



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 Africa for climate resilient development and adaptation to climate change – Ethiopia			
Country(ies):	Ethiopia	GEF Project ID: ¹	4992
GEF Agency(ies):	UNDP(select)(select)	GEF Agency Project ID:	5095
Other Executing Partner(s):	National Meteorological Agency	Submission Date:	July 23, 2013
GEF Focal Area (s):	Climate Change Adaptation	Project Duration(Months)	48
Name of Parent Program (if applicable):	n/a	Agency Fee (\$):	490,000
	➤ For SFM/REDD+ <input type="checkbox"/>		
	➤ For SGP <input type="checkbox"/>		

A. FOCAL AREA STRATEGY FRAMEWORK²

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount (\$)	Co-financing (\$)
CCA-2(select)	Outcome 2.1 Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas	Output 2.1.2 Systems in place to disseminate timely risk information	LDCF	3,336,100	13,900,000
	Outcome 2.2 Strengthened adaptive capacity to reduce risks to climate-induced economic losses.	Output 2.2.2 Targeted population groups covered by adequate risk reduction measures	LDCF	1,333,900	17,871,640
Project Management Cost			LDCF	230,000	1,564,770
Total project costs				4,900,000	33,336,410

B. PROJECT FRAMEWORK

Project Objective: To strengthen the climate monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change in Ethiopia.

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount (\$)	Confirmed Co-financing (\$)
Transfer of technologies for climate and environmental monitoring infrastructure.	Inv/TA	Enhanced capacity of the National Meteorological Agency and the Hydrology and Water Quality	1.1 10 hydrological monitoring stations installed and 50 rehabilitated with telemetry, archiving and data processing	LDCF	3,336,100	13,900,000

¹Project ID number will be assigned by GEFSEC.

² Refer to the [Focal Area/LDCF/SCCF Results Framework](#) when completing Table A.

		Department to monitor extreme weather and climate change.	<p>facilities.(INV: US\$ 479,300)</p> <p>1.2 40 automated meteorological monitoring stations installed, 200 rehabilitated with telemetry, archiving and data processing facilities and 5 calibration units procured. (INV: US\$ 1,851,600)</p> <p>1.3 One upper air monitoring station installed and operating.(INV: US\$ 330,000)</p> <p>1.4 Satellite monitoring equipment to receive real time (AMESD) climate and environmental information installed and rehabilitated. (INV: US\$ 210,000)</p> <p>1.5 Training of at least 20 technical trainers to maintain and repair equipment, computer infrastructure and telecommunications, including cost-effective technologies to interface with existing equipment/software. (TA: US\$ 465,200)</p>			
Climate information	Inv/TA	Efficient and	2.1 NMAs capacity	LDCF	1,333,900	17,871,640

<p>integrated into development plans and early warning systems.</p>		<p>effective use of hydro-meteorological and environmental information for early warnings and long-term adaptation.</p>	<p>to make and use climate forecasts (on daily to seasonal basis) is strengthened by training at least 5 lead forecasters 5 hydrology engineers for in house capacity building.(TA: US\$ 278,000)</p> <p>2.2 Tailored sector-specific early warning products – agromet and food security advisories, flood warning...etc - based on identified user needs that link climate and environmental information with current vulnerability assessments are developed. (INV: US\$ 380,000)</p> <p>2.3 National capacity for assimilating forecasts and monitoring (from NMA and HWQD) into existing DRMFS and the Growth and Transformational Plan is built, including coordination with systems and warnings developed by other initiatives.(TA:US</p>			
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			\$ 360,000)			
			2.4 Communication channels (e.g. radio, newspapers, SMS, television etc) and Standard Operating Procedures for issuing warnings through both governmental (woreda.net) and civil society are enabled.(INV: US\$ 179,800)			
			2.5 Plan for sustainable financing for the operation and maintenance of the installed EWS developed and implemented, including public and private financing options.(TA: US\$ 136,100)			
Subtotal					4,670,000	31,771,640
Project management Cost (PMC) ³				(select)	230,000	1,564,770
Total project costs					4,900,000	33,336,410

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

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Please include letters confirming co-financing for the project with this form

Sources of Co-financing	Name of Co-financier (source)	Type of Co-financing	Co-financing Amount (\$)
National Government	National Meteorological Agency - Ethiopia	In-kind	600,000
Other Multilateral Agency (ies)	Africa Climate Policy Center	Grant	1,202,000
Other Multilateral Agency (ies)	World Food Program	Grant	123,000
Bilateral Aid Agency (ies)	USAID	Grant	16,800,000
GEF Agency	UNDP	Grant	13,000,000
Other Multilateral Agency (ies)	FAO	Grant	1,611,410
Total Co-financing			33,336,410

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

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	Ethiopia	4,900,000	490,000	5,390,000
Total Grant Resources				4,900,000	490,000	5,390,000

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	312,000	0	312,000
National/Local Consultants	367,500	0	367,500

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 PIF⁴

No significant changes in alignment with the project design of the original PIF have been made. All outputs have been contextualized to fit Ethiopia’s needs as articulated through the project preparatory and design phase. Output 1.3 of the original PIF has not been adopted because the preparatory and 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

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phase found that the procurement of radar was too expensive and not needed in Ethiopia. The assessment of the possibility for the repair of existing radar has been incorporated in output 1.2.

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.

NA

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

NA

A.3 The GEF Agency's comparative advantage:

NA

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

1. The Productive Safety Net Programme (PSNP) which aims at serving the dual purpose of helping bridge the income gap for chronically food insecure households, and engaging such households in community asset-building efforts to earn income, especially during the lean season and times of drought. PSNP is funded through budgetary support to the value of US\$480 million by a wide range of donors, including DFID, World Bank, Sweden and Ireland. The PSNP is having a significant impact on building asset base of the poorest, and this project aims at providing national level capacity to reduce the destruction and damage caused by climate hazards to these built assets.

2. The UNFAO is implementing a project called "Strengthening Capacity for Climate Change Adaptation in Land and Water Management with focus on Sustainable Land Management in Ethiopia project" with the objective of reducing the impact of climate change and variability on smallholder farmers through sustainable land management and contribute to improvement of agricultural productivity, livelihood and ecosystem resilience in two sustainable land management (SLM) watersheds within the Awash Basin with a budget of US\$550 000. Another FAO project that this LDCF initiative will build on is entitled "Managing the Rain: Making improved use of one of Ethiopia's most valuable resource" (US 1,061,410) and aims at improving rain water harvesting and management for agriculture and rural livelihoods.

3. USAID/Ethiopia's strategy seeks to address the underlying issues, which make communities and sectors most vulnerable to climate variability, while supporting and enhancing knowledge and information sharing. To contribute to this effort USAID/ Ethiopia's climate strategy focuses on adaptation with a goal of "reducing vulnerability of people, places and livelihoods". The main project is the "Pastoralists Resiliency Improvement and Market Expansion (PRIME)" (\$10M) that just started implementation building on the experience on PLI II, Implemented by Mercy Corps. It aims to Identify and implement actions that can make people, places and livelihoods less vulnerable to climate change over the long term:

- a. GoE and community institutions capacity built for better implementation of CCA activities
- b. Introduce flood/drought management plans and responses to reduce vulnerability
- c. Introduce livestock and crop insurance
- d. Introduce conservation based agriculture

- e. Introduce new methods for, pasture, soil and water conservation
- f. Introduction of drought tolerant / resistant crops

4. Another important project that is currently being implemented by USAID is the Enhanced Livelihoods Application through the Livelihood Integration Unit which aims to support the Ethiopian Ministry of Agriculture and the DRMFSS to strengthen early warning systems. This is a 6.8M USD initiative that focuses on improved science, analysis and information sharing for decision-making and effective governance systems for coordination and response. It aims to:

- a. Improve ability to understand impacts of climate variability and changes in long term food security;
- b. Improved climate information, prediction and diffusion of early warning information;
- c. Support information sharing and collaboration activities at national and regional level; and
- d. Strengthen government and local communities' governance structures such as customary institutions' capacity to respond to and communicate on climate-related disasters, such as floods and droughts.

5. UNDP is currently supporting the Government of Ethiopia in two mutually reinforcing priority areas- support to climate resilient green economy and **Strengthening Capacities for Ethiopia's Disaster Risk Management System**. (\$13m). Support to the climate resilient green economy through UNDP focuses on mainstreaming a climate resilient green economy vision of the country into the medium and long-term national planning, budgeting and M&E system, climate finance, and building capacity for coordination of climate resilient green economy initiatives in federal ministries. Support for the Government of Ethiopia to reduce disaster risk and impact of disasters is proceeding through the establishment of a comprehensive and integrated disaster risk management system. More than \$12m has been secured to-date for a programme that will run from 2012-2016. The programme is to support the DRMFSS led the development of the Disaster Risk Management Strategic Programme and Investment Framework (DRM-SPIF) which elaborates the new Government of Ethiopia (GoE) approach on DRM and is the sole government framework for the harmonization of government, donor, and development partner support and interventions on DRM. The DRM-SPIF supports the Growth and Transformational Plan (GTP) by maximizing the achievement of socio-economic targets and the preservation of social and economic gains by not allowing these gains to be translated into losses as a result of disasters. It also firms up the position of the GoE on its new DRM approach to shift from disaster response and food aid to the building of community resilience and reduction of vulnerabilities.

6. With the implementation of the current DRR and LR Programme, the Ministry of Agriculture, specifically the DRMFSS, requested UNDP to undertake a substantive revision of the current programme to capitalize on its significant achievements and direct it towards supporting the DRM-SPIF. The revised programme will work towards the reduction in the risks and impacts of disasters through the establishment of a comprehensive and integrated disaster risk management system within the context of sustainable development. As the main engine for UNDP to realize the intended GoE and UNDAF outcomes, the programme will work at achieving the intended UNDP contribution of making integrated DRM systems and coordination mechanisms functional at federal and regional levels.

7. The ACPC is undertaking two projects with a total budget of US\$ 1, 202, 000. titled "Support to the National Meteorological Agency (NMA) of Ethiopia in Capacity Building of Climate Monitoring and Early Warning Activities for Climate Change Adaptation" in order to rescue historical meteorological data; reviewing the master plan of meteorological stations network; training users on how to use the map room of NMA website and developing the capacity of human resources of NMA in data management.

And the second one on “Upgrading and Expansion of Stream flow Observing and Data Management Systems in Ethiopia” together with MoWE in order to upgrade manual water level stations to automatic stations; Install automatic hydrological observation instruments at new stations; Expand the pilot telemetry system of MoWE to enhance real time measurement of river water level; Upgrading the existing data storage, management and analysis system;

8. WFP - has three on-going projects which this initiative will build on with a total budget of \$729,742. These are:

- The establishment of automated weather stations (AWS) to improve timely provision of weather data for LEAP Project in order to enhance monitoring of drought, flood & other weather risks through contributing to the development and refinement of LEAP, one of the DRM tools with a budget of US\$ 362,700;
- Improving automated hydrological data for the flood model development, early warning based on a community-based flood forecasting and early warning (CBFFEW) system as pilot in the Awash River Basin to strengthen the capacity in flood forecasting, warning and management with a budget of US\$115,000; and
- Setting up of a Geonetcast infrastructure and application within the DRM FSS and NMA to Strengthen Early Warning Systems and Disaster Preparedness in order to support flood and drought forecasting and alert, climate change and early warning system in Ethiopia with a total budget of US\$ 252,042.

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:*

Outcome 1: Enhanced capacity of National Meteorological Agency and the Hydrology and Water Quality Directorate to monitor extreme weather and climate change

Without LDCF Intervention (baseline):

9. Now that the institutional arrangements for coordinating climate change action at a national level in Ethiopia have been clarified and the 2011-15 Growth and Transformation Plan is completed and the Climate Resilient Green Economy Strategy (CRGE) in place, the arrangements for effective action to implement these national commitments are needed. As part of these national plans Ethiopia needs more accurate and timely weather information to be able to forecast the damage and risks of extreme weather events, and plan for strategies for long term climate change adaptation. At present the capacity of the NMA and HWQD, the main institutions responsible for weather, climate and hydrological monitoring, is limited both in equipment and human capacity. Therefore too few planners and managers have the weather/climate information they need and fewer have the capacity to assess risk, evaluate trade-offs and integrate cross-sectoral initiatives using this information.

10. This is partly due to the limited ability of the NMA and HWQD to provide useful, accurate and timely weather, climate and hydrological information that can be integrated across sectors in developmental plans, both in the rural and urban context. This in turn is due to the limited environmental observational infrastructure available to the NMA and HWQD, coupled with a low level of skills and human capacity to analyse and use the data for forecasting risks. Through discussions with government officials and other stakeholders during the Preparatory phase, equipment and information gaps were identified as well as training and capacity needs, which need to be resolved for effective disaster risk management and climate resilient planning to be improved (see Key assessment report, Annex IV). In

particular the report highlights the need to improve the current baseline situation through additional rehabilitation and procurement of:

- 70 AWS and 1200 manual rainfall stations (10-47% functional);
- 489 manual hydrological stations reporting every 4 months; 10 stations with data loggers and 4 stations with telemetry capabilities;
- One partly- and one fully-functioning upper air monitoring stations;
- Functional satellite data systems (EUMETSAT) but with limited capacity to fully utilize and distribute the products; and
- Insufficient calibration units to maintain existing and additional sensors.

11. Without improvements in the current observation network, disaster risk reduction initiatives, but also rural development, health and land conservation plans have very limited scientific and information to base their strategy and actions on. They will continue to be based on available weather/climate information, and past experience. The efforts will remain piecemeal, sectoral and unable to build strong mitigation measures to counter expected increases in extreme weather events, such as floods and droughts, landslides and cloudbursts.

12. The WFP programme will continue to support chronically food-insecure communities participate in environmental rehabilitation and income generating activities designed to improve livelihoods through the sustainable use of natural resources. Whilst it provides support for installing weather monitoring infrastructure in support of LEAP as part of the PSNP, this is limited to 20 stations in three regions (ten are in the Somali Region, five in Eastern Oromia and another five in Afar)⁵. However, other regions will not benefit from this activity at present. WFP is also working to improve automated hydrological data collection and flood forecasting in the Awash River Basin, which involves setting up GEONETCast infrastructure within the DRMFS and NMA, in order to receive satellite data, and using this data for flood forecasting.

13. Similarly the USAID funded PRIME and ELA projects aims at providing early warnings to avoid famine and strengthen livelihoods and food security. However this is done through the provision of support to local farmers and pastoralist by introducing flood and drought management plans and response to reduce vulnerability, introducing new methods for soil and water conservation and drought resistant crops. Other important products that are necessary for planning including additional meteorological products, such as weather forecasting, agro-meteorology advisories to farmers, early warnings for all extreme weather events, are currently insufficiently provided.

14. All the identified baseline projects contribute in some way to providing a platform to build Ethiopia's resilience to climate change, but little focus on building hydro-met infrastructure to improve the capacity to monitor the climate and the environment at the national level. The Government of Ethiopia, in an effort to strengthen its hydro-met infrastructure for improved monitoring has recently approved a budget increase (66M Birr) to the National Meteorological Agency for operation and maintenance of existing and new observational infrastructure and the human capacities of these national institutions to perform more effectively and efficiently.

15. ACPC projects to support NMA are also undertaking a variety of activities including: rescuing historical meteorological data; reviewing plans for the expansion of the meteorological station network; training users how to use the map room of the NMA website and developing the capacity of human resources of NMA in data management. Also in partnership with MoWE they are upgrading manual water level stations to automatic stations; installing automatic hydrological instruments at new stations and expanding the pilot telemetry system of MoWE to enhance real time measurements of river water levels. These projects, whilst currently in their early stages⁶, provide key baseline activities that LDCF funds can be used to build upon, strengthening and expanding these efforts where necessary.

⁵ <http://www.wfp.org/stories/automated-weather-stations-enhance-ethiopia-climate-risk-data>

⁶ <http://climate-l.iisd.org/news/acpc-holds-workshop-on-meteorological-data-in-ethiopia/>

With LDCF Intervention (adaptation alternative)

16. Within this outcome, LDCF financing will be used to rehabilitate and transfer weather and environmental observation infrastructure by procuring new automated weather stations, gauging stations, computer software and new calibration units. This will build on the CRGE strategy and vision, on the Growth and Transformational Plan of individual ministries and on the findings of the Climate Change Technology Needs Assessment developed by the Ethiopian government in partnership with UNDP and supported by GEF (2007). This initiative will complement the WFP programme that seeks to support poor rural communities with food security and climate resilient agriculture, as well other LDCF-funded sectorally-specific interventions - Promoting autonomous adaptation at the community level in Ethiopia – and the ACPC and USAID PRIME and ELA programmes.

17. The key assessment report in the annex IV developed by the project design team during the preparatory phase details the procurement and rehabilitation plan for NMA and HWQD, identifying what equipment needs to be procured at what cost and what infrastructure already in place needs to be rehabilitated. LDCF financing will contribute to strengthening the technical capacity of the national and 11 regional NMA institutions responsible for monitoring the climate and hydrological parameters to feed into integrated and cross sectoral planning. With better observational equipment and enhanced human skills and capacity the NMA, the DHWQ and the DRMFSS is expected to deliver more timely and accurate early warnings and take appropriate mitigating actions. This will complement very well with a WMO project that is expected to start at the end of the year, focusing on increased climate information and capacities for supporting climate risk management at sub-national level.

18. This initiative will also build on FAO's intervention on improving capacity for climate change adaptation for small farmers at the community level, and the LDCF funded project on autonomous adaptation by contributing to the improved accuracy of meteorological bulletins. This in turn will improve the trust and reliability that farmers and pastoralists have in climate information.

19. During the preparatory and design phase the state of the weather and environmental observational infrastructure was assessed, see the key assessment report in Annex IV. A wide range of stakeholders (Govt ministries, departments, donors, research institutions, civil society and NGOs - see stakeholder baseline analysis, section 2.1.3) during three national level consultations decided to maximise cost effectiveness by directing the funds and efforts on rehabilitating existing infrastructure (weather stations and hydro gauging stations) and in procuring more up to date technology like AWS, with telemetry, archiving and data processing facilities. The key assessment report in Annex IV presents the needs and gaps identified during the preparatory phase and are clearly defined on maps and list. It provides Indicative locations and sites for the procurement and installation of 40 new automated weather stations and 10 new gauging stations which are subject to additional detailed feasibility during the implementation phase. It also provides a detailed plan for the 200 weather stations and 50 hydrology gauging stations that need rehabilitation or repair (which sensors need replacement).

20. Upper air monitoring stations, through either radiosonde ascents and remote sensing technologies, are useful for improving regional numerical weather predictions and global climate models run by international forecasting centres and will be procured and improved through this LDCF funding. Technical training on Operation and Maintenance (O&M) will also be provided to strengthen the technical capacity and sustainability of the NMA. Building on the UNDP DRM programme this outcome will enhance the weather and environmental observational capacity of the country by rehabilitating existing infrastructure and by procuring and installing new AWS and gauging stations. It will also provide the foundation to guide the process of integrating climate change risks and adaptation into development plans at national, regional and local levels.

Outcome 2: Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term development plans.

Without LDCF/SCCF Intervention (baseline):

21. The Environmental Protection Authority (EPA) has been mandated to co-ordinate the national response to climate change. Through Ethiopia's Programme of Adaptation to Climate Change (EPACC) and emissions abatement initiatives including the Nationally Appropriate Mitigation Actions (NAMAs) the country has made a strong start. The next step is to broaden and deepen this response.

22. NMA holds the responsibility to provide weather forecasts on a daily and seasonal basis. However, with the current system, the NMA is unable to ensure the accuracy, timeliness and reliability of its forecast due to limitations in observational infrastructure (as discussed and addressed under outcome 1) but also limitations in data analysis (calculating long term trends, combining satellite and surface observations, assessing regions experiencing accumulated moisture deficits) and forecasting skills (running numerical weather prediction and local area models to predict the weather and seasonal forecasts for medium-term outlooks). In the case of the latter, NMA technical capacity is also restricted in its ability to produce accurate and timely weather forecasts for use by the public, businesses and issuing warnings.

23. The World Bank funded GFDRR and a UNDP-financed Disaster Risk Reduction initiative (described in section 2.3), are contributing to the strengthening of the capacity of DRMFS and MoA to respond to and mitigate ongoing disasters, however, they do not specifically provide training and capacity building in the hydro-met sector to be able to improve the accuracy and frequency of early warnings and the analysis of historical climate data for long term planning.

24. Efforts currently underway by ACPC and FAO to help small-scale farmers improve their ability to interpret and respond to early warnings and consider adaptation options to longer-term climate change are important baseline activities. It is essential for farmers, pastoralists and other sectors of the economy that NMA, MoA and HWQD are able to collaborate to produce tailored and sector-specific early warning products that integrate weather/climate observations, environmental and socio-economic information on various timescales (ranging from the present to several months in the future) and based on user needs. For example, during deliberations at the national stakeholder consultation, experts from the Ministry of Agriculture mentioned that farmers and the agricultural sector are more interested to know when the rains will start rather than the intensity of the rain. The DRMFS mentioned that on the other hand communities and regions affected by floods or landslides need information on rainfall quantity to be able to assess the risks of landslides. These sector specific and tailored early warning products require a diversity of skill and an agility to analyse weather data that the NMA, DRMFS and HWQD presently does not have. The baseline assessment of other interventions has shown that very few projects are engaging in developing tailored and sector specific meteorological products such as agromet and food security advisories, flood warnings and daily weather forecasts.

25. Without this intervention, the current ability of MoFED, the MoA and their directorates to assimilate and use climate forecasts and monitoring is limited. The formulation of strategies for poverty reduction and disaster risk management do not presently make sufficient use of long term climate change information to mitigate the risks and build on the opportunities. To facilitate cross-government engagement on this agenda, the Ethiopian Government has recently established a new CRGE ministerial committee. This committee is supported by a technical working group, itself delegated into a series of sub-sectoral working groups. These ad-hoc institutional arrangements will be replaced by permanent institutional arrangements to direct Ethiopia's efforts to achieve a climate resilient green economy. Building on the USAID efforts to strengthen the Government's ability in use climate information in

planning, this LDCF financing will contribute to the enhanced capacity of the various government sectors to integrate climate information into their strategic planning process.

26. Although Ethiopia has built some of the components of an early warning system and response capacity, the preparatory and design phase identified clear opportunities to extend and improve the communications channels especially focusing on the last mile connectivity. The World Bank funded GFDRR project supports improved EWS and communications systems in Ethiopia which this initiative will build on to ensure inter-sectoral communications are enabled and rigorous, between the NMA and the DRMFS, and strengthen timely issuance of early warning to remote and rural communities. The use of VHF radio, mobile phone and other innovative technology will potentially improve the Ethiopian governments' ability to reach out to the most remote and rural communities. Building on the WFP and FAO initiatives that focus on community level adaptation measures, and disaster risk management LDCF-funding will reinforce the communication system of early warnings and ensure that they reach the most remote locations.

With LDCF/SCCF Intervention (adaptation alternative)

27. Much of the value of early warnings (whether a user changes their actions or lives/assets are safeguarded) is dependent on the packaging, communication and dissemination of those warnings. The effectiveness of warnings can be improved either through improving the forecasts/monitoring information, communications or the decision-making process. This component is primarily concerned with improving these aspects of the EWS. Specific details on the exact type of EWS information and risk management tools (for flood warnings, agricultural extension advisories, weather index insurance, transport planning etc) will be determined during the project implementation phase as well as additional actions designed to meet those priority needs.

28. Building on current initiatives by the World Bank (GFDRR), the WFP's effort to improve the EWS for the rural farmers and the ACPC's project titled "Support to the National Meteorological Agency (NMA) of Ethiopia in Capacity Building of Climate Monitoring and Early Warning Activities for Climate Change Adaptation", the capacity of NMA will be strengthened to issue daily and seasonal forecasts. The capability of NMA and DHWQ staff to analyze, forecast and use weather and environmental information more effectively will include the ability to cooperate within the government as well as use forecasts and observations produced by international meteorological centres. Today NMA updates its weather forecast only once a day, with this LDCF-financing NMA will be able to update it four times a day because of improved infrastructure and forecasting capacity.

29. At present tailored meteorological products are limited and often produced by regional or international organisations which only have access to internationally available observation and monitoring data. Consequently these products often lack detailed observations, which the GoE has access to (improved partly through outcome 1) and can utilize to produce more targeted and effective tailored products. Building on the activities of the ACPC and the USAID PRIME and ELA projects, LDCF funding will be used to build capabilities within NMA to make use of satellite to forecast rainfall over large areas, to provide accurate flood warning at the local level and strengthen agricultural advisories. Another improvement that this project will contribute to is the leap from analogue rainfall predictions to model based rainfall prediction thanks to the software procured and the technicians trained to use it.

30. In parallel, and building on the UNDP DRM initiative with the MoWE and the ACPC project aiming to upgrade manual water level stations to automatic stations, this LDCF initiative will strengthen the hydrology department of Ethiopia in its ability to monitor flow levels of the Abbay River basin and Tana Lake. Typically before any major flood there is a rise in the level of the water in lakes and rivers and if it goes unnoticed cannot serve as an indicator of an imminent flood. LDCF financing will

reinforcing the ability of the hydrology department of Ethiopia to monitor river and lake levels by increasing the number of automated gauging stations and improving the technical skills of the engineers to understand and analyse the data in real time. Most of the flood prone areas of Ethiopia are along river basins and around lakes. See map of flood prone areas in the Key Assessment report, Annex IV, page 93.

31. This LDCF initiative in close collaboration with the USAID PRIME project working on strengthening Ethiopia's planning (MOFED) and disaster management institutions (DRMFSS) in their ability to integrate climate information more routinely in their work, will contribute to further enhance the capability of the MOFED and DRMFSS to use climate information in the Growth and Transformational Plan and in the issuance of alerts. Building on the UNDP DRM programme, the collaboration of NMA with these important institutions will be improved through the signing of MoUs and Standard Operating Procedures for channeling climate information and long term climate projections.

32. The private sector too has an interest in more accurate and timely weather forecasts and tailored sector meteorological specific products. The civil aviation (Ethiopian airlines), insurance companies (Oromia insurance) and the hydropower industry for example are sectors that are eager to have access to these improved products and have expressed willingness to pay for weather services, thereby promoting public private partnerships and financial sustainability. This LDCF initiative will contribute to strengthening existing contracts between NMA and the Bole Airport and update the fees collected for these services. Public private partnerships between NMA and at least two important national insurance companies will be enabled to raise funds.

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:

1. Problems related to involvement and co-operation of stakeholders to work cross-sectorally. During the preparatory phase a multi stakeholder consultation and involvement has been conducted to ensure clear commitment of the Ministries and Bureaus to sharing of data and joint programming. This will be strengthened during project implementation by the area-based planning approach that promotes cross-sectoral data sharing.
2. The issue of the unavailability of requisite human resources will be mitigated by the recruitment of international consultants who will work closely with in-country counterparts and by targeted capacity building activities. Training activities of local personnel will also be part of all aspects of the work and the relevant institutions will be encouraged to expand the staff base if it is weak in particular areas.
3. There is a low risk of insufficient institutional support and political commitments. The proposed project is strongly supported by Governments and other key stakeholders and development partners. The project, in conjunction with UNDP, will therefore take advantage of this opportunity to seek substantial support from the Governments and forge strong partnership with other development partners. Direct linkages to existing and planned baseline development activities implemented by government, securing of the necessary co-financing, as well as local buy-in will also minimize this risk. It will also be important to establish buy in from all government departments early as the project will utilize data and information from a wide range of departments.
4. There is a low risk that local weak IT and telecommunications infrastructure e.g. international bandwidth and local mobile telecommunications networks will delay transmission of climate information. Cost-effective solutions for each particular situation will be used e.g. satellite and/or

radio communications. Where feasible, automatic weather and hydrological stations reporting will be preferred over the mobile telecoms network.

5. There is a medium risk that limited capacity within relevant ministries/ insufficient qualified human capacity will delay project implementation. A major part of the project is to strengthen institutional and technical capacity for planning, designing and implementing local level adaptation actions. Technical and capacity building expertise will be contracted in, to work with and train local technical staff. A dedicated National Project Coordinator within the Project Manager will be supported with short term national and international specialist support to ensure smooth and timely delivery of project outputs.
6. There is low risk that work progresses in a compartmentalized fashion and there is little integration e.g. government departments refuse to share data and information. This risk is always present in such a project. By ensuring that capacity is built across a range of departments and implementing 'quick win' measures early (developing products based on internationally available data), these issues can be mitigated.
7. There is a low risk of non-compliance by primary proponents for the successful implementation of this project. Ensuring that the project is designed and implemented in a participatory and inclusive manner, following established UNDP procedures, will mitigate the risk. Since the activities correspond to the urgent needs as expressed by the primary proponents the risk of non-compliance should be reduced.
8. There is a medium risk that climate shocks occur during the design and implementation phase of the project. Engage with disaster response and recovery as part of adaptation planning process and incorporation of climate hazard information into planning. There may be some delays as more urgent priorities may need to be addressed by some of the stakeholders (e.g. NMA or DRMFS) but it is unlikely that this will derail the project.

A.7. Coordination with other relevant GEF financed initiatives

33. In the preparatory phase it has been verified that LDCF financed activities are not duplicated through any other project, but rather build on baseline initiatives. The current LDCF request aiming at strengthening EWS in Ethiopia will coordinate and complement with other relevant initiatives. Both these initiatives are part of the UNDP portfolio and will receive the same level of oversight and coordination. The project board supervising the implementation of these initiatives will invite the project managers of the other projects when in session to ensure information sharing and coordination. Regular coordination meetings between the two implementing teams will be organized to ensure maximum synergies and complementarity.

34. There are a number of parallel development projects and programmes, the Ministry of Finance and Economic Development is responsible for coordination and knowledge sharing between all projects through the UN Agencies and Regional Economic Cooperation Directorate Director which calls a quarterly meeting of all donor-funded projects and programmes under the Ministry.

35. The project will coordinate specifically with the projects and programmes listed below (including both GEF and non-GEF financed initiatives) through the relevant technical department or government agency, as represented in the national Technical Advisory Committee and Project Board.

36. In Ethiopia UNDP's Africa Adaptation Programme (AAP) project "Supporting integrated and comprehensive approaches to climate change adaptation in Africa - Supporting climate resilient sustainable development in Ethiopia" (which has recently been completed, though provides important lessons for this project) has strengthened existing leadership for climate change adaptation at national and local levels, by strengthening the capacity of line Ministries to develop technical advice on adaptation, the capacity of local managers for managing local adaptation planning and improving the understanding of climate change and its strategic implications amongst leaders themselves. The programme piloted approaches to managing climate change risks that integrated known methods of sustainable land management with adaptive practices that are informed by climate risk forecasting. Using the evidence and experience generated through the pilots, the programme assisted line Ministries to collaboratively prepare a climate change strategy that supported the implementation of PASPDEP II and a linked investment facility which attracted and managed funds for integrated adaptation actions.

37. It will be important to collaborate with the LDCF funded initiative (2011) on Promoting autonomous adaptation at the community level in Ethiopia that aims to support local communities and administrations at the lowest level of government design and implement adaptation actions aimed at reducing vulnerability and building resilience. This project is supporting the development of territorial climate resilient plans at sub-national level and supporting the application of climate risk reducing techniques and practices in selected rural and urban sites. It is, in particular, piloting applications of climate information and forecasts for use in agricultural planning for small-scale farmers, and the use of climate change scenarios for water management in the city of Addis Ababa.

38. The Government of Ethiopia and World Bank (GFDRR) – Ethiopia Disaster Risk Management Country Plan seeks to reinforce risk and vulnerability assessments, early warning systems and contingency planning: The methodology for mapping vulnerabilities and risk at woreda level has been developed in earlier projects financed by GFDRR and shall now be rolled out for the entire country. Multi hazard forecasting systems are being applied to develop a comprehensive early warning system, including further development of the LEAP Livelihood Early Warning and Protection system. Activities will include developing a contingency plan for operations in the case of drought and flood events in Ethiopia.

39. The USAID funded Famine and Early Warning System Network, FEWSNET, is a regional programme developing early warning systems for food security monitoring across Africa. FEWSNET is a set of integrated activities intended to: 1) deliver early warnings of hazards, food insecurity, vulnerability to food insecurity, and famine; 2) increase the quantity and improve the quality of information used to make comparable food security and vulnerability monitoring, needs assessments, preparedness, and contingency and response planning; and 3) develop national and regional emergency early warning and food security monitoring and assessment capabilities. The overall goal of the activity is to help prevent food insecurity and famine through early identification and warning to decision-makers.

40. Currently UN FAO supports agricultural development and food security initiatives, as well as agricultural production (e.g. improved seeds, or livestock, pesticide management and control). In particular FAO and the Ministry of Agriculture are supporting pilots of a Community-based Integrated Watershed Development Approach to Soil and Water Conservation (US\$371,880).

41. The World Bank has so far provided lending for over 130 projects in Ethiopia that have focused, among other things on Infrastructure, Protection of Basic Services, Food Security and Education. As of September 2009, there were 33 active projects with a net commitment value of over US\$ 3.6 billion. Of this funding, 66% is being spent on Agriculture, 12% on public administration and 22% is being spent on industry and trade. Relevant projects that are proposed, in preparation or being implemented are:

- Ethiopia Forest Carbon Partnership Facility readiness;
- Flood Risks Prevention in Ethiopia;

- Electricity Access Rural Expansion Project II – to increase access to electricity in rural towns and villages with grid access;
- Tana&Beles Integrated Water Resources Development;
- WMO/IGAD Climate Predictions and Applications Centre (ICPAC) (GFDRR Track I);

42. This LDCF project is not a standalone project; it is part of a wider multi-country programme that will implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia). Synergies between these projects will be used to enhance the cost-effective hiring of specialized technical staff, coordination of data and information (including inter-country sharing where feasible), training (operations & maintenance of equipment; forecasting techniques; tailored advisories and warnings), and effective use of communications and standard operating procedures.

43. Being part of a multi-country programme means there is significant scope for many activities to be coordinated at the regional level thereby enabling economies of scale, which can reduce costs and increase effectiveness (especially in terms of knowledge generation and training). Details of outputs and the types of engagement, which will benefit through the regional approach, are presented in section B.3. In particular activities under Output 1.1 and 1.2, which will procure hydrological and meteorological equipment, will benefit from the core technical staff who will help design and identify appropriate cost-effective observing networks. Activity 1.5.1 of output 1.5 (as well as activities under outputs 2.1 and 2.2) can also be implemented in collaboration with other countries to provide training on infrastructure operations and maintenance, weather and climate forecasts and development of tailored warnings/advisories e.g. activity 2.1.1 which focuses on training of forecasters and modellers. These activities will be closely coordinated with other regional and international partners/centres e.g. WMO/GFCS, ICPAC etc. Further benefits of a regional approach can also be pursued through outputs 2.4 and 2.5, sharing knowledge on communication strategies and engaging multi-national corporations who can benefit from climate services.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

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

44. Stakeholder consultation has been a key feature in the design of this LDCF Proposal, and stakeholders have been involved in identifying and prioritizing the proposed intervention activities. Details of the stakeholder engagement during the Preparatory phase were provided in Section 2.1.3 in the project document. Ongoing public consultation is critical for successful implementation. This section outlines some of the key consultation principles and processes at a strategic level that will need to be translated into practical action during the project implementation. It provides guidance based on the initial stakeholder analysis, conducted as part of the project preparation process, and the consultations so far. This can be used to define exact activities that will form part of a communications and consultation strategy developed during the inception period of implementation.

Objectives:

45. The stakeholder consultation during project implementation will be expected to support all outcomes. Overall, the objective of the consultation plan is to provide a framework to guide and promote two way engagements between the key implementing partners (Federal NMA, regional offices of NMA, DRMFSS and MoWE-Hydrology Directorate) and the key stakeholders with whom the project will engage and directly impact upon.

46. It is proposed that several more specific objectives for consultation are adopted:
- To ensure a general vision and understanding of the project and its expected outcomes by all concerned stakeholders.
 - To engage key stakeholders in planning, implementing and monitoring of specific interventions.
 - To ensure consistent, supportive and effective communication (information, documentation, sharing, learning and feedback) processes with key implementing partners as well as the wider public including farmers and pastoralists.
 - To influence and ensure strategic level support for project implementation from state and non-state organizations and international agencies through engagement in effective community, private sector and donor forums or platforms.
47. In delivering these objectives, there are a number of simple qualitative considerations that need to be taken into account when planning engagement processes and what they should be seeking to achieve:
- Identify constraints and solutions: As a two way engagement, the consultation process should be used as an opportunity to identify with stakeholders possible constraints to or with the project's implementation and to work with the stakeholders in finding sustainable solutions.
 - Managing expectations: The LDCF investment is relatively minor, compared to the adaptation demands facing the country. It will be important that consultations take due consideration to manage expectations of stakeholders and stakeholder groups.
 - Partnerships for co-financing: The LDCF seek to add value to their investments by building on existing and parallel projects that represent co-financing and consultations should consider opportunities for partnerships that will leverage co-financing into innovative approaches or technologies that may improve efficiencies and enhance impact.

Stakeholders:

48. Stakeholders include a range of types of groups, all with their own interests and concerns. They have different roles to play in the project and the Table below indicates key stakeholders and their possible roles.

Activities planned during implementation and evaluation:

49. During implementation, the communication and consultation process should be divided into three main phases, being:
- Phase 1 – this is the mobilization phase in the first year of the project. The fine details of the activities and implementation structures will be designed, partnerships for action will be forged and stakeholder engagement will focus around these design processes.
 - Phase 2 – represents the main implementation phase where investments will be made on the ground in the target areas and stakeholder consultation about engagement will focus on output oriented action.
 - Phase 3 – represents the completion of the project and the plans for scale-up and long-term sustainability of the LDCF investments. Consultation will focus on learning, bringing experience together and looking at processes for continued post-project impact.

Phase I – Developing a strategy and action plan:

50. At mobilization, a simple communications strategy should be developed. Key principles to be considered in the development of the strategy include:
- Who? Implementers need to understand the stakeholders well – their needs, the impacts of interventions on each stakeholder group, the opportunities for contribution/engagement, and their power/influence. Whilst, as part of the project preparation, a stakeholder analysis was carried out, during this phase this should be reviewed as stakeholders should be seen as dynamic. The

stakeholders that may be involved in or affected by the project are multiple, diverse; so an effective stakeholder identification process will be an important contributor to identifying key factors for success and risks to mitigate.

- Gender: In engagement with the project implementation, it will be important to consider the different ways that the early warning products are easily accessed, understood and used by both women and men. The project implementer will need to consider how these two groups access information and interpret it and get feedback through consultation process in selected areas of implementation.
- Why? Implementers need be clear about the purpose of the consultation process as so that the right stakeholders make the right inputs to the planned activities. During Phase I, NMA will seek to have secured the support and commitment of key stakeholders required for project implementation. Implementers should make key stakeholders aware of the plan and its intended activities and outcomes and make clear their role and scope for contributing to project decisions and activities.
- What? In planning stakeholder involvement, the strategy should make as much use of existing mechanisms (institutions and process) as possible, avoiding establishing project oriented structures.

Types of consultation mechanism:

- An overarching multi-stakeholder group, such as a steering committee will form a governance role, but also be a forum for stakeholder engagement.
- Specific focus groups on technical interventions; and
- Information briefings for government and co-financing institutions.

Phase II - Consultation through implementation:

51. Once implementation begins, public consultations should become more of an ongoing exchange of information, and there are two main purposes for the various mechanisms outlined under Phase I:

- to gather information from beneficiaries and stakeholders about the impact and effectiveness of the planned adaptation packages (efficient and reliable EWS) to support adaptive management; and
- to provide interested government and donor stakeholders and the general public with information about the progress and impact of the project as it is implemented.

52. The first purpose relates to engagement for effective implementation and monitoring, whilst the latter is more concerned with information dissemination, 'public relations' and expectation management. Good public relations will also help encourage collaboration with respect to the objective of the LDCF project.

Phase III - Project completion and scale up promotion:

53. This will be a process of ensuring completion, hand-over and long-term sustainability of the LDCF investment. Consultation will focus on bringing experience together, sharing key lessons learnt (through the UNDP ALM, Woreda.net and other forums) and looking at processes for promoting scale up of this project in order to have efficient and reliable EWS in the country.

Social issues and impacts:

54. Different assessments indicate that women and children; elderly people, small scale farmers and pastoralists are among the most affected groups in the society by climate change. The implementation of this project will improve the EWS of the country and hence the impact of extreme events like flood and drought will be well monitored and the impact will significantly reduced. Hence, the project will benefit all the communities equally but the most affected group like women will have a comparative advantage as most of burden is on them. In line with improving the quality and accessibility of the data, EW

information, communication channels, training of selected groups especially women on how to use the product is to be done.

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):

55. This LDCF initiative will improve the EWS and long term planning for climate change adaptation capacity of Ethiopia, particularly in support of enhancing the resilience of livelihoods and assets of some of the poorest communities. Providing accurate and timely early warning on severe weather and long term adaptation strategies has the potential to enable poor communities such as agriculturalist and pastoralists to make informed decision about their livelihood activities and protect their built assets. This intervention will have tangible and direct benefits for the population in flood prone areas which represents about 20 to 25 Million people. In the Oromia and Afar regions lying along the mid Awash River around 4 to 5 Million people will benefit from early warning for floods and flash floods. Similarly in the low-lying areas of Gambella (around 5 Million) along the Baro, Gilo and Akobo rivers are regularly flooded and will benefit from the improved accuracy and effectiveness of early warnings. Downstream areas along the Omo River and the extensive floodplains surrounding Lake Tana and the Gumara and Rib rivers in Amhara is a region of intensive agriculture because of the fertility of its soil, but is also prone to regular flooding.

- and downstre

56. This LDCF financing will impact this area substantially by ensuring improved early warning and forecasting, this represents around 5 Million people. The project will indirectly benefit the entire population (around 80 Million people) of Ethiopia by creating capacity at the national level to produce more accurate weather forecasts and train government staff in planning long term strategies for climate change adaptation. At household level, benefits will be most important for those living on banks of rivers and flood prone areas (around 5 million people) by receiving more timely, tailored and accurate severe weather forecasts and early warnings for floods. Similarly those living on the plains and prone to recurrent droughts will benefit from the increased capacity of the national agencies to foresee the lack of rain for a given season and trigger adequate funds and mitigation measures. Close and strengthened partnerships and communication channels between the NMA and the DRMFS will improve the efficiency and effectiveness of the disaster risk reduction systems to deliver coping and relief goods and services.

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

57. The preparatory and design phase focused on project implementation principles and technology that will meet the objectives of the project in the most cost-effective way. The project will implement 2 of the NAPA (2007) top 12 priority actions.

58. The project will be implemented through government agencies responsible for EWS, climate change adaptation, disaster risk management and multi-sectoral task teams drawing expertise from the departments responsible for planning and implementing climate resilience enhancing practices was considered the most cost effective approach. One alternative way of implementing this project was to expand the hydrological monitoring network based on a cross-border watershed approach; however, this requires cross-border data sharing and more financial resources. This project lays a foundation for future initiatives to model hydrology in river basins by establishing good monitoring networks to build off of. For the meteorology aspect another was to only use manual stations and incorporate SMS communication services; NMA however needs more automatic stations. Some automatic stations are necessary for rapid data gathering to generate timely alerts. In order to gradually build their capacity with automatic stations,

equipment procurement will be staggered and existing manual stations will be rehabilitated and continued to be used. Manual data readers are already trained on the existing equipment that is in need of repair or spare parts.

59. The project will also focus on rehabilitating existing weather observational infrastructure rather than allocating a substantial part of the budget to procuring new weather and hydrological stations. This will enhance the cost effectiveness of the project because more observational infrastructure will be operational for every dollar spent. This will mean an increased availability and quality of weather data compared with the alternative approach of concentrating on procurement of only new equipment.

60. An additional benefit is that the repairing and rehabilitation will be done by the NMA staff and will provide a learning by doing attitude that will strengthen the capacity of the staff to later maintain the infrastructure. The Preparatory phase also analysed the training and capacity building options and only those within the scope and cost effectiveness of this project were identified. For example the options of sending NMA and HWQD engineers abroad to reputed universities for forecasting and modelling training is more expensive than getting the training done in the country. Most of the training will be done in country either with international experts for short periods, or using national expertise from the University of Addis Ababa and other research institutions with meteorological and climate change expertise. This will create a pool of knowledge and trainers who will in turn be able to transfer the knowledge to other national or regional staff thereby extending the outreach and impact of the project for. The alternative of outsourcing the training to universities and research institution abroad (mostly in the US and Europe) was deemed cost ineffective.

61. This initiative could have alternatively used stations with cheaper sensors to decrease the cost of spare parts; however if sensors do not adhere to WMO standards, WMO will not consider the station data in regional and global models. As a result, the country's data would not be assimilated to improve the regional and international forecasting models the country will exploit and downscale. Another alternative would have been to acquire more equipment to improve national coverage; this option was considered as per the feasibility studies and development plans which demanded more monitoring equipment. However, this project is focusing on capacity development for service delivery (which is lacking in Ethiopia) rather than excessive procurement. Good and targeted service delivery of EWS/CI is more likely if funds are focused on building capacity within NMA, HWQD and DRMFS (Output 2.2). This will ensure the sustainability of continued monitoring and the use of tailored EWS/CI into long-term development plans.

62. Also the option of lightning detection systems could have been followed. However these technologies do not enable sufficient warning lead-time for resource mobilization. They also cannot provide seasonal forecasts which are essential for Ethiopia and its economic dependence on agriculture. Also depending on the provider, they are expensive to install and rely on external expertise; \$100,000 - \$3.5m (Sources: Astrogenic, SAMPRO, Earth Networks).

63. All operation and maintenance could have been outsourced to a private company through a PPP (public private partnership) to enable the company time to train information production personnel over a longer period of time. However, NMA and the HWQD already have experience with learning-by-doing and have received training for many of the specific monitoring instruments they have requested to be acquired/rehabilitated.

64. NMA and HWQD could rely solely on regional and international centers for training but this is not cost-effective because the option does not take advantage of internal forecasting expertise within the institutions. Another alternative to building in house forecasting and modeling capacity would have been to use outside forecasting products for free: this option will be considered, such as NOAA's CFS and other forecasting tools which are readily available and free. However, these products must be downscaled and calibrated with in situ data. Therefore, regional and international databases will be exploited to the extent possible to support Ethiopia to develop national forecasting by translating open-source climate monitoring and forecasts into flooding and drought/food security information.

65. This LDCF project is not a standalone project; it is part of a wider multi-country programme that will implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia). Synergies between these projects will be used to enhance the cost-effective hiring of specialized technical staff, coordination of data and information (including inter-country sharing where feasible), training (operations & maintenance of equipment; forecasting techniques; tailored advisories and warnings), and effective use of communications and standard operating procedures.

66. Surveying the technical support needs for each country a set of common specialized technical staff were identified, each with particular skills related to the development of hydroclimatic observing systems, the effective design and implementation of standard operating procedures and tailored warnings/advisories, as well as the communication of advisories/warnings. Hiring 3-4 full-time technical staff, which can provide the needed support for all countries, will be more cost effective than hiring the same staff as consultants for each country. Further benefits include time saved on HR procurement procedures (e.g. for hiring, advertising etc.) and the ability to compare and standardize support across countries where possible. UNDP will directly undertake the recruitment for all project staff who will support all countries in this multi-country programme.

67. Training and capacity building for operations and maintenance of the hydromet infrastructure and for modeling and forecasting (Outputs 1.5, 2.1 and 2.2) can also be done at a regional level, bringing together participants from all countries to encourage knowledge sharing and the development of collective skills. This has several advantages, namely: i) promoting the sharing of information and learning between countries; ii) encouraging discussions of best practices i.e. what works, reasons for failure etc; and iii) increasing the effective pool of skilled resources which each country can draw upon (increasing the potential for future trainings to be conducted by experts within the region). Such activities will be closely coordinated with other regional and international partners/centres e.g. WMO/GFCS, ICPAC etc.

68. Regional support will also be used to help strengthen the development of standard operating procedures (both the procedures themselves and their legal basis), for the issuing and communication of warnings/advisories, where possible incorporating warnings issued by neighbouring countries e.g. in the case of shared watersheds (Output 2.4). Where private sector engagement (Output 2.4 and 2.5) includes multi-national corporations, regional support will assist engaging head offices in multiple countries, increasing the total effective services being offered and hence bargaining position of each government. In the case of mobile (cellular) communications (which may be used for both disseminating alerts and the collection of data used to generate alerts), the regional support programme will leverage collective negotiations for data services, as well as engaging with corporate social responsibility programmes to enhance services where possible..

C. DESCRIBE THE BUDGETED M & E PLAN:

69. The project will be monitored through the following M& E activities. The M&E budget is provided in the table below. The M&E framework set out in the Project Results Framework in Part III of this project document is aligned with the AMAT and UNDP M&E frameworks.

Project start:

70. A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the LDCF related AMAT set out in the Project Results Framework in Section III of this project document, and finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule PB meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first PB meeting should be held within the first 12 months following the inception workshop.

71. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Quarterly:

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP/GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs will be used to monitor issues, lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annually:

72. Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lesson learned/good practice;
- AWP and other expenditure reports;
- Risk and adaptive management; and
- ATLAS QPR.

Periodic Monitoring through site visits:

73. UNDP CO and the UNDP-GEF region-based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

Mid-term of project cycle:

74. The project will undergo an independent Mid-Term Review at the mid-point of project implementation. The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the mid-term evaluation cycle.

End of Project:

75. An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The LDFC/SCCF AMAT as set out in the Project Results Framework in Section III of this project document) will also be completed during the terminal evaluation cycle. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

Learning and knowledge sharing:

76. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

77. The project will identify and participate, as relevant and appropriate, in scientific, policy based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

There will be a two-way flow of information between this project and other projects of a similar focus. At the validation workshop a participant representing USAID mentioned the importance of focusing on monitoring and on food insecure areas. This will be done and is included in the monitoring plan.

Audit:

78. Project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies.

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Inception Workshop and Report	<ul style="list-style-type: none"> • Project Manager (MEE) • PIU • UNDP CO, UNDP GEF 	Indicative cost: 10,000	Within first two months of project start-up.

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
Measurement of Means of Verification of project results	<ul style="list-style-type: none"> • UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members • PIU, 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 <i>output and implementation</i>	<ul style="list-style-type: none"> • Oversight by Project Manager (MEE) • PIU, esp. M&E expert • Implementation teams 	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans.
ARR/PIR	<ul style="list-style-type: none"> • Project manager (MEE) • PIU • UNDP CO • UNDP RTA • UNDP EEG 	None.	Annually.
Periodic status/ progress reports	<ul style="list-style-type: none"> • Project manager and team 	None.	Quarterly.
Mid-term Review	<ul style="list-style-type: none"> • Project manager (MEE) • PIU • UNDP CO • UNDP RCU • External Consultants (i.e. evaluation team) 	Indicative cost: 30,000.	At the mid-point of project implementation.
Terminal Evaluation	<ul style="list-style-type: none"> • Project manager (MEE) • PIU • UNDP CO • UNDP RCU • External Consultants (i.e. evaluation team) 	Indicative cost : 45,000	At least three months before the end of project implementation.
Audit	<ul style="list-style-type: none"> • UNDP CO • Project manager (MEE) • PIU 	Indicative cost per year: 3,000 (12,000 total).	Yearly.
Visits to field sites	<ul style="list-style-type: none"> • UNDP CO • UNDP RCU (as appropriate) 	For GEF supported	Yearly for UNDP CO, as required by UNDP

Type of M&E activity	Responsible Parties	Budget US\$ <i>Excluding project team staff time</i>	Time frame
	<ul style="list-style-type: none"> • Government representatives 	projects, paid from IA fees and operational budget.	RCU.
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US\$ 97,000. (+/- 2% of total GEF 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)
Dr Tewolde Berhan G/Egziabher	Director general	Environmental Protection authority, Ethiopia	04/23/2012

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, Office-in-Charge, and Deputy Executive Coordinator, UNDP/GEF		July 23, 2013	Mark Tadross Technical advisor, GLECRDS	+27216502884	mark.tadross@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

<p>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</p> <p>Outcome 1: Strengthened capacities of government and producer institutions to design, develop and deliver key services (Hydro-met services) Outcome 2: Mainstreaming & operationalization of DRRM policy. Outcome 4: LCCR & MEA compliance, access to climate finance and technology.</p>					
<p>Country Programme Outcome Indicators:</p> <p>Woredas with early warning system (EWS) and contingency plans. Gender responsive policies, sector strategies, investments increasingly LCCR and MEA compliant.</p>					
<p>Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page): 3. Promote climate change adaptation</p>					
<p>Applicable SOF (e.g. GEF) Strategic Objective and Program:</p> <p><u>OBJECTIVE 2:</u> Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level.</p>					
<p>Applicable SOF (e.g. GEF) Expected Outcomes:</p> <p>Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses.</p>					
<p>Applicable SOF (e.g. GEF) Outcome Indicators:</p> <ul style="list-style-type: none"> • Relevant risk information disseminated to stakeholders • Type and no. monitoring systems in place • % of population covered by climate change risk measures 					
	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<p>Project Objective⁷</p> <p>To strengthen the climate monitoring capabilities, early warning systems and available information for responding to</p>	<p>1.Capacity as per capacity assessment scorecard (baseline: 83; target: 139)</p>	<p>1.Limited capacity to generate EWS and CI on a national scale for extreme hydro-meteorological phenomena.</p> <p>No Standard</p>	<p>1. Capacity assessment scorecard score of 139.</p>	<p>Capacity Scorecard results.</p> <p>Focus group interviews with planning and subject</p>	

⁷Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR
 GEF5 CEO Endorsement Template-December 2012.doc

<p>climate shocks and planning adaptation to climate change in Ethiopia.</p>	<p>2. Domestic finance committed to the relevant institutions to monitor extreme weather and climate change.</p>	<p>Operating Procedure (SOP) for alert communication by NMA to DRMFS.</p> <p>Current score: 83</p> <p>2. Existing budget plans do not have sufficient funds to maintain and operate environmental monitoring infrastructure.</p> <p>Current budget: Low</p>	<p>2. Domestic target financing of 100M Birr per year.</p>	<p>matter specialists.</p> <p>Hydro-met institutions plans and related budgets.</p> <p>Field Surveys and climate vulnerability analyses.</p>	
<p>Outcome 1</p> <p>Enhanced capacity of NMA and HWQD to monitor extreme weather and climate change.</p>	<p>1. Percentage of national coverage of weather/climate and hydrological monitoring infrastructure.</p> <p>2. Frequency and timeliness of climate-related data availability (baseline: Monthly).</p>	<p>1. Percentage of national coverage of weather/climate and hydrological monitoring network at the beginning of the project.</p> <p><u>Meteorological stations:</u> 1000 manual, 70 automatic</p> <p><u>Hydrological stations:</u> 489 manual, 4 with telemetry</p> <p>2. Frequency of data transmission and collection: monthly.</p>	<p>1. Increase in 24% national coverage to take steps in achieving NMA and HWQD optimal monitoring arrangements as defined in feasibility studies.</p> <p><u>Meteorological stations:</u> 1240 manual stations, 110 automatic</p> <p><u>Hydrological stations:</u> 439 manual, 64 with telemetry</p> <p>2. Frequency of data transmission and collection: Daily.</p>	<p>Work logs of NMA and HWQD to assess the rehabilitation and repair work done.</p> <p>Procurement records of NMA and HWQD for procuring new equipment.</p> <p>Training programs feedback forms and internal assessments.</p>	<p>Political commitment to enhance the capacity of the hydro-met institutions remains</p> <p>Unavailability of requisite human resources and data.</p> <p>Poor co-ordination among implementing and executing agency.</p> <p>Local IT and telecommunications infrastructure weak e.g. international bandwidth and local mobile telecommunications networks.</p> <p>Limited capacity within relevant ministries/ insufficient qualified.</p>

<p>Outcome 2</p> <p>Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term development plans.</p>	<p>1. Percentage of population with access to improved climate information and flood and drought warnings (disaggregated by gender).</p> <p>2. Development frameworks (e.g. GTP) that integrate climate information in their formulation</p> <p>3. Sector-specific EW products and strategies that integrate climate risks.</p>	<p>1. Use of hydro-meteorological and environmental information for making early warnings currently low for both women and men.</p> <p><u>Women:</u> 6 million <u>Men:</u> 8 million</p> <p>2. Currently no development frameworks incorporate climate change information</p> <p>3. Limited number of tailor made and sector specific meteorological products.</p> <p>Limited number of public private partnerships and pay for services contracts.</p>	<p>1. Percentage increase in population who have access to improved EWS/CI (50% increase for women, and 50% increase for men).</p> <p><u>Women:</u> 9 million <u>Men:</u> 12 million</p> <p>2. At least 2 of the PRSP policy briefs incorporate analyses of risk maps and/or climate change projections influencing long-term planning proposals.</p> <p>3. Development of at least one tailored climate product and presentation of market research plan on how to implement mobile phone based agricultural advisories, both supporting targeted weather/climate service delivery.</p>	<p>Training programmes feedback forms and internal assessments.</p> <p>Meteorology department internal planning and related budgeting.</p> <p>National plan and development strategies.</p> <p>Institutions cross communications logs and internal assessments.</p> <p>Meteorology department contracts with private sector companies.</p>	<p>Problems related to involvement and co-operation of stakeholders to work cross-sectorally.</p> <p>Work progresses in a compartmentalized fashion and there is little integration e.g. government departments refuse to share data and information</p> <p>Non-compliance by primary proponents for the successful implementation of this project</p> <p>Insufficient institutional support and political commitments.</p>
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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).

United States Government Comments	
Comments	Responses
Include detailed activities related to production of climate/hydrological information, communications and sustaining this work and retaining expertise, particularly under component 2.	Detailed activities related to production of climate/hydrology information have been included. For example agrometadvisories, targeted early warnings for sector-specific needs such as pastoralism or hydro-power will be developed during the project implementation (in consultation with famers associations (coffee growers association of Ethiopia), women representatives at regional and national level, and the NMA, DRMFSS and the Ministry of Agriculture (Output 2.1, activity 2.1.1 -2.1.3 and Output 2.2 and 2.3). During the implementation phase, efforts will be made to ensure that expertise is retained by signing contracts with trainees binding them to remain in the institution for at least two years after the training program.
Maintain close relationships and establish partnerships with relevant organizations working on climate and hydrometeorological services in the project region and make use of lessons learned from related efforts. This will strengthen capacity and connectivity within the broader region.	Efforts to ensure that close relationships are established/maintained has been at the center of the PPG process. Lessons learned by other partners involved in similar activities have been reviewed and incorporated in the project proposal. The project aims to ensure partnerships are developed or strengthened with ACMAD, Africa Climate Policy Center, Eumetsat, ICPAC and others. Partnerships will be formed through MoUs and formalized agreements. NMA is already a partner of Eumetsat and has relationships with ACMAD and AfricaGeoss and they share data and information (Output 2.1, activity 2.1.1 -2.1.3 and Output 2.2 and 2.3, page 46). These partners provide satellite imagery and data (Eumetsat) regional climate monitoring and sharing of knowledge and technology.
Describe how the project will ensure that the production of information is driven by the needs of the users and delivered through appropriate user-friendly channels	Both providers (NMA, HWQD, EPA) and users (DRMFSS, MoFED, Civil aviation, Oromia Insurance company, Ethiopian coffee growers association, Ministry of Women's Affairs) of climate and environmental information have been consulted to ensure that the project is driven by the needs of the users. See annex IV Key Assessment Report in the project document for detail of inputs from stakeholders. During project implementation, participatory consultations with users such as farmers, pastoralist, women associations, but also from the private sector with insurance companies (Oromia insurance) and civil aviation (Ethiopian Airlines) will ensure that user needs are taken into consideration when designing Met products. User-friendly channels for delivery of information such as SMS, TV and Radio have been identified and will be used during project implementation. Outputs 1.1 to 1.5 have all been designed in consultation with stakeholders to identify the procurement and rehabilitation needs for the climate and hydrology observation infrastructure. Also Outputs 2.2 and 2.3 have taken specific inputs from stakeholders to ensure they are compliant with local needs.
Include clear explanations of how local communities and women will be involved in shaping the project and describe how the project will benefit vulnerable populations and individuals.	The preparation phase has focused on gender-sensitive approaches (kkk) and has ensured and clearly explained in the project document how women and vulnerable populations will be involved in shaping the type of information needed. Women representatives participated in the national consultations, and processes to include local communities in the design of early warning products have been included in the project document (Output 2.2 and 2.4). During the preparation phase (see Annex IV, Key assessment report and section 2.1.3 Stakeholder Baseline Analysis) the importance of designing early warning products in a gender sensitive and participatory manner was emphasized. NMA

	will lead the consultative process of engaging with communities at Kebele and Woreda level through its network of regional staff.
Activities related to data stewardship should be expanded to include a plan for data sharing throughout the region and globally.	Data sharing is a key feature of this project and efforts during implementation to activate and maintain data sharing channels with regional and global climate institutions will be ensured. Ethiopia's NMA has formal partnership with Eumetsat, UKMO, ACMAD and has agreed to ensure data will be shared with these centers (Output 2.1, activity 2.1.1 -2.1.3 and Output 2.2 and 2.3).
Clearly articulate the sectors that will benefit from the project, and include considerations of the adaptation priorities and needs of local communities.	Sectors that will benefit from the project have been identified, including the Disaster Risk Management and Food Security sector, the Agriculture and Water ministries, and the hydro-power, insurance and civil aviation sectors. Section 2.3.2 details the local and national benefits that this project will provide. This intervention will have tangible and direct benefits for the population in flood-prone areas which represents about 20 to 25 million people. In the Oromia and Afar regions lying along the mid- and downstream plains of the Awash River around 4 to 5 million people will benefit from early warnings for floods and flash floods. Similarly in the low-lying areas of Gambella (around 5 million) along the Baro, Gilo and Akobo rivers are regularly flooded and will benefit from the improved accuracy and effectiveness of early warnings.
General comments on PIFs	
Given the similarity between all the PIFs, it is recommended to develop one regional PIF OR conduct more in-depth analysis of gaps and needs for each country.	A detailed analysis of the gaps and needs of Ethiopia have been completed to input in the design of the proposal. The outputs for this LDCF project have been tailored to address the gaps and needs for the NMA, HWQD as well as user-agencies namely DRMFS and MoFED and local communities in Ethiopia. The gaps and needs of these key early warning institutions and end-users of early warning system information have been identified through multi-stakeholder consultations conducted including: i) an initial inception workshop on 26 September 2012; ii) a national stakeholder consultation to obtain feedback on proposed project framework on December 2012; and iii) a Validation workshop in February 2013. Consultations were attended by national operational focal points, government departments responsible for generating and using climate information and early warning systems as well as a number of development partners (FAO, World Bank, WFP, WMO, USAID), NGOs and civil society organisations. Please see details of stakeholder involvement during the PPG phase in Annex IX of the project document.
Long term data records require sustainability and therefore need more detail for output 2.5 (sustainable financing) and how it will overcome barriers.	Programmatic Sustainability and financial sustainability have been emphasised during the preparation phase and will be at the center of the project implementation. Private sector clients (insurance companies like the Oromia insurance company, Ethiopian Airlines and the hydro-power sector) who are potentially interested/willing to pay for climate information and EWS have been identified. They participated in the national consultations and the project will engage with them to ensure maximum cost recovery and financial sustainability.
Ensure that integration of hydro-met system, satellite, gauges and radars is considered. Radars are expensive to install and maintain and can exceed national budgets .	Radars will not be procured in Ethiopia. One radar will be assessed for rehabilitation at small cost. During the design phase, Ethiopian stakeholders decided that this project should not be the vehicle for procuring radars. Instead, LDCF funds will contribute in a small way to rehabilitating and existing radar and ensuring information it generates is linked to the network. Less than \$20,000 will be used for this purpose. Most of the LDCF resources are going towards procuring and rehabilitating automated weather and manual weather stations and hydrology gauging stations, as outlined in the project document.
Projects will be challenged by a lack of IT infrastructure (bandwidth, etc.) to collect, analyse, exchange and archive	In Ethiopia, bandwidth is sufficient to ensure data is exchanged and collected effectively. Other technology like GPRS will also be used

data.	when necessary. During the design phase, the team looked into the issue of bandwidth to support data exchange and collection. Experts in NMA and the Information and Communication Ministry, including assessments such as bandwidth capacity were conducted by the project development team and have indicated that the current system is sufficient. NMA, as part of baseline development plans, will be monitoring whether bandwidth is a limiting factor and will be expected to resolve such issues.
There is a lack of workstations to make forecasts, access global products for downscaling etc.	5 Workstations and IT equipment will be procured during the project to strengthen the ability of the NMA to make forecasts, access global products etc. Training of 5 forecasters, 3 GIS experts and climate modellers to operate these stations will be implemented during the project.
There is a lack of private capital to support the large costs of modernisation.	Output 2.5 of the project results framework will focus on leveraging private and public funds by providing sector specific tailored meteo products aimed at the civil aviation, insurance companies, the hydro power industry and the tourism industry. Output 2.5 will aim to put in place financial arrangements and public private partnerships between NMA and clients like Ethiopian Airlines and Oromia Insurance to raise funds to improve the financial sustainability of the NMA. A comprehensive needs assessment for climate services will be carried out (how needs are currently met, opportunities for private partnerships and gaps in the current services), as well as the willingness and ability to pay for such services across a range of stakeholders, both private and public. Where suitable legal arrangements exist and where the government is willing, private companies will be approached to test their willingness to engage in a public-private partnership with the NMA or associated entity. Similar activities within the country or region will be approached to learn from their experiences (e.g. the CABI initiative in Kenya and Ghana).
Specific details on which hazards are important and where should be included.	Detailed historical hazards maps have been produced and specific hazards such as floods and droughts, along with their locations (Abbay river basin, Tana Lake, Awash river basin etc.) have been identified (see annex IV Key Assessment Report, page 77, 78 and 95 of the prodoc). Output 2.1 focuses on setting up EWS for floods and droughts.
More analyses of climate needs to be included in determining where hydromet stations should be located.	The location of existing and proposed meteorological and hydrological stations was a key feature of the preparation phase and in-depth discussions with NMA and the Hydrology department took place to locate and identify the most appropriate locations based on climate and hazard profile. Maps have been developed showing their position and GPS locations of the Hydromet stations recorded.
To ensure that the appropriate climate observations are recorded and applied, the following considerations should be included:	
Clear descriptions of the types of observations that are required and how they will feed into an EWS appropriately.	During project implementation and inception phases, detailed discussions with NMA will clearly identify the types of observations that are required and how they will feed into the EWS. Types of observations: weather station, radar, radiosonde, satellite, and hydrological measures. Weather stations will measure temperature, rainfall, soil moisture, evapotranspiration and pressure variables on the surface or in the case of wind, 2 or 10 m above the surface each hour. Flow meters and water level meters will provide discharge measurements every hour. Radar will be used to measure rainfall droplets at a rate of every 10 minutes and then averaged every hour. Radiosonde will give a vertical profile of atmospheric variables including temperature and pressure two times a day (at noon and midnight in accordance with WMO standards). Combined, these observations providing information on a frequent basis will support

	daily weather forecast generation using external forecasting products (e.g., COSMO, NCEP GFS, ECMWF). For climate analyses, climate stations measuring rainfall and temperature and satellite images used to detect images of the Earth's surface on a daily basis will be used to predict climate trends such as drought periods by looking at soil moisture measurements and dry periods over several months.
Provide data to world climatic data centres.	Data will be shared with world climatic centers. There is an international convention on the meteorological data exchange policy WMO-Resolution 40 (Cg-XII). As Ethiopia, through NMA, is a WMO member country, there are seventeen synoptic meteorological stations regularly sending all recorded meteorological data to regional and global climate centers every three hours. The standard time of data exchanging are 00, 03, 06, 09, 12, 15, 18 and 21 UTC. These data (surface observations and upper air monitoring data) are currently sent via the GTS and the range of stations and data will be expanded as more data are collected via this project.
Clearly distinguish between weather and climate observations and how they are used.	A clear distinction between climatic and weather observations is now made in the project documents. Weather observations and short-term forecasts serve as a basis for daily bulletins (observations and forecasts) and will feed into modeling software for predicting extreme and severe weather for early warnings. Climate observations will be used for longer term analyses (detection of trends and development of climatic zoning maps etc.) and will be provided to planners (Ministry of Finance and Economic Development, Ministry of Agriculture etc.) and will feed into the next Growth and Transformational Plan of Ethiopia. Output 2.1 and 2.3.
Details should be provided on whether additional funding for procurement of technology can be accessed.	Additional funding for procurement of technology will be sought and from discussions with other donors in Ethiopia it seems that further funding will be made available. USAID, ACPC and the World Bank have projects that will complement this initiative procuring additional technology. See section 2.3.1 Links to other baseline initiatives and section 2.3.3 Linkages with other donor funded initiatives.
Project goals include mitigation of flood/drought losses but have insufficient hydrological modeling described in the PIF.	Limited and insufficient modeling and GIS capacity for river basins and watersheds by the hydrology department have been identified during the design phase. Therefore Hydrological modeling (Output 2.1, activity 2.1.1) will be enhanced and capacity built during the project and procurement and training to achieve these goals have been included in the project document. Hydrology department staff will receive specific hydrology modeling and GIS training to enhance the ability to plan and anticipate floods based on soil moisture and rainfall.
Include considerations of how capacity of hydrological services (and agriculture) can be improved e.g. issue flood and drought monitoring and early warnings.	Hydrological services will be strengthened and improved to have the capacity to issue accurate and timely flood and drought warnings. This will be done by procuring additional equipment to monitor the levels of flood areas such as Lake Tana and rivers like the Abbay and Awash rivers. In addition, training on hydrological modeling of watersheds and river basins will be provided in combination with GIS and mapping for clear communication and planning (Output 1.1 and 2.1).
Address links and gaps between representatives of hydromet and agriculture e.g. will the meteorological data work with hydrological/agricultural models, or will it require manipulating?	The Ministry of Agriculture and the agriculture extension services as well as farmers have been identified as primary beneficiaries and the project will focus on providing tailored and sector-specific met products to these users. Close collaboration between the NMA, the Hydrology directorate and the Ministry of Agriculture and consultations with farmers representatives and women groups will ensure that the hydromet products are designed to serve early warning and development needs. The use of both crop modeling and manipulated weather information (e.g. onset of rains etc.) will be undertaken, with the information from each used to design advisories and warnings. Additional training on data manipulation and modeling used by NMA and the Hydrology Directorate will be provided during

	the project implementation to ensure data can be used for the development of tailored and sector specific hydromet products, including flood forecast modeling.
In Component 2 there is a need to articulate the types of forecasts that will be produced.	The type of forecasts that will be produced will range from daily weather bulletins, to agromet advisories, to early warnings for severe weather and rainfall. Seasonal forecasts for agriculture and pastoralists will also be developed. During project implementation and at the inception phase, extensive consultations will review the details on the type of forecasts that need to be produced. Output 2.2, activity 2.2.4.
The focus of the PIF tends to be on early warnings and does not include long term changes to extreme weather events. Ensure that climate information can be integrated into development plans.	Efforts to activate robust communication channels between the hydromet and the planning and finance ministries will lead to regular policy briefs from the hydromet on long term climate information that the authorities can use for development planning. Output 2.3 will focus on increasing the capacity of Government institutions to assimilate climate information. Coordination mechanism between NMA and planning authorities (Ministry of Finance and Economic Development, Ministry of Agriculture) for long-term climate change adaptation strategies operational. <ul style="list-style-type: none"> • Set up standard operating procedures for transfer of information to planning authorities with varying timescale (short-term, seasonal and long-term). • Policy briefs presenting the economic costs/benefits of sectoral impacts using information from the new system on the medium and long term for Ethiopia designed by NMA and shared with Finance and Planning Ministries for integration in the Growth and Transformational Plan and other national PRSPs.
Hydromet products which are sold for a fee will limit uptake by vulnerable populations.	Hydromet products are primarily free and a fee is only applied for companies and specific sectors that have for-profit activity that requires meteo information like insurance and civil aviation. The project will ensure that vulnerable communities are not going to be left out. A fee policy which the Government will look into applying in specific cases including land developers, private companies as a way of internalising costs and supporting flow of O&M resources.
Include consideration of how the project will benefit women, noting that evidence suggests that women do not receive EW messages via radio.	Gender issues and considerations have been at the center of the design of the project and efforts to ensure that women will receive and benefit from the improved meteo information and EW have been included in the project document. See section 1.3 Integrating gender in EWS. Activity 2.1.1 and 2.2.1. Particular efforts include the use of SMS or ensuring that women's representative are part of the national and regional system of EW.
ACMAD, GEO and AfriGEOSS are not mentioned despite coordinating earth observations and climate observations.	Focus on regional and international linkages and communication is an important part of the project objective and will include institutions like ACMAD, GEO, WMO and others. Output 2.1 activity 2.1.3
There is a need to include WMO and the GFCS initiative.	The WMO focal point in Ethiopia is based at the NMA under the MWE and therefore this LDCF project will be closely linked and aligned to WMO initiatives in the country. This will include the GFCS initiative. WMO is also included for technical support to the project under the stakeholder involvement plan of the PD.

Germany comments on the PIF “Strengthening Climate Services and Early Warning Systems in the Gambia for Climate Resilient Development and Adaptation to Climate Change- 2nd Phase of the GOTG/GEF/UNEP LDCF NAPA Early Warning Project”	
A robust strategy to ensure sustainability of project, particularly with reference to investments in infrastructure and climate services, should include commitments from partners as well as an assessment of risks related to the sustainability of investments.	Output 2.5 of the project results framework will focus on leveraging private and public funds by providing sector specific tailored meteo products aimed at the civil aviation, insurance companies, the hydro power industry and the tourism industry. Issues of operation and maintenance will be addressed during the project implementation by training engineers in O&M. NMA has provided a co-finance letter of 600,000 USD, and

	<p>other partners like the Africa Climate Policy Center has also provided co-finance letters (1,202,000 USD) in rapport with support to O&M.</p>
<p>As the proposed project requires very specialized technical expertise on meteorology (hardware and software), provide detailed information on how expertise and comparative advantages of partners is incorporated in the project</p>	<p>Partners expertise has been harnessed to meet the project requirements. NMA and HWQD have long standing relations with EUMETSAT and the British Met service (UKMO) and have access to experts and technical expertise that will be procured during the project to transfer this knowledge to NMA and HWQD staff. A pool of specialists with specific expertise in meteorology and EWS will be supporting the project implementation as well as local experts, drawing on external technical specialists where necessary. Locally partnerships with other agencies (WFP, FAO, ACPC, USAID) working in this field have been developed and the project will build on this baseline and work in close partnerships with other actors. The Africa Climate Policy center and WMO are partners and have contributed to the design of this project document and will continue to support and collaborate on this project.</p>
<p>The additional cost reasoning should be outlined more clearly. Much of the investment is for the weather related observational network and brings considerable co-benefits for economic activities, logistics and transport. However, a baseline development of maintaining and upgrading of infrastructure is not described. Please elaborate on the climate and climate change related benefits in comparison to the business as usual investment.</p>	<p>Additional cost reasoning in the project document includes further details on baseline development and maintenance of weather observational infrastructure. Ethiopia will focus on rehabilitation of the existing network, in order to address the current adaptation deficit, and the procurement of new technology to enhance its capacity to predict weather and strengthen its EWS in response to climate change. Without this project Ethiopia's capacity to forecast severe weather and warn its population is inadequate. For example at the moment NMA is able to receive data from manual stations once every twenty four hours and from only some Synoptic stations: once every three hours. This project will enable NMA to receive data twice a day from manual stations and once every three hours from all synoptic stations. Similarly, today NMA is able to provide aeronautical services mainly for international and some national airports, after the project it will be able to do it for 3 national and 1 international airports in Ethiopia. Today NMA has difficulty issuing timely and accurate warnings to vulnerable populations for severe weather events such as floods. This project will enable NMA to provide 6 hour warning for severe rainfall and 24 hours warning for potential flood along rivers and watersheds.</p>
<p>An up to five percent fee for “National implementation” is mentioned. Strong partner involvement and ownership in the implementation of this project is important but should not be at the expense of overall project management fees. Please outline how the five percent fee relates to the agency fees.</p>	<p>The national implementation fee (also called Project Management Costs) are those costs of running the project within the National Implementing Partner. These costs are distinct from Agency fees which are to provide oversight and quality assurance of the project, which in this case is by UNDP (through its country office, region based staff and HQ-based staff).</p>
<p>Liberia specific comments:</p>	
<p>Regarding the ‘current’ vulnerability assessments mentioned in Output 2.1 - which information will be used and will it be generated through project activities or come from other projects or programmes?</p>	<p>The information used for vulnerability assessments includes social, economic and environmental data. A combination of geographic location (assets and people being located close to river banks or historically known flood prone areas, or similarly areas historically prone to drought and other climatic severe events) with socio-economic vulnerability such as poverty, reliance on subsistence agriculture and food insecurity. In Ethiopia this information came from secondary sources of government institutions such as DRMFS, NMA, HWQD, MoFED and other projects and programmes like the GFDRR, UNDP's DRM programme and WFP's food security initiative.</p>

Recommend targeting the amount of people that should be reached through communication channels in sub-component 2.2 (quantification) and to make sure that the most vulnerable populations are reached.	The amount of people that will be reached through communication channels is around 5 million. The most vulnerable are being targeted and have been identified through the above described process.
It is recommended to explain the selection process i.e. definition of the “most vulnerable communities” in Output 3.2.	"Most Vulnerable Communities" are defined by a number of criteria, both geographical, environmental and socio-economic. These include geographic location in historically flood-prone and drought-prone vulnerable areas, dependence on difficult environments such as drylands, mountainous and landslide-prone areas and desert areas. And most importantly socio-economic vulnerability including dependence on subsistence agriculture, food insecure, women-headed households, below poverty line (less than 1 USD per day), unemployment and physically disabled. A detailed vulnerability assessment was taken up during the PPG phase.

The World Bank's comments on LDCF EWS PIFs	
There is concern that approving these projects based on a template is at the expense of more robust proposals (perhaps more targeted) and could pose a reputational risk to the GEF.	Country-level-specific project documents have been developed to ensure tailored interventions are undertaken. A broad stakeholder consultation (including Gov't. institutions such as NMA, EPA, DRMFS, MoFED, Addis Ababa University, Climate Change Forum Ethiopia, farmer associations and women representatives from the Ministry of Women Affairs) process took place in the country to capture the context and specific needs of Ethiopia. The original PIF was adapted and contextualised in terms of the number and types of climate and environmental equipment to be procured and rehabilitated (e.g. 40 AWS procured, 200 manual weather stations rehabilitated, 10 hydro-gauging stations procured and 50 rehabilitated) as well as the specific type of training programs for forecasters and modelers and the tailored specific hydromet products which are to be targeted, designed and communicated.
There is insufficient assessment of current state of hydro-met sector, past failures and their causes.	A review of current and past activities related to EWS was completed, and the absorptive capacities of the intended partners have been assessed as well as their needs both in terms of infrastructure and training.
There is insufficient consideration of the limitations of current capacity, which currently prevents many of the proposed activities in some countries.	A detailed review of the existing technology and infrastructure and human capabilities has been completed. Gaps and needs have been identified for the main partners and detailed requirements have been compiled. The main limitations for NMA were identified as insufficient technical expertise to forecast and model the climate and make full use of available data. A poor network of climate and weather observational infrastructure, and associated difficulties with O&M, has also been highlighted. A further important limitation has been the limited capacity to provide sector-specific and tailored hydromet information for different sectors of the economy. Financial sustainability has been a recurring limitation.
Cost estimates are unrealistic and do not include variation between countries and O&M (operations & management) costs.	Detailed cost assessments including O&M and long term financial sustainability have been provided by NMA and HWQD during the PPG phase. Specific project activities (under output 2.5) will take place during implementation to secure further funding from both private and public sectors.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS⁸

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

NA

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

PPG Grant Approved at PIF: 100,000			
<i>Project Preparation Activities Implemented</i>	<i>GEF/LDCF/SCCF/NPIF Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
1. Review and technical feasibility study and cost assessment analysis	46,000	31,314	14,686
2. Information collection and stakeholder consultations (including stakeholder workshops)	34,000	34,000	0
3. Identification of co-funding sources and formulation of project documents	14,000	10,078	3,922
4. Institutional arrangement for implementation	6,000	3,740	2,260
Total	100,000	79,132	20,868

⁸If 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.

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)