REQUEST FOR: CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND: LDCF

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PART I: PROJECT INFORMATION

Project Title: **Strengthening climate information and early warning systems in Cambodia to support climate resilient development and adaptation to climate change**			
Country(ies):	Cambodia	GEF Project ID:[1]	5318
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5235
Other Executing Partner(s):	MOWRAM	Submission Date: Re-submission date:	Aug. 19, 2014 Oct. 02, 2014
GEF Focal Area (s):	Climate Change	Project Duration(Months)	48
Name of Parent Program (if applicable): ➢ For SFM/REDD+ ☐ ➢ For SGP ☐	n/a	Agency Fee ($):	466,477

A. FOCAL AREA STRATEGY FRAMEWORK[2]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCA-1	Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas	Output 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks	LDCF	912,962	5,228,575
CCA-2	Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced threats at country level and in targeted vulnerable areas	Output 2.1.2: Systems in place to disseminate timely risk information	LDCF	779,000	7,026,760
CCA-3	Outcome 3.2: Enhanced enabling environment to support adaptation-related technology transfer	Output 3.2.1: Skills increased for relevant individuals in transfer of adaptation technology	LDCF	2,984,500	6,340,063
Project Management Costs			LDCF	233,823	3,289,142
		Total Project Costs		**4,910,285**	**21,884,540**

[1] Project ID number will be assigned by GEFSEC.
[2] Refer to the Focal Area/LDCF/SCCF Results Framework when completing Table A.

B. PROJECT FRAMEWORK

Project Objective: To strengthen climate observing infrastructure and increase capacity to utilize climate and environmental information for responding to climate hazards and planning adaptation to climate change

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount ($)	Confirmed Cofinancing ($)
1. Capacity to synthesize/model the climate and environmental data	TA	Outcome 1 Increased institutional capacity to assimilate and forecast weather, hydrological, climate and environmental information	Outputs 1.1 Training-of-trainers programmes for DOM and DHRW forecasters to combine regional/global information and data from monitoring stations in data quality control, archiving and modeling/forecasting climate, flood and water resource information (on daily to seasonal, as well as medium to long term timescales) 1.2 Customized weather and climate information for targeted stakeholders to meet the short-term and long-term planning needs 1.3 Training materials and courses available in local university for continued learning 1.4 Central repository for weather, climate and environmental data to enhance historical records of climate and weather trends and related impacts	LDCF	912,962	5,228,575
2. Information dissemination to different sectors of an economy and purposes (such as risk of flooding, harvesting and sowing, and seasonal forecasting of weather, climate,	TA	Outcome 2 Climate and weather information available and utilized for national, sectoral and sub-national planning as well as for transboundary communication in the region	Outputs 2.1 Standard Operating Procedures (SOP) for effective and timely EWS and climate information dissemination 2.2 Training programs for planning/line ministry staff at the national and sub-national levels to apply climate information to inform climate resilient planning 2.3 Regular exchange of climate and weather information	LDCF	779,000	7,026,760

drought etc. for national planning.)			with border countries on transboundary issues, as well as best practices and lessons learned related to building climate change resilience and adaptive capacity			
3. Transfer of technologies for climate and environmental monitoring infrastructure	INV	Outcome 3 Strengthened institutional capacity to operate and maintain EWS and climate information infrastructure, both software and hardware, in order to monitor weather and climate change	Outputs 3.1 Upgrade of up to 25 sites with automatic meteorological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies 3.2 Upgrade of 55 sites with automatic hydrological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies 3.3 Training-of-trainers programs for DOM and DHRW staff to build capacity in the selection (i.e. identifying cost effective technologies), installation, operations and maintenance of equipment to established standards and services 3.4 Sustainable financing plan for the long term O&M of the equipment, including private and public financing arrangements	LDCF	2,984,500	6,340,063
			Subtotal		4,676,462	18,595,398
			Project management Cost (PMC)[3]	LDCF	233,823	3,289,142
			Total project costs		**4,910,285**	**21,884,540**

C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Please include letters confirming cofinancing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount ($)
National Government	Ministry of Water Resources & Meteorology (MOWRAM)	Cash	5,927,450

[3] PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

National Government	MOWRAM	In-kind	600,000
National Government	Ministry of Environment (MOE)	Cash	9,785,090
National Government	National Committee for Disaster Management (NCDM)	Cash	4,500,000
Other Multilateral Agency	Mekong River Commission (MRC)	Cash	390,000
Bilateral Aid Agency	Japanese International Cooperation Agency (JICA)	Cash	682,000
Total Co-financing			**21,884,540**

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant Amount (a)	Agency Fee (b)[2]	Total c=a+b
UNDP	LDCF	Climate Change	Cambodia	4,910,285	466,477	5,376,762
Total Grant Resources				**4,910,285**	**466,477**	**5,376,762**

[1] In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.
[2] Indicate fees related to this project.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Cofinancing ($)	Project Total ($)
International Consultants	398,000	2,105,890	2,503,890
National/Local Consultants	398,007	786,500	1,184,507

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF[4]

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.

Critical documents were approved during the PPG stage of the LDCF project, which informed project design.

[4] For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question

Approved at the 3rd National Forum on Climate Change in November 2013, the **Cambodia Climate Change Strategic Plan (CCCSP) 2014-2023**[5] was a guiding document in the design of the project. The CCCSP seeks to achieve its vision to "develop towards a greener, low-carbon, climate-resilient, equitable, sustainable and knowledge-based society" by way of the following strategic objectives:

- Promote climate resilience through improving food, water and energy security
- Reduce sectoral, regional, gender vulnerability and health risks to climate change impacts
- Ensure climate resilience of critical ecosystems (Tonle Sap, Mekong River, coastal ecosystems, highlands, etc.), biodiversity, protected areas and cultural heritage sites
- Promote low-carbon planning and technologies to support sustainable development
- Improve capacities, knowledge and awareness for climate change response
- Promote adaptive social protection and participatory approaches in reducing loss and damage
- Strengthen institutions and coordination frameworks for national climate change responses
- Strengthen collaboration and active participation in regional and global climate change processes

The **Climate Change Strategic Plan (CCSP) for Water Resources and Meteorology 2013-2017**[6] was finalized in 2013 and states as its vision, the sustainable use of water resources in adapting climate change, as well as timely, trusted weather and climatic information. It further emphasizes the need to improve the national weather monitoring and forecasting systems and to develop partnerships for creating downscaled models of future climate. Adaptive strategies include strengthening and extending the hydrological and meteorological systems, including data dissemination, and providing short-, medium- and long-term forecasts and warnings for droughts, floods and storms to the public and related institutions.

The **National Policy and Strategic Development Plan on Green Development 2013-2030**, coordinated by the Ministry of Environment (MOE), aims to find a balance between economic development and environment, society, culture and sustainable consumption of natural resources in order to enhance people's well-being and living conditions[7]. The related Cambodia National Green Growth Roadmap lists 7 key priorities: access to water resources management and sanitation, access to food security (agriculture) and non-chemical products, access to sustainable land-use, access to renewable energy and energy efficiency, access to information and knowledge, access to means for better mobility and access to finance and investments[8].

Following the Rectangular Strategy, Phase III and the launch of the National Policy and Strategic Development Plan on Green Development 2013-2030, ministries have to been asked to (1) identify climate change risks surrounding their sectoral activities, (2) develop measures to address climate change impacts and (3) capitalize on the emerging opportunities in their respective sectors. The **National Strategic Development Plan (NSDP) 2014-2018,** which is currently being finalized, will integrate these efforts into a cohesive national plan. Led by the Ministry of Planning (MOP), the NSDP's guiding principles include, pulling the country out of its LDC status, ASEAN economic integration, achieving and surpassing the country's MDGs, and putting the country on a path to attain sustainable and inclusive development. The project is fully aligned with these principles and will further support

[5] Cambodia Climate Change Strategic Plan (CCCSP) 2014-2023 available at http://camclimate.org.kh/index.php/com-phocagallery/documents-and-media/library/category/12-national-policies.html?download=474:cambodia-climate-change-strategic-plan-2014-2023-en-final (accessed in April 2014)
[6] Sectoral CCSP Ministry of Water Resources and Meteorology. Eng
[7] http://news.xinhuanet.com/english/world/2013-03/01/c_132201617.htm
[8] http://www.slideshare.net/greeninclusivegrowth/green-growth-national-strategy-plan-ngo-forum-conference

climate resilient planning through the provision of climate information and related training, particularly in the agriculture sector.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities.

Reflecting priorities highlighted by the Royal Government of Cambodia (RGC), the focal areas targeted by the LDCF are as follows:

- CCA-1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level
  Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas
- CCA-2: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level
  Outcome 2.2 - Strengthened adaptive capacity to reduce risks to climate-induced economic losses
- CCA-3: Promote transfer and adoption of adaptation technology
  Outcome 3.2 - Enhanced enabling environment to support adaptation-related technology transfer

A.3 The GEF Agency's comparative advantage:

Since the PIF approval, two strategic plans were approved which reinforce UNDP's commitment and comparative advantage in the areas building resilience to climate change and reducing the impacts of climate-induced weather events and natural hazards.

The UNDP Strategic Plan 2014-2017 was approved by the Executive Board in September 2013. Given the project's focus on climate resilient planning, the project falls under Outcome 1:

> Outcome 1: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded
>
> - *Output 1.4. Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented*

The project is part of UNDP's well-established programme of work on strengthening climate information and early warning systems for climate resilient development, through projects funded by LDCF, SCCF, the Adaptation Fund as well as bilateral donors. It will therefore benefit from UNDP's extensive experience, as well as the best practices and lessons learned from similar efforts in other countries, especially LDCs.

The Regional Programme Document for Asia and the Pacific 2014-2017 was approved by the Executive Board in January 2014. The LDCF project falls under Outcome 3:

> - Countries are able to reduce the likelihood of conflict, and lower the risks of natural disasters, including from climate change.

UNDP's regional policy focuses on disaster preparedness within the broader disaster risk management framework, which is central to building greater resilience to climate change and natural hazards. The following are key areas for intervention: effective early warning systems utilizing climate risk information to reduce disaster risks; established capacities in systematic, credible recording of disaster loss and damages that support evidence-based disaster risk reduction planning; and increased participation of women in climate change adaptation and disaster risk reduction plans. UNDP also facilitates

development of appropriate methods to transfer knowledge and skills to countries using a practitioners and South-South cooperation approach.

Technical backstopping is provided to the LDCF project by the Regional Technical Adviser at the UNDP Asia-Pacific Regional Centre (APRC) in Bangkok and UNDP's network of global Senior and Principal Technical Advisors as necessary.

A.4. The baseline project and the problem that it seeks to address:

The assessments, reviews of national documents and stakeholder consultations conducted as PPG activities further defined the baseline scenario. The final project document better addresses the several causes which underpin Cambodia's difficulties in applying climate and weather information for useful and timely early warnings: (1) capacity to analyze and tailor climate and weather data, (2) availability of climate and weather data due to insufficient number and low reliability of current meteorological and hydrological monitoring stations, (3) capacity to effectively communicate climate information and early warning messages and (4) adaptive capacity to apply climate information in planning and responding to early warning messages.

Capacity to Analyze Climate and Weather Data

Through its departments, MOWRAM has the important role of analyzing and tailoring climate and weather data for use by various sectors and target groups. The Department of Meteorology (DOM) and the Department of Hydrology and River Works (DHRW) however have an insufficient number of trained personnel and limited capacity to analyze climate and weather data, especially given the increasing demand for such information.

There is a need to increase the number of staff with skills in producing quality analyses, such as forecasts and models. A challenge for MOWRAM in building and maintaining the necessary capacity has been high staff turnover. With relatively low government salaries and limited incentives, it is difficult for MOWRAM to retain trained staff[9]. Often, staff acquire skills, become more marketable, and leave for higher-paying opportunities outside the Ministry or abroad. Training efforts thus far have been either short term in nature or have not adequately considered the issue of high staff turnover.

Availability of Climate and Weather Data

Available regional forecasts can provide reliable information, however it is important to integrate local conditions to the analyses for greater accuracy and applicability. Currently, local data is not being adequately collected and archived.

Cambodia has 24 meteorological stations and 114[10] hydrological stations. An assessment of existing stations was undertaken in October 2013, as part of the project preparation activities (refer to ProDoc, Annex C). The results indicate that none of the meteorological stations and only 12 of the hydrological stations were fully operational or considered to be in good working condition. The condition of the remaining stations ranged from 'partially operational' to 'abandoned'. These assessment results, unfortunately, are not uncommon for LDCs, which face the common challenges of limited capacity and financing to sustain the network of observational equipment.

[9] Climate Change Strategic Plan for Water Resources and Meteorology, 2013-2017 (MOWRAM, 2012)
[10] Based on number of stations visited during working condition assessment in October 2013 (PPG activity)

The poor condition of the stations is due in large part to a lack of trained technicians, especially at the provincial level, to maintain the equipment and the insufficient resources allocated for operations and maintenance (O&M). MOWRAM is responsible, through its departments, for the collection of data as well as the O&M of the stations. The annual budget allocation from MOWRAM is estimated $25,000 for O&M of the country's meteorological stations and $12,500 for the hydrological stations. A more appropriate level would be approximately $2,500/per station/per year or $60,000 for meteorological stations and $282,000 for hydrological stations. While MOWRAM acknowledges that the current budget is insufficient, it has faced difficulty in securing the necessary budgetary approvals for the required amount.

Previous efforts have been made by development partners to support the hydro-meteorological data collection needs of Cambodia, but a project-based approach has resulted in (a) a lack of equipment standardization, (b) difficulties related to operations and maintenance of different equipment at different sites, and (c) burdens in centrally synchronizing and analyzing data from different observational platforms. All of which overly complicate the process of climate and weather data collection, and challenge limited capacity and resources.

These challenges, along with the lack of necessary risk mapping and vulnerability assessments, and the related capacity to integrate this information into forecasts and models, further prevent the generation of early warning messages tailored to meet urgent or specific needs.

Information sharing with neighboring countries also needs to be enhanced and systematized. The transboundary nature of climate and weather requires close collaboration with the National Hydrological and Meteorological Services (NHMS) in the region, especially with those countries sharing watersheds and with border areas at higher altitudes with potential risk for flash floods. This refers not only to the regular collection of climate and weather data for analysis purposes, but also emergency information related to natural hazards and extreme weather events, which would allow valuable time for preparation and response in border areas.

Capacity to Effectively Communicate Climate Information and Early Warning Messages

MOWRAM is responsible for providing climate and weather information to planning and line ministries to inform climate resilient planning and disaster risk reduction. However, the information is often not presented in a manner that can be easily understood or applied and SOPs defining roles, responsibilities, and accountability are lacking.

Similarly, SOPs are lacking for the communication of advisories related to potential natural hazards and extreme weather events. NCDM is responsible for disaster risk management and communicating related information. NCDM was established by a sub-decree in 1995, for the purpose of leading the management of disasters in Cambodia and developing disaster management capacity at all levels. It is also the responsibility of NCDM to communicate early warning messages to the Provincial Committees for Disaster Management (PCDMs), the District Committees for Disaster Management (DCDMs), the Community Committees for Disaster Management (CCDMs), and the Village Teams for Disaster Management (VTDMs), as appropriate for action and response.

While NCDM has a clear mandate, the exact legal authority of NCDM to exercise its mandate and responsibilities has yet to be clarified, due in part to its status as a committee. This has resulted in its mandated activities being at times undertaken by member ministries, sub-national disaster management committees and non-governmental organizations (NGOs) — blurring the lines of accountability and weakening NCDM's leadership role.

An institutional review and capacity assessment of NCDM was conducted in 2013, with support from the Asian Development Bank (ADB). Concerns and needs expressed during the related stakeholder consultations best illustrate this lack of clarity and responsibility related to disaster management in Cambodia and the role of NCDM[11]:

- No clarity on NCDM's role and legal authority to implement disaster risk reduction and management activities and its accountability at the provincial and district levels
- No clear definition of the roles and responsibilities of sub-national disaster management committees
- No clear and specific definition for emergencies and disasters, including different types of disasters and specific measures for each
- No defined conditions or criteria for a 'state of emergency' or calamity and who is authorized to make the declaration, at both national and sub-national levels
- No defined rules and guidelines governing the roles of international organizations in Disaster Management including the entry of humanitarian relief and supplies (e.g. customs clearance, taxation, shipping, and other related logistical concerns) and entry and exit of international humanitarian aid workers
- No description of the rights and entitlements of disaster victims and survivors particularly in cases of evacuations and dislocation of people
- Disaster risk reduction strategies are not mainstreamed into national and sectoral plans and programmes
- No policies and guidelines on the involvement of local civil society and the private sector in disaster management
- No system in place to expedite delegation of authority during disasters and to approve contingency funding for provinces to support disaster response

The absence of legal authority for NCDM has also affected its ability to access a regular budget, limiting its ability to perform its functions, and to build or maintain its capacity.

Adaptive Capacity to Apply Climate Information in Planning and Responding to Early Warning Messages

Adaptive capacity is perhaps the biggest challenge facing Cambodia. Adaptive capacity plays an important role in changing the spatial pattern of vulnerability. Low adaptive capacity has made Cambodia among the most vulnerable areas of Southeast Asia despite its relatively low exposure to climate hazards[12]. Those most affected by climate change are often those with the fewest options, and thus the least capacity to adapt or respond to climate information and early warning messages. Poverty levels and literacy rates are both important factors when considering adaptive capacity, and both are development challenges in Cambodia.

Cambodia is ranked 138 on the UNDP Human Development Index (HDI). Of the overall Cambodian population of approximately 14 million, the total number of people below the food poverty line[13] is 2.6 million and the number below the (total) poverty line[14] is 4.7 million[15]. Of those categorized as poor,

[11] Institutional Review and Capacity Assessment of the National Committee for Disaster Management (ADB, 2013)

[12] Climate Change Vulnerability Mapping for Southeast Asia, Economy and Environment Program for Southeast Asia (EEPSEA) 2009

[13] The food poverty line is defined as the cost of a food basket just sufficient to meet a minimum food requirement of 2,100 calories/person/day. In the case of Cambodia, this was set at 1,684KHR/person/day or US$0.42/person/day.

[14] The poverty line refers to the food poverty line of 1,684KHR/person/day, plus non-food related items, or 440KHR/person/day, for a total of 2,124KHR/person/day or $0.531/person/day.

51% are engaged in agriculture sector, and 91% live in rural areas in general[16]. The poor have very limited flexibility in decision-making and thus weak adaptive capacity to respond to climate change. These difficulties are compounded by the lack of credit systems and insurance[17], which would allow for more effective planning and could serve as reliable coping mechanisms.

Poverty rates are particularly high among those with little or no education[18], and literacy rates among women are generally lower than men in Cambodia. Less than half of female household heads in the agriculture sector are able to read or write a simple message compared to 80% for male household heads[19]. Lower literacy puts those already vulnerable at greater risk, by excluded them from valuable information which would inform preparedness and climate resilient planning. Climate information is needed, which is packaged in a manner that can be understood and applied considering the varying levels of literacy, as well as limited related knowledge about climate change and climate change adaptation options. Women, therefore, have especially weak adaptive capacity, given challenges in understanding and responding to early warning messages, and in applying climate information to better inform their agricultural planning.

Women are significant, and particularly vulnerable, contributors to the agriculture sector in Cambodia. Women make up the majority of the active agriculture population with 53%, compared to men with 47%. 20% of agriculture households are headed by women, and nine out of 10 female agriculture household heads are "de facto" or actual household heads in the permanent absence of their spouses/husbands or adult male members. The remaining 11% are the "de jure" household heads who have assumed the responsibilities in the temporary absence of their spouses, who either are working in other areas of the country or abroad. The proportion of male members contributing to the agricultural labor force in female headed agriculture households is less than that of female members by 59 percentage points[20]. When one considers the role of women as caregivers as well, and the fewer number of men to support in the agriculture work, one can see how adaptive capacity in female headed households is especially limited.

Effective efforts to improve early warning systems in Cambodia must address all of the above barriers, while taking in account the adaptive capacity of the country's most vulnerable.

The alignment of project design with the original PIF: Overview of Changes from PIF to ProDoc

Outcomes and Outputs		Rationale for Changes from PIF Outcomes and Outputs in the ProDoc
GEF-Approved PIF	**Project Document**	
Project Duration: 3 years	**Project Duration: 4 years**	The need for a more sustained approach towards training was highlighted during stakeholder consultations. In the project document, this is reflected through various training events, and a training-of-trainers approach to knowledge transfer. To allow the necessary time for the multiple events, an additional year was added to the project duration. A critical risk for the project is O&M of observation

[15] In April 2013, the poverty line in Cambodia was redefined, increasing the caloric requirement to 2,200 (per person, per day), making further distinctions between urban and rural consumption, and including the cost of clean water. The results are higher per person per day monetary requirements for sustenance. Analysis of newly collected data, disaggregated by gender and applying the redefined rates, is not yet available.

[16] A Poverty Profile of Cambodia (RGC, MOP, 2006)

[17] Microinsurance Study: The Understanding and Needs of Low-Income Population regarding Microinsurance (UNDP, 2013)

[18] A Poverty Profile of Cambodia (RGC, MOP, 2006)

[19] National Gender Profile of Agriculture Households (FAO, National Institute of Statistics, MOP, 2010)

[20] National Gender Profile of Agriculture Households (FAO, National Institute of Statistics, MOP, 2010)

Outcomes and Outputs		Rationale for Changes from PIF Outcomes and Outputs in the ProDoc
GEF-Approved PIF	Project Document	
		infrastructure. To mitigate this risk, the project uses a phased approach toward installation, ensuring that the necessary support is in place first, particularly at the provincial level, so that national capacity is not overwhelmed by too large a number of stations in too short a time. Again, to allow the necessary time, an additional year has been added to the project duration.
Component 1: Capacity to synthesize/model the climate and environmental data[21]		
Outcome 2.1: Increased national capacity to assimilate and forecast climate and environmental information **Original budget: $420,350**	Outcome 1: Increased institutional capacity to assimilate and forecast weather, hydrological, climate and environmental information **Revised budget: $912,692**	The order of the components and outcomes were revised to emphasize the project focus and government priority on institutional strengthening. The wording of Outcome 1 was also changed to reflect this. The original budget was considered too low by stakeholders for effective capacity strengthening, given training needs in the area of forecasting weather, hydrological, climate and environmental information. As the outputs and related activities became more defined, the overall budget was reallocated to give greater support to the capacity building efforts of the project and employ sustainability measures.
Outputs 2.1.1. Develop climate/weather forecast products utilizing monitored data 2.1.2. Train 6 forecasters, 3 each from DOM and DHRW and use information from monitoring stations in modelling, data quality control and forecasting climate information (on daily to seasonal, as well as medium- to long-term timescales)	Outputs 1.1. Training-of-trainers programmes for DOM and DHRW forecasters to combine regional/global information and data from monitoring stations in data quality control, archiving and modeling/forecasting climate, flood and water resource information (on daily to seasonal, as well as medium to long term timescales) 1.2. Customized weather and climate information for targeted stakeholders to meet the short-term and long-term planning needs 1.3. Training materials and courses available in local university for continued learning 1.4. Central repository for weather, climate and environmental data to enhance historical records of climate and weather trends and related impacts	An assessment, conducted under the ADB's Supporting Policy and Institutional Reforms and Capacity Development in the Water Sector project, recommended that DHRW and DOM to be restructured in a way that they gradually become the National Hydrological and Meteorological Services (NHMS). In support of this recommendation, and anticipating MOWRAM restructuring efforts, Outcome 1 looks collectively at the needs of DOM and DHRW. As the customized climate and weather products will be generated by DOM and DHRW, related training and support is now captured under this Outcome (from Outcome 3 in the PIF). Outputs under Outcome 1 are focused on strengthening capacity of MOWRAM, with particular consideration to the limited human resources and high staff turnover which have made it difficult for the institution to develop capacity and maintain qualified forecasters and modelers. Training will be provided employing a training-of-trainers approach, and the training materials will be

[21] for forecasting (3-24 hours for risk of flooding, short-term of 5 days for harvesting and sowing, and seasonal forecasting of weather, climate, drought etc. for national planning purposes) and issuance of early warning

Outcomes and Outputs		Rationale for Changes from PIF Outcomes and Outputs in the ProDoc
GEF-Approved PIF	Project Document	
		made available through local universities or institutions, making learning available and more accessible.
Component 2: Information dissemination to different sectors of an economy and purposes (such as risk of flooding, harvesting and sowing, and seasonal forecasting of weather, climate, drought etc. for national planning.)		
Outcome 3.1: Customized climate and weather information available for national planning and other purposes Outcome 3.2: Increased communication between countries in the context of trans- boundary issues **Original budget: $410,770**	Outcome 2: Climate and weather information available and utilized for national, sectoral and sub-national planning as well as for transboundary communication in the region **Revised budget: $779,000**	Outcomes 3.1 and 3.2 from the original PIF were merged for simplification purposes. Outcome 2 is focused on dissemination and application of climate and weather information, including transboundary. This increase in budget is mainly due to the needed activities, especially training staff to apply the early warning information in national, sectoral and sub-national plans as well as for transboundary communication purposes.
Outputs 3.1.1. Generate tailored climate and weather information (for different sectors of an economy and purposes such as risk of flooding, harvesting and sowing, and seasonal forecasting of weather, climate, drought etc. for national planning), technically robust and tailored warning messages to meet the short-term and long-term needs of key stakeholders 3.1.2. Establish Standard Operating Procedures (SOP) for issuing and disseminating warnings through communication channels 3.2.1. Conduct knowledge (lessons, and best practices) sharing workshop through regional institutions involving other countries	Outputs 2.1. Standard Operating Procedures (SOP) for effective and timely EWS and climate information dissemination 2.2. Training programmes for planning/line ministry staff at the national and sub-national levels to apply climate information to inform climate resilient planning 2.3. Regular exchange of climate and weather information with border countries on transboundary issues, as well as best practices and lessons learned related to building climate change resilience and adaptive capacity	As the tailored climate and weather products will be generated by DOM and DHRW, related training and support is now captured under Outcome 1. An SOP for the dissemination of early warning messages remains a key output of the project. This includes the timely dissemination of early warning messages to enable response to extreme events, but also forecasts and models related to climate trends which could inform climate resilient planning. Critical therefore is also training for planning ministries (i.e. MAFF) to apply the information provided by MOWRAM. The SOP will also define the exchange of climate and weather information with border countries. Workshops are captured as activities under the outputs, as a means of sharing best practices and lessons learned.
Component 3: Transfer of technologies for climate and environmental monitoring infrastructure		
Outcome 1.1. Improved hardware and software capacity to monitor extreme weather, climate change and forecast capacity Outcome 1.2. Increased	Outcome 3: Strengthened institutional capacity to operate and maintain EWS and climate information infrastructure, both software and hardware, in order to monitor weather and climate change	Outcomes 1.1 and 1.2 from the original PIF were merged for simplification purposes. The budget for this outcome has been reduced significantly from the PIF. Investment in the national observation network is important as a means of strengthening institutional capacity and

Outcomes and Outputs		Rationale for Changes from PIF Outcomes and Outputs in the ProDoc
GEF-Approved PIF	**Project Document**	
institutional capacity to maintain EWS related infrastructure **Original budget: $3,863,342**	**Revised budget: $2,984,500**	enhancing national data sources to ultimately improve the accuracy of climate and weather forecasts, models and tailored products. To meet the RGC's goal of an effective EWS, investment in infrastructure must be complemented by support on analysing the data and disseminating it in manner that can be applied.
Outputs 1.1.1. Procurement and installation of 24 meteorological stations across the country 1.1.2. Procurement and installation of 2 upper air monitoring stations 1.1.3. Rehabilitate 37 hydrological monitoring stations installed across the country including Mekong river tributaries 1.1.4. Establish the required hardware and software tools in Cambodia for risk mapping and forecasting (3-24 hours for risk of flooding, short-term of 5 days for harvesting and sowing, and seasonal forecasting of weather, climate, drought etc. for national planning purposes) using climate models and information received from monitoring stations 1.1.5. Enhanced capacity of relevant existing institutions to calibrate sensors and measurement equipment 1.2.1. Train 5 key staff each from DOM and DHRW in the selection (identify cost effective technologies), installation and maintenance of equipment to established standards and services 1.2.2. Develop and implement plan for the operation and maintenance of the installed EWS with matching skills and institutional capacities	Outputs 3.1. Upgrade of up to 25 sites with automatic meteorological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies 3.2. Upgrade of 55 sites with automatic hydrological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies 3.3. Training-of-trainers programmes for DOM and DHRW staff to build capacity in the selection (i.e. identifying cost effective technologies), installation, operations and maintenance of equipment to established standards and services 3.4. Sustainable financing plan for the long term O&M of the equipment, including private and public financing arrangements	As of 31 December 2013, the official number of provinces in Cambodia changed from 24 to 25. As the scope of the project for the collection of meteorological data is national, the total number of meteorological stations increased to match the total number of provinces. An assessment of the working condition of the monitoring stations was conducted as a PPG activity. The assessment identified 55 priority hydrological stations that needed upgrading or replacement. The change in of number of hydrological stations from 67 to 55 reflects this recommendation. The procurement of calibration equipment and related training are captured as activities under output 3.3. The PIF included an output for the procurement of (2) upper air monitoring equipment. The related cost of procurement and regular operations however is quite high (estimated at $400,000) and not a cost-efficient option to gather this information. Data collected by upper air monitoring stations, such as air temperature, wind speed and wind direction at higher altitudes, is available from commercial flights at ascending, descending and cruising altitudes via the Aircraft Meteorological Data Relay (AMDAR), a World Meteorological Organization (WMO) initiative. DOM already receives upper air data through AMDAR as well as from neighboring Viet Nam on a daily basis, therefore further investment in the collection of upper air data was not pursued as part of this project. This considerable savings enabled the reallocation of funds to Outcomes 1 and 2. The plan for the operation and maintenance of the installed EWS detailed in the PIF, has also been refined. The sustainable financing plan of the full sized project will seek engagement with the private sector and explore innovative approaches towards the long term functionality of the stations.

Outcomes and Outputs		Rationale for Changes from PIF Outcomes and Outputs in the ProDoc
GEF-Approved PIF	Project Document	
Project Management Cost **Original budget: $233,823**	Project Management Cost **Revised budget $233,823**	Unchanged

A.5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The Royal Government of Cambodia's (RGC) preferred situation is to implement an effective early warning system (EWS). The purpose of an EWS is to monitor climate and environmental data on a real-time basis, detect adverse trends and make reliable predictions of possible impacts in the form of early warning information. An early warning therefore refers not only to advisories in emergency situations, but also to information related to the changing climatic trends revealed after tracking and analyzing climate and weather data over time. An effective EWS would thus enable timely response to natural hazards and extreme weather events, as well as informed planning in light of changing climate trends.

Ultimately, the project will contribute to building Cambodia's resilience to climate change by strengthening institutions and coordination frameworks for an effective EWS. This includes increasing institutional capacity to monitor, analyze, disseminate, and apply climate and weather climate information and early warnings, into development planning and disaster preparedness and at the national and sub-national levels.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

Risks and recommended countermeasures were further discussed at the inception workshop as well as bilateral consultations during the project development phase. Key risks and planned mitigation measures have been elaborated:

Key Risks	Level	Risk Mitigation Measures
Failure of forecasting/modeling training programmes to build institutional knowledge or adequately take into account high staff turnover	M	While staff turnover cannot be addressed as part of this project, the training programmes will be designed in a way that ensures sustainability by: • designing a curriculum which can be housed in a local university or other institution for future learning • developing a train-the-trainers programme that will enable DOM and DHRW to maintain a pool of master trainers as part of their regular learning programmes
Climate products generated/distributed by MOWRAM do not meet the needs of stakeholders	L	Stakeholders are engaged throughout the design and implementation phases of the project, informing the design of the climate products to best suit their needs. Additional training of stakeholders on interpreting these products for planning purposes will also ensure their usefulness. The product design can be revisited as needed to ensure that the relevant data is communicated in a way that can be understood and applied.

Key Risks	Level	Risk Mitigation Measures
Poor coordination between implementing and executing agencies, as well as development partners	M	Consultations were conducted with stakeholders and development partners during the PPG stage of the project, with project management arrangements discussed and agreed which facilitate coordination (detailed in ProDoc, Section 4). Effectiveness of the management arrangements will be verified through the regular project implementation reviews and M&E undertaken following UNDP rules and principles. Adjustments may be made to the management arrangements as/if necessary with the approval of the Project Board.
Lack of effective early warning communication at the commune and village levels	H	NCDM is responsible for disaster preparedness and response interventions in Cambodia. NCDM, however, has limited capacity especially at the commune and village levels to effectively fulfil its mandate. There are ongoing co-financing initiatives which seek to address this. Further, SOPs will be put in place for more effective coordination across various governmental levels and timely distribution of information.
Inadequate maintenance of meteorology, hydrology and hydro-met stations, resulting in hardware falling into disrepair	M	Cost of O&M for the duration of the project have been captured in the project budget. However, ownership of, and therefore accountability for, the stations is with Cambodian government. Reflecting this responsibility, MOWRAM has committed $150,000/year for ongoing O&M of the observation network. This project will further support longer term O&M of the stations by designing a financing plan, which includes strategies for engagement of the private sector. Training programmes for O&M of the equipment will be designed to be periodic, therefore not only at time of installation. In that way, the training programme will also look towards the longer term, by building the skills and confidence of individuals to identify and immediately fix/report any problem at the stations. A train the trainer approach will ensure benefits to a wider set of personnel and ensure that skills are retained within the institution.
New equipment is not compatible or consistent with existing systems, making synthesis and analysis of information/data difficult	L	Standardization has been challenge. The project will therefore prioritize the need for standardization in the purchase of new equipment. One of the initial activities of the project is to review lessons learned and define national criteria for the procurement of observation equipment. As part of the prototype approach, quality of O&M of new equipment will be verified to ensure that data transmission requirements are met and staff are able to maintain stations, before additional stations are procured.

Note: L - Low, M - Medium, H - High

A.7. Coordination with other relevant GEF financed initiatives

Project implementation will be closely coordinated with the "Strengthening the resilience of Cambodian rural livelihoods and sub-national government system to climate risks and variability" project. The project, with an indicative budget of $4.6million, is currently in the design phase. The objective, as detailed in the LDCF PIF, is to improve sub-national administration systems affecting investments in rural livelihoods through climate sensitive planning, budgeting and execution. The climate information generated through this EWS LDCF can inform the sub-national planning supported in the above-named project.

The Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia project ($2,404,942) funded by the Canadian International Development Agency (CIDA), seeks to strengthen community-based climate information systems to facilitate resilient agriculture choices and practices informed by climate information. The goal of IFAD's $52million Agriculture Services Programme for Innovation, Resilience and Extension (ASPIRE), is to reduce poverty and increase resilience of poor and vulnerable smallholder farmers in Cambodia. Together these two projects provide the necessary capacity support to communities, which can ultimately help them to apply the tailored climate information generated by the LDCF project to their agriculture planning.

UNDP's Strengthening Early Warning Systems for Extreme Weather Events to Advance Climate Risk Management in the South East Asian Region project ($426,066) has compiled damage and loss related data, and created a centralized disaster management information system i.e. the Cambodia Disaster Loss Database (CamDi). CamDi is designed to be a long-term strategic planning tool. In it, data on various disaster events is stored and analyzed to assist in recovery and reconstruction efforts after natural hazards or extreme weather events. This information is incredibly valuable while conducting risk mapping and vulnerability assessments under this project.

MOE and MAFF are receiving training on economic analysis under the UNDP/USAID-ADAPT Capacity Building Programme on the Economics of Climate Change Adaptation (ECCA). ECCA seeks to strengthen institutional capacity to apply economic principles and techniques to inform cost-efficient and sustainable adaptation planning. As part of the programme, a survey was conducted of 300 households to gauge the impact of climate change on economic activity.

Funding has been provided by UNDP to combine these efforts of these two programmes - integrating the data/results generated from CamDi and the ECCA programme into evidence-based loss and damage estimates and climate risk assessments. The climate and weather data generated through the LDCF project could further inform this work and be used to inform climate resilient planning.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

Stakeholders' consultations throughout implementation will be important to ensure that best practices and lessons learned are captured in decision-making, and to ensure synergies of similar efforts. A list of key stakeholders consulted during the project design phase is included in the Stakeholder Baseline Analysis section. The list of stakeholders consulted during implementation will be similar, with particular focus on areas of mutual interest in the project.

Given the focus of prior and planned efforts on EWS hardware and software, consultations related to Outcome 3 will include, but not be limited to ADB, DCA/CCA, JICA and MRC. Consultations related to the training activities of Outcome 1 will include RIMES, TSC and ITC as well as other learning

institutions as appropriate, both national and regional/global, which could provide on-line support to continued learning efforts. The development of tailored products will require extensive consultation across various ministries, including MOE, MOP, MAFF and MOWA. Consultations related to activities of Outcome 2 will include MOI, NCDM, MOPTC, ADB and MRC, as well as Caritas, CRC, and FRC as appropriate. UNEP and FAO will also be consulted given related ongoing efforts.

As the project ultimately seeks to build the resilience of the agriculture sector to climate change, MAFF is will be consulted on Outcomes 1 and 2, but also on overall project direction. Given the particular vulnerability of women in agriculture, this will also apply to MOWA. The importance of MAFF and MOWA in providing guidance to the project is further reflected in their roles of Senior Beneficiary on the Project Board.

It is of critical importance to receive inputs and feedback from communities. As part of the ECCA programme and the CIDA-funded Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia project, an agriculture/water use survey was conducted of 300 households. This survey will provide baseline information for this project on the perceived changes in climate and current agricultural practices. While this is largely a monitoring tool, the subsequent surveys to be conducted under this LDCF project as part of a randomized control approach (refer to ProDoc, Annex F), should be seen as also a means of gathering stakeholder feedback from a large number of farmer households.

The following table provides an indicative plan for stakeholder involvement by output. This plan will evolve throughout the project implementation to include additional stakeholders relevant to developments in national policies and plans, project board decisions, and new interventions and investments supporting climate change resilience in Cambodia.

Project Outcomes and Outputs	Potential Stakeholder Involvement			
	Year 1	**Year 2**	**Year 3**	**Year 4**
Outcome 1: Increased institutional capacity to assimilate and forecast weather, hydrological, climate and environmental information				
Outputs *1.1 Training-of-trainers programmes for DOM and DHRW forecasters to combine regional/global information and data from monitoring stations in data quality control, archiving and modeling/forecasting climate, flood and water resource information (on daily to seasonal, as well as medium to long term timescales)*	DOM, DHRW, MRC, RIMES, ADB	DOM, DHRW, MRC, RIMES, ADB	DOM, DHRW, MRC, RIMES, ADB	DOM, DHRW, MRC, RIMES, ADB
1.2 Customized weather and climate information for targeted stakeholders to meet the short-term and long-term planning needs	DOM, DHRW, MOE, MOP, MAFF, MOWA, NCDM, CRC, FRC, IFRC, Caritas	DOM, DHRW, MOE, MOP, MAFF, MOWA, NCDM, CRC, FRC, IFRC, Caritas	DOM, DHRW, MOE, MOP, MAFF, MOWA, NCDM, CRC, FRC, IFRC, Caritas	DOM, DHRW, MOE, MOP, MAFF, MOWA, NCDM, CRC, FRC, IFRC, Caritas
1.3 Training materials and courses available in local university or institution for continued learning		RIMES, ITC, TSC, JICA, MRC, ADB, Academia	RIMES, ITC, TSC, JICA, MRC, ADB, Academia	RIMES, ITC, TSC, JICA, MRC, ADB, Academia
1.4 Central repository for weather, climate and environmental data to enhance historical records of climate and weather trends and related impacts	MOWRAM, DOM, DHRW, MOE, MOP, MRC, NCDM, RIMES, ADB	MOWRAM, DOM, DHRW, MOE, MOP, MRC, NCDM, RIMES, ADB	MOWRAM, DOM, DHRW, MOE, MOP, MRC, NCDM, RIMES, ADB	MOWRAM, DOM, DHRW, MOE, MOP, MRC, NCDM, RIMES, ADB
Outcome 2: Climate and weather information available and utilized for national, sectoral and sub-national planning as well as for transboundary communication in the region				
Outputs *2.1 Standard Operating Procedures (SOP) for effective and timely EWS and climate information dissemination*	MOWRAM, MAFF, MOE, MOI/NCDD, MOP, NCDM, PCDM, DCDM, CCDM, VTDM, MOPTC, ADB, MRC, CRC, FRC, IRFC, Caritas (developing SOP)	MOWRAM, MAFF, MOE, MOI/NCDD, MOP, NCDM, PCDM, DCDM, CCDM, VTDM, MOPTC, ADB, MRC, CRC, FRC, IRFC, Caritas (developing SOP)	MOWRAM, MAFF, MOE, MOI/NCDD, MOP, NCDM, PCDM, DCDM, CCDM, VTDM, MOPTC, ADB, MRC, CRC, FRC, IRFC, Caritas (testing SOP)	MOWRAM, MAFF, MOE, MOI/NCDD, MOP, NCDM, PCDM, DCDM, CCDM, VTDM, MOPTC, ADB, MRC, CRC, FRC, IRFC, Caritas (testing SOP)
1.2 Training programmes for planning/line ministry staff at the national and sub-national levels to apply climate information to inform climate resilient planning	MOWRAM, MOP, MAFF	MOWRAM, MOP, MAFF	MOWRAM, MOP, MAFF	MOWRAM, MOP, MAFF

Project Outcomes and Outputs	Potential Stakeholder Involvement			
	Year 1	**Year 2**	**Year 3**	**Year 4**
2.3 Regular exchange of climate and weather information with border countries on transboundary issues, as well as best practices and lessons learned related to building climate change resilience and adaptive capacity	MOWRAM, MOE, NCDM, MOI, NCDD, MOP, MAFF, MRC	MOWRAM, MOE, NCDM, MOI, NCDD, MOP, MAFF, MRC	MOWRAM, MOE, NCDM, MOI, NCDD, MOP, MAFF, MRC	MOWRAM, MOE, NCDM, MOI, NCDD, MOP, MAFF, MRC
Outcome 3: Strengthened institutional capacity to operate and maintain EWS and climate information infrastructure, both software and hardware, in order to monitor weather and climate change				
3.1 Upgrade of up to 25 sites with automatic meteorological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies	DOM, DHRW, PDOWRAMs, ADB, JICA, DCA/CA	DOM, DHRW, PDOWRAMs, ADB, JICA, DCA/CA	DOM, DHRW, PDOWRAMs, ADB, JICA, DCA/CA	DOM, DHRW, PDOWRAMs, ADB, JICA, DCA/CA
3.2 Upgrade of 55 sites with automatic hydrological stations, establish telemetry and data quality & control systems for centralized access by all CI/EWS agencies	DOM, DHRW, PDOWRAMs, MRC, ADB, JICA	DOM, DHRW, PDOWRAMs, MRC, ADB, JICA	DOM, DHRW, PDOWRAMs, MRC, ADB, JICA	DOM, DHRW, PDOWRAMs, MRC, ADB, JICA
3.3 Training-of-trainers programmes for DOM and DHRW staff to build capacity in the selection (i.e. identifying cost effective technologies), installation, operations and maintenance of equipment to established standards and services	DOM, DHRW, PDOWRAMs, JICA, ITC, vocational schools	DOM, DHRW, PDOWRAMs, JICA, ITC, vocational schools	DOM, DHRW, PDOWRAMs, JICA, ITC, vocational schools	DOM, DHRW, PDOWRAMs, JICA, ITC, vocational schools
3.4 Sustainable financing plan for the long term O&M of the equipment, including private and public financing arrangements		MOWRAM, MOEF, MOE, MOP, MPWT, MIME, telecom companies, private sector	MOWRAM, MOEF, MOE, MOP, MPWT, MIME, telecom companies, private sector	MOWRAM, MOEF, MOE, MOP, MPWT, MIME, telecom companies, private sector

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The proposed LDCF project is expected to deliver both national and local benefits. It is generally agreed that investments in disaster risk reduction are more cost-effective than investments in disaster response and recovery. Studies conducted by the World Bank (WB) and International Federation of Red Cross and Red Crescent Societies (IFRC) estimate that for every dollar invested in disaster risk reduction, two to ten dollars are avoided or reduced in disaster response and recovery costs.

With the provision of climate and weather information, capacity would be strengthened at the national, sub-national and community levels to apply that information towards more climate resilient planning and better preparedness for climate change-induced natural hazards and extreme weather events.

Better planning and preparedness would translate into long term reductions in adverse financial and humanitarian impacts related to climate change, climate change-induced natural hazards and extreme weather events. These savings would allow for greater investment in development efforts, including national priority projects such as irrigation to lessen agriculture's reliance/dependence on seasonal rain, and canals to divert excess water flows in flood prone areas.

Importantly, providing ample early warning to extreme weather events would enable households to take the necessary precautions to minimize the impact on crops, livestock and private assets. Further, information about changing weather patterns can help inform crop calendars — improving crop yields and ultimately contributing to improved food security in Cambodia.

The project complies with the NAPA-identified urgent needs, all of which are relevant for supporting national development priorities and for achieving the Millennium Development Goals (MDGs) specifically 1, 3, and 7. The project will contribute to:

- MDG 1 of eradicating extreme poverty and hunger, by providing seasonal forecasts which would allow for climate resilient planning to improve crop yield and reduce crop loss, and by facilitating early warning messages to minimize impacts of natural hazards and extreme weather events on human life, livestock and crops
- MDG 3 of promoting gender equality and empowering women, by ensuring that needs pertaining to women in terms of adaptive capacity are addressed, eliminating gender disparity in the measures towards preparedness and response to climate change
- and MDG 7 of ensuring environmental sustainability by integrating the principles of disaster risk reduction and sustainable development into country policies and programs, and reversing the loss of environmental resources through improved evidence-based decision-making for early warning and national planning processes.

Women make up 53% of the active agriculture population, and account for 20% of agriculture heads-of-household. Challenges facing male and female-headed agriculture households vary across Cambodia. Differences can be seen in the literacy rates, the number of household members, the ownership of farm equipment, and access to/reasons for loans[22]. Understanding these differences and how they influence vulnerability is critical to building resilience to climate change.

[22] National Gender Profile of Agriculture Households (FAO, MoP, 2010)

Disaster risk reduction must integrate a gender perspective through the collection of gender-disaggregated data, along with noting specific concerns pertaining to women in terms of preparedness and adaptation requirements, in order to appropriately reduce exposure to hazards. The monitoring and evaluation (M&E) framework will require related data reporting and include vulnerable group-sensitive benchmarks and targets.

MOWA will be engaged throughout implementation to ensure that (1) the tailored information generated under Outcome 1 takes into account the type of information needed by women and (2) the information is communicated in a way that it can be understood and applied. Further, surveys conducted under the randomized control trials will collect data from agriculture households, which will be disaggregated by gender to measure the impacts of the project on women. This is to measure behavioral changes resulting from the successful dissemination of tailored weather and climate information and ensure women's needs are appropriately captured in Cambodia's EWS.

B.3. Explain how cost-effectiveness is reflected in the project design:

The project falls under UNDP's established programme of work on strengthening climate information and early warning systems for climate resilient development. Initiatives under this programme aim to generate effective EWS by integrating four major elements (a) risk knowledge, (b) monitoring and predicting, (c) disseminating information and (d) responding to warnings.

This comprehensive approach is in line with the GEF Instrument's principles towards ensuring that funded activities are cost-effective, specifically that "the least-cost sustainable means of meeting many global environment global environment objectives lie in a combination of investment, technical assistance, and policy action at the national and regional level.[23]"

Various combinations and cost scenarios were assessed during the process of designing the project. One alternative for instance would have been a greater focus on hardware, given the results of the station assessment conducted as part of the PPG. However, without the budget allocations for training (Output 3.3) and a financing plan for the long term O&M of the stations (Output 3.4), there would be a risk that the procured stations falling into disrepair and requiring costly replacement within a short number of years.

There has also been an adjustment from the approved Project Identification Form (PIF) which reflects cost-effectiveness in the project's ultimate design. The PIF included an output for the procurement of (2) upper air monitoring equipment. The related cost of procurement and regular operations however is quite high (estimated at $400,000) and not a cost-efficient option to gather this information. Data collected by upper air monitoring stations, such as air temperature, wind speed and wind direction at higher altitudes, is available from commercial flights at ascending, descending and cruising altitudes via the Aircraft Meteorological Data Relay (AMDAR), a World Meteorological Organization (WMO) initiative. DOM already receives upper air data through AMDAR as well as from neighboring Viet Nam on a daily basis, therefore further investment in the collection of upper air data was not pursued as part of this project.

The principle of cost-effectiveness was also employed through the use of prior reviews and assessments to inform project design. As the reports are thorough and recent, duplication of these important assessments during the PPG phase was not necessary:

[23] Principles of Cooperation among the Implementing Agencies, Instrument for the Establishment of the Restructured Global Environment Facility (2004)

- Country Assessment Report for Cambodia: Strengthening of Hydrometeorological Services in Southeast Asia (UNISDR, WB, WMO, RGC, GFDRR, 2013)
- Institutional Review and Capacity Assessment of the National Committee for Disaster Management, Royal Government of Cambodia (ADB, 2013)
- National Gender Profile of Agriculture Households (FAO, National Institute of Statistics, Ministry of Planning, 2010)

C. DESCRIBE THE BUDGETED M&E PLAN:

The project will be monitored through the following M&E activities. The M&E budget is provided in the table below.

Monitoring & Evaluation Activities			
Type of M&E activity	**Responsible Parties**	**Budget US$** ***(excluding project team staff time)***	**Time frame**
Inception Workshop and Report	▪ Project Coordinator (supported by project team) ▪ UNDP CO, UNDP GEF	Indicative cost: $10,000	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members. ▪ Project team, esp. M&E expert	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on output and implementation	▪ Oversight by Project Coordinator ▪ Project team, esp. M&E expert ▪ Implementation teams	To be determined as part of the Annual Work Plan's preparation. Indicative cost: $20,000 (Total $80,000)	Annually prior to ARR/PIR and to the definition of annual work plans
Randomized Control Trials	▪ Oversight by Project Coordinator in consultation with MAFF	To be determined as part of the Annual Work Plan's preparation Indicative cost: $15,000/survey (total $30,000)	At midterm and end of project
ARR/PIR	▪ Project Coordinator (supported by project team) ▪ UNDP CO ▪ UNDP/GEF RTA (Bangkok) ▪ UNDP Environment & Energy Group (HQ & Bangkok)	None	Annually
Periodic status/ progress reports	▪ Project Coordinator (supported by project team)	None	Quarterly

Monitoring & Evaluation Activities			
Type of M&E activity	**Responsible Parties**	**Budget US$** ***(excluding project team staff time)***	**Time frame**
Mid-term Review	▪ Project Coordinator (supported by project team) ▪ UNDP CO ▪ UNDP/GEF RTA (Bangkok) ▪ UNDP Environment & Energy Group (HQ & Bangkok) ▪ External Consultants (i.e. evaluation team)	Indicative cost: $30,000	At the mid-point of project implementation.
Terminal Evaluation	▪ Project Coordinator (supported by project team) ▪ UNDP CO ▪ UNDP/GEF RTA (Bangkok) ▪ UNDP Environment & Energy Group (HQ & Bangkok) ▪ External Consultants (i.e. evaluation team)	Indicative cost: $45,000	At least three months before the end of project implementation
Audit	▪ UNDP CO ▪ Project Coordinator (supported by project team)	Indicative cost per year: $3,000 ($12,000 total)	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP/GEF RTA (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO, as required by UNDP RCU
TOTAL Indicative Cost **(excluding project team staff time and UNDP staff and travel expenses)**		**US$ 207,000** **(or upto 5% of total GEF/LDCF budget)**	

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):): (Please attach the Operational Focal Point endorsement letter(s) with this form. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE *(MM/dd/yyyy)*
H.E. Dr. Lonh Heal	Director General and GEF Operational Focal Point	Ministry of Environment	02/18/2013

Note: Please see Annex E for Operational Focal Point letter

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Adriana Dinu, Executive Coordinator, UNDP/GEF		Oct 3,014	Butchaiah Gadde, UNDP APRC, Bangkok	(+66) 2 304 9100 Ext. 5048	butchaiah.gadde@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: Outcome 2: By 2015, national and local authorities, communities and private sector are better able to sustainably manage ecosystems good and services and respond to climate change -Output 2.3: A national strategy, programme, and financing mechanism established for cohesive climate change response at national, sub-national, and community levels
Country Programme Outcome Indicators: Outcome 2 **Indicator:** Number of national and sectoral strategies, plans, and programmes integrating climate change **Baseline:** 4 in 2010 **Target:** 10 by 2015
Primary applicable Key Environment and Sustainable Development Key Result Area: Promoting climate change adaptation
Applicable SOF (e.g. GEF) Strategic Objective and Program: **CCA-1**: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level **CCA-2**: Increasing Adaptive Capacity: Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level. **CCA-3**: Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology.
Applicable SOF (e.g. GEF) Expected Outcomes: Outcome 1.1: Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced threats at country level and in targeted vulnerable areas Outcome 3.2: Enhanced enabling environment to support adaptation-related technology transfer
Applicable SOF (e.g .GEF) Outcome Indicators: Indicator 1.1.1.3 Type and No. of regulatory reforms that prevent economic loss from climate change, including variability (Type and No.) Indicator 2.1.2.1 Type and no. of monitoring systems in place (Type and No.) Indicator 3.2.1.1 Number of individuals trained in adaptation related technologies

	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Project Objective[24] To strengthen climate observing infrastructure and increase national capacity to utilize climate	Indicator 1 Number of national, sectoral and sub-national plans informed by accurate	Climate and weather information currently provided by MOWRAM, but information is not	2 (MOWRAM and MAFF)	National, sub-national, sectoral planning documents, budgets referencing forecasts and	Risks Insufficient institutional support and political commitment Poor coordination between implementing and executing agencies

[24] Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR

and environmental information to respond to climate hazards and to support climate resilient development planning adaptation to climate change.	and up-to-date climate information[25] (AMAT 1.1.1.3) Indicator 2 Effective and timely EW/climate information dissemination mechanism established and functioning (AMAT 2.1.2.1) [26]	sufficiently tailored to adequately inform planning Early warning messages are disseminated, but roles, responsibilities and accountability not clear. No SOP in place.	SOP for the dissemination of early warnings designed and successfully tested	products SOP developed and approved	<u>Assumptions</u> Government remains committed to implementing the baseline activities and to taking forward their existing climate change plans and strategies. There is sufficient political support and capacity within the EWS agencies for successful implementation of the project. The policy priority currently afforded climate change is not overshadowed other matters.
Outcome 1[27] Increased institutional capacity to assimilate and forecast weather, hydrological, climate and environmental information	Indicator 1 Number and type of targeted institutions/individuals with increased capacity to assimilate and forecast climate and environmental information Indicator 2 Number and type of training/learning tools on forecasting/modeling available for new hires or for continued learning of staff Indicator 3	9 forecasters at DOM (Staff do not currently serve as formal trainers, do not provide tailored products) Training is generally provided by outside parties and is short term in nature.	6 forecasters [(3 from DOM and 3 from DHRW) trained, which can also serve as trainers, to use information from monitoring stations in modeling, data quality control and forecasting climate information (on daily to seasonal, as well as medium to long term timescales)] 3 courses (1 hydrology, 1 meteorology, 1 applying risk maps and GIS data) developed and available to staff (i.e. online, at local learning institution and training programme within MOWRAM) – course content and level should depend on MOWRAM staff needs Products developed for various	Capacity assessment, evidence of training and field demonstration of technology transfers Feedback (questionnaire) from trainees to gauge level of knowledge and confidence to assimilate and forecast climate and environmental information Course material, syllabus	<u>Risks</u> Failure of forecasting/modeling training programmes to build institutional knowledge or adequately take into account the high staff turnover Climate products generated/distributed by MOWRAM do not meet the needs of stakeholders <u>Assumptions</u> The available climate modeling practitioners and researchers remain available for the project duration, providing input and institutional memory to training and capacity building activities of the project.

[25] Rephrased Indicator 1.1.1.3 Type and No. of regulatory reforms that prevent economic loss from climate change, including variability (Type and No.)
[26] Rephrased AMAT Indicator 2.1.2.1 Type and no. of monitoring systems in place (Type and No.)
[27] All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.

	Number and type of targeted institutions with increased capacity to reduce risks of and response to climate variability	Forecast information is currently provided, but not tailored.	agro-ecological zones of the 7 priority provinces and provided to MAFF	Tailored climate and weather products generated by MOWRAM, resulting from accurate collection of data, as well analysis and coordination between DOW and DHRW to meet MAFF (or other stakeholder) needs	
Outcome 2 Climate and weather information available for national, sectoral and sub-national planning as well as for transboundary communication in the region	Indicator 1 Receipt of transboundary climate and weather related data Indicator 2 % change in agriculture productivity in select communities (data disaggregated by gender)	Information sharing not systematized. Early warnings provided are not tailored sufficiently to inform planning at agriculture household level	Communications plan to regularly share transboundary information (combined with ADB-supported SOP, or separate) Positive % change in agriculture productivity, particularly by female headed households, resulting from behavior changes informed by climate information (see ProDoc, Annex F – Randomized Control Trials)	Reports, data received from neighboring countries	<u>Risks</u> Lack of effective early warning communication at the village level <u>Assumptions</u> MOWRAM and participating sector ministries/departments remain committed to the realization of cross-sectoral collaboration in climate change planning and implementation of adaptation measures. Data sharing protocols can be agreed between MOWRAM and other ministries, and data can be presented in sufficiently utilitarian way for local application. The available climate modeling practitioners and researchers remain available for the project duration, providing input and institutional memory to training and capacity building activities of the project.
Outcome 3 Strengthened institutional capacity to operate and maintain EWS and climate information infrastructure, both software and hardware, in order to monitor weather and climate change	Indicator 1 Number (national coverage) of automatic weather and climate monitoring network in Cambodia Indicator 2 Number and type of	12 fully functional hydrological stations 0 fully functional meteorological stations Unclear as brand of	67 functional hydrological stations (the 12 currently functional, plus the 55 as part of this project) Up to 25 functional meteorological stations 10 key staff from DOM (5) and	Data records at MOWRAM indicating regularly received data from functioning stations Training records and field	<u>Risks</u> Inadequate maintenance of meteorology, hydrology and hydro-met stations, resulting in hardware falling into disrepair New equipment is not compatible or consistent with existing systems, making synthesis and analysis of information/data difficult

	targeted individuals with increased capacity to provide O&M training for EWS related infrastructure (AMAT 3.2.1.1[28])	equipment and related supplies that need to be procured	DHRW (5) trained, and can serve as trainers, in the operations and maintenance of equipment	demonstration of technology transfers Survey of trainees to gauge level of knowledge and confidence to operate and maintain equipment.	Assumptions The target equipment and infrastructure is compatible and standardized with existing hardware and software. Existing functioning equipment remains in working condition.
	Indicator 3 % of financing plan funded for hardware and software operations and maintenance	Currently O&M is funded by the MOWRAM budget, this is however insufficient. A financing plan is needed for the longer term sustainability of the network. This does not currently exist.	Financing plan with committed resources sufficient to operate and maintain equipment for at least 5 years after the completion of project	Developed sustainable financing plan, increases in MOWRAM budget allocation, and contributions/fees from stakeholders with interest to receive customized weather and climate information products	

[28] Rephrased AMAT 3.2.1.1 "Number of individuals trained in adaptation related technologies"

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Responses to GEFSec Comments (15 September 2014)

Comments and Responses	Reference
COMMENTS ON CEO ENDORSEMENT (FSP)	
Comment [13]: *FI, 9/15/14:* *More information is requested on Scale-up: Please clarify whether the project already has national coverage (in terms of hydromet station upgrading and equipment provision), of whether there is potential to scale this project up and, if so, how.* **Response**: This project will provide support for the installation of new meteorological stations where necessary, and repair or upgrade of stations that can be rehabilitated for the collection of meteorological data through a nation-wide coverage at 25 sites (1 per province). The project will also ensure O&M, and related training to ensure long term sustainability of the stations network. For the collection of hydrological data, LDCF funds will be used to procure new, rehabilitate or upgrade 55 hydrological stations. There are currently 114 hydrological stations in Cambodia, though only 12 are fully functional. As this output provides for 55, it is not meant to provide national coverage for the collection of hydrological data, but rather targeted support to vulnerable areas. Selection of the sites will be based on priority and vulnerability, with particular focus on upstream/downstream relationships, given the measurable increase in the number of unexpected floods along the Mekong River and its tributaries. Procurement and installation and equipment will occur in phases throughout project implementation based on a prototype approach. To ensure that the best practices are identified and honed early in the project, the project will focus first on just 2-3 sites, then expand slowly to other provinces based on evaluation of training efforts and the verification of data transmission and functionality of the stations. By using this prototype approach, the project mitigates the risk of stations falling into disrepair due to lack of O&M, and allows time to adjust project activities to address related challenges. Using this approach, upscaling can continue towards national coverage for the hydrological network.	ProDoc, section 2.4 (Outcome 3), Para 3&4, p 41 ProDoc, section 2.4 (Outcome 3), Para 6-8, p 41
Comment [17]: *FI, 9/15/14:* *Not quite. Co-financing is adequate, at $23.38 million, and co-financing letters have been provided. However, Table C of the Datasheet specifies that MRC is providing $1,885,000 in cash, whereas the MRC co-financing letter appears to state that between $90,000 and $390,000 will be provided.* *Recommended action:*	

Comments and Responses	Reference
Please adjust the MRC co-financing contribution as stated in Table C to match the amount stated in the co-financing letter, or provide an explanation for this apparent discrepancy. **Response:** This error has been corrected, and the change reflected in the relevant sections of the CEO ER and the ProDoc referring to co-financing.	CEO ER, Part I, Table A-C, p 1-3 & ProDoc, section 2.3.2, p 23; Para 5, p 24; and Table 5, p 25
Comment [21]: *FI, 9/15/14:* *No. A Project Results Framework has been submitted. However, the AMAT excel file is missing.* *Recommended action:* *Please provide the AMAT file.* **Response:** Now attached with this FSP resubmission.	Attached as a separate document, which will be submitted along with this FSP resubmission.

Suggestions from the GEF Council (Germany) for improvements to be made during the drafting of the final project proposal

"Regarding the operation and maintenance (O&M) costs of the planned and existing meteorological and hydrological stations, the PIF states that the national budget available through the Ministry of Water Resources and Meteorology (MoWRAM) for this purpose is USD 50,000/year. Furthermore, it is mentioned that there are 12 automated real-time hydrological stations in Cambodia installed by the Mekong River Commission (MRC), which will be operated and maintained by Cambodia. The annual budget allocated by MRC towards operation and maintenance of these hydrological stations is stated to be USD 50,000/year. However, it remains unclear to us whether this annual O&M budget of USD 100,000 in total is estimated to be sufficient for operating and maintaining the meteorological and hydrological stations in an effective manner. Also, we consider it of utmost importance to ensure the budget availability for O&M not only for the project implementation period but also for the years to come. Germany therefore recommends further clarification in the final project document on (1) whether the foreseen budget is considered sufficient to cover the actual O&M costs and (2) how the allocation of adequate funds for O&M will be ensured after the end of the project.

Response:

As indicated in the Council comments, $50,000/year of the national budget is indeed not sufficient for the effective O&M of Cambodia's observation network, currently comprised of 24 meteorological stations and 114 hydrological stations. The lack of O&M was evident in the results of an assessment of existing stations undertaken in October 2013, as part of the project preparation activities. The results indicated that none of the meteorological stations and only 12 of the hydrological stations were fully operational or

considered to be in good working condition. The condition of the remaining stations ranged from 'partially operational' to 'abandoned'. (refer to ProDoc, Annex C for more detailed findings of the assessment.)

While MOWRAM acknowledges that the current allocation is insufficient, it has faced difficulty in securing the necessary budgetary approvals for the required amount. However, with the investment in observation infrastructure provided by the LDCF project, MOWRAM has secured $150,000/year for the duration of the project. LDCF funds will supplement this amount to ensure sufficient O&M of the updated observation network for the project duration, plus 2 years. An appropriate level for O&M would be approximately and $2,500/meteorological station/year and $2,000/hydrological station/year or $60,000 for meteorological stations and $228,000 for hydrological stations annually.

The long term functionality, and financial resourcing for O&M of the stations, have been key considerations in the design of the project. The project design reflects this through the following:

- Innovative approaches to station site selection and O&M: The LDCF project will support MOWRAM in exploring innovation approaches to station placement and O&M which can ensure longer term sustainability, such as the use of cell phone towers as sites for weather observation stations, establishing partnerships with the telecommunications companies to utilize company staff to maintain equipment, as well as using alternatives to in-situ stations (e.g. radar alternatives such as lightening detection and rain fade). Related successes have been documented, especially in Africa[29], which can be replicated in Cambodia after making adjustments for the country context.
- Standardization of observation network infrastructure: Previous efforts have been made by development partners to support the hydro-meteorological data collection needs of Cambodia, but a project-based approach has resulted in (a) a lack of equipment standardization, (b) difficulties related to O&M of different equipment at different sites, and (c) burdens in centrally synchronizing and analyzing data from different observational platforms. All of which overly complicate the process of climate and weather data collection, and challenge limited capacity and resources for O&M. The poor current state of the existing stations, and the national scope of this LDCF project, presents an opportunity for Cambodia to establish a clear set of equipment criteria and standards for its observational network going forward, ultimately reducing excessive costs and lessening the burden on national technical capacity related to O&M.
- Phased installation of stations: Installation of observation infrastructure will be done in phases throughout the project duration – starting with 2-3 meteorological stations and 5-6 hydrological stations, then expanding based evidence of regular O&M, as well as accurate and timely collection of data from the stations. In this way, the project will expand slowly towards its target of 25 meteorological stations and 55 hydrological stations. As training will be part of each installation, this phased approach also creates multiple opportunities for O&M training, strengthening capacity especially at the provincial level for effective and sustained O&M.
- Private sector engagement to support O&M: While the above measures focus on improving efficiency and reducing costs, engagement of the private sector will seek to generate a revenue stream to support O&M through Output 3.4 - *Sustainable financing plan for the long term O&M of the equipment, including private and public financing arrangements*. The tailored climate and weather products generated under Outcome 1 can inform private sector planning, as well as public (i.e. MAFF). The LDCF project will support MOWRAM in conducting market research to

[29] Non-traditional Approaches to Weather Observations in Developing Countries: A Study for the World Bank (J. Snow, 2013)

gauge willingness-to-pay for the tailored weather products, capturing interests such as banking/lending institutions, insurance providers, telecommunication service providers, tourism operators and large agricultural companies (e.g. producing products related to major exports such as sugar cane, Kampot pepper, and rice), in order to identify potential partners/contributors and formalize public-private partnerships. This will be linked to ongoing efforts under the CCCA Phase 2 to establish coordination and finance mechanisms for domestic and external finance to build resilience to climate change in Cambodia.

Comments from the GEF Council (United States)

"With a view toward further strengthening this PIF, we would like to request that UNDP, as it prepares the draft final project document for CEO endorsement:

- Clarify how it plans to promote coordination between ministries at both the national and provincial level. We appreciate the involvement of multiple government agencies and institutions as this EWS will not only require input from various sector experts but also produce information applicable to numerous ministries and institutions; and
- Outline how users will be involved both in the design of the EWS and in deciding what information is produced from the EWS as well as how information will be disseminated. Better results can be achieved by ensuring that climate information and early warning system products are user-driven and communicated to users through various innovative channels.

In addition, we expect that UNDP in the development of its full proposal will:

- Clarify how it will communicate results, lessons learned and best practices identified throughout the project to the various stakeholders both during and after the project; and
- Engage local stakeholders, including community-based organizations and environmental NGOs in both the development and implementation of the program."

Response:

For an effective implementation of EWS, it is important to establish a coordination between various ministries at national and sub-national level. The Ministry of Water Resources and Meteorology (MOWRAM) plays a vital role to fulfil this mandate. Given the cross-sectoral nature of climate change, use of a coordination mechanism such as the National Climate Change Committee (NCCC), will help to ensure that the climate and weather information needs of the country are being met, by facilitating dialogue between the ministries and highlighting national priorities. As detailed under Output 2.2, climate information would be communicated by MOWRAM to ministries through inter-ministerial dialogue to provide information which is useful for their planning processes. In addition, advisories related to potential natural hazards and extreme weather events would be communicated through National Committee for Disaster Management (NCDM) channels, as per its mandate, for timely preparation and response at the national, provincial, district, commune and village levels. Standard Operating Procedures (SOPs) put into practice where roles and responsibilities defined, clarifying the lines of communication, and establishing accountability.

Stakeholders' consultations throughout implementation will be important to ensure that best practices and lessons learned are captured in decision-making, and to ensure synergies with similar efforts. A number of key stakeholders were consulted during the project design phase, which is presented in detail in Project Document in section 2.10 (stakeholder involvement plan). Given the ongoing efforts on EWS in Cambodia, the project made a conscious effort to closely coordinate with ADB, DCA/CA, JICA, MRC, and other institutions including NGOs during project implementation, refer to Annex G. When it comes to

communication of results, lessons learned and best practices, Output 2.3 emphasizes to strengthen communication with neighboring countries who may benefit from best practices and lessons learned, as well as enhance data synthesis related to transboundary issues and to support this effort, a communication plan will be developed.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[30]

A. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

Extensive consultations with stakeholders were held during the project design phase, which highlighted the following:

1. the project must plan for a long term capacity building programme for weather forecasting and climate modeling
2. the project must include a sustainable O&M plan to ensure functionality of the stations after the project
3. the project must keep the country's most vulnerable a priority – ultimately, the project must contribute to building their resilience to climate change

Points 1 and 2 have been captured in the project design by implementing training activities in phases and employing innovative approaches to secure funding for long term O&M. To best address point 3, the scope of the project has been refined to the agriculture sector – Cambodia's most vulnerable sector.

Discussions are ongoing on how best to collect baseline data for the randomized control trials detailed in the Annex F of ProDoc, in order document success of the early warning system in reaching vulnerable agriculture households.

A survey conducted in 2014 as part of the Capacity Building Programme on the Economics of Climate Change Adaptation (ECCA) is a potential baseline data source. To ensure that this tool can be adequately linked to ongoing poverty programmes, Terms of Reference are being developed by the UNDP Cambodia office. For instance, the Identification of Poor Households Programme (IDPoor), led by the Ministry of Planning (MOP) in collaboration with the Department of Local Administration (DOLA) of the Ministry of Interior (MOI) seeks to identify individual households and to directly target services and development assistance to the those households in order to alleviate poverty and to protect the most vulnerable from the impact of shocks (e.g. crop failure) which may deepen their poverty. The results of the ECCA survey will be verified to ensure that households identified under the IDPoor programme were included in the survey scope. Additional household surveys will be conducted where necessary.

As per GEF guidelines, activities detailed above will be undertaken before the completion of the first year of project implementation.

[30] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

B. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG Grant Approved at PIF: **$ 150,000**			
Project Preparation Activities Implemented	***GEF/LDCF/SCCF/NPIF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
Project Development	37,777.80	35,861.80	1,916.00
Rapid Assessment of Hydro-met Stations	42,000.00	24,000.00	18,000.00
Traveling Costs for field work and assessment work	28,372.20	4,709.95	23,662.25
Training and Workshops	38,350.00	8,906.45	29,443.55
Miscellaneous	3,500.00	3,482.35	17.65
Total	150,000.00	76,960.55	73,039.45

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

N/A

ANNEX E: OPERATIONAL FOCAL POINT LETTER

KINGDOM OF CAMBODIA
NATION-RELIGION-KING

Ministry of Environment

No : .....035.....DG.....MoE

Phnom Penh, February ..., 18 ..... 2013.

To: Mr. Yannick Glemarec
UNDP/GEF Executive Coordinator
304 East 45th Street, Room FF-916
New York, NY 10017
U.S.A.

Subject: Endorsement for project proposal "Strengthening climate information and early warning systems in Cambodia to support climate resilient development and adaptation to climate change"

In my capacity as GEF Operational Focal Point for Cambodia, I confirm that the above project proposal (a) is in accordance with my government's national priorities identified in the National Adaptation Programme of Action to Climate Change (NAPA) and our commitment to the relevant global environmental conventions; and (b) was discussed with relevant stakeholders, including the global environmental convention focal points.

I am pleased to endorse the preparation of the above project proposal with the support of UNDP. If approved, the proposal will be prepared and implemented by the Ministry of Water Resources and Meteorology. I request UNDP to provide a copy of the project document before it is submitted to the GEF Secretariat for CEO endorsement.

The total financing from LDCF being requested for this project is US$5,541,012, inclusive of project preparation grant (PPG), if any, and Agency fees for project cycle management services associated with the total GEF grant. The financing requested for Cambodia is detailed in the table below.

Source of Funds	GEF Agency	Focal Area	Amount (in US$)			
			Project Preparation	Project	Fee	Total
LDCF	UNDP	CC	150,000	4,910,285	480,727	5,541,012
Total GEF Resources			150,000	4,910,285	480,727	5,541,012

Sincerely,
GEF Operational Focal Point for Cambodia
Director General, Ministry of Environment

H.E. Dr Lonh Heal

Copy to: Convention Focal Point for UNFCCC
UNDP Country Office for Cambodia

No. 48, Samdech Preah Sihanouk, Tonle Bassac, Chamkarmon, Phnom Penh, CAMBODIA, Fax : 855 23 21 25 40 Phone : Standard 023 21 34 62
023 21 29 94