By the end of the project, 90% of commune committees in target districts are using climate information in water resource planning ; Indicator and target 2: At the end of the project, all water resource management programmes of MAFF and MOWRAM in the target districts incorporate measures to reduce the impacts of climate risks

- Outcome 2: Locally appropriate adaptation options adopted to reduce exposure to climate - induced risks; Indicator and target 1: By the end of the first year of project implementation, a portfolio of appropriate community-based climate change adaptation options on rural water

[14] See UNDP Project Document for the Global Community Based Adaptation (2006), UNDP (2008) A Guide to the Vulnerability Reduction Assessment, Brooks *et al*, Note 2. Also Brooks, N. 2003. *Vulnerability, risk and adaptation: A conceptual framework.* Tyndall Centre Working Paper No. 38. Available at: http://www.tyndall.ac.uk/publications/working_papers/working_papers.shtml

management has been developed and demonstrated in (20) communities of the 2 pilot districts; Indicator and target 2: By the end of the project, at least 50% of households in the pilot districts have adopted one or more of the demonstrated adaptation options to safeguard water availability for household and farming uses.

- Outcome 3: Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia; Indicator and target: By the end of the project, at least 5 programmes, policies or projects in other Cambodian districts incorporate project practices, approaches or methods.

Expected national and local adaptation benefits

101. The expected national and local adaptation benefits and adaptation alternatives generated by this project are individually outlined in connection with the single Outcomes and Outputs of the project (see the section on 'Project Goal, Objective, Outcomes and Outputs/activities').

102. It should again be noted that this project addresses vulnerabilities outlined in Cambodia's INC to the UNFCCC and immediate priorities of the Cambodian NAPA. The project proponent is The Ministry of Agriculture Fisheries and Forestry (MAFF). The project addresses a report from the National Capacity Self Assessment (NCSA, priority action CC6), which outlines that a major constraint in moving from a focus only on post-disaster management to a process that supports planning and adaptation to increasingly fickle availability of water resources is the limited institutional and individual capacity in both government agencies and community organizations.

Country Ownership: Country Eligibility and Country Drivenness

103. As described in paragraphs 50 and 29-33, the project fits the objectives of the LDCF, Cambodia's national development priorities, the UNDAF, and MDGs. Cambodia, one of the 48 LDCs, is a Party to the United Nations Framework Convention on Climate Change (UNFCCC), having ratified it on 18 December 1995. Cambodia is eligible for technical assistance from UNDP, and this project is endorsed by the national operational focal point. The project contributes to the achievement of UNDAF outcomes related to the need to enhance resilience to shocks. One of UNDAF outputs that this project will contribute to is to enhance capacity to manage risks and respond to natural and man-made shocks.

104. The project conforms to UNDP's comparative advantage in capacity building. UNDP has supported Cambodia in capacity development for various issues related to the environment and sustainable managmeent of natural resources and with a range of stakeholders from different government departments. UNDP's Bureau for Crisis Prevention and Recovery (BCPR) supports national counterparts to develop both a disaster risk perspective and the human, financial, technical, and legislative capacity; civil society preparedness; and coordination systems required to effectively manage and reduce risk. In an effort to promote integrated development approaches, UNDP brings together partners working on both climate change and disaster risk reduction. Hence, the project will be able to efficiently connect to the central policy processes that currently shape Cambodia's approach on how to deal with future climatic hazards. UNDP Cambodia is undertaking CPAP review which will provide more emphasis on capacity development and climate change interventions (both climate change mitigation and adaptation). The revised CPAC proposes outputs and indiactors related to climate change to advance climate change response and environmental sustainability to contribute to poverty reduction. In response to this, UNDP is initiating a climate change programme which focus on addressing climate change for poverty reduction and pro-poor growth. The project will enhance national capaty to address climate change (see annex 3.1, section iv, part iii)

Sustainability

105. The project has strong government support at both central and local levels. The current Medium Term Strategy for Agriculture and Water (2006-2010)has identified five priority programs to implement: (i) Institutional capacity building and management support program for agriculture and water sector, (ii) Food security support program, (iii) Agriculture and agri-business (value-chain) support program, (iv) Water resource, irrigation and land management program, and (v) agricultural and water resources research, education and extension program. The project will contribute to the current programme 1 and 4 of the Medium Term Strategy for Agriculture and Water in amending the proposed activities of the programmes so as to incorporate measures to address the impacts of climate change and climate variaiblity. This will effectively mainstream climate change adaptation into national polcies and programmes for agriculture and water resources, thus ensuring sustainability. The Medium Term Strategy for Agriculture and Water recognises the impacts of climate change and variability in agriculture and water resource management and suggests to design measures to mitigate adverse impacts and gain benefit from positive ones (paragraph 40). Under programme 4, the Medium Term Strategy for Agriculture and Water suggests that country take appropriate steps to respond to climate change and variability (paragraph 40).

106. The long-term viability and sustainability of the project will depend greatly on institutional sustainability. Cambodia is currently undergoing a process of decentralization, resulting in greater authority and responsibility falling on provincial, district and communal agencies. The project is aligned with this development by focusing on local capacity development and integrating project interventions with broader social and economic development programmes. After completion of the project, commune councils and provincial and district departments of agriculture and water resources and meteorology, supported by national NGOs, will be able to plan and implement measures to adapt to climate change, as well as having enhanced capacities to plan locally appropriate economic development that will be resilient to the impacts of climate change. Efforts will be made to improve institutional and individual capacity, integrate climate-sesilient water management and agricultural practices into programme IV of the AWS and other donor-government project support on decentralization and deconcentration (PSDD). Lessons learned and good prectices from this project will be shared with wider government-donor stakehoders consultation forum through the government-donor technical working group on Agriculture and Water Resources consist of 27 members, out of which 10 from government technical agencies, and 17 from donor oganizations.

Replicability

107. Outcome 3 of the project is entirely concerned with promoting in-country learning, up-scaling and replication. The project will establish conditions to facilitate learning of climate change adaptation measures, for example, by developing learning networks in association with several national NGOs, developing and delivering training modules for the new FWUC Service Centre, and awareness raising campaigns through various forms of media. The project also incorporates international replication measures through Outcome 3, which links to the GEF-supported Adaptation Learning Mechanism (ALM).

PART III: Management Arrangements

108. The project will be implemented over a period of four years; from 01 July 2009 until 30 June 2013. The project will be nationally executed under UNDP National Execution (NEX) procedures. The lead Executing Agency will be the Ministry of Agriculture, Fisheries and Forestry (MAFF). The Ministry of Water Resource and Meteorology (MOWRAM), NGOs and Executive Comittees of the two pilots provinces will play a leading implementing role, taking responsibility for delivery of Outputs directly related to its mandate. The Ministry of Environment (MOE), which has the mandate over climate change matters will also sit on the Project Board and will adopt lessons learned from the project to prepare for modifications to national CC adaptation policy(ies).

109. As identified in Cambodia's National Capacity Self-Assessment (NCSA), these management arrangements will support the strengthening of institutions responsible for climate change adaptation issues, specifically as related to agricultural water management. Coordination with other agencies will further enhance the dissemination of learning on adaptation.

110. The project will receive high level guidance and oversight from a **Project Board (PB)**, which will be chaired by the secretary of state of the Ministry of Agriculture, Fisheries and Forestry, as the lead executing agency. The PB is the group responsible for making management decisions on a consensus basis for a project when guidance is required by the Project Manager, including approval of project revisions. Project assurance reviews by this group are made at designated decision points during the running of a project, or as necessary when raised by the Project Manager. The TOR of the PB is presented in annex 3.3, Section IV, Part III.

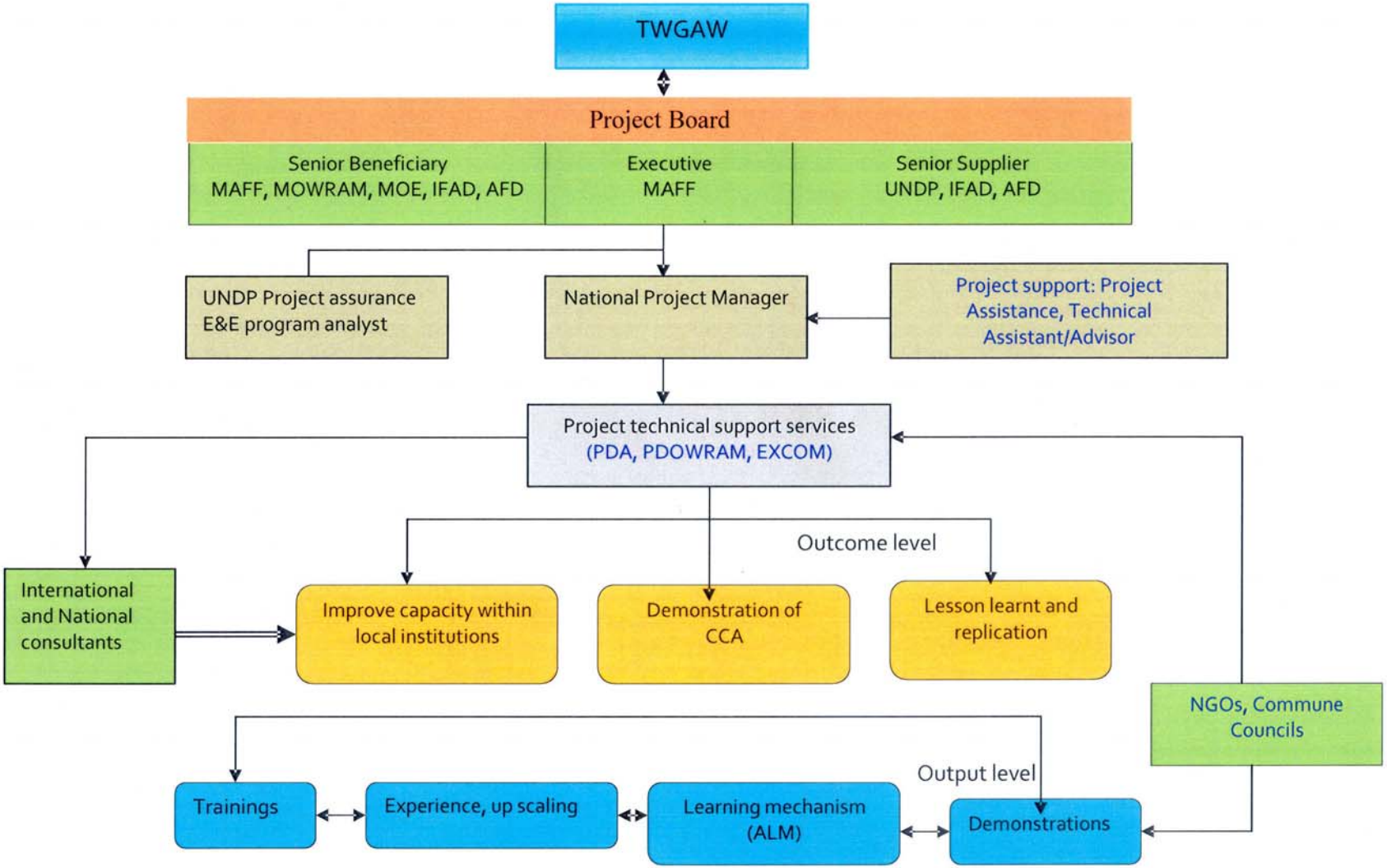
111. One **Project Manager** will work under the direction of the **Project Director** assigned by MAFF. The Project Manager will be responsible for the Outputs to be delivered by the respective agencies on time, on scope and on budget, as well as for the application of all UNDP administrative and financial procedures and efficient use of LDCF funding. A Project support team will be housed in the MAFF PSU office in order to reduce transaction costs and build synergy and linkages with existing IFAD programmes.

112. Additional technical support would be provided through access to regional experts or institutions from the region as and when the Project Management Team identifies the need. UNDP will provide support, particularly for compiling lessons learned and sharing experiences internationally.

113. In order to accord proper acknowledgement to the LDCF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with LDCF funds. Any citation on publications regarding projects funded by LDCF should also accord proper acknowledgment to GEF. The UNDP logo should be more prominent—and separated from the GEF logo if possible, as UN visibility is important for security purposes.

114. The project will collaborate with other key development partners such as IFAD, AFD, DANIDA and others to support a coherent and synergetic approach to climate change adaptation in Cambodia.

Figure 4: Project Management Structure



PART IV: Monitoring and Evaluation Plan and Budget

115. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from UNDP-GEF. The Strategic Results Framework in Section II provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built.

116. The following sections outline the principle components of the Monitoring and Evaluation Plan and indicative cost estimates related to M&E activities.

Monitoring and Reporting

Project Inception Phase

117. A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP Regional Technical Advisor, as well as UNDP HQ as appropriate. Fund Authorisation and Certificate of Expenditure (FACE) and baseline capacity development will be conducted during the inception period.

118. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders, and assist the project team to understand and take ownership of the project's goals and objectives. After the Inception Workshop, the Project Management Team will finalize preparation of the project's first annual work plan on the basis of the project's Strategic Results Framework (SRF). This will include reviewing the SRF (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected Outcomes for the project.

119. Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF expanded team which will support the project during its implementation, namely the CO and responsible UNDP/GEF Regional Technical Advisor; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), project board roles and functions, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget rephasings.

120. The IW will also provide an opportunity for all parties to understand their roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed, in order to clarify for all, each party's responsibilities during the project's implementation phase.

Monitoring responsibilities and events

121. A detailed schedule of project reviews meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the

Project Inception Report. Such a schedule will include: (i) tentative time frames for Project Board Meetings, (or relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities (see M&E Table below).

122. Day to day monitoring of implementation progress will be the responsibility of the Project Manager, based on the project's Annual Work Plan and its indicators, with overall guidance from the Project Director. The Project Team will inform the UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

123. The Project team will fine-tune the progress and performance/impact indicators of the project at the Inception Workshop with support from UNDP-CO and assisted by the UNDP-GEF Regional Technical Advisor. Specific targets for the first year of implementation, progress indicators, and their means of verification will be developed at this Workshop. These will be used to assess whether implementation is proceeding at the intended pace and in the right direction and will form part of the Annual Work Plan. The local implementing agencies will also take part in the Inception Workshop in which a common vision of overall project goals will be established. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

124. Measurement of impact indicators related to global benefits will occur according to the schedules defined in the Inception Workshop. The measurement of these will be undertaken through subcontracts or retainers with relevant institutions, or through specific studies that are to form part of the projects activities, or periodic sampling such as with sedimentation.

125. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the project proponent, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

126. UNDP Country Offices and UNDP-GEF RCUs as appropriate, will conduct yearly visits to the project field sites based on an agreed upon scheduled to be detailed in the project's Inception Report / Annual Work Plan to assess first hand project progress. Any other member of the Project Board can also accompany, as decided by the PB. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all SC members, and UNDP-GEF.

127. Annual Monitoring will occur through the Project Implementation Review (PIR)/Annual Project Report (APR), field visits and project board meetings. . The project will be subject to project board meetings 4 times every year. The first such meeting will be held within the first three months of the completion of project inception report. The project proponent will prepare an APR and submit it to UNDP-CO and the UNDP-GEF regional office at least two weeks prior to the project board meeting for review and comments.

128. The APR and Quarterly Progress Reports will be used as some of the basic documents for discussions in the project board meeting. The project proponent will present the APR, QPRs and annual work plans to the project board, highlighting key issues and recommendations for the decision of the project board members. The protocols of the project board meeting and its preparation will be determined by UNDP CO in consultation with project board members.

Project Monitoring Reporting

129. The Project Manager, DGM, in conjunction with the UNDP-GEF extended team will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature is project specific to be defined throughout implementation.

(a) Inception Report (IR)

130. A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This Work Plan would include the dates of specific field visits, support missions from the UNDP-CO, the UNDP/GEF Regional Technical Advisor or consultants, as well as time-frames for meetings of the project's decision making structures. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame.

131. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation.

132. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the IR, the UNDP Country Office and UNDP/GEF Regional Technical Advisor will review the document.

(b) Annual Project Report (APR)

133. The APR is a UNDP requirement and part of UNDP's Country Office central oversight, monitoring, and project management. It is a self-assessment report by project management to the CO and provides input to the country office reporting process and the ROAR. An APR will be prepared on an annual basis to reflect progress achieved in meeting the project's Annual Work Plan and assess performance of the project in contributing to intended outcomes through outputs and partnership work.

(c) Project Implementation Review (PIR)

134. The PIR is an annual monitoring process mandated by the GEF. It has become an essential management and monitoring tool for project managers and offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a Project Implementation Report must be completed by the CO together with the project. The PIR can be prepared any time during the year (July-June) and ideally prior to the TPR. The PIR should then be discussed in the TPR so that the result would be a PIR that has been agreed upon by the project, the executing agency, UNDP CO and the concerned RC.

135. The individual PIRs are collected, reviewed and analysed by the RCs prior to sending them to the focal area clusters at the UNDP-GEF headquarters. The focal area clusters supported by the UNDP-GEF

M&E Unit analyse the PIRs by focal area, theme and region for common issues/results and lessons. The TAs and PTAs play a key role in this consolidating analysis.

136. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings.

137. The GEF M&E Unit provides the scope and content of the PIR. In light of the similarities of both APR and PIR, UNDP-GEF has prepared a harmonized format for reference.

(d) Quarterly Progress Reports

138. Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF regional office by the project team. See format attached.

(e) Periodic Thematic Reports

139. As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

(f) Project Terminal Report

140. During the last three months of the project the project team will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved, structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the Project's activities.

Independent Evaluations

141. Mid-term evaluation of the project will take place within two years after project implementation. In addition, an independent Final Evaluation will take place three months prior to the closure of the project. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the UNDP/GEF Regional Technical Advisor.

Audits and financial reporting

142. The project will be audited following UNDP Financial Regulations and Rules and applicable Audit policies as per NEX procedures and Global Environment Facility requirements, based on certified financial statements provided by MAFF.

143. UNDP is responsible for preparing quarterly and annual Combined Delivery Reports (CDRs), based on financial statements prepared by the Project Accountant. CDRs reflect the expenditures of the ending period. Quarterly CDRs can be certified by the NPM, while Annual CDRs must be certified by the NPD on behalf of MAFF.

144. In addition to the discrete monitoring, evaluation and planning products in the table below, the Project team and UNDP CO are expected to monitor the project continuously, using the following tools:

- **Issues Log**: where project issues are recorded as they arise. Clear explanations and analysis should be provided as well as possible coping strategies and resolution.
- **Risk Log**: Should be updated whenever new risks are identified. It also details the status of previously identified risks, and the status of any counter measures put in place.
- **Quality Log**: where assessments of the quality of the project deliverables is recorded. It is prepared according to the C&M Plan, which is developed by Project Manager and UNDP Programme Analyst. It documents the extent to which deliverables meet the expected quality, from a users/beneficiaries' perspective as well as details on timeliness and financial resources usage.

145. Each log is required to be submitted to UNDP quarterly, together with QWPs and QPRs. UNDP must then update the equivalent logs in the ATLAS system. Key aspects of the logs are to be communicated to the Project Management Board at meetings.

Monitoring and Evaluation Matrix

Type of M&E activity	Responsible parties (lead responsibility in bold)	Approval Authority	Timeframe/frequency
Inception Report	MAFF and **PMU**	Project Management Board	4 months after the beginning of project implementation, but not later than 6 months after the project signature
Communication and Monitoring Plan (C&M Plan)	MAFF and **PMU**	Project Management Board	As per Inception Report.
QWP	MAFF and **PMU**	UNDP	To be submitted no later than one week after each quarter ends, together with the quarterly progress report. To be approved by UNDP 2 weeks after quarter ends.
QPR	MAFF and **PMU**	UNDP	To be submitted no later than one week after each quarter ends, together with the quarterly work plan. To be approved by UNDP 2 weeks after quarter ends.
Funding Authorization and Certificate of Expenditures (FACE) – This provides a quarterly financial report of expenditures and sets out the project's funding requirements for the following quarter	MAFF and **PMU**	UNDP (Reviews) UNDP DRR-P (Approves)	To be submitted no later than one week after each quarter ends, with the quarterly work plan and quarterly progress report. Bank statements, reconciliations and other financial documents as specified in the financial policies and procedures of this manual should be submitted also. To be approved by UNDP 2 weeks after quarter ends.
Quarterly CDR	**UNDP**	National Project Manager/UNDP	Quarterly
AWP	MAFF and **PMU**	Project Management Board	To be submitted to the CO by mid-November every year, together with APR (UNDP) before the annual project review. To be approved by Project Management Board by mid-January in following year.
APR (UNDP)	UNDP Country Office, MAFF and **PMU**	Project Management Board	First draft of the UNDP APR to be submitted to the CO by mid-November every year. Approved by Project Management Board by mid-January in following year.
APR/PIR (GEF)	UNDP Country Office, MAFF and **PMU**	UNDP	Every year, at latest by June of that year

Type of M&E activity	Responsible parties (lead responsibility in bold)	Approval Authority	Timeframe/frequency
Annual CDR	**UNDP**	National Project Director/MAFF	At the end of each calendar year
Lessons learnt log	**PMU**	Project Management Board	At the end of each calendar year
Project Management Board Meeting (TPR meeting)	MAFF, **UNDP Country Office,** PMU	N/A	At least twice yearly (more regularly if required in the reasonable opinion of the NPM). There is to be one meeting in mid January every year upon receipt of APR (UNDP)
Mid Term evaluation and Final External Evaluation	UNDP/GEF headquarters, UNDP/GEF Task Manager, **UNDP Country Office,** MAFF and PMU	Project Management Board	In year 2 and final year implementation
Terminal Report	UNDP Country Office, MAFF and **PMU**		Draft report available for UNDP review at least three months before the end of the project and submitted to GEF no later than three months after the end of project
Audit (with preceding spot check by UNDP)	**UNDP Country Office**, MAFF and PMU	N/A	Yearly, commencing in February or March of each year
Implementation of audit recommendations	MAFF and **PMU**	UNDP	Yearly, by June of each year (spot checks by UNDP to verify)
Visits to field sites	**MAFF** and **PMU**	N/A	Twice a year

Learning and Knowledge Sharing

146. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums including TWGAW. In addition:

- The project will participate, as relevant and appropriate, in UNDP-GEF sponsored networks, organized for senior personnel working on projects that share common characteristics. UNDP-GEF shall establish access to a number of networks, such as the Adaptation Learning Mechanism, that will largely function on the basis of an electronic platform.
- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.
- The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identification and analysis of lessons learned is an ongoing process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP-GEF shall provide a format and assist the project team in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.
- Results from the program will be disseminated within and beyond the program intervention zone through a number of existing information sharing networks, in particular, the ALM. The ALM lessons learned template will be adapted to be used by the project. To support this goal, adaptation-related activities from the project will contribute knowledge to the ALM, such as the following:
    - Best practices in integrating adaptation into national and local development policy, and project design and implementation mechanisms.
    - Lessons learned on removing the most common barriers to adaptation, with special attention to the roles of local partners, international partners, UNDP, and GEF in designing and implementing projects
    - The conditions for success (or failure), including replication and scaling up.

147. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identifying and analyzing lessons learned is an on-going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP shall provide a format and assist the project team in categorizing, documenting, and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

PART V: Legal Context

148. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Cambodia and the United Nations Development Programme, signed by the parties on 19th December 1994. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

149. The UNDP Resident Representative in Cambodia is authorized to effect in writing the following types of revision to this Project Document, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

a) Revision of, or addition to, any of the annexes to the Project Document;

b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;

c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and

d) Inclusion of additional annexes and attachments only as set out here in this Project Document

SECTION II: STRATEGIC RESULTS FRAMEWORK (SRF) AND GEF INCREMENT

PART I: Strategic Results Framework, SRF (formerly GEF Logical Framework) Analysis

Project Strategy	**Objectively verifiable indicators**				
Goal	**To enhance adaptive capacity to prevent climate change-induced changes in water resources Cambodia**				
	Indicator	*Baseline (2008)*	*Target (2011)*	**Sources of verification**	**Risks and Assumptions**
Objective: To reduce the vulnerability of Cambodia's agricultural sector to climate–induced changes in water resources availability	Reduction of farmer vulnerability to climate variability and climate change	Baseline value: Farmer vulnerability to impacts of climate change is extreme, with virtually no adaptive capacity in place	At the end of the project the average VRA value as determined from interviews with central government and local agencies and stakeholders in pilot communities is at least 35% lower than the baseline value	Qualitative stakeholder surveys / interviews with farmers and local authorities	Potential lack of inter-agency cooperation and coordination does not affect efficiency of project interventions
Outcome 1: Improved capacity within local institutions to manage agricultural water resources in a changing climate	Percentage of Commune Councils' Planning and Budgeting Committees utilizing climate information, forecasts and scenarios for decision making and water resource planning	No commune council planning and budgeting committees utilizing CC information in water resource planning	By the end of the project, 90% of commune committees in target districts are using climate information in water resource planning	Survey of decision makers in communal councils and key sectoral agencies	Parallel initiatives to develop local capacity as part of the decentralization process are effective.
	Mainstreaming of climate risk reduction in water resource management programmes of MAFF and MOWRAM in the target districts	Existing agriculture and water resources programs do not incorporate climate risk projection, reduction activities	At the end of the project, all water resource management programmes of MAFF and MOWRAM in the target districts incorporate measures to reduce the impacts of climate risks	Document review, interviews and field surveys.	
Output 1.1 – Commune Council Plans and budgets address inherent climate risks in target districts	Number of commune development plans with climate risk safeguards and	Climate Risk Management is absent from commune development plans	By the end of the project, 18 commune development plans incorporate climate risk management and adaptation measures	Report analysis, commune plans	Commune Councils are willing to take long-term view as

	Indicator	*Baseline (2008)*	*Target (2011)*	Sources of verification	Risks and Assumptions
	anticipatory risk reduction activities Provincial development plans with explicit CC adaptation measures	 Provincial development plans do not include explicit CC adaptation measures	 By the end of the project, provincial development plans for the provinces in which the target districts are located incorporate explicit measures to address risks associated with CC	 Provincial development plan review	well as focusing on short-term financial goals
Output 1.2 - FWUCs and MOWRAM engineers trained in climate-resilient irrigation design	Availability of guidelines for climate resilient irrigation design in Cambodia Number of FWUCs able to operate and maintain climate resilient irrigation systems	No easy-to-use guidelines on climate resilient irrigation design is available in Cambodia FWUCs are not able to systematically operate and maintain CC resilient irrigation system	By the end of the first year of project implementation, guidelines are available for climate resilient irrigation design By the end of the project, 70% of FWUC and MOWRAM engineers in the pilot districts are able to routinely maintain and operate CC resilient irrigation systems	Project reports; guidelines, training protocols Survey, interviews	FWUC's prove to be sustainable Setup of FWUC Service Centre is not delayed
Output 1.3 Conflict potential in areas prone to climate-induced water assessed and conflict prevention measures supported	Existence of mediative mechanisms to avoid or to manage conflicts resulting from access to water resources Number of potential conflicts avoided or resolved	No conflict resolution mechanism exists to deal with conflicts related to water resources None	By the end of the project, water use needs and projections in target districts and communities are assessed in relation to their current and future conflict potential At the end of the second year of project, a mediative mechanism is available to avoid or manage conflicts resulting from access to water resources By the end of the project, at least 2 conflicts are actively addressed through this new mechanism	Conflict analysis report, based on field observations Project reports, Interviews with conflict parties	Timely confirmation of cofinancing for additional vulnerability mapping in target areas Water resource conflicts do occur in target areas
Output 1.4 - A community-based climate information system on flooding and	Standardized communication structures for climate	Farmers in target districts are not receiving climate forecast and early warning	By the end of the first year of project implementation, standardized communication structures are in place	Hazard and vulnerability maps	Limitation in involvement from local authorities

	Indicator	*Baseline (2008)*	*Target (2011)*	Sources of verification	Risks and Assumptions
drought events established	risk information are established Number of vulnerable households in pilot districts utilizing climate forecast information on seasonal or shorter timescales	information in time to take precautionary measures in the face of flooding and drought events None of the households in the target areas use climate risk and early warning information to protect livelihood assets	to collect, analyze and relay climate and hazard warning information to vulnerable community members By the end of the project, 60% of households in pilot sites utilise timely early warning information about impending drought and flooding hazards	Early warning communication logs/reports; field interviews	and communities and provincial line departments including financial constraints
Outcome 2: **Locally appropriate adaptation options demonstrated to reduce exposure to climate - induced risks**	Community-based adaptation measures adopted by households in target districts	No systematic demonstration and rollout of community-based measures that increase long-term livelihood resilience in a changing climate	By the end of the first year of project implementation, a portfolio of adaptation measures are developed and demonstrated in at least 30 communities of the 2 pilot districts By the end of the project, at least 70% of the households in the target districts are implementing at least one additional measure to reduce livelihood exposure to climate risk	Project evaluation reports	Willingness of communities to participate is not impacted by external factors (such as macro-economic changes, political unrest, etc.)
Output 2.1 – Improved rainwater harvesting facilities demonstrated in 20 target villages	Number of households harvesting and/or conserving rain water in target communities for household and agricultural uses	Approx. 378 hhs (out of 18,842hh) in Bavel And 127 hhs (out of 22,994) in Chi Kreng districts are actively harvesting rainwater for household uses only. Water conservation for agricultural uses is not yet systematically explored.	By the end of the project, at least 50 % of all households in the target districts are actively harvesting rainwater to conserve and safeguard water resources for household and /or agricultural uses	Ground survey Project monitoring and evaluation reports	Opportunity costs of spending time to collect water are recognized and reflected in household activities
Output 2.2 – Resilient farming methods to climate-induced changes in rainfall	Area of agricultural land on which climate resilient farming	Currently, SRI is applied on about 200 ha in the 2 target districts	By the end of the project, the area farmed with resilient agricultural practices in the pilot districts has	Ground survey on farming practices and	Benefits of diversified agriculture seen to

	Indicator	*Baseline (2008)*	*Target (2011)*	Sources of verification	Risks and Assumptions
intensity and distribution demonstrated	practices and/or crops are actively adopted Number of agricultural practices evaluated for their performance and resilience under different climatic scenarios	 Agricultural techniques and prescriptions are not systematically analyzed for climate resilience and cost/benefit under different climatic scenarios	increased to at least 2000ha By the end of the project, at least 3 agricultural farming methods (including SRI) are evaluated for their performance and resilience under different climatic scenarios	crop use Monitoring and evaluation reports	exceed short-term reduction in financial flows
Output 2.3 – Resilient design and management of reservoirs, irrigation canals, ponds and dykes demonstrated	Number of reservoirs, irrigation canals ponds and dykes made to the design of reservoirs to accommodate longer dry periods and/or increased rainfall intensities	No modification of irrigation systems that actively incorporates changing climatic trends and projections	By the end of the project, modifications have been made to at least **4** reservoirs, 4 irrigation canals and 4 communal ponds in each of the target districts ("major" to be determined based on baseline survey; e.g. increase in reservoir capacity from a 20-year event to a 50-year event)	Ground survey Project reports	Resources to support modified designs can be mobilized in a timely fashion
Outcome 3: Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia	Number of outside programmes, policies or projects incorporating project practices, approaches or methods	No follow-up projects to date incorporate project lessons and experiences	By the end of the project, at least 5 programmes, policies or projects in other Cambodian districts incorporate project practices, approaches or methods that have been demonstrated in, and derived from, this project	Project evaluation reports; survey of MAFF/ MOWRAM provincial and district offices	Conditions affecting target districts are reflective of wider situation in Cambodia
Output 3.1 – Increased public awareness and environmental education programmes on climate risk reduction designed and implemented	Percentage of households in pilot sites aware of precautionary measures to counter CC risks and minimize material losses Number of awareness raising events	Virtually no households in pilot districts are aware of long-term climatic trends and projections that affect their farming outputs and livelihood security No awareness raising events on CC issues are taking place in the target districts	By the end of the project, at least 70% of households in the target districts are aware of long-term climatic trends that potentially affect their livelihood security, and of potential small-scale adaptive measures to safeguard livelihoods From year 2 of project implementation onwards, at least 10 awareness events are conducted each year	Qualitative survey project report	Awareness will stimulate action Penetration of awareness raising events is sufficient to change overall community attitudes

	Indicator	*Baseline (2008)*	*Target (2011)*	Sources of verification	Risks and Assumptions
	Percentage of communal/religious/ FWUC leaders and village elders who are able to explain long-term climate projections, scenarios and potential risk reduction options to other community members	Communal/religious/ FWUC leaders and village elders are able to describe current coping mechanisms for flooding and drought events, but do not understand long-term climatic trends and potential scenarios	At the end of the project, at least 60% of a representative sample of commune/religious/ FWUC leaders and village elders are able to correctly describe the current and projected impacts of climate change and potential risk reduction options in their communities		
Output 3.2 – Learning networks for climate-resilient farming practices established	Number of farmers incorporating lessons learned with regard to CC risks into their practical livelihood activities Repository of information established to collect data on lessons learned in CC risk reduction and make it available to stakeholders	No farmers incorporate CC-related lessons as there is no accessible repository of information about climate change impacts on farming in Cambodia No repository established	By the end of the second year of project implementation, 30% of farmers in the target area incorporate lessons learned from the project By the end of the project, all project-related lessons learned are collected, systematically presented and available to the immediate districts around the target area through a designated learning/information focal point serving as a repository for information on CC adaptation	Project reports Knowledge products generated by the project CEDAC annual report	Networks access sufficient numbers of communities and are sustainable
Output 3.3 – Media-supported (TV, radio) dissemination of project lessons	Number of paper-based, web-based, audio-based and TV-based publications about project-related practices, approaches, methods or results Number of workshops at the national and	No project-related publications None	From year 2 of project implementation onwards, at least 5 TV and radio broadcasts per year raise awareness of CC and community-based adaptation options At least (10) paper-based and web-based publications disseminate information about project-related practices, approaches, methods or	Newspaper or other publication archive TV archive Radio archive	Dissemination mechanisms effective in promoting uptake

	Indicator	*Baseline (2008)*	*Target (2011)*	Sources of verification	Risks and Assumptions
	regional levels on lessons learned		results derived from the project In each year of project implementation, there is at least one national workshop to disseminate lessons learned from the project During the lifetime of the project, there is at least one regional workshop to disseminate lessons learned from the project	Project monitoring and evaluation reports Workshop proceedings	
Output 3.4 – Review of national policies on CC adaptation based on lessons generated by the project	Existence of draft modifications to relevant national policies on CC adaptation	National policies and strategies for Agricultural Water Management do not contain reference to a changing climate	By the end of the project, the Ministry of Environment (Climate Change Office) has reviewed and is in the process of preparing recommendations to revise at least one sector policy to include climate risk considerations and reflect lessons learnt through the project	MoE reports Draft policy recommendation	Project lessons indicate a need for modifications of national policies
Output 3.5 – Experiences generated contribute to Adaptation Learning Mechanism	Project-related lessons learned are communicated through ALM	No lessons learned are available	By the end of the project, the ALM includes lessons learned from this project and makes these lessons accessible to other countries in Asia and beyond	Project-related entries in the ALM platform	The ALM remains an active operational platform to capture lessons from all GEF-funded CC adaptation projects

Part II: Additional Cost Analysis

Project Background

150. According to the Cambodia National Adaptation Programme of Action to Climate Change (NAPA), there is emerging evidence that human systems have been affected by increases in flood and droughts. Projected changes in climate could have major consequences on hydrology and water resources, agriculture and food security, terrestrial and freshwater ecosystems, costal zones and marine ecosystems, and human health. Adverse impacts include increased flood and drought magnitude and damages in temperate and tropical Asia, reduction of crop yields, decrease water availability, and increase in number of people exposed to vector and water-borne diseases.

151. The proposed project is based on priority interventions outlined in the NAPA and focuses on climate change-resilient agricultural water management. The impacts of climate change on Cambodian agriculture, particularly on rice cultivation, are predicted to adversely affect food production and – security in rural areas. Various climate models depict different trends in annual precipitation, with some predicting substantial increases in total precipitation and some predicting a rise, followed by a fall. These trends do not find appropriate reflection in the government's planning and decision-making processes, which is mainly due to the fact that climate change challenges in Cambodia are predominantly addressed through post-disaster relief operations after extreme weather events.

Additional Cost Assessment

Baseline

152. Baseline activities to address the vulnerabilities of Cambodia's agricultural sector to cllimate change-induced changes in water resources availability are limited. At present, the Cambodia government is unable, on its own, to bear the total cost of safeguarding food security in the country. A comprehensive gaps and policies analyis was conducted to: (i) review the impacts of climate hazards and climate change in Cambodia; (ii) review and assess the sectoral policy gaps; and (iii) identify long-term programmes for increasing sectoral adaptive capacity to changing climate conditons.

153. The analysis shows that current national policies and programmes do not integrate global policies on climate change, focusing mainly on post-disaster emergency relief. Programmes for improving community capacity and enhancing community-based initiatives to cope with climate hazards and adapt to climate variability receives little attention. Furthermore, these programmes have limited geographical coverage of areas identified as vulnerable to climate hazards. It also indicates that programmes for developing and disseminating climate forecast are limited and long term programmes on research and education for addressing climate variability and climate change have not been well developed.

Additional Cost Reasoning

Systems Boundary

154. The project targets the national, district, and local levels for activities to improve government capacity to safe guard food security in Cambodia by reducing the vulnerability of Cambodia's agricultural sector to climate-induced changes in water resources.

Summary of Adaptation Benefits and Costs

Cost-Benefit	Baseline (B)	Alternative (A)	Project and Additional costs (A-B)
BENEFITS			
Current rural development initiatives largely ignore the anticipated risks of climate change; there are capacity deficits in planning for CC and an absence of examples of effective CCA measures.	Numerous government- and donor-led initiatives are rebuilding rural infrastructure in Cambodia and supporting rural development, but these largely ignore CC impacts.	The project seeks to integrate long-term climate risk planning into rural development in Cambodia. Specifically, it will address capacity to incorporate CCA into planning processes, demonstrate locally relevant adaptation options, and establish conditions of up-scaling and replication.	
COSTS			
Outcome 1: Improved Capacity within local institutions to manage agricultural water resources in a changing climate	The ECOSORN project will help build local capacity for water resources management. The RILGP (Rural Investment and Local Governance initiative) under PSDD provides support to improved governance throughout Cambodia, representing an RGC contribution to the baseline **Baseline: $640,000** RGC: $40,000 (in-kind) AFD: $600,000	The project will support investment in improved institutional capacities at all levels for climate-resilient planning in water resources management and use in rural Cambodia. LDCF funding will incorporate CC planning into existing measures. UNDP will also support three NGOs to develop a training programme on community based climate change adaptation and soil improvement. **Alternative: $1,351,467**	**$711,467** **LDCF: $608,000** **Co-financing:** UNDP: $103,467
Outcome 2: Locally appropriate adaptation options adopted to reduce exposure to climate - induced risks	The ECOSORN project will support irrigation renovation and other water resources infrastructure in Battambang and Siem Reap; total costs: €389,796 RGC support to provincial departments of Agriculture, Fisheries and Forestry, and Water Resources and Meteorology to assist communities in water resource management, for example, to renovate existing and construct	In two pilot districts in NW Cambodia, communities are more resilient to the impacts of CC due to the adoption of CCA measures. LDCF funding will be limited to adding CCA measures to proposed rural development activities. **Alternative: $1,527,667**	**$1,087,667** **LDCF: $911,000** **Co-financing:** UNDP: $176,667

Cost/Benefit	Baseline (B)	Alternative (A)	Project and Additional costs (A-B)
	additional canals **Baseline: $440,000** RGC: $20,000 (in kind) AFD: $420,000		
Outcome 3: Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia	GRET/CEDAC Development of a FWUC Service Centre (AFD funded) UNDP will develop economic analysis report on "No Cost of Action "to Climate change; Human Development Report on Climate Change and Climate change communication strategy. A part of preparatory activity of a comprehensive CC programme, UNDP will develop a programme component for mainstreaming CC into national and sectoral plans and policy. **Baseline: $320,000** AFD: 220,000 UNDP: $100,000	Lessons and experiences will be systematically shared, up-scaled and replicated. The FWUC Service Centre will include learning modules dealing with CCA. LDCF funding will be targeted at adding CCA issues to baseline initiatives **Alternative: $539,066**	**$219,066** **LDCF: $176,750** **Co-financing:** UNDP: $42,316
Project management and evaluation	No evaluations conducted on project. RGC co-financing is largely through evaluations of the EU-financed ECOSORN project and the AFD/ADB-financed NWI programme **Baseline: $180,000** RGC: $120,000 (in kind) AFD: $60,000	Project management and monitoring and evaluation of the project activities and impacts. LDCF funds will specifically target the CCA issues in project implementation **Alternative: $672,150**	**$492,150** **LDCF: $154,250** **Co-financing:** UNDP: $337,900
TOTAL COSTS	**Baseline: $1,580,000**	**Alternative: $4,090,350**	**LDCF: $1,850,000** **UNDP: $660,350**

Co-financing costs include cash and in-kind contributions

SECTION III: TOTAL BUDGET AND WORKPLAN

Project title:

Award ID:	00056753
Project ID:	00069653
Award Title	PIMS 3867 Cambodia: Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia
Business Unit:	KHM10
Project Title:	Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia
Implementing Partner	Royal Government of Cambodia, Ministry of Agriculture, Forestry and Fisheries (Designated institution/Executing agency)
Other Implementing Partners	Royal Government of Cambodia, Ministry of Water Resource and Meteorology Royal Government of Cambodia, Ministry of Environment

Expected Output	Key Activities	Resp. Partner	Planned Budget				Amount in US. Dollars						
			Fund	Donor	Account	Budget Description	2009	2010	2011	2012	2013	Total	Notes
Output 1. Reduce Vulnerability of Cambodia's Agricultural Sector to Climate–Induced Changes in Water Resources Availability	**Activity 1.** Improved Capacity within local institutions to manage agricultural water resources in a changing climate	MAFF	62160	10003	71200	International Consultant	-	62,500.00	67,500.00	-	-	130,000.00	a
		UNDP	04000	00012	71200	International Consultant	-	-	26,667.00	-	-	26,667.00	a
		MAFF	62160	10003	71300	National Consultant	-	21,429.00	21,429.00	21,429.00	10,713.00	75,000.00	b
		MAFF	62160	10003	72600	Mainstreaming CCA into NPDD	-	92,285.00	92,285.00	92,285.00	46,145.00	323,000.00	d
		MAFF	04000	00012	72600	Mainstreaming CCA into NPDD	-	21,942.00	21,942.00	21,942.00	10,974.00	76,800.00	d
		MAFF	62160	10003	71600	Travel and Workshops	7,500.00	15,000.00	15,000.00	15,000.00	7,500.00	60,000.00	f
		MAFF	62160	10003	74500	Miscellaneous Expenses	2,500.00	5,000.00	5,000.00	5,000.00	2,500.00	20,000.00	h

	Sub - Total					**Sub-total GEF**	10,000.00	196,214.00	201,214.00	133,714.00	66,858.00	**608,000.00**	
						Sub-total UNDP	-	21,942.00	48,609.00	21,942.00	10,974.00	**103,467.00**	
						Total	**10,000.00**	**218,156.00**	**249,823.00**	**155,656.00**	**77,832.00**	**711,467.00**	
	Activity 2. Locally appropriate adaptation options adopted to reduce exposure to climate -induced risks	MAFF	62160	10003	71200	International Consultant	-	60,000.00	30,000.00	-	-	90,000.00	a
		UNDP	04000	00012	71200	International Consultant	-	-	26,667.00	-	-	26,667.00	a
		MAFF	62160	10003	71300	National Consultant	-	58,929.00	43,929.00	21,429.00	10,713.00	135,000.00	b
		UNDP	04000	00012	72600	NGO Grant (Piloting & Demonstration)	-	42,864.00	42,864.00	42,864.00	21,408.00	150,000.00	d
		MAFF	62160	10003	72600	NGO Grant (piloting & Demonstration)	-	130,286.00	130,286.00	130,286.00	65,142.00	456,000.00	d
		MAFF	62160	10003	72200	Equipment (Rain Water Harvesting)	-	50,000.00	50,000.00	50,000.00	-	150,000.00	g
		MAFF	62160	10003	71600	Travel and Workshops	7,500.00	15,000.00	15,000.00	15,000.00	7,500.00	60,000.00	f
		MAFF	62160	10003	74500	Miscellaneous Expenses	2,500.00	5,000.00	5,000.00	5,000.00	2,500.00	20,000.00	h
	Sub - Total					**Sub-total GEF**	10000	319,215.00	274,215.00	221,715.00	85,855.00	**911,000**	
						Sub-total UNDP	0	42864	69531	42864	21408	**176,667**	
						Total	**10,000.00**	**362,079.00**	**343,746.00**	**264,579.00**	**107,263.00**	**1,087,667.00**	
	Activity 3. Lessons learned in project pilot sites replicated in other vulnerable areas of Cambodia	UNDP	04000	00012	71200	International Consultant	-	-	26,666.00	-	-	26,666.00	a
		UNDP	04000	00012	74200	Communication and Advocacy	1,957.00	3,913.00	3,912.00	3,912.00	1,956.00	15,650.00	e
		MAFF	62160	10003	74200	Communication and Advocacy	5,844.00	11,688.00	11,687.00	11,687.00	5,844.00	46,750.00	e
		MAFF	62160	10003	74200	Communication and Advocacy	-	-	14,000.00	14,000.00	7,000.00	35,000.00	e
		MAFF	62160	10003	71600	Travel and Workshops	10,000.00	20,000.00	20,000.00	20,000.00	10,000.00	80,000.00	f
		MAFF	62160	10003	74500	Miscellaneous Expenses	1,875.00	3,750.00	3,750.00	3,750.00	1,875.00	15,000.00	h
	Sub - Total					**Sub-total GEF**	17,719.00	35,438.00	49,437.00	49,437.00	24,719.00	**176,750.00**	
						Sub-total UNDP	1,957.00	3,913.00	30,578.00	3,912.00.00	1,956.00.00	**42,316.00**	

					Total	**19,676.00**	**39,351.00**	**80,015.00**	**53,349.00**	**26,675.00**	**219,066.00**	
	Activity 4. Project Management Monitoring and Evaluation	UNDP	62160	10003	71200	International Consultant	-		15,000.00	-	15,000.00	30,000.00	a.
		UNDP	62160	10003	71300	National Consultant	7,187.00	14,375.00	24,375.00	14,375.00	17,188.00	77,500.00	b
		UNDP	04000	00012	71300	National Consultant	16,813.00	33,625.00	33,625.00	33,625.00	16,812.00	134,500.00	b
		MAFF	04000	00012	74200	Communication and Advocacy	1,957.00	3,913.00	3,912.00	3,912.00	1,956.00	15,650.00	e
		MAFF	62160	10003	74200	Communication and Advocacy	5,844.00	11,688.00	11,687.00	11,687.00	5,844.00	46,750.00	e
		MAFF	04000	00012	72100	Contractual Service - Individual	5,400.00	18,000.00	18,000.00	18,000.00	9,000.00	68,400.00	c
		MAFF	04000	00012	72200	Equipment	2,000.00	37,400.00	-	-	-	39,400.00	g
		MAFF	04000	00012	71600	Travel and Workshops	1,875.00	3,750.00	3,750.00	3,750.00	1,875.00	15,000.00	f
		MAFF	04000	00012	73400	Operational Costs	-	15,699.50	15,699.50	15,699.50	7,851.50	54,950.00	h
		MAFF	04000	00012	74500	Miscellaneous Expenses	1,250.00	2,500.00	2,500.00	2,500.00	1,250.00	10,000.00	i
	Sub-Total					**Sub-total GEF**	13,031.00	26,063.00	51,062.00	26,062.00	38,032.00	**154,250**	
						Sub-total UNDP	29,295.00	114,887.50	77,486.50	77,486.50	38,744.50	**337,900**	
						Total	**42,326.00**	**140,950.50**	**128,548.50**	**103,548.50**	**76,776.50**	**492,150.00**	
Grand Total GEF							**50,750**	**576,930**	**575,928**	**430,928**	**215,464**	**1,850,000**	
Grand Total UNDP							**31,252**	**183,606.50**	**226,204.50**	**146,204.50**	**73,082.50**	**660,350**	

Budget Breakdown by Main Expenditure

Budget Break Down by Account Code		Budget	Percentage	Budget Break Down by Activity	Budget	Percentage
Code	Description					
71200	International consultants	330,000	13%	Activity 1.	711,467	28%
71300	National consultants	422,000	17%	Activity 2.	1,087,667	43%
71600	Travel and Workshops	215,000	9%	Activity 3.	219,066	9%
72100	Individual Services	68,400	3%	Activity 4.	492,150	20%
72200	Equipment	189,400	8%	**Total**	**2,510,350**	**100%**
72600	NGO Grant for Demonstration & Piloting	1,005,800	40%	**Break Down by Fund Code**	**Budget**	**Percentage**
74200	Printing and Publications	159,800	6%	GEF - Cost Sharing	1,850,000	74%
73400	Operational Costs	54,950	2%			
74500	Miscellaneous Expenses	65,000	3%	TRAC Fund	660,350	26%
Total		**$2,510,350**	**100%**	**Total**	**$ 2,510,350**	**100%**

Co-Financing Table

Donor/Partner	Yr1 (6 months)	Yr2	Yr3	Yr4	Yr5 (6 months)	Total
GEF	113,250.00	581,930.00	508,428.00	430,928.00	215,464.00	**1,850,000.00**
UNDP (in cash)	31,252.00	183,606.50	226,204.50	146,204.50	73,082.50	**660,350.00**
AFD	162,500.00	325,000.00	325,000.00	325,000.00	162,500.00	**1,300,000.00**
RGC	22,500.00	45,000.00	45,000.00	45,000.00	22,500.00	**180,000.00**
UNDP Climate Change Initiation Plan	12,500.00	25,000.00	25,000.00	25,000.00	12,500.00	**100,000.00**
Total	**$342,002.00**	**$1,160,536.50**	**$1,129,632.50**	**$972,132.50**	**$486,046.50**	**$4,090,350.00**

NOTES:

a). International Consultants:

(i) Water Resources and Irrigation Design Specialist for 6 months at the rate of $10,000/month, starting in the 2nd year.
(ii) Climate Change and Gender Mainstreaming Specialist for 8 months at the rate of $10,000/month, starting in the 2nd year.
(iii) Mid-term and Final Project Evaluation Specialist for 2 months at the rate of 25,000/month, in 2nd year and 4th year.
(iv) Agriculture, Water Resources and Climate Change Vulnerability Assessment Specialist for 16 months (10 months in 2nd year and 6 months in 3rd year) at the rate of $10,000/month, starting in 2nd year.
Cost breakdown for consultants is spread across Activity 1, 2, 3, and 4; and the consultants will perform capacity building and provide technical support to the project team.

b). National Consultants:

(i) National Project Manager working fulltime for 48 months at the rate of $2,400/month including other benefits and allowances (13th month salary, medical insurance, security insurance, etc.)
(ii) Provincial Advisors (1 for agriculture and the other for water resources) working for 45 months at rate of $1667/month for each advisor
(iii) National Monitoring and Evaluation Specialist for 48 months
(iv) Agriculture, Water Resources and Climate Change Vulnerability Assessment Specialist for 16 months, starting in the 2nd year
(v) Mid-Term and Final Project Evaluation Specialist for 2 months at the rate of 25,000/month, in 2nd year and 4th year.
(vi) Communication, Advocacy and Lesson Learned (Policy Advocacy) Documentation for 48 months

c). Contractual Service Individual:

(i) Contractual Services Individual (Project Assistant) for 48 months
(ii) Driver

d). Micro Capital Grants to NGOs:

(i) Capital Grant to NGOs for Demonstration and Piloting and Mainstreaming CCA into NPDD for 42 months starting in the 2nd year
(ii) Contractual services via EXCOM (D&D system) to communal councils of target districts to undertake integrated climate change resilient water resource management and agricultural practices into commune development plans. Starting in the 2nd year

e). Audio Visual and Printing Production for Community and Advocacy:

(i) Printing and Publication for Community and Advocacy

f). Travel and Workshop:

(i) in Activity 1, travel and workshop costs from MAFF to target areas with regard to capacity building at the provincial, commune and village levels
(ii) Under Activity 2, travel and workshop costs in demonstrating CC appropriate technologies/adaptation option to reduce exposure to Climate induced risks, this will entail travel to SRI demos,etc
(iii) Under Activity 3, travel for lessons documentation and replication, workshops to share information and experiences
(iv) Travel associated with project management, field work and monitoring and evaluation

g). Equipment:

(i) Rain Water Harvesting
(ii) Motorcycle
(iii) Vehicle
(iv) Computers, desks and Office Accessories

PART I: Other Agreements

155. See Annex 6 for the following letters:

GEF OFP Endorsement letter
AFD Co-financing letter
UNDP co-financing letter
MAFF co-financing letter (submission pending)

PART II: ANNEXES

ANNEX 1: Detailed information on districts selected for project implementation
ANNEX 2: Potential Impact of Climate Change on Rice Production and Water Availability for Agriculture
ANNEX 3: ALM template
ANNEX 4: Terms of Reference for Key Project Groups, Staff, and Sub-contracts
ANNEX 5: Analysis of national capacity development benefits from the project
ANNEX 6: Institutional capacity analysis
ANNEX 7: Event-Stakeholder consultation and Review Process
ANNEX 8: Letters of endorsement and co-financing

ANNEX 1: Detailed information on districts selected for project implementation

1. Introduction

This report documents results from key stakeholder consultations and vulnerability assessments through key informant interviews, district workshops for data gathering and field visits to selected villages in the pilot districts. The activities took place from September 21-28, 2008 in Siem Reap and Battambang province.

The objective was to (i) update the progress of project formulation, and to identify stakeholders and development partners at provincial, commune and village level, (ii) to find out capacity development needs of the key stakeholders especially Provincial Departments/district offices of Agriculture and Provincial Departments of Water Resource and Meteorology in context of climate change, and (iii) to conduct vulnerability assessments at the project sites: Chikreng district, Siem Reap province and Bavel district in Battambang province.

The methodology involved rapid assessment at two levels. At the provincial level, we consulted and collected information from line provincial departments such as PDA, PDOWRAM, FAO, ECOSORN project, and NGOs whose working activities are relevant. At the community level, we interviewed district and commune chiefs as well as local community members regarding vulnerability to climate change and hazards.

One day district workshops at selected districts were organized in order to present the project concepts and facilitate data gathering and building partnerships among local authorities.

2. The key findings

a). Siem Reap Province

Siem Reap province is situated about 314 km northwest of Phnom Penh. The province borders with Uddor Meanchey and Preah Vihear to the north, Battambang and Tonle Sap Lake to the south, Bantey Meanchey to the west, and Kampong Thom and Preah Vihear to the east.

The province is divided into three different ecological parts. The upper part consists of 13 communes, the middle part (terrace) of 67 communes and the lower part of 18 communes adjacent to Tonle Sap Lake.

The upper part is rich with natural forest, highland areas, and faces challenges including lack of water and frequent droughts. The middle part consists of large areas of paddy field and residential land which includes temples while the lower part is often subject to floods, with a local perception of increased frequently. Floods result from both heavy rain and from water surges from Tonle Sap Lake.

The province covers an area of 12,015 Km^2 divided into 12 administrative districts, 100 communes with 915 villages. The total number of families is 141,712 equaling 776,978 people (6.06% of the total population of the country) of which 499,116 are women. The population density is 65/km^2, which is marginally higher than the national density. The average family size is 5.4.

The province is described as rural, and the second poorest in the country even though there is a large amount of tourism infrastructure. Seventy percent of the population lives outside the provincial town, and their livelihoods depend on agriculture. Almost all such people are described as poor. Sixteen percent live along the shores of the Tonle Sap Lake; their livelihoods depend on fishing and farming, while other 14% live in urban areas (mostly the provincial town), and their livelihoods depend on trading, tourism

and work as government officials. The province is one of those with the greatest cultural value and national identity.

The priorities for development, determined by the provincial development committee (which include all provincial departments and all level of authority in the provinces), focused on 7 sectors: rural development, agriculture, health, education, hygiene and clean water, local infrastructure development. Climate change and its vulnerability have not been mentioned in this strategic development planning.

Table 1: Districts, communes, villages, population in the province

District	communes	villages	Families	% of families
Angkor Chum	7	84	10,115	7
Angkor Thom	4	26	3,646	3
Banteay Srey	6	35	6,486	5
Chi Kreng	12	152	21,751	15
Kra Lanh	10	99	11,240	8
Puok	16	154	22,154	16
Prasat Bakorng	9	67	10,979	8
Siem Reap	10	76	23,203	16
Sothr Nikum	10	113	18,000	13
Srey Snorm	6	46	5,836	4
Svay Lue	5	32	3,599	3
Va Rin	5	31	4,703	100
Total	100	915	141,712	

Source: Provincial strategic development plan 2006-2010

Natural resource

Siem Reap receives abundant water from Tonle Sap Lake with 81 km of lake coastline from Kra Lahn to Chikreng districts. Historical records indicate an original coverage of 366,401 ha of flooded forest, of which 224,344 ha have been cleared for dry season farming. Currently, there is only 87,500 ha of flooded forest, which is in need of more conservation and protection.

The province also has large areas of fish domain with 137,569 ha. There are 10 fishery communities established by the PDA which cover a fishing area of 108,444 ha. There is also a fishing sanctuary of 64,000 ha, from which 15,396 families in 117 villages, 16 communes in 6 districts receive benefits

3.1 Key stakeholders consulted

Key stakeholders consulted included local NGOs, and government and bilateral agencies active in the province.

3.1.1 NGOs

During the visits, four local NGOs were consulted. They have been active with contracting services for the PSDD and ECOSORN projects in the province. Even though, the results found that these NGOs working activities were less relevant to the current issues of climate change and adaptation. Table 2 summaries the working structure and mandate of the NGOs regarding climate hazards and coping mechanisms.

Table 2: NGO, working activities and its relevant to climate hazards

NGOs	Major work works and its relevant
Angkor Association for Disable (ASD)	The organization has no idea about what is climate hazard and there is no coping mechanism and early warning for the organization.
Friends' Association Pioneer (FAP)	The organization has the mandate regarding the mitigation and preparedness of disaster action. The executive director understands the main hazards encountered in their project areas such as flood and drought. The FAP helps local community to response to climate hazard with financial support from Caritas Australia (but not sure how much/year). The program has no system to receive and issue early warnings. In the future, FAP has plans to assist local communities and authorities to cope with hazards, which include: Building refuges, ponds, ring wells, providing seed before and after the hazards. Stakeholders who should be involved with climate protection include the hydrology department, provincial health department and donor agencies. The executive director knows what is climate change and the major impacts, including: effects on human health and agricultural production. FAP has suggested that building reservoirs for storing water during raining season to use for agriculture and animal in the dry season are the priorities in their working target.
Human Resource and Rural Economic Development Organization (HURREDO):	HURREDO has a plan to cope with hazards: providing training, preparedness, mitigation, DRR project and cooperation with the Provincial committee for Disaster Management (PCDM). The director knows about climate change and impacts such as frequency of drought and flood. Other effects include farmers not being able to transplant their rice seed in time as the result of drought. It was requested that UNDP/GEF project should provide training on strategy against hazards, awareness, preparedness and mitigation, and introduce crops which are tolerant to climate change.
Khmer Volunteer Organization (KVO)	KVO has no mandate regarding climate hazard and assistance. It is engaged in no coping mechanism and warning system. The organization has no plans to do this work. Actions or programs to cope with hazards include: constructing ponds, pumping wells and water purifiers, and improved sanitation. These activities are cheap. They know about climate change: temperature is getting hotter, frequency of droughts and floods is increasing. The impact will be drought, flood affecting the human health, agricultural crops. More reservoirs will be needed to cope against CC (if the project implemented).

3.1.2 Government and bilateral agencies

a). Provincial to support Democratic Development through Decentralisation and Deconcentralisation (PSDD)

This is a UNDP project to support the current Provincial Rural Development Committee, Executive committee (Excom) where all line provincial departments are the members. PSDD provides a small amount of funding to the provincial department which is about US$7000-10,000 per year for water gate construction. Agriculture: received PIF (Provincial Investment Fund) with amount of more than US$10,000 /year. The PSDD has one relevant program called Community Based Natural Resource

Management and Livelihood improvement (CBNRML). The project started since 2003-2006 and from 2007-2010. The project have fund to support each commune around US$3000 to US$ 4,000/year for livelihood improvement. We have 10 districts in the provinces with total commune of 69.

b) Economic and Social Relauch of the Nortehwestern Province (ECOSORN)

The project covers three provinces: Banteay Meanchey, Battambang and Siem Reap, starting from January 2006 to December 2010. MAFF is the executing authority with funding support from EC with EURO 25,000,000 and EURO 1,000,000 from Royal Government of Cambodia. Other participating agencies include MRD, MOWRAM, MoI, MOWA, MLMUPC, NGOS and other private sectors. The objective is to contribute to the poverty reduction through increased household income, increased agricultural productivity, and increased local community empowerment. The project purpose is the economic and social development of smallholder farmers and their families living in the project areas, in a way that accrue equitably to both men and women.

The project focuses on five components:

1. Agricultural, livestock and fishery production intensified, diversified and increased
2. Economic and employment opportunities developed
3. Local communities empowered
4. Improved physical access to social amenities, markets, greater access to potable water
5. Safer and permanent access to arable land and social infrastructure

The project focuses on 40 communes with 55,000 families out of 68,000 families are target beneficiaries. In Siem Reap, the project covers 14 communes with 31 villages.

In term of irrigation renovation, the program received technical support from PDOWRAM and contracted to private company in three schemes:

- One in Kra Lanh district in Snuol commune with 338 ha with two villages
- Chi Kreng district in Pongro Lue commune with 250 ha and could irrigate around 10-20 ha in dry season. The total cost of construction was estimated around US$160,000
- Soth Nikom district in Kna Por commune with 362 ha in four village, but have some problem with land ownership.

In terms of agricultural extension, the project has been contracted by the provincial department of agriculture (PDA) to train village focal persons to undertake the project activities extension, in particular in the agricultural sector. This is based on training modules covering rainfed rice cultivation, irrigated areas, agricultural crops and vegetables cultivation. The project also provides access to clean water by constructing open- wells. The cost of the drill-well is around US$1,000 for a deep of around 10 meters. In Chi Kreng, there are four open-wells provided to Russey Laork commune. The project also provides 50 toilets to the target villages. Each toilet costs around US$100.

c) Provincial Department of Water Resource and Meteorology (PDOWRAM)

PDOWRAM has the role to solve problem regarding to water shortage for rice cultivation and other sectors of agriculture. The works include construction of irrigation scheme, intervention on the drought, cooperate with district office and commune office for carrying out research work relate to irrigation and water work, follow up with hydrology and meteorology, clean water (but this is overlaps with the rural development department) and do not work for the department, establish FWUC and inventory of existing irrigation schemes, managing the sand, river, and lakes.

The current projects being implemented in the province

1. The status of the Northwest irrigation sector project is not clear. ADB and MOWRAM have done the study, but not yet decided which scheme is going to be renovated and implemented. They also studied the Sreng tributary, the share boundary of Siem Reap and Banteay Meanchey province.
2. ECOSORN Project: irrigation covers in three districts: Kra Lanhn was completed in October 2008, Sothr Nikum has problems with land ownership (farmers resist the canal construction as it affects their land and the project has no policy to compensate the land lost, as land is not considered to belong to local farmers inside the irrigation scheme). The project will irrigate more than 300 ha and cost around US$300,000. Chi Kreng district to be completed in October 2008.
3. The PDOWRAM received funds from the government of 198 million riel (around US$ 49,500) to construct certain canals connecting from the main reservoirs (2800 m length with 6 m width).
4. Reservoir and irrigation construction has resulted in much social conflict. The feasibility study before construction did not reflect the reality. When the construction was started, the conflicts started to emerge. Most of the irrigation schemes are renovated from the Pol Pot schemes and land inside the schemes should are not be considered to be owned privately, but it is locally considered to be private land, resulting in demands for compensation of US$ 0.55/m^2.
5. The PDOWRAM have 15 machines to treat rice fields affected by drought.

Makak reservoir is situated in Chi Kreng district and could store around 30 million m^3 of water. The scheme could irrigate around 8000 ha in wet season (Pongro Leu, Krom, Kampong Kdei, Skor Thnort, Lveng Russey communes) and 400-500 ha in the dry season (Kork Thlork Krom and Lue communes). Renovation work is supported by MOWRAM directly, the PDOWRAM being only the subordinate.

PDOWRAM has total staff of 42. In some districts there is no staff. The department has 10 priority canals for construction and renovation out of the 50 identified in the work plan. The department received money from MOWRAM of around 200 million riel per year. Money received from EXCOM is around US$ 10,000 /year. Working with the EXCOM is much better than directly with the ministry. CCA is not well understood.

d) Provincial Department of Agriculture (PDA)

PDA reports that 179,000ha of wet rice and 11,000 ha of dry rice are being cultivated in the province. Rice cultivation in the province is mostly rainfed. The department reports that the province has frequently faced uneven rainfall, with amounts typically ranging from 1600 mm to 1200 mm/year. In some months, drought is a problem as there is no rain from July to August and sometimes even into September, and this negatively impacts rice seedlings.

Flood and drought

The province reports that droughts happen mostly in July to August and sometimes September when there is no rain. Normally, farmers start preparing their land in May and June. If the rains are delayed their young seedlings are destroyed, and they need to start cultivating again. Some farmers could afford to borrow money from middlemen for rice cultivation. The district most affected by delayed rainfall is Kralang district, which has suffered from three consecutive years of such problems. The provincial representatives explained that the longer drought duration means farmers do no have enough water for transplanting rice, and increased weeds within the rice field.

In terms of floods, s two types were identified. The first is sfloods caused by water from the Mekong River flowing into the Tonle Sap. The second is caused by heavy rain where water comes from the upstream watershed.

PDA has strong experience with project implementation. For instance, the ADESS program supported by IFAD included fund allocations for canal construction for irrigation and rice cultivation. The project ended in 2006. The department has its own training center and agricultural experiences center. From the provincial level down to commune, there is an office for agricultural dissemination and extension service. The PDA has formed networking farmer association at village level; there is village focal person for village dissemination and village animal health support by the department.

3.2 Chi Kreng district (project site selection).

Chi Kreng is one of 12 districts in Siem Reap province. The district consists of 12 communes with 123 villages.

The district receives most water from the mountains and upstream. Rice cultivation is the major source of livelihood of local communities. Two major ecological zones divide the district. The lowland part covers the commune territory of Chi Kreng, Kampong Kdei, Lveng Russey, Russey Lork, Sangveuy, Spean Thnot, Pongro Krom, Pong Ror Lue, Kork Thlork Krom, while the upper part covers Kork Thlork Lue, Kvav, and Pongro Lue communes.

One reservoir and irrigation scheme were constructed during the Pol Pot regime across the Chi kreng tributary, and is now known as the Makak reservoir, which can store around 30 million m^3 of water and irrigate around 8000 ha in the wet season (the communes Pongro Leu, Krom, Kampong Kdei, Skor Thnort, Lveng Russey) and 400-500 ha in the dry season (Kork Thlork Krom and Lue communes). The scheme has been recently renovated by the MOWRAM at an estimated cost of around US$ 2 million. The main canals, secondary canals, territory and quaternary canals were not renovated due to financial constraints.

Currently there is no formal FWUC established to manage the scheme. At the field level, there is no dike along paddy fields to store water in the fields. The district has significant potential for rice cultivation, but water conflicts and shortages remain problematic.

Total rice cultivation in the wet season is 35,800 ha of which 34,230 ha have been planted. The recent drought (during the visit) affected 3160 families. District statistics show 1465 ha of wet rice was destroyed and 230 ha of floating rice affected by floods. However, that actual report provided by the commune councils during the district workshop was higher than the figures provided by the district of agriculture. In addition, 50 animals were killed by floods 900 m of road destroyed, while drought caused rice damage over 2,000 ha, killing 200 animals. Eighty households were also affected by windstorms.

The villages affected by floods include Prek Angkor Thmey, Sdau village in Anlung Samnor commune, while drought affects all villages in the district. Windstorms also strongly impacted 5 villages in three communes: Anlung Samnor, Russey Lork and Sang Vuey.

3.3 The district data gathering workshop

During the district workshop, there were representatives from 8 communes out of 12. The nearby communes also sent their village chiefs to participate. Other participants included the district office of agriculture, water resources and meteorology, departments of education and health, the deputy district chief, district chief and members of district development committees.

The total number of participants during the workshop was 45. During the workshop, questionnaires were distributed and participants asked to complete them. The questionnaires focused on 6 major parts: (i) general information about institutions related to structures and mandates for disaster management, (ii)

climate hazards experienced in the community, (iii) vulnerability, (iv) existing coping mechanisms, (v) adaptation strategies, and (vi) knowledge about climate change. However not all sections could be answered s by the participants. This was due to the lack of ideas and knowledge about climate change and lack of responding strategies being developed in the district or at the community level.

Below is the summary from the discussion and questionnaire posted during the data gathering at district level.

Table 3: commune, villages affected by flood, drought and windstorm and other

No	Commune	Flood	Drought	Windstorm
1	Russey Lork	non	all villages (8)	Boueng village
2	Kork Tlork Krom	non	all village (18)	Bat Angrut, Beng and Taop Siem
3	Sang Vuey	Prey Pros, Pak Skea, Damrey Chlorng, and Thnal Dech	Kanseng, Thnal Dech, Chork, Taprum, Au, Pak Spea, Prey Pros, Damrey Chlorng	Kanseng and Damrey Chlorng
4	Spean Thnot	non	all village (15)	
5	Lveng Russey	non	all villages (13)	
6	Kork Tlork Lue	13 villages	13 villages	Sangke, Prey Thom, Svay Pork
7	Chi Kreng	Anlung Thnot, Sromor, Kampong, Beng, Kor, Anlung Chambak,	14 villages	

Table 4: Vulnerability affected by different types of climate hazards

Commune	Flood	Drought	Windstorm
Russey Lork	rice crops (no road)	rice crops, farm, animals	Households
Kork Tlork Krom	rice crop, infrastructure, animal and fishery	rice crops, farms, animal and fisheries	Households
Sang Vuey	Rice , animal, household, infrastructure	rice, farms, animals, fisheries	Houses and animals
Spean Thnot	rice, road	rice, animal, fisheries	rice
Lveng Russey	none	rice, farms, animal and aquaculture	none
Kork Tlork Lue	rice, infrastructure, houses, animals	rice, farms, animal, fisheries	houses, animal, rice and farms
Chi Kreng	rice, animals, houses, fisheries, aquaculture	rice, animal, fisheries	houses, animals

Table 5: Average damage by different types of climate hazards

Commune	Flood	Drought	Windstorm
Russey Lork	500 ha of rice	5000 ha	42 houses
Kork Tlork Krom	250 ha, 300 m of road	500 ha, 30 ha of farms, 20 animals	30 houses
Sanng Vuey	312 ha	1213 ha, 35 ha farms	18 houses
Spean Thnot	non	7 ha	
Kork Tlork Leu	60 ha (rice), 10 houses, 40 infrastructures	500 ha (rice), 20 ha farms, and 30 animals	3 houses
Chi Kreng	180 ha (rice)	1450 ha (rice)	

Table 6: shows the response strategies and proposed adaptation actions raised by the commune councils

No	Commune	Responses and requested actions
1	Sang Vuey	• Flood: the communes have the ability to prepare refuges, establish helping groups, vaccination against virus for human and animals • Drought: the communes could afford little for providing a small number of pumping systems, small dikes for water diversion. • Requested actions: the commune will need emergency assistance, need rice seed to provide to local farmers after the flood, need irrigation and reservoirs renovation, infrastructure renovation, vaccination for human and animal against typical diseases, and request for canals and water gate construction from the main canals and reservoirs.
2	Chi Kreng	Drought: the communes have access to water from Makak reservoir for an area of radius about 15 km. Strategies exist to divert water and pump into their individual rice fields (individual strategies) Floods: in 2000-2001, 250 ha of floating rice was affected by flood. The responses strategies against floods include evacuation of villagers and animals to higher places, at pagodas and schools. Most of the affected wet rice has been replaced by IR66. Prepared refuges at pagodas and have undertaken vaccination against diseased for animals. Requested action: renovated main canals about 14 km among the main tributary with 6 water gates.
3	Kork Tlork Krom	Flood normally happens in August and September. The response includes construction of refuges for humans and animals, preparing boats, oxcarts, motorcars, and food stuffs. Drought: normally happens from June to August. Some can be solved where there is a source of water (by using pumping machine), encourage plantation such as cassava. Request: main canal renovation to facilitate water flows from the main reservoir about 14 km.
4	Kork Tlork Lue	Floods happen mostly in September and October. There is no coping mechanism reported by the commune councils and participants. Drought: happens in July and August. The response strategies: report to responsible institutions; construct water gate to convert water, pump water to survive rice crops and vaccination against disease for animals.
5	Kampong Kdei	No flooding reported for this commune. But drought happens from June to September. There are no response strategies reported by the commune councils
6	Russey Lork	The commune is half lowland which is vulnerable to flood from Tonle Sap Lake and upland which is vulnerable from heavy rain from upstream and drought. Drought mostly takes place from May to November. The communes have undertaken floating rice cultivation of about 500 ha which is vulnerable to changing water levels.

Knowledge about climate change

All commune councils and participants participating in the district workshop had little idea about climate hazards and its effects. But they all understand the impacts caused by flood and droughts. However, the structure and mechanism of responses to these issues were not functioning well due the lack of financial

plans and budget constraints. During the workshop and field visit, we observed most of the paddy fields along the main rod were affected by drought, most farmers try to pump water from the canal along the stream and most of the canals are also have no water.

Box 1: case study from Thnal Dach village, Sang Vuey commune

The team visited one village in Sang Vuey commune. The village is the second poorest among the 8 villages in the commune. Thnal Dach village has 179 families with 1114 people of which 554 are women.

The village occupies more than 300 ha of wet rice (rainfed) in the village. It was reported that about 60-70 families faced with rice shortage for period of six months. Wet rice plantation starts from June to December. Beside rice cultivation, farmers in the village growth agricultural crops on the hilly areas such as green bean, corn, jack fruits, cashew nut (total land about 30 ha).

In dry season, it starts from December to May: villagers start to plan cabbage, potato and other crops. Beside this, they migrate to Siem Reap town for construction work. They could earn around 100,000 riel/month. About 50-60 people experienced with migration to Thailand for work and around 4 people never return back home. These 4 people never return home around 5 to ten years. Among the 60 people migrated to Thailand, most of them were put into prison and return home with no money back.

Rice product in the village
The village is vulnerable to drought and rice yield per hectare have been low. In some case, they could harvest with five sack around 200 kg or 500 kg per ha. Villager recall the drought period such as in 2002, 2004, 2005, 2006, 2007 have water, but still face with water shortage and 2008 the village face with drought until mid-September. That is during our visit to the village. The water is rain water and water come from upstream.

Villagers faced with selling labor for rice transplantation in the village. The labor cost around 7000 riel/day. Some farmers advance money ahead and get only 5000 riel/day. About 65% of the farmers experienced with selling labor for rice transplantation started from July, august and September depending on paddy field and types of rice seed. About 35% of families have more lands. Paddy field holding in the village shows that those who have 3ha/hh consist of 30 families, with 2 ha/family consists of 20 families, with 1 ha/hh consist of 50 families, with less than 1 ha/hh consists of 50 families and those with no paddy field consist of 30 families.

1. Battambang province

The province is situated about 291 km northwest from Phnom Penh. It shares borders with Banteay Meanchey to the north, Siem Reap and Tonle Sap Lake to the east, Pursat to the South and Thailand to the west. The province used to be the rice bowl of the country during the Sihnaouk Regime. Currently, production levels are still outstanding in many districts such as in Thmar Kol, Moung Russey, Sangker and Bavel districts, with a rice yield of 2.15 tonnes per hectare.

The province covers 1,162,200 hectares of which 415,200 ha for cultivated land, 315,100 ha for rice fields, 444,200 ha are forest and 145,800 ha makes up the Tonle Sap flood plain, with 257,100 ha for other land.

Ecological zones

There are three ecological zones: the upland, terrace and lowland. The upland area contains mountains that are covered by various forest types in Rattanak Mondul, Bavel, Bannan and Samlot districts. Particularly, in Samlot district there is habitat for wildlife and there are fruit tree orchards and industrial crops. At present, the government has issued a law on conservation of this area under the support of

Hollywood movie star Angelina Jolie with the cooperation of others involved in wildlife protection and forest conservation.

The terrace category is a large area including fertile soil, rivers and streams which flow from upland areas into the Tonle Sap. These include the Moung Russei, Sangker and Mong Koul Borei rivers, and other lakes, rivers and canals. There are many rice paddy fields and the majority of the provincial urban areas are situated in this zone. Fishing activity mostly takes place during the wet season. This ecological zone covers four districts: Moung Russei, SangKer, Battambang and Thmor Kuol districts, mostly situated along national road No. 5.

The lowland zone covers areas close to Tonle Sap Lake in Ek Phnom district. This area receives seasonal floods from July to September. When the water starts to recede, farmers in these areas start to plant diverse agricultural crops such as watermelon, corn and other various cash crops. One part of this area remains as flooded forest which serves as natural habitat for fish, spawning grounds and commercial fishing lots. It also serves as habitat for water bird migration. **Prek Toal** is one of three core areas situated in this part, serving as natural habitat for water bird, attracting a large number of tourists.

Major sources of water in the province

Three major tributaries and much irrigation system were found in the province. These river systems include:

- **Sangker River** with the water source from Talor in the Cardamom Mountains range, and from Mongkol Borei River, which converges at Bak Prea, and from Stung Sre which converges at Peam Sima. It also consists of many small rivers such as Stung Chas, Doun Teav lake, Prek Kphop, Prek Doun Mea and Prek Trab. This tributary plays important source of water and other livelihood activities for people in the provincial town and along the stream before it flows into Tonle Sap Lake.
- **Mongkol Borei River** also originates in the Cardamom Mountains. It receives most water from the Sereisophoan tributary through its sub-branch from the west of Svay Chek Lake and Bavel tributary's sub branch.
- **Moung River** has its source of water in the Cardamom Mountains range as well.

Major irrigation schemes in the province include:

- **Kamping Puoy Reservoir**: It is located in Banan district and consists of 9000m of major canals and three secondary canals that have already been rehabilitated. The scheme could potentially irrigate 13,000 hectares as supplementary irrigation. After the Pol Pot regime fell, the scheme was first renovated by the Italian government in 1998 and then through Japanese assistance in 2003. With full renovation, the scheme could irrigate four districts: Thmar Kol, Bavel, Battambang and Banan districts, but up to now the scheme only irrigates two districts with current assistant from FAO. Kamping Pouy Reservoir could store 110 million m^3 of water and has become a major tourism site, and supports fishing. More water birds are found in the reservoir. However, the reservoir has been poorly managed by the competing provincial institutions causing floods in certain villages around the reservoir.
- **Bavel Reservoir**: The reservoir was constructed during the French colonial period, then extended during the Sihanouk regime and the Pol Pot regime. It is located in Bavel district with an irrigation capability of 3,500 ha. During the dry season, the water in reservoir is just enough for daily needs such as for drinking for both humans and animals and home gardening. Many infrastructures are associated with the reservoir. These include 350km of canals, 4km of digging canals, and 75km of

secondary canals. In the wet season, it irrigates paddy fields in Bavel and Thmar Kol districts including the Samrong Agricultural Rice Station.

- **Ream Kun Reservoir**: located in Moung Russey district which can irrigate 4500 ha in the wet season.

4.1 Stakeholders consulted

Stakeholders consulted include NGOs, government and bilateral development agencies.

4.1.1 NGO works

Three major NGOs are actively working in the proposed project site. These are:

a) Caritas-Cambodia in Battambang province

This is a Christian organization with the working objective to form community-based organizations and cooperatives at the grassroots level. Three working components being actives: the sustainable agriculture, health and disaster.

The Sustainable agriculture component involves rice cultivation demonstration through SRI, compost making, home gardening, and small scale irrigation construction for target farmers in order to achieve food security. This component has operated for the last five years and still continues. The project covers three districts: Ratanak Mondul, Samloth and Bavel districts. The organization has established and operated more than 50 Village Development Associations (VDA), 31 in Bavel, 14 in Ratanak Mondul and 13 in Samloth districts. In each village, the group saves around 10 to 20 million riel and operates in the form of credit. Up to now, the Caritas has worked with 4200 families. These include 2500 families in Bavel, 800 families in Ratanak Mondul and 900 families in Samloth district.

Each association consists of 3-5 groups (each group has members of around 15-35 families). Currently, there are 300 groups established. The formation of groups is in response to the goal of community based organizations being effective at grassroots level. This will lead to the formation of production and selling cooperatives in the village level, before the focus moves to the district and provincial level.

The Health component covers awareness rising on dengue (blood fever) and clean water sanitation in cooperation with health department to education farmer in target districts. The project is trying to select and train village health volunteers.

Disaster management receives packages of money range from US$ 10,000-30,000/year from Caritas Asia office in response to disasters in the province. The project works closely with the provincial risk and disaster management committee and WFP.

Caritas Battambang currently has an operating budget of US$ 190,000, of which $40,000 is for Ratanak Mondul district, $50,000 for Samlot and 100,000 for Bavel district.

b). Association for Development and Our Village Right (ADVIR)

The organization consists of five staff working in one commune: Ampel commune with 14 villages. The project has been active on integrated rural development such as agriculture, illiteracy education, and primary health education, credit, working with the poorest total beneficiaries around 1300 families.

Emergency project: food for work (digging pond and canals), educating children who drop out from school, health care: including malaria, clean water, ponds, water purifiers; Vitamin A supplies and recruiting village health volunteers (14 Village Health Volunteers currently).

The project receives funding support from Church World Service (CWS) and Development Partnership for Action (DPA) of around US$ 13,000/year.

c) LWF-Battambang

LWF has done most of the work regarding to climate change adaptation, but without realizing the link to climate change adaptation. These activities include the digging of canals, construction of reservoirs and ponds, establishment of tree plantations in pagodas, and organization of environmental days. LWF has also introduced biogas, but this practice was not successfully replicated in the target areas. One biogas stove cost around $300.

LWF is currently working in 45 villages of which 20 villages are in Kdul and Kdul Tahem communes in Bavel district. The organization has also been implementing the concept of integrated rural development project in the district and throughout the country. Additional project activities implemented by LWF include: disaster management and micro-development projects at household level (family pond construction, small canals, pumping wells). The model of community pond construction promoted by LWF costs US$1500 (with labor provided by local communities), compared with costs of US$3200 suggested by ADVIR with no labor provided by communities. The pond size was 20 m x 30 m and depth was 3 m. LWF experiences suggested that as each village has an average of 200 families, and one community pond can support around 30-35 families, we need about 6-7 ponds/village. Up to now, LWF could only provide one community pond per village.

LWF suggested UNDP GEF should provide more training on CC and CCA for NGOs, local authorities and local communities. LWF is willing to support the UNDP GEF project in the district and willing to provide co-financing.

The program is currently managing project activities with total fund of US$450,000 in three districts with total 40 staff.

4.1.2 Government and external development agencies

a) PSDD

PSDD has assisted the PRDC to develop a work plan with 140 projects approved, but up to now only 30% of these activities have been implemented for the year 2008. Delays in implementation led to cost over-runs due to rising costs of construction materials, and most of bidding companies withdrew. For the year 2008, the province approved a budget of more than 4 million USD.

Bavel district is late in project implementation, having already taken 3 years to begin implementation.

b) PDOWRAM

The department has a similar role as in Siem Reap. The current projects being implemented in province include:

1. NWIS: Loan from ADB and started with a feasibility study two years ago.
2. Italy-FAO: Kamping Pouy irrigation system. The scheme construction has been completed, but another year is required for the FWUC to become operational.

3. Pra Sak reservoir, Stung Morng Russey. The project is implemented by JICA and is about 70% complete. The reservoirs can store around 20 million m^3 of water and could irrigate around 5000 ha in the wet season; there is no water for dry season irrigation.
4. MOWRAM has borrowed money from China to build a dam across the Sangke river in Battambang province, but the quantity is unclear. A feasibility study is being conducted.

c) FAO project- Kamping Pouy irrigation scheme

The project started from late 2006- to late 2009. This is the third phase, which includes four components:

1. Irrigation: total irrigated areas around 1950 ha in the dry season for Chrey commune (7 villages). The construction was completed in 2008 and all compensation paid, in 2009 it will begin operation.
2. Training (FFS): focus on agriculture, capacity building and social survey with 300 families. Knowledge on agricultural productivity, including chicken raising, compost, SRI (Six farmers about 1.6 ha) in late 2007 with average yield 8t/ha. Focus on two communes, two districts: Ta Kream in Banan, Chrey in Thmo Korl district. The progress,. There are 20 FFS, each FFS consists 20-25 members.
3. FWUC: There are two FWUC one in Takream and one in Chrey commune. These people received additional training on FFS where they can extend knowledge to other farmers.
4. Credit. . GVC and FWUC are in charge of Credit operation within the scheme.

FAO is managing the project directly. They commented that the two ministries (MAFF and MOWRAM) have difficulties working together. It was suggested that MAFF would be better as the implementer of the GEF project.

d) Provincial Department of Agriculture (PDA)

There are two major projects being implemented by the PDA. The agricultural extension contracted by ECOSORN project and the ADMAC (upland areas along the border) with funded support from CIDA.

The PDA currently has 292 staff while before there were more than 400 staff, including fishery administration. Currently, water and fishery staff have been detached from the provincial department of agriculture. With new staff replacing former employees there is now little institutional cooperation. Even within the ministry, not all senior staff get on well, and this is even worse in other ministries.

4.2 The Bavel district (project site)

The district consists of 6 communes with total 18,109 families, 95,847 people of which 48,731 are women. Rice cultivation in dry season are 841 ha of which 22 ha recession rice, 184 ha under irrigated and 206 ha are dry season rice. Wet rice is 32,703 ha of which all of them are rainfed. One stream known as Bavel serves as the main source of water to support livelihoods for those living along the stream. Some parts of the district also receive water from Kamping Pouy irrigation scheme. Beside this, certain areas of the district are also in protected areas of Roneam Donsor initiated by a Hollywood film star. This protection covers three districts: Bavel, Phnom Preuk, and Sampove Lun.

The interview with PDOWRAM officer revealed that the tributary is an international water course: 70% of water is from Thailand and 30% from the Cambodian side (flowing through Pailin and Battambang provinces). In Battambang, there are more tributaries, mostly in Kamrieng and in Phnom Preuk districts. There should be more focus on the study of IWRM and hydrological studies to try to generate new data for this stream rather than copying from others.

At the movement, there is less water in the stream. Some factors include: the increase population and use, the increase cut of forest and more modern equipment use. More forest has been converted into corn farming. However, the majority of water has been converted by Thai side to support their agricultural purposes.

Major developments along the stream since the Pol Pot regime:

1. Sala Krau irrigation scheme supported by social fund (funded by WB)
2. O Daun Pov irrigation scheme built by Pol Pot regime
3. Prey Kpos scheme built by Pol Pot regime
4. Por Piduem irrigations scheme build by Pol Pot regime and need to be renovated by the NWIS.

Based on an interview with the provincial engineer, there is a lack of irrigation engineering skills and knowledge in government agencies to build or renovate the schemes. The current government keeps seeking for funding to build and renovate, but fails to see the engineering side and hydrological changes of the stream. That is a big threat for irrigation scheme construction or renovation in the future. This suggestion is clearly reflects the need to reconsider the affect of climate change for water resource management and planning.

4.3 The district data gathering workshop

During the district workshop, there were about 45 participants attended. Most of them were commune councilors, representatives of district agriculture and water departments, NGOs working in the district, district authorities, and district development committees.

After the introduction from UNDP team and participants, the objective of the workshop was presented. This also included the process of project formulation, the reason for selecting the district and expected output of the project. Then the introduction for the group discussion was provided to participants. The guiding questions for discussion included:

1. What is the structure (in your commune/district) and mandate for dealing with disaster management? Please explain
2. Do you know about climate change?
3. What are the climates risks that often occur in your community?
4. What sectors are affected by the climate risks in your communities and what are the average costs of the damage? (for instance, agriculture, human health, water, and infrastructure)
5. What is the existing mechanism for dealing with the climate risks in your community?
6. What are priority actions for dealing with climate risks in your community?

4.3.1 The results

Below is the summary of the responses made by the district and communal authorities. At the district level, the members of discussion groups included the deputy district chief, director office of agriculture, water resources and meteorology and the district technical support officer.

District level

1. There is an established disaster management committee which includes the district chief as the chair and all district line office and commune chiefs as members
2. District officials have some idea about climate change such as the temperature getting hotter, rainfall not being regular, and constant threat of drought and floods in the district

3. Disasters caused by the CC include: drought, flood, windstorm, affects on human and animal health, and increase in insect pests.
4. Affected sectors include:
- Agriculture: rice yield reduced, reduction in the quantity of cultivated land, fewer draft animals, and lower productivity
- Water resource: lack of water, damage irrigation system and flood
- Human health: drowning, thunderstorm, and diseases
- Transportation: destroyed roads
- Education: destroy school buildings
- Social work: lack of household and shelter for those effected by the cc
5. Existing actions include:
- Drought: use pumping machine to pump water
- Flood: build more dikes and construct additional canals
- Provide vaccination for animal and human
- Provide assistant material and food stuff to affected people (with assistant from Red cross and LWF)
6. Prepare the district management structure down to the village level
- provide training on how to prevent and emergency assistance
- Prepare infrastructure
- Prevent forest cutting and increase tree plantation

Commune level

a) Ampel Praim Duem commune

1. There is structure for disaster management in the commune but the mandate is unclear.
2. There is some knowledge on CC such as drought, rainfall not being regular, floods destroyinge agricultural crops and communal roads
3. Disasters occur almost every year, such as windstorms, and animal diseases which are unlike former times
4. Sectors affected by CC include: agriculture, social welfare, and environment.
5. The commune does not have any solution to these CC hazards
6. The priority projects to be done in the commune: renovation of the converted water canals in two places and the drainage system in four places, and repair of 4 km of canals.

b) Bavel commune

1. Commune council has disaster management committee with 5 year mandate, but there is no support and training from both the government and other external development agencies. We only collect information and report to the district office and Red Cross.
2. The commune used to faced with cc such as temperature getting hotter, more drought then before, rain fall are not regular and more thunderstorm and windstorm while raining start. We do not know this natural phenomenon of climate change.
3. Get hotter, more droughts, (agricultural crops get damaged, more disease happen to chicken, pigs and cows, and increase of insect affecting the rice crops, more storm and thunderstorm (lighting) lead to broken down of the tree or tree's branches.
4. Sector effected:
   - Agriculture: wet rice cultivation is affected by drought of which 50-70% destroyed with exterminated money of $800,000.
   - Insect affect agricultural crops range from 5-25% which cost around $80,000 of total cultivated land.

- Infrastructure: house destroyed by storm around 3-10 houses with total cost of $8,000
- Road: road in the commune destroyed around 5-15% which cost around $5,000

5. Examine the problems happening in the places and report to the district level, red cross and generous people such as politician to help affected people.
6. The proposed priority activities include:
   - Canal renovation and construction, build up Watergate, renovate reservoir, establish the FWUC, emergency fund and pumping station
   - Disseminate and provide training on cc and its impact
   - Establish the local community to use alternative energy and solar power

c) Ta Haen commune

1. There structure established to manage disaster, but has not been working
2. There is no knowledge among the commune council regarding CC and CCA
3. Disaster happening in the commune includes:
   - Windstorm which cause the damage on households and tree fallen down
   - Household caught up with fire, thunderstorm on human and trees
   - Drought which destroyed the wet rice cultivation and other agricultural crops
4. The average cost destroyed:
   - Two house have been destroyed by storm which cost 24,000,0000 riel
   - Drought destroyed wet rice cultivation with 3,577ha which can be quantified as 3,577 ha x 2 tones x 7 000 Baht = 50,078,000 Baht
5. Renovate the existing canal, construct additional dikes for water conversion, and construct the water gate for water distribution. This covers 11 villages : 7000 m + 300 m + 2447 m = 9747 m. Total beneficiaries are 8.289 people
6. Priority activities: training course for local authority and community on the CC and its affect on local people.

d) Lvea commune

1. There is no structure of disaster management and mandate in the commune
2. There is some knowledge on CC
3. Drought, irregular rainfall, flood damage to infrastructure, windstorm destroyed two school buildings
4. Sector affecting by CC hazard include:
   - Agriculture: Reduce rice yield
   - Education: lack of school building for students
   - Communication: lack of funds to repair the road destroyed by flood
   - Water resources: destroyed the water gate conversion and drainage system
5. Existing responding strategies:
   - Flood: build up protection dikes (not the existing strategies)
   - Drought: pumping water
6. Priority action: Awareness raising on climate change and training course for local authority and setting the communal structure in responding to the cc in the commune.

e) Knach Romeas commune

1. The commune council used to form a committee responsible for disasters, but never understood the natural disasters
2. Do not understand the Climate Change
3. Disaster in the commune is drought, not enough canal
4. Sectors affected by CC hazards: rice yield reduced, animal sickness
5. There is no clear mechanism to solve climate change risks in the commune
6. No answer

f) Prey Kbos commune

1. There is structure in the commune dealing with disaster issue. This include district and line district offices and all commune chief in the district. The mandate is unclear.
2. There is some knowledge on CC such as drought, flood, irregular rainfall, animal and human diseases different from the past, such as swollen hand, legs and diarrhea affecting both humans and animals.
3. sector effected by CC risks include:
    - flood effected wet rice around 35%, road with 1500m, drought effect wet rice with 65%
    - windstorm destroy 10 houses cost $ 60,000
    - 8 people died from thunderstorm (lightning)
4. Average cost effected by climate change hazard: 1t/ha of rice
5. There is no solution
6. Priority solution: construction of conversion water gate in two places, prepare drainage system across the commune road and additional canal construction for water conversion and diversion, distribution.

5. Conclusions

Stakeholders consulted were very interested in the project. They were all interested to learn more about climate change and its consequences as well as how to adapt to changes. The representatives from PDOWRM and PDA were willing to support if required. They have no additional funds to deal with these issues, only waiting for the central government to provide financial support. Some NGOs are very active in dealing with similar work (even though they did not call it Climate Change) such as LWF and Caritas in Battambang province.

In Chi Kreng, based on the discussions with the representatives from the 7 communes out of 12 communes it was found that floods affected 16 villages, while drought affects 91 villages, and 9 villages were affected by windstorms. The real effect might be worse if we have all data from other communes who were absent during the district meeting. This is because they found it difficult to attend due to road conditions and distance from the communes.

Typical vulnerability to climate change consists of exposure to floods and their impacts on rice crops, animals, households, local infrastructure and human health. Drought also affects most rice crops, animals and fisheries, while windstorms affect some households.

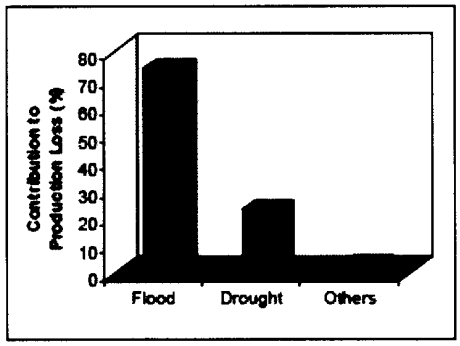
To quantify the affects of climate change in Chik Kreng, among the 7 communes drought affects up to 8,670ha of rice crops and 85ha of other farm land, while floods affect around 1320 ha of rice production.

At district and local community levels, we see drought is the major problem for agricultural production, especially rice cultivation, second is floods and then thunderstorms. During the district workshop, all local authorities confirmed changing patterns of rain fall. In Bavel, they explained that normally during the Phchum Ben festival there is rainfall everyday which makes road difficult for transportation, but now there is no rain. In addition, once there is rain, there are strong winds, often accompanied by thunderstorms. During the visit, we found Chi Kreng and Bavel districts mainly faced drought problems. In Bavel, all wet rice is rainfed and this is similar to Chi Kreng district. There is no formal mechanism to respond to flood and drought.

ANNEX 2: Potential Impact of Climate Change on Rice Production and Water Availability for Agriculture

The assessment of the impact of climate change on agricultural production was carried out for rice production in the four major rice-producing provinces. Variability of rice production in Cambodia is significantly correlated with climate variability, primarily due to the occurrence of, and alternating interplay between, floods, dry spells and drought. Data from the past five years showed that production losses were mainly due to flooding (more than 70% losses), followed by drought (nearly 20% losses). Production loss due to pests and diseases was insignificant (Figure 2) in comparison. Based on previous studies, it was found that the frequency and intensity of floods may increase with changing climate conditions. Increased flooding will in turn cause serious damage to rice crops. Therefore, under changing climate, farmers may be exposed to greater risk, in particular those producing wet season rice.

Figure 2: Contribution of Natural Hazard to Rice Production Loss in Cambodia[15]



Cambodia ranks third in Southeast Asia for its abundance of water resources. This is because the country is positioned in the lower Mekong River Basin and has annual water availability of nearly 50,000 m^3/ person[16]. The Cambodian section of the Mekong River is 486 km (out of 4,800 km) in length (JICA 2006) and contributes about 20 percent of the total Mekong catchment areas of 795,000 km^2 (MRC 2005). Numerous tributaries along the river provide fresh water for domestic and industrial purposes, fisheries, navigation, agricultural development, hydropower, and forestry products.

Table 1: The Mekong River and its tributaries in Cambodia

Name	**Total catchments area (km^2)**	**Catchment areas in Cambodia (km^2)**
Mekong river	795,000	156,000
Sesan River	17,968	7,773
Sekong River	29,600	514
Srepork River	30,240	12,762
Tonle Sap Great Lake		
Water Areas		2,600 km^2 (dry season) 15,000 km^2 (wet season)
Water quantity Wet season (May-October)		70,000 million (CBM) 80 percent of annual rainfall falls

[15] Cambodia INC

[16] The average annual flow in the Mekong at Kratie is approximately 440 billion m^3, while the maximum and minimum discharges at Kratie are estimated at 66,700 m^3/s and 1,250 m^3/s, respectively (MoE 2004)

	in the wet season

Source: JICA (2006) and MoE (2004)

ANNEX 3: ALM template

Climate Change Adaptation Experience Template

Climate Change Adaptation Experiences help the adaptation community share practical experiences and lessons to promote learning. **Experiences may include: successful or unsuccessful practices, approaches, and strategies, lessons learned,** and **reviews of methods applied (e.g. screening tools, guidelines, etc.)**. *Templates also available: Adaptation Profile and Mainstreaming*

***Completed by:** _____ ***E-mail:** _____ ***Date:** _____

Completed forms may be up to 6 pages and should be submitted to info@adaptationlearning.net

1. **Experience Title** – *Please provide a title for the adaptation* ***experience***

   What is the initiative from which the experience is derived? (Include project code, if applicable)

2. **Initiative Description** – *Briefly summarize the initiative's objectives, methods, expected outcomes, timeframe, and specific activities of relevance to the experience.*

3. **Adaptation Experience Description: Challenge(s), Solution(s)** – *Describe 1) the adaptation challenge(s) or question(s); and 2) how the challenge(s) was (were) solved and/or the question(s) addressed through specific actions.*

4. **Results and Learning** – *Describe the impacts of this experience on the problem, the project and stakeholders and partners, as well as what was learned about "(good) adaptation practice"?*

5. **Replication** – *What conditions should be in place or efforts made to replicate the successes (and overcome challenges) of this experience? What should others expect when replicating this experience?*

6. **Significance** – *What is the significance of this experience: How is it innovative and what is the potential relevance? Who else should be interested?*

7. **References** – *How can more information be obtained? Please provide relevant Web site(s), documentation and contact information. These may be shared through the ALM.*

8. **Keywords** – *Please provide up to 6 keywords to help others search for and find this experience.*

1. 2.	3. 4.	5. 6.

9. **Photos** – *Please attach photos with this note or share the link to photos online*

ANNEX 4: Terms of Reference for Key Project Groups, Staff, and Sub-contracts

Relevant information on the project background, objectives, activities, and expected outputs of the project are provided in the project document, which can be referred to for more detailed information. The project document is to be considered an integral part of these Terms of References.

Annex 4.1. Project Management roles and responsibilities (summary from RBM)

Project Board[17]

Overall responsibilities[18]**:** The Project Board is the group responsible for making by consensus management decisions for a project when guidance is required by the Project Manager, including recommendation for UNDP/Implementing Partner approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance to standards[19] that shall ensure best value to money, fairness, integrity transparency and effective international competition. In case a consensus cannot be reached, final decision shall rest with the UNDP Programme Manager. Project reviews by this group are made at designated decision points during the running of a project, or as necessary when raised by the Project Manager. This group is consulted by the Project Manager for decisions when PM tolerances (normally in terms of time and budget) have been exceeded.

Based on the approved annual work plan (AWP), the Project Board may review and approve project quarterly plans when required and authorizes any major deviation from these agreed quarterly plans. It is the authority that signs off the completion of each quarterly plan as well as authorizes the start of the next quarterly plan. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems between the project and external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities.

Composition and organization: This group contains three roles, including:

1) An Executive: individual representing the project ownership to chair the group.
2) Senior Supplier: individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project.
3) Senior Beneficiary: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.

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[17] For a simple programme component, separate Project Boards would not be required if their roles can be covered by the Outcome Board.

[18] Source: Guidelines on UNDP Implementation of UNDAF Annual Review Process

[19] UNDP Financial Rules and Regulations: Chapter E, Regulation 16.05: a) The administration by executing entities or, under the harmonized operational modalities, implementing partners, of resources obtained from or through UNDP shall be carried out under their respective financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. b) Where the financial governance of an executing entity or, under the harmonized operational modalities, implementing partner, does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, that of UNDP shall apply.

Potential members of the Project Board are reviewed and recommended for approval during the LPAC[20] meeting. For example, the Executive role can be held by a representative from the Government Cooperating Agency or UNDP, the Senior Supplier role is held by a representative of the Implementing Partner and/or UNDP, and the Senior Beneficiary role is held by a representative of the government or civil society. Representative of other stakeholders can be included in the Board as appropriate.

Specific responsibilities:

Defining a project

- Review and approve the Initiation Plan (if such plan was required and submitted to the LPAC).

Initiating a project

- Agree on Project Manager's responsibilities, as well as the responsibilities of the other members of the Project Management team;
- Delegate any Project Assurance function as appropriate;
- Review the Progress Report for the Initiation Stage (if an Initiation Plan was required);
- Review and appraise detailed Project Plan and AWP, including Atlas reports covering activity definition, quality criteria, issue log, updated risk log and the monitoring and communication plan.

Running a project

- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
- Address project issues as raised by the Project Manager;
- Provide guidance and agree on possible countermeasures/management actions to address specific risks;
- Agree on Project Manager's tolerances in the Annual Work Plan and quarterly plans when required;
- Conduct regular meetings to review the Project Quarterly Progress Report and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans.
- Review Combined Delivery Reports (CDR) prior to certification by the Implementing Partner;
- Appraise the Project Annual Review Report, make recommendations for the next AWP, and inform the Outcome Board about the results of the review.
- Review and approve end project report, make recommendations for follow-on actions;
- Provide ad-hoc direction and advice for exception situations when project manager's tolerances are exceeded;
- Assess and decide on project changes through revisions;

Closing a project

- Assure that all Project deliverables have been produced satisfactorily;
- Review and approve the Final Project Review Report, including Lessons-learned;
- Make recommendations for follow-on actions to be submitted to the Outcome Board;
- Commission project evaluation (only when required by partnership agreement)
- Notify operational completion of the project to the Outcome Board.

[20] Depending on its composition, the Outcome Board can fulfill the function of the Project Appraisal Committee (LPAC)

Executive

The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The Executive has to ensure that the project gives value for money, ensuring a cost-conscious approach to the project, balancing the demands of beneficiary and supplier.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Ensure that there is a coherent project organisation structure and logical set of plans
- Set tolerances in the AWP and other plans as required for the Project Manager
- Monitor and control the progress of the project at a strategic level
- Ensure that risks are being tracked and mitigated as effectively as possible
- Brief Outcome Board and relevant stakeholders about project progress
- Organise and chair Project Board meetings

The Executive is responsible for overall assurance of the project as described below. If the project warrants it, the Executive may delegate some responsibility for the project assurance functions.

The project will have the TWGAW as an addition to the executive. The TWGAW will play an important role in translating the project findings into national policies. One of the responsibilities of the technical group is to invite MoE to the technical group.

Senior Beneficiary

The Senior Beneficiary is responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The role represents the interests of all those who will benefit from the project, or those for whom the deliverables resulting from activities will achieve specific output targets. The Senior Beneficiary role monitors progress against targets and quality criteria. This role will be covered by MAFF, MOWRAM, MOE and NDP.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Ensure the expected output(s) and related activities of the project are well defined
- Make sure that progress towards the outputs required by the beneficiaries remains consistent from the beneficiary perspective
- Promote and maintain focus on the expected project output(s)
- Prioritise and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes
- Resolve priority conflicts

The assurance responsibilities of the Senior Beneficiary are to check that:

- Specification of the Beneficiary's needs is accurate, complete and unambiguous
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target
- Impact of potential changes is evaluated from the beneficiary point of view
- Risks to the beneficiaries are frequently monitored

With regard to this project, MAFF/PSU as a senior beneficiary will be expected to have the additional following roles:

- Chairing of project board meetings, and key events related to project monitoring and evaluations, policy advocacy;
- Provision of an enabling environment for the project operations by promoting team building and good communication and coordination between MAFF/PSU staff and project staff. Promotes team building and good communication and coordination between MAFF/PSU staff and project staff;
- Co-financing and supports project efficiency and effectiveness through the provision of project office space, preferably within MAFF/PSU, and other technical services, policy and institutional support to the project.
- Facilitation of the scaling up and mainstreaming of CC resilient agricultural practices into national agricultural strategic plans and policies;
- Assistance in advocating good practices and lessons learned of CC resilient agricultural practices into TWGAW and MAFF/IFAD supported initiatives; Supports project implementation at provincial level in line with EXCOM;
- Promotion of partnership and synergy between MAFF, IFAD, UNDP and other partners in the promotion of CC-resilient agricultural practices.

MOWRAM is expected to have the following additional roles:

- Appoints a senior representative to the project board to implement the MOWRAM roles with the project;
- Mainstreams CC resilient irrigation design techniques into irrigation development policy and projects of MOWRAM;
- Supports the project to upscale and mainstream CC resilient water resources management into the national's policy and planning;
- Assists in advocating good practices and lessons learned of CC resilient water resource management into TWGAW;
- Supports project implementation at provincial level in line with EXCOM;

MOE is expected to have the following additional roles:

- Appoints a senior representative preferably a senior representative of GEF operational focal or of Climate Change Office to sit in the project board;
- With the invitation from the TWGAW, appoints a senior representative from CC office to be a member of TWGAW to advocate for climate change adaptation measures;
- Takes lessons learned from the project to prepare for modifications to the national CC adaptation policy(ies) to reflect lessons learnt through the project;
- Provide technical inputs and support to findings and methodologies on climate change vulnerability assessment and adaptation measures with the project.

Where the project's size, complexity or importance warrants it, the Senior Beneficiary may delegate the responsibility and authority for some of the assurance responsibilities (see also the section below)

Senior Supplier

The Senior Supplier represents the interests of the parties which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Senior Supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. UNDP, AFD and IFAD will be represented under this role.

Specific Responsibilities (as part of the above responsibilities for the Project Board)

- Make sure that progress towards the outputs remains consistent from the supplier perspective
- Promote and maintain focus on the expected project output(s) from the point of view of supplier management
- Ensure that the supplier resources required for the project are made available
- Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes
- Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts

The supplier assurance role responsibilities are to:

- Advise on the selection of strategy, design and methods to carry out project activities
- Ensure that any standards defined for the project are met and used to good effect
- Monitor potential changes and their impact on the quality of deliverables from a supplier perspective
- Monitor any risks in the implementation aspects of the project

In addition to the roles stipulated above, AFD and IFAD will also have the following responsibilities:

- Facilitation of the linkages and synergies between this project and AFD and IFAD -funded projects related to agricultural practices;
- Sharing of knowledge and lessons learned of good agricultural practices of AFD and IFAD funded projects with this project;
- Ensuring that project findings and lessons learned feed into the agenda of TWGAW;
- Co-financing support to the project.

If warranted, some of this assurance responsibility may be delegated

Annex 4.2: ToRs of Project Management Team and of Technical Support Team

I. Project Management Team

A. National Project Manager

The National Project Manager (NPM) will be accountable to both the National Project Director and to UNDP Cambodia for the overall management of the project "Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia", the quality, timeliness and effectiveness of the services provides and the activities it carries out, and for the use of funds provided to it. He/she will also directly work with the projects extension teams and supervise and contribute to training and rural appraisal processes. The NPM will be the focal point for communications to the participating partners, national and regional organizations, and others concerning the implementation of the project. The PM will provide a coordination and management structure for the implementation of the project, functioning in accordance with the rules and procedures of UNDP.

Summary of key functions:

- Management of the Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia project
- Implementation of the project plan
- Support to the development of resources mobilization strategies
- Ensure the overall management of the Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia project
- Ensure the effective implementation of the project as described in the Project document
- Support to the development of resources mobilization strategies
- Coordinate and work closely with Technical Working Groups on Agriculture and Water (TWGAW), donor agencies and UNDP Cambodia office.
- Working with regional and national office in organizing and hosting of national workshops and international symposia

Key qualifications

- Master degree in a relevant field (environmental sciences, social sciences, developments, agricultural sciences, political economy of institutional reform)
- Five years program management experience
- Experience in supervision of at least five staff (both national and expatriates)
- Working experiences with MAFF, MOWRAM, MoE and donor agencies
- Experience in working with former PLG support project or the Seila program is an added advantage and may compensate for lack of some qualification in the other areas.
- Working experiences with donor agencies in Cambodia in related to climate change, agriculture and water resources
- Strong knowledge about Cambodia politic, in particular at National and provincial level
- Fluency in spoken and written Khmer and English.

B. National Project Assistant

Project management and Administration

- Assume the general responsibility of the day-to-day administrative activities of the project
- Draft routine communication for the project
- Handle local purchases in line with UNDP procurement procedures;
- Maintain project accounts;
- Maintain the electronic and physical filing system for project documentation and communication;
- Prepare and update documentation and records for audit

Project Implementation

- Prepare budget for workshops and meetings;
- Arrange for travel fro project staff and meeting participants
- Facilitate the organisation for workshops and meetings
- Prepare for quarterly and annual financial reports

Project reporting

- Provide support to the preparation and distribution of project reports and publications
- Assist the National Project Manager in preparing reports for the project board or UNDP as required

Selection Criteria:

- Secondary education with specialised certification in accounting, business administration with demonstrative and technical experience
- 3 to 5 years of relevant experience in office administration and finance management in a large organisation
- Experience in the operational aspects of UN-funded projects or with projects of other donors
- Experience with UNDP NEX procedures would be an important asset;
- Organisational, financial, inventory and budgetary skills
- Demonstrate oral and written communication skills in English and Khmer

Duration: 4 years

II. Project Technical Team

C. Provincial Agriculture and Water Resources Advisors (two positions)

- Assist the Provincial Department of Agriculture and the Provincial Water Resource Management Department of the two pilot provinces in integrating climate change into commune council plans and budgets
- Provide technical support to provincial and district staff with regard to climate change resilience water resource management and agricultural practices.
- Conduct of training needs assessments for provincial, district and commune teams with respect to climate change.
- Facilitate the formulation of Commune Development Plans to integrate climate change resilient water resource management and agricultural practices;

- Coordinate and promote effective collaboration with ministry line departments, NGOs/IOs, private sector and other development partners to support capacity development of the Commune in issues related to adaptation to climate change;
- Collaborate and coordinate with the Units of the Executive Committee of the Provincial Rural Development Councils and line departments to support the implementation of climate change adaptation activities.
- Provide technical advice and support services to the Provincial/Municipal Governor and the Executive Committee on matters related to implementation of climate change adaptation activities.
- Provide advice on the technical, social, managerial, financial, economic and cultural aspects of climate change resilient water resource management and agricultural practices to support the PDA and PWRD Director,
- Ensure that gender considerations are mainstreamed in the project's agricultural development activities.
- Advise on the preparation of appropriate extension materials using cultural appropriate approaches and local languages for promotion of the adaptation of climate change water resources and agricultural practices.
- Liaise with complementary programmes e.g. DANIDA/DfID NRM and Livelihoods Programme and NGO agricultural and NRM activities to ensure that project implementation complements those of other programmes;
- Conduct regular field visits with counterparts to monitor field activities and assist with the organisation of visits and supervision missions from the co-operating institution to the province;
- Facilitate the implementation of the project's technical aspects
- Plan and support project monitoring, evaluation and coordination.
- Liaise with, and coordinate the consultants work and activities.

Qualifications

- Bachelor Degree in Agriculture with postgraduate study abroad an advantage;
- At least three years experience in technology transfer using a participatory group approach and on-farm demonstrations;
- Experience of working in upland areas with ethnic minority communities;
- Experience in advising government agricultural or water resource management counterparts;
- Strong training experience and skills and a strong commitment to participatory processes.
- Above average communication and documentation skills and ability to work with a multi-disciplinary team;
- Advanced computer skills for the analysis of data and preparation of technical reports;
- Strong skills in drafting and editing technical reports in both Khmer and English;
- Good written and oral English ability; and
- Able and willing to work in remote areas.

Duration: 3.5 years

D. Monitoring and Evaluation (National Specialist)

Project Monitoring and Evaluation

- Develop monitoring and evaluation plans, including baseline survey before the start of each component of the project.

- Conduct baseline and mid-year surveys to provide input into the project progress and achievement of project outputs;
- Develop project monitoring indicators to for reporting progress of capacity development and gender mainstreaming
- Periodically review indicators and target for project outputs to determine the relevance of the indicators and targets wit progress of time.
- Periodically monitor the level of delivery of the project activities, alert and provide recommendation for effective project implementation to the project management;
- Provide technical support to the submission of progress, quarterly and annual reports;
- Maintain the project risk-log and bring to the attention of project management of new development with might affect the delivery of the project.
- Liaise with the Gender Mainstreaming Specialist to incorporate gender issues into the monitoring and reporting of the projects.
- Facilitate yearly reviews and secure the service of independent evaluator to assess the impact of the project at mid-term and final evaluation.
- Work with different Specialists and counterparts to monitor the implementation of the project to identify challenges and opportunities.
- Provide recommendations that are aimed at improving the project implementation.

Selection Criteria

- Masters degree in business administration, public administration, management, or equivalent.
- 5 years of professional experience in project management
- Good experience in project monitoring and evaluation
- Knowledge of alternative dispute resolution and indigenous issues is preferable
- Above average communications skills
- Strong analytical skills
- Strong interpersonal skills
- Excellent command of English and Khmer languages (written and spoken)

Duration: 4 years

E. Communication, advocacy and learning management system specialist

- Develop an inventory of experiences and lessons learned from other stakeholders involved in water resource management and agriculture, and other relevant information, which would be used to inform technical strategies with regard to the project outputs
- Assessment of awareness and education gaps in communities on climate-related risks and the linkages between climate change and agricultural production and water resources.
- Review of experiences in delivery of environmental awareness and education in Cambodia and design awareness and education materials on climate impacts and community-based risk reduction
- Mainstream genders issues into the works of communication, advocacy and develop of learning management system
- Develop key messages for advocacy targeting women issues related to climate change

- Ensure that the project take advantage of special climate change-related events and organise demonstration days for climate-resilient farming and community-based adaptation for local NGOs, provincial staff and farmers
- Conduct extensive stakeholder and public consultations to collect relevant information and also to share experiences and lessons learned from the project.
- Liaise with local implementing partners, provincial advisors and technical specialists in organising training for planning and use of climatic risks management of water resource and agricultural practices.
- Manage and coordinate the dissemination of lessons from the project, by engaging the media, organising, regular multi-stakeholder workshops, reporting to the technical working group on agriculture and water (TWGAW), Submitting articles for publication
-
- Identify of policy gaps and inconsistencies, hold consultative meeting to review policy revisions and provide technical assistance in the drafting of revisions to national policy revisions with regard to climate change
- Capturing of lessons learned and successful adaptation methods/technologies from the project on a continuous and systematic basis for dissemination and replication.
- Synthesizing of project impact from Outputs 2.4 and 3.4 and publication on the ALM platform
- Design and introduce community-based, low-tech information dissemination mechanisms, linked to local and central offices of MOWRAM

Duration: 4 years

Qualifications:

- University Degree, preferably Advanced University Degree or equivalent, in Communication, Journalism, the Social Sciences or Humanities.
- At least 5 years experience of relevant professional work experience at the national or international level in:
    - development and involvement in strategic advocacy/campaign activities
    - a communication-related field, such as the broadcast or print media or public relations;
    - management, planning and monitoring and evaluation of strategic communications work.

156. Strong English language and communication skills are essential, especially strong English language drafting skills; Strong analytical skills combined with practical judgment;
157. Ability to clearly and concisely present ideas and concepts in both oral and written form.
158. Ability to assess and identify communication priorities and develop a strategy and workplan to meet these.
159. Good inter-personal and negotiation skills.
160. Demonstrated ability to work in harmony with colleagues of different cultural backgrounds in a professional manner, especially in a mutually-supportive team environment.
161. Ability to identify newsworthy elements to promote to journalists.
162. Computer literacy and knowledge of standard PC software packages (eg. Excel, Power Point, MS Word, etc.) is essential.

F. Water and irrigation design specialist:

Key tasks:

- Conduct gap analysis of climate change adaption of policy planning related to irrigation development and water resource management

- Conduct technical assessment of potential impacts of CC of irrigation system and engineering plans in adapting to CC
- Development of guidance for climate-resilient irrigation design
- Propose policy recommendations for the improvement of Agriculture and water resource strategy in relation to water resource management and irrigation system
- Post-training assessment of knowledge uptake and impact
- Design of consolidation and re-training activities
- Develop comprehensive check list of existing and new designs of irrigation scheme and their impact/performance under different climatic scenarios in relation to soil structure and weather conditions
- Analyze costs and benefits of modifications to existing irrigation systems to increase storage capacity under conditions of climate change
- Development training material in relation to water resource management, irrigation system development and climate change adaptation
- Analyze water use needs and projections in target districts and communities based on climate change
- Conduct institutional analysis and reviews of water resources policy
- Involvement of existing FWUC, water user community, local authorities, extension staff from PDA and PDOWRAM in training events
- Identify pilot sites within the target districts to demonstrate modifications and document and report on costs and benefits of the modifications
- Measure effectiveness of modifications, and integrate into modelling of hydrological processes and livelihood impacts undertaken by Helsinki University of Technology on climate change scenarios for the Mekong region and Tonle Sap Lake
- Inform and involve policy makers in dissemination of research results

Duration: 14 months

Qualifications:

- PhD or Master in Irrigation Engineering, Water Resources Management, Water Resource Management or Hydrological modeling t or field related to irrigation
- At least five years experiences in the field of irrigation designing
- Practical knowledge of principles and practices of irrigation and range of irrigation related issues
- Sound knowledge of irrigation, including principles of operation analysis of water productivity, agronomic practices, institutional arrangements, interaction of irrigation with other users and the environment
- A very good understanding of CC adaptation and water resource management
- Experiences in designing irrigation in adapting to climate change adaptation
- Experiences in community based water resource management, community pond designing and development
- Strong experiences with water resources planning, river basin management, irrigation, hydrology, rural development, general agriculture and soils.
- Experience of capacity-building (including strengthening water user associations), assessing training needs, curriculum development, and developing/giving training courses with lectures, workshops and seminar sessions.

G. Agricultural, Water Resources and CC Vulnerability Assessment Specialist

Duration: 26 months

- Conduct an analysis and projection of water household and agricultural use needs in target districts and communities as climate changes, including the categorisation of water users in the target areas.
- Carry out an assessment of current coping strategies in target communities in times of flooding and drought, review climatic information gaps in relation to water resource management and agriculture.
- Complementary to Cambodia's Second National Communication to the UNFCCC and in collaboration with the Agriculture and CC Vulnerability Specialists conduct a climate risk and vulnerability assessment of water resource management in target areas.
- Analysis of information gaps in access to and application of, hydro-meteorological information in time to prevent losses due to drought or floods.
- Define of climate information flows, communication roles and appropriate signal/user interfaces to ensure timely information flows related to climate hazards.
- Develop community-based, low-tech information dissemination mechanisms, linked to local and central offices of MOWRAM.
- Analyze economic and social costs and benefits of options for community based water resource management that are less vulnerable to impacts of climate variability and climate change.
- Review the vulnerability of existing agricultural prescriptions (including SRI and DMC and agro-ecosystem analysis) to the impacts of climate variability and climate change
- Undertake trials on diversified and appropriate agricultural crops (30) target communities and develop training materials for scaling-up adoption of modifications in liaison with the Communication Specialist.
- Provide support and strengthen farmer and water user associations and production groups in target districts in promoting and adopting resilient agricultural methods and techniques

- Undertake participatory mapping of climate change risks on key ecosystems in target districts and an inventory of practices that are likely to affect the delivery of environmental services under a range of climate change future scenarios
- Develop joint education and awareness raising activities with existing water resource management projects, ecosystem conservation projects, highlighting the implications of the effectiveness of management practices in the context of climate change.

Qualifications

- PhD or Master in agricultural sciences, agronomy, water resources management, water resource management or hydrological modeling t or field related to water management
- At least five years experiences in the field of water resources management, agricultural irrigation or extension.
- Practical knowledge of principles and practices of irrigation and range of irrigation related issues
- Sound knowledge of irrigation, including principles of operation analysis of water productivity, agronomic practices, institutional arrangements, interaction of irrigation with other users and the environment
- A very good understanding of CC adaptation and water resource management
- Experiences in designing irrigation in adapting to climate change adaptation
- Experiences in community based water resource management, community pond designing and development

- Strong experiences with water resources planning, river basin management, irrigation, hydrology, rural development, general agriculture and soils.
- Experience of capacity-building (including strengthening water user associations), assessing training needs, curriculum development, and developing/giving training courses with lectures, workshops and seminar sessions.

H. CEDAC Grant for replication of FWUCs and Climate change resilient agricultural practices and development of learning network

- Design and develop and implement training programme for extension workers in target two provinces on climate change resilient water resources and agricultural practices.
- Design of mechanisms to resolve potential disputes (e.g. district and commune level water use commissions)
- Provision of training in conflict resolution to officials from PDOWRAM and PDA, local authorities and FWUCs.
- Provision of legal advice and education to communes and FWUC's
- Continuous documentation and inventory of successful adaptation methods, technologies and practices for replication
- Preparation and dissemination of adaptation-related training and awareness raising materials for farmer learning networks
- Continued training of MAFF and CEDAC agricultural extension workers in community-based adaptation practices and lessons learned from the project
- Organization of regular learning events on community-based adaptation for participants in learning networks
- Integration of project-related awareness and training materials into existing rural development and farmer learning networks
- Development of awareness and training materials to FWUC members
- Organization of training courses and other capacity development events for FWUC members
- Organization of field visits in project areas / pilot communities by FWUC members from other districts
- Assessment of training needs in water resource management and utilization FWUCs
- Design of training programmes for FWUCs on resilient irrigation design and maintenance
- Integrate project lessons on resilient farming practices into agricultural extension activities in the target districts

I. Rain water Harvesting Specialist

Duration: 26 months

- Conduct an assessment of existing rainwater harvesting measures and costs and benefits of individual setups / options
- Provide an analysis of social and economic costs associated with water use needs in relation to women
- Conduct a community-based problem analysis to identify optimal rainwater harvesting solutions
- Promote existing women groups in water harvesting at the household level

- Draw lessons learned from UNDP/GEF small grant programme on support with rain water harvesting
- Demonstration of appropriate solutions for critical infrastructure (e.g. rain harvesting reservoirs in village centre, pagoda, primary schools, health centre)
- Awareness raising on new technologies related to rain water harvesting techniques for both household water use and farming use (e.g. how to use water purifiers)
- Development of management mechanisms for community ponds and drilled wells constructions
- Bring good practices from other countries of rain water harvesting techniques.
- Prepare policy recommendations to promote rain water harvesting
- Indentify opportunity and constraints for rain water harvesting in Cambodia.
- Integrate rain water harvesting techniques into training programme for provincial staff and communal councils of target districts and communes

Qualifications

- PhD or Master in Water Resources Management, Water Resource Management or Hydrological modeling t or field related to water resources management
- At least five years experiences in the field of water resource management and specifically rainwater harvesting.
- Practical knowledge of principles and practices of irrigation and range of irrigation related issues
- Sound knowledge of irrigation, including principles of operation analysis of water productivity, agronomic practices, institutional arrangements, interaction of irrigation with other users and the environment
- A very good understanding of CC adaptation and water resource management
- Experiences in designing irrigation in adapting to climate change adaptation
- Experiences in community based water resource management, community pond designing and development
- Strong experiences with water resources planning, river basin management, irrigation, hydrology, rural development, general agriculture and soils.
- Experience of capacity-building (including strengthening water user associations), assessing training needs, curriculum development, and developing/giving training courses with lectures, workshops and seminar sessions.

J. CC and Gender Mainstreaming Specialist

During: 10 months

- Provide technical support to the project in gender mainstreaming and the application of a right based approach
- Provide technical support on data collection, disaggregated for information collection of various positions of the project including sex, ethnicity, age where needed
- Coach and provide structured advice to project management team and technical team on the linkages between gender and climate change.
- Ensure the inclusion of such data in the design and formulation of the monitoring, evaluation and reporting framework of the project
- Develop a gender mainstreaming action plane and incorporate gender perspectives into all components and activities of the project where appropriate and into MAFF and MOWRAM gender action plans.

- Support the preparation of information dissemination toolkit, training manuals and checklist.
- In collaboration with the M+E Specialist, ensure that monitoring and evaluation reporting captured gender-based information
- In collaboration with the Communication Specialist provide guidance on materials prepared to promote gender equality and human rights based approach in relation with climate change adaptation
- Support partnership building with development partners and CSO and SWAPs in mainstreaming gender and climate change
- Liaise with the technical specialists to ensure that gender issues are addressed in their activities.
- Ensure that grants to NGOs address climate change vulnerability for poor women households
- Participate and share information in UNDP's knowledge networks in liaison with regional UNDP gender focal points and climate change adaptation focal points
- Provide inputs from gender perspectives and climate change vulnerability into NHDR on climate change

Qualifications:

- 5 year experience in gender mainstreaming
- Master degree or higher in business development, environmental management, NREM and agricultural development or water resource management
- Good understanding of climate change adaptation
- Good experience in project monitoring and evaluation
- Good experience in training and capacity development
- Good communication skills
- Demonstrate good leadership and managerial skills

ANNEX 5: Analysis of national capacity development benefits from the project

Project goal: To enhancing adaptive capacity to prevent climate change-induced food insecurity in Cambodia			
Capabilities expected from Capacity Development	**Objectives**	**Outcome assessment of capacity development**	**Project strategy, outcomes and outputs contributing to capacity development**
Act and self organize	To increase commitment, values, confidence , right perception and planning	-implementation of decisions -operational autonomy -action orientation-integrity (org., leaders, staff) -resource mobilization	- Improve knowledge and understanding (Output 1.1) of commune Council and Planning and Budgeting Committees on CCA - Equip local planners and decision makers on CC through vulnerability assessment (output 1.4). - Training and awareness programme (output 1.2.&1.5. - Locally appropriate adaptation options demonstrated (outcome 2)
Generate development results	To increase synergy, shared common results, replicability and sustainability, resource mobilization and partnership building	- better institutions and services -better environment-sustainability of results	- Synergy and linkage with existing projects - Up-scaling good practices - Long term environmental sustainability - The project has an objective to reduce the vulnerability of Cambodia's agricultural sector to climate–induced changes in water resources availability - Reduction of farmer vulnerability to climate variability and climate change - Number of outside programmes, policies or projects incorporating project practices, approaches or methods
Relate to other actors	To gain support and protection/legitimacy. Informal approaches and political dimension…	-legitimacy - protect core interests -Operational autonomy	- Through implementation and management arrangement: - MAFF-executing agency - MORAM-implementation - Stakeholder consultation plan during project design and implementation -Stakeholder involvement plan -Support dialogue and consultation forums
Adapt and self renew	to master change and adopt new ideas	-Adaptive management culture -Learning opportunities	- Lessons learned in the pilot sites replicated in other vulnerable areas of Cambodia (outcome 3)

		-Balance stability and change	
Achieve coherence	To achieve coherence and to combine achieving results with political structure	-Integrating structures -simple rules governing operations -leadership intent -shared vision	- Communication with TWGAW - Integrate into the EXCOME - Improve coordination and communication - Technical guidelines and training programme - Lessons learned feedback to policy - Summary of cost benefit analysis

ANNEX 6: Institutional capacity analysis

Institutional justification	Proposed role	Relevance to the mandate	Synergy with others partners	Making possible greater impacts and achievement of project outcomes	Commitment	Good capacity to support and delivery	Alignment with other programmes
MAFF (proposed national execution)	Executing agency	Agricultural development and planning, agricultural research and extension, support farmer associations (programme # 1, 2, 3, 4 and 5 of SWA 2006-2010).	Agricultural research such as CARDI, IRRI, and other donors (CAVAC-Ausaid, JICA, AFD, and others- and NGOs working on agricultural sector	Agricultural extension, former promoters, and Farmer Field School farmer association and small scale canal construction (at paddy field level)	More number of staff and qualified and more commitment at the provincial level	Good annual action plan/more staff at the provincial level	Agricultural extension work and FWUC
MOWRAM	Implementi ng agency	Reservoir and main canals and secondary canal construction/irrigatio n scheme construction. The ministry staff and experts also involve with the five programmes like MAFF.	Water resource planning institutions and donors agencies (JICA, WB, ADB, AFD, Kuwait,	Reservoir constructions/maintenanc e and establishment of FWUC	Number of staff are limited and difficult to delivery output at the local level	Less number of staff at provincial level	Possible CCA planning and
EXCOM	Implementi ng agency at provincial level	Support democratic development through decentralisation and deconcentration of integrated planning at provincial level	All provincial departments are under the coordination of this institutions (received wide range support from donors to work in whole country)	Existing mechanism of administration and management at provincial level	Strong commitment to coordinate all provincial department in term of planning and investment	Administrative and institutional development and strengthening	coordinate all provincial departments and other donor funded activities in the field of NRML, and policy and administrative reform

CEDAC	Potential implementing agency at output level	Agricultural and rural development, agriculture based climate change adaptation through SRI, multiple purpose farming, and community water management, rainwater harvesting and small scale irrigation.	Strong network with MAFF/MOWRAM, local authorities, NGO network and local communities	Have more than 300 staff working in 2,700 villages. The most leading NGOs in term of community mobilisation, rural and agricultural development in Cambodia and the promotion of climate change	Staff are strongly committed and active with the mentioned sectors	More professional staffs	GRET and AFD are the main partnership. OXFAM America support the study of SRI and demonstration for CEDAC

ANNEX 7: Event-Stakeholder consultation and Review Process

Date	Event	Objective	# of people	Analysis
Mar 31-Apr 01, 2008	Inception Workshop	• To introduce the approved project concept to stakeholders and present the next steps in project preparation.	83	See list of participants, Workshop inception report
11-13 June, 2008	First Mission of International Project Design Specialist (Tim Boyle) for project alignment and synergy	• To provide inputs to improve baseline information (the background context, project relevance, project synergy etc) of the project document.	8	8 key partners including donor (CIDA, AFD, USAID), ministries (MoE, MOWRAM), NGOs (CEDAC/GRET). See report, schedule and list of NGOs, Donor and government agencies consulted. Project concept was introduced in the TWGAW.
07-11, July 2008	Provincial stakeholder consultation	• To update the progress of project formulation, to identify stakeholders, development partners at provincial, commune and village level, to find out capacity development needs of the key stakeholders, and to identify the proposed project sites	17	See report and list of people consulted, interview guideline. Key stakeholder include representative of PDA, PDOWRAM, and PSDD
8-13 September	Second mission of second of International Project Design Specialist (Tim Boyle) for project strategy, result and resource framework	• To draft project strategy • To define the scope, delivery of the project through the development of resource and result framework • To identify site selection	5	Meet with AFD, E+E team, debriefing country director
21-28 Sept 2008	Provincial stakeholder consultation	• Update progress of project formulation, identify and synergy on-going projects related to agriculture and water implemented by provincial government agencies, bilateral development agencies, and NGOs program. • To identify their knowledge gaps on climate change and its impacts and their commitments if the project implemented in the provinces	24	18 in Siem Reap and 6 in Battambang. See list of stakeholder interview and reports

	District workshops for data gathering	• To inform about the project intervention in the district. • To collect baseline survey and identify vulnerable assessment caused by climate change (drought, flood, and windstorms) on agriculture, water, human health, infrastructure and others in Chi Kreng and Bavel districts.	83	Participants with 45 in Chi Kreng and 48 in Bavel district (see list of participants), questionnaire, and workshop reports
	Village visited	• To assess livelihood activities and vulnerability to drought and flood to rice cultivation in the villages	50	See photo activities
October 22, 2008	National Stakeholder Consultation Meeting	• To update progress of project formulation, to provide platform of sharing experience on climate change, water and agricultures project by project partners, • To get feedback from participants and opportunity of project alignments.	43	Participants are stakeholders consulted during the national and provincial consultation (five provinces). See list of participants, meeting agenda, and minute of meetings. SPA of 5 provinces attended.
24 October	Review and comments provided by Pradeep Kurukulasuriya, PhD Technical Advisor- Capacity Development & Adaptation	• To ensure the project document meet GEF requirements	He shared with Gernot, Khim, Try, Tim,	See Pradeep inputs and review checklist on 23 October.
26 October	Review and comments provided by Khim	▪ To ensure the project document address national relevance and needs, project results and resource framework is clear and realistic, project implementation is rational, good synergy and linkage with UNDP programme	Sovanny, Try, Cecelia	See Khim comments and review checklist on 26 October.
30 Oct 08	In-house review	▪ To get feedback/comments on project formulation and to synergy with other projects being implemented by the UNDP office in Cambodia	12	See the minute of meeting and list of participants
6 Nov 08		▪ Delayed to 05 December 2008		

Key stakeholders consulted during the project development
An overview of stakeholders' roles in agriculture development, water resource planning, and climate change is provided in the table below.

Institutions	Contact Information	Main responsibility	Role in PPG and FSP
CEDAC	Ms. Tong Chantheang, CEDAC/WENet Cambodia General Secretary #9, Street 257, Toeuk Laak 1, Tuol Kork, Phnom Penh Mb: 012 725 724	CEDAC is a Cambodian NGO that is actively working in agriculture development especially promoting SRI nationwide. In the last ten years, CEDAC has implemented many projects such as SRI, integrated farming systems, organic chicken raising, small scale irrigation, development of farmer's associations, etc. CEDAC has experts in delivery of training and research in agriculture development and water resource management.	CEDAC will contribute technical inputs in undertaking field activities, especially in relation to Outcome 2. It will also contribute to the Technical Advisory Group and share experience and lessons learned in dissemination/learning workshops to be organized by the project.
Cambodian Development Resource Institute	Mr. Yem Dararath, CDRI Research Associate/Acting Team Leader, Natural Resource and Environment Programme #56, Street 315, Tuol Kork, Phnom Penh Tel: 012 264 083	CDRI has been implementing the Water Resource Management Research Capacity Development Programme. The primary target areas are the watersheds surrounding the Tonle Sap. The goal of the programme is to improve the use and management of water resources, to increase agricultural production and promote the sustainable use of natural resources in Cambodia.	CDRI will facilitate field visits for UNDP Project Formulation Team to visit and meet with local community and commune councils in Kampong Thom province. CDRI will contribute technical inputs into Technical Advisory Group and share experience and lesson learned in dissemination/learning workshops to be organized by the project.
Oxfam Australia	Mr. Sam Sovanna, Country Representative Mr. Khim Channy, Programme Officer Mr. Van Saravuth, Disaster Risk Reduction Project Manager	Oxfam Australia is an international Non-Governmental Organisation (NGO) which works with Government counterparts and other organizations to overcome poverty and injustice since 1979 in	Oxfam Australia will Provide expertise in the development of community-based climate information and early warning systems. Oxfam Australia will contribute technical inputs into Technical

	Tuol Tumpoung, Chamkar Mon, Phnom Penh	Cambodia. Oxfam's current programs focus on community-based rural development, which includes an integrated disaster Risk Reduction Program in poor and isolated communities in the Takeo, Kratie, and Stung Treng provinces.	Advisory Group and share experience and lesson learned in dissemination/learning workshops to be organized by the project.
TWGAW secretariat	Mr. Mak Mony Chief of secretariat 016 947 475 Email: pcmeo@camnet.com.kh Phnom Penh	The TWGAW is a platform that facilitates the exchange of information on activities in the agriculture and water management sectors. Though information sharing through joint debriefings, exchange of project documents, and other forms of consultations are already frequently practiced, the TWGAW will provide a forum for this process with the added value of linking up to a wider policy dialogue. Hence, this would improve the effectiveness of information sharing.	TWGAW secretariat will help in organizing of meeting with senior government officials for consultations in the PPG phase. TWGAW is keen to collaborate in implementation of the NAPA follow-project.
Local communities (through fieldwork)	Local contacts through provincial line-agency departments	Direct beneficiaries and willing to support the projects	Willing to contribute labour work and support the project within their communities
Provincial Department of Agriculture	**Siem Reap province** Mr. Teav Pochun, deputy director of PDA, tel: 012 225 152 Mr. Mean Phanny, deputy director of planning and finance, tel: 012922712 **Battambang province** Mr. Sat Sokhum, deputy director	Responsible for agricultural extension, planning and implementation, animal health trainings and soil studies, small canal construction for irrigation purpose, formation of farmers association and agricultural experimentation	The two provinces have received a large amount of money from ECOSORN project for agricultural extension work. They also welcome the project to be implemented in the provinces. Willing to offers their staff to be counterparts if required by the project and the recommendations from MAFF.
Provincial Department of	Mr. Net Phallkun, Deputy	Responsible for irrigation schemes	They have strong support for the project

Water Resource and Meteorology in Siem Reap and Battambang	director of PDOWRAM- Siem Reap (tel: 012 827 757/ tel/fax: 855 063 965 366 Mr. Hong Kimsan, deputy director of Battambang PDOWRAM (tel: 012867475)	covering less than 200 ha, responsible for FWUC formation, water resource study, inventory of irrigation scheme and support technical team from ministry and donors agencies, cooperate with NGOS working with irrigation work.	if it is implemented in the districts and their provinces. The departments have fewer staff compared to the agriculture departments.
Commune councils (through field visit)	All commune chiefs and council members	Responsible for commune development plan and local security and local administrative work	Help to monitor project activities and help to mobilize local community participation with project
Project to Support Decentralization and Deconcentration (PSDD)	**Siem Reap province** Mr. Nhim Hak, senior provincial program advisor, tel: 012630395 and the team **Battambang province** Mr. Thou Vannak, Senior Provincial Program Advisor, tel: 012 940 338	UNDP support project based at Ministry of Interior and provincial rural development committee. The PSDD responsible for mobilizing all provincial department, district level and commune council to form integrated planning on strategic development and implementation.	This institution is a UNDP oriented approach which has already developed administrative and structure of management in the provinces to integrate the planning sectors on economic, social, gender and social security, environment, community based natural resource management and livelihood improvement
Climate Change Office Ministry of Environment	Mr. Sum Thy Chief of Climate Change Office #48, Samdech Preah Sihanouk, Tonle Bassac, Chamkar Mon, Phnom Penh Tel: 855 23 218 370 Email: cceap@online.com.kh		Active support with the project if required
National Committee for Disaster Management		The Committee on Disaster Management is an inter-ministerial coordination mechanism reporting to the council of ministers. At the ministerial level, the NCDM will oversee the implementation of the	

		NDRMF.	

ANNEX 8: Endorsement and Co-financing Letters

KINGDOM OF CAMBODIA
NATION-RELIGION-KING

COUNCIL OF MINISTERS
Ministry of Environment

No: 103 MoE

Phnom Penh 24th, August, 2007.

To: Mr. Yannick Glemarec
Executive Coordinator,
UNDP-GEF
304 East 45th Street
9th Floor
New York, NY 10017, U.S.A.

Subject: Endorsement for CC/LDCF Cambodia "Building Capacities to Integrate Water Resources Planning in Agricultural Development ", PIMS 3867

In my capacity as GEF Operational Focal Point for Cambodia, I confirm that the above project proposal (a) is in accordance with the government's national priorities and the commitments made by Cambodia under the relevant global environmental conventions and (b) has been discussed with relevant stakeholders, including the global environmental convention focal points, in accordance with GEF's policy on public involvement.

Accordingly, I am pleased to endorse the preparation of the above project proposal with the support of the United Nations Development Programme (UNDP). If approved, the proposal will be prepared and implemented by the Royal Government of Cambodia's Ministry of Environment. Further, I request the UNDP to provide a copy of the project document for reference and review before it is submitted to the GEF Secretariat for CEO endorsement.

I understand that the total GEF financing being requested for this project is $2,145,000, inclusive of project preparation grant (PPG), if any, and Agency fee (10%) to UNDP for project cycle management services associated with this project.

Sincerely,

Dr. LONH Heal
GEF Operational Focal Point
Director General for the Ministry of Environment

Copy to: Convention Focal Point for UN Framework Convention on Climate Change
UNDP Country Office for Cambodia

No 48 Sandan Preah Sihanouk, Tonle Bassac, Chamkarmon, Phnom Penh, CAMBODIA. Phone - Fax: 855 23 21 25 41

Phnom Penh, le January 23, 2009

Agence française de développement
AGENCE DE PHNOM PENH
5, RUE 96 Sangkat Wat Phnom
BP 1042 PHNOM PENH
CAMBODGE
FAX (855) 23 426 242
TEL (855) 23 426 260
23 362 490
e-mail : AFD@online.com.kh
www.afd.org

Mrs. Sophie BARANES
Deputy Country Director
UNDP Cambodia
#53, Pasteur Street

N° HC/kl – L 49/09

Subject: ***AFD parallel funding to the LDCF-funded Project on" Promoting Climate-Resilient Water Management and Agricultural Practice in Rural Cambodia"***

Dear Mrs. Sophie BARANES,

This letter is to confirm AFD's commitment to support the co-financing of UNDP GEF LDCF funded project "Promoting Climate- Resilient Water Resource Management and Agricultural Practices in Rural Cambodia."

There are three projects funded by AFD, which are best contribute and are relevant to the objectives and outcomes of the UNDP/GEF project. These include:

- The Northwest Irrigation Sector Project (Pursat, Siem Reap, Battambang and Batteay Meanchey) with a total funding of US$ 4,000,000.
- Project to Support Development of Agriculture in Cambodia (PADAC) with a total funding of EURO 2,500,000. This project is executed by DAALI, Ministry of Agriculture, Forestry and Fisheries (MAFF).
- Technical Service Center for Farmers Water User Community (TSFWUC). This project is executed by GRET/CEDAC and MOWRAM with a total funding of 350,000 EURO for a period of three years.

Through the above projects, AFD will contribute a total of US$ 1,350,000 as parallel financing to the LDCF-funded project. This co-financing is distributed as follows:

Projects	Amount (US$)	Activities
Northwest Irrigation Sector Project	200,000	Irrigation design related to climate change adaptation
Project to support Development of Agriculture in Cambodia	1,000,000	Agricultural methods and techniques in relation to drought tolerance
Technical Service Center for Farmer Water Community	100,000	Training manuals related to FWUCs and staffing
Total	1,300,000	

26 JAN 2009
Date: File: UNDP GEF project

	Action	Info
RR		Sample for Sophie
DRR		
PROG		Khun
OPER		
OTHER	Chea Vannara	

afd
AGENCE FRANÇAISE DE DÉVELOPPEMENT

5, RUE ROLAND BARTHES 75598 PARIS Cedex 12
TEL. 01 53 44 31 31 - FAX 01 44 87 99 39 - TELEX 261871 F
TEL. International + 33 1 53 44 31 31 - FAX international +33 1 44 87 99 39
Internet : http://www.afd.fr - Email : ria@afd.fr

ETABLISSEMENT PUBLIC - DOTATION 400 millions d'euros

United Nations Development Programme

Cambodia

4 February 2009

Dear Mr. Glemarec,

Subject: **UNDP Co-financing commitment to the LDCF-funded Project: "Promoting Climate-Resilient Water Management and Agriculture in Rural Cambodia"**

UNDP Cambodia would like to confirm its commitment to provide UNDP TRAC and parallel funding to the LDCF-funded project: "Promoting Climate-Resilient Water Management and Agriculture in Rural Cambodia"

The total co-financing of UNDP for the project is **US$ 760,350** for the project period of four years. UNDP will make a cash contribution to the project of US$ 660,350. Additional US$ 100,000 will be provided in parallel funding through a new preparatory assistant project aims at addressing climate change for poverty reduction and pro-poor growth.

The project will play a critical role in implementing priority actions identified in the Cambodia National Adaptation Programme of Action (NAPA) and increase Cambodia's adaptive capacity to climate change in the areas of water resource management and agricultural production. The above mentioned contributions will enhance project efficiency, effectiveness, sustainability and impacts of project outputs and outcomes.

We look forward to your continued cooperation.

Sincerely yours,

Sophie Baranes
Deputy Country Director (Programme)

Yannick Glemarec
UNDP/GEF Executive Coordinator

CC: **Gernot Laganda**
Regional Technical Advisor
Climate Change Adaptation UNDP Regional Centre in Bangkok

No. 53, Street 35, Boeung Keng Kang, Phnom Penh, Cambodia Tel: 023-216 167 Fax: 023 216 257 www.un.org.kh/undp

Country: CAMBODIA

UNDAF Outcome(s)/Indicator(s): Enhanced resilience to shocks/ enhanced capacity to manage risks and respond to natural and man-made shocks

Expected Outcome(s)/Indicator (s):
Improve the capacity of national and sectoral authorities to plan and implement integrated approaches to environmental management and energy development that respond to the needs of the poor.

Capacity development of national and sub-national government agencies, civil society and private sector to mitigate and adapt to climate change

Implementing partner: Royal Government of Cambodia, Ministry of Agriculture, Forestry and Fisheries (Designated institution/Executing agency)

Other Partners: Royal Government of Cambodia, Ministry of Water Resource and Meteorology
Royal Government of Cambodia, Ministry of Environment

Programme Period: 01 July 2009-30 June 2013
Programme Component:
Project Title: Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia
PIMS: 3867
Project ID: 00069653 (KHM10)
Award ID: 00056753 (KHM10)
Project Duration: 4years
Management Arrangement: National Execution

Total budget: $ 4,090,350.00

GEF (LDCF): $1.850.000

Co-Financing:
- Government (In-kind): $180.000
- UNDP (Trac II): $660.350
- UNDP (parallel): $100.000
- RGC/ADB/AFD (parallel): $1.300.000

Total co-financing: $2.240.350

Agreed by (Government): H.E. Keat Chhon, Deputy Prime Minister, Minister, First Vice Chairman of CDC Ministry of Economic and Finance

24 Aug. 2009

Agreed by (Implementing partner/Executing agency): H.E. Chan Sarun, Minister Ministry of Agriculture, Forestry and Fisheries

15 June 2009

Agreed by (UNDP): Mr. Jo Scheuer, Country Director

01 Sep. 2009

United Nations Development Programme

Cambodia

August 17, 2009

Ref: 00069653

Excellency,

Subject: Endorsement for UNDP/GEF/MAFF Project Document on Promoting Climate Change-Resilient Water Management and Agricultural Practices in Rural Cambodia

We are pleased to forward you the project document entitled **Promoting Climate Change-Resilient Water Management and Agricultural Practices in Rural Cambodia** for your review and signature. The project will be implemented over a period of 4 years (July 2009 to June 2013) and will be executed by the Ministry of Agriculture, Forestry and Fisheries.

The objective of the project is to reduce the vulnerability of Cambodia's agricultural sector to climate-induced changes in water resource availability.

The project document has been signed by the Ministry of Agriculture, Forestry and Fisheries. To enable project implementation to start, the project document requires the signatures of three relevant agencies. In this regard, we have enclosed three copies of the project cover page and project document for your signature and to be returned to UNDP Cambodia. We will send you a fully signed project document for your records when the copies of the project document have been countersigned by all signatories.

Please accept, Excellency, the assurances of our highest consideration.

Jo Scheuer
Country Director

H.E. Keat Chhon
Deputy Prime Minister
Minister of Economy and Finance
First Vice Chairman of Council for the Development of Cambodia

No. 53, Street 51, Boeung Keng Kang, Phnom Penh, Cambodia Tel: 023-216 167 Fax: 023 216 257 www.un.org.kh/undp