

Terminal Evaluation Report

Strengthening Climate Information and Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change – Ethiopia

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GEF Agency Project ID:	4992
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Midterm Review date:	20 June 2016
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Country:	Ethiopia
GEF Focal Area:	Climate Change Adaptation
Implementing Agency:	UNDP Country Office, Ethiopia
Executing Agency:	National Meteorology Agency (NMA)
Responsible Partners:	Hydrology and Water Quality Directorate (HWQD), National Disaster Risk Management Commission (NDRMC)
Project Start/End date:	September 2013 – May 2018
Terminal Evaluation Team Members:	David Wright, International Consultant Gizachew Getaneh, National Consultant

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0 Executive Summary

0.1 Project Summary Table

Project Title	Strengthening Climate Information and Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change - Ethiopia
UNDP PIMS ID	5095
GEF Agency Project ID	4992
Project Start/End date	September 2013 – May 2018
Midterm Review date	20 June 2016
Terminal Evaluation date	May 2018
Region	East Africa
Country	Ethiopia
Project Coverage	11 Meteorological Branch Office Directorates of the National Meteorology Agency: Kombolcha, Adama, Bahir Dar, Mekele, Jimma, Awasa, Jijiga, Gambela, Asosa, Semera, Bale Robe 10 Regional Basin Authorities of the Hydrology & Water Quality Directorate: Awash, Abbay, Baro Akobo, Ghibe Omo, Rift Valley, Teeze, Wabi-Shebelle, Genale Dawa, Danakil and Mereb, Abbay
GEF Focal Area	Climate Change Adaptation
Focal Area Objectives	CCA-2 Increase adaptive Capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level CCA-3 Promote transfer and adoption of adaptation technology
Implementing Agency	UNDP Country Office, Ethiopia
Executing Agency	National Meteorology Agency (NMA)
Responsible Partners	Hydrology and Water Quality Directorate (HWQD) National Disaster Risk Management Commission (NDRMC)
Project Start/End date	September 2013 – May 2018
Terminal Evaluation Team Members	David Wright, International Consultant Gizachew Getaneh, National Consultant

0.2 Project Description

In Ethiopia, climate change, and the limited availability of climate information, has led to increased challenges in managing, planning and coordinating the impact of, and response to, severe weather events. Insufficient coverage of hydrometeorological (hydromet) observational infrastructure (Automatic Weather Stations [AWS] and hydrology stations), coupled with low capacity to analyse and model climate and environmental data, has led to inadequate information to support decision-making processes. This weak observational and analytical capability has compounded the difficulty to foresee and manage extreme weather events, and to mitigate long term impacts of climate change on various sectors of the economy.

The overall objective of the project was 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.

The project aimed to transfer weather and environmental observational technology, and build capacity for data analysis, modelling and communication of advisories/warnings by delivering two complimentary outcomes:

1. Enhanced capacity of NMA and HWQD to monitor extreme weather and climate change.
2. Efficient and effective use hydromet and environmental information for early warnings and long-term adaptation.

“Strengthening/enhancing drought and early warning systems in Ethiopia” was identified as the second priority in Ethiopia’s NAPA, published in 2007. The project also addresses the NAPAs sixth priority, *“Capacity building program for climate change adaptation”*. Ethiopia’s Growth and Transformation Plan (GTP, 2010-2015) aimed to “ensure food security at the family, regional and national levels” by doubling domestic agricultural production and recognised climate change as both a threat and an opportunity. Ethiopia’s Climate Resilient Green Economy Strategy (CRGE, 2011) recognises that building a climate resilient economy requires effective adaptation to minimise potential damage and maximise potential benefits. This project was designed to support the implementation of these strategies and was closely aligned with baseline efforts already underway within Ethiopia to promote development which is resilient to climate change, at the national and local levels.

0.3 Evaluation Rating Table

Criteria	Rating	Comments
Monitoring & Evaluation		
Overall quality of M&E	Unsatisfactory	Significant shortcomings at entry and implementation, and failure to establish a Project Management Unit (PMU).
M&E design at entry	Moderately Unsatisfactory	Insufficient resources were allocated (2% of LDCF grant). Project Results Framework (PRF) had significant shortcomings, including unquantified objective level capacity assessment baseline and targets, and omission of output level indicators. GEF Focal Tracking Tool was not completed at CEO endorsement or baseline.
M&E implementation	Unsatisfactory	M&E implementation was weak. The Project Steering Committee (PSC) was not well attended by its appointed stakeholders and no meetings took place after August 2016. This limited the effective input of relevant stakeholders and minimised capacity for M&E, inter-agency co-ordination and cross-sectoral dissemination of strategic findings. Despite budgetary allocation from LDCF, a PMU was not established; only a part-time National project Co-ordinator, who had limited time to dedicate to project activities, was appointed. PIRs were incomplete and lacked effective reporting towards PRF indicators. HWQD and NDRMC did not produce regular progress reports. There is little evidence of management response to Mid-term Review recommendations and the GEF Focal Tracking Tool was not utilised.
Implementing Agency (IA) and Executing Agency (EA) Implementation/Execution		
Overall quality of Implementation/Execution	Moderately Satisfactory	Stronger demands from UNDP to establish a PMU may have improved implementation efficiency.
NMA Implementation	Moderately Satisfactory	The IP established eight task teams, responsible for the implementation of project activities, but failed to set up a PMU — significantly decreasing capacity for project oversight. Problems were experienced disbursing funds to HWQD and NDRMC leading to almost all HWQD activities scheduled in 2015 being delayed to 2016.
UNDP Implementation	Moderately Satisfactory	Extensive international expertise was facilitated to support equipment procurement and capacity building. However, UNDP should have made stronger demands on the IP to ensure better M&E, especially in regard to the establishment of a PMU. There is

		limited evidence of active efforts to establish public-private partnerships.
Project results		
Overall Results (attainment of objectives)	Satisfactory	It was difficult to evaluate the overall attainment of the project objective and outcomes — objective level indicators were difficult to measure and some outcome level indicators were not effectively monitored. Significant capacity has been built but domestic finance committed to operations & maintenance (O&M) of hydrometeorological (hydromet) observation equipment remains insufficient.
Relevance	Relevant	The project addressed two NAPA priorities, <i>Strengthening/enhancing drought and early warning systems in Ethiopia</i> and <i>Capacity building program for climate change adaptation</i> . The project was consistent with Ethiopia's second Growth and Transformation Plan (GTP 2016-2020) and objective and outcome targets have been incorporated in the pillars of NMA and HWQD sector-specific GTPs. The project is relevant to Ethiopia's Climate Resilient Green Economy Strategy (CRGE 2011) and the National Policy and Strategy on Disaster Risk Management (2013).
Effectiveness	Satisfactory	National coverage of hydromet observational equipment has significantly increased and the project has built capacity to effectively and efficiently produce 3-day, 10-day, seasonal, annual and decadal forecasts models. Standard Operating Procedures (SOPs) have been developed which detail service provision procedures between NMA and HWQD and NMA and NDRMC. However, limited progress was made towards developing public-private partnerships for sustainable financing of climate information and early warning services.
Efficiency	Moderately Satisfactory	Investments in hydromet observational equipment and institutional capacity building are considered cost-effective. Through the LDCF supported multi-country CIRDA programme, Long-Term Agreements (LTAs) with equipment suppliers and services streamlined procurement, reducing costs and delivery lead times. However, project management issues significantly delayed many activities.
Sustainability		
Overall Likelihood of Sustainability	Moderately Likely	All dimensions of sustainability were rated equally
Financial	Moderately Likely	Financial sustainability was not well considered at the institutional level and there remains a shortage of funds for O&M. The objective level target for domestic finance falls significantly short of country requirements.
Socio-economic	Moderately Likely	Community awareness of hydromet observational equipment value is limited and many solar panels and GPRS units have been stolen/vandalised. Efforts to raise community awareness is limited however, NMA has invested in sensitisation at some AWS sites and HWQD has invested in sensitisation at the regional level.
Institutional Framework & Governance	Moderately Likely	Projects outcomes are institutionalised and recurrent budgets are allocated to NMA, HWQD and NDRMC for climate information and early warning services. Ethiopia's second National GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services and outcome targets are incorporated in the pillars of NMA and HWQD sector-specific GTPs. However, installation and maintenance of Automatic Weather Stations (AWS) and hydrological telemetry equipment is centralised at the Federal level. This has excluded regional authorities from significant

		engagement in project activities. On several occasions, and in many localities, access to Ethio Telecom's mobile data network was blocked by the government, often for many months at a time. During these times, data was not transmitted from hydromet observational equipment to the Federal server.
Environmental	Moderately Likely	Climate shocks threatened implementation of activities. NMA noted that the 2015/16 El Niño diverted resources of all project partners for several months, as operational capacity was diverted to monitor extreme climate events, and to issue rainfall and flooding advisories to government stakeholders and civil society. Generally, the hydromet infrastructure installed is resilient to Ethiopia's environmental conditions. However, shaft encoders are susceptible to sedimentation build up and require regular maintenance during the rains to ensure reliability.
Impact		
Overall Impact	Minimal	Capacity to generate climate information and early warnings on a national scale has been significantly strengthened, and objective and outcome targets have been incorporated in the pillars of NMA and HWQD sector-specific GTPs and support the implementation of Ethiopia's second GTP (2016-2020). However, the project made little progress towards establishing public-private partnerships and tailoring products for different sectors. Climate forecasts and impact advisories are disaggregated at the regional and zonal level and disseminated three times a week to a wide variety of stakeholders. However, there is little evidence that climate information and advisories are reaching local populations in remote rural areas and influencing the behaviour of subsistence farmers/pastoralists.

0.4 Major Strengths and Achievements

Capacity to generate climate information and early warnings on a national scale has been significantly strengthened. The procurement, installation and operationalisation of AWS, one Upper Air Monitoring Station and telemetry for hydrological gauge stations — plus associated trainings on installation, operations and maintenance — has significantly increased spatial and temporal data collection capacity. This increase in AWSs reduces the need for data interpolation, significantly improving forecasting capacity and, with data transmitted every 15 minutes, the capacity to monitor extreme short-term weather patterns for issuing warnings.

AWS data is sent directly to NMAs central server. Data management capacity has been upgraded and future-proofed with the upgrade of NMAs CLIDATA database, capable of managing data received from NMAs nationwide target of 700 AWS (as identified in NMAs sector-specific GTP 2015-2019). Several experts, mainly from the Data and Climatology Directorate were given factory-level training (Czech Republic trainers) in database installation and management, and five NMA forecasters received training in installation and general features of GIS CLIDATA.

Computational capacity for forecasting was upgraded with the procurement and installation of a High-Performance Cluster (HPC) machine. This is a significant upgrade since, prior to installation, NMA was using PCs which cannot satisfy the requirements imposed by the available input data and the need for storing model outputs. Furthermore, to increase spatial accuracy of forecasts, numerical weather prediction models must be run at resolutions far exceeding the capacity of PCs. Operationalising the HPC has enabled forecasters to run numerical weather prediction models, using all available input data, at the required resolution. This has significantly improved forecasting capacity, accuracy and

timeliness, resulting in improved spatial and temporal forecast resolution and, therefore, capacity for climate related decision-making. NMA estimates that the HPC has the computing power of 300 PCs. Several experts, drawn mainly from the Meteorological Forecast and Early Warning Directorate — the directorate responsible for running numerical weather models — were given factory-level training in installation, configuration and modelling.

The significant increase in hydromet observation infrastructure, coupled with targeted capacity building activities for NMA, HWQD and NDRMC — including numerous training events, workshops and international study tours — has improved the accuracy and availability of climate information throughout the country. Awareness creation workshops were organised at all meteorological branch directorates for regional government policy makers, and local community representatives, on how to interpret climate information and make use of it to minimise climate related risks. Climate forecasts and impact advisories are disaggregated at the regional and zonal level and disseminated three times a week to a wide variety of stakeholders. These forecasts are used at the federal and regional levels to advise national and regional government offices in decision-making. This was exemplified during the El Niño in 2015/16, when project resources supported the establishment of a national and regional El Niño monitoring and forecasting task force. During this time, accurate forecasting and monitoring supported decision makers and NDRMC to minimise the impact of flooding.

Facilitation of international expertise

UNDP facilitated extensive international expertise to support equipment procurement and capacity building in support of project outcomes. The multi-country CIRDA programme, implemented by UNDP and funded by LDCF, provided support that would not be viable for a national project. The Long-Term Agreements (LTAs) negotiated by CIRDA with hydromet observational equipment suppliers streamlined UNDP procurement, reducing costs and delivery lead times. With CIRDA support, UNDP facilitated further international expertise to support cost-effective capacity building through study-tours and trainings in Austria, China, Finland, Kenya, South Korea and Turkey.

Mainstreaming project outcomes in operational activities and national strategic plans

Project outcomes are institutionalised into NMA, the Ministry of Water, irrigation and Electricity and the Ministry of Agriculture; outcome targets are incorporated in the pillars of NMA and HWQD sector-specific GTPs; and Ethiopia's second National GTP (2015-2020) incorporates targets for meteorological forecasting and early warning services. Project outcomes supported the establishment of national and regional El Niño monitoring and forecasting task forces. During the 2015/16 El Niño, based on frequently updated forecasting and monitoring, these task forces supported decision makers to act, reducing the impact of heavy rainfall and flooding.

0.5 Key Shortcomings and Recommendations

Identify actions to safeguard public goods

The project invested significant financial resources in the procurement and installation of hydromet observational equipment but did not adequately consider risks of equipment theft, vandalism and lack of routine maintenance. While it is recognised that once the equipment is handed over to the government it becomes their responsibility to protect and maintain it, the project should have investigated specific actions to minimise risk in the short term, while longer-term sustainability was developed.

Establish an Effective Project Management Unit

Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established. Therefore, the project lacked a dedicated project manager, administrative and financial assistant, and monitoring & evaluation expert. The part-time National Project Co-ordinator was too busy with day-to-day activities to adequately provide project

implementation oversight and the capacity of focal points at HWQD and NDRMC was also stretched. This had significant impacts on the effectiveness of project implementation, and monitoring & evaluation.

Sector-specific Early Warning products and strategies that integrate climate risks were not developed

The project planned to develop public-private partnerships to provide on-going revenue for weather forecasting services and products. Little progress was made — during project implementation only one public-private partnership was under development, with Ethiopian Airlines. However, the modality of this partnership is yet to be agreed. Little progress towards partnerships with Ethio telecom, to develop SMS-based advisories; and insurance companies, to develop weather-indexing methods, was made.

0.6 Proposals for Future Direction

The following recommendations are made as future directions underlining the project's objective.

Develop a sustainable finance strategy

NMA is currently undertaking a study on payment for meteorological services. Through consultation with parallel projects, and building on global best practice, this study should be developed in to a sustainable finance strategy to identify the feasibility of implementing financial mechanisms.

Develop a strategy to implement mobile phone-based agricultural advisories

A parallel ADB-Climdev funded project is undertaking a technology and needs assessment. This assessment should be developed in to a strategy to identify the feasibility of implementing mobile phone-based agricultural advisories.

Decentralise operations and maintenance to the regional level

Empower regional NMA and HWQD offices as stewards of hydromet observational equipment to minimise maintenance costs and maximise efficiency. As Ethiopia's climate information infrastructure continues to expand, decentralisation is recognised as a necessity at NMA and HWQD. As a first step, a capacity needs assessment should be undertaken at all regional NMA and HWQD offices.

Develop an awareness raising communications strategy

A communications strategy should be developed to identify opportunities for raising awareness of hydromet equipment, and the importance of climate information and early warning advisories it provides. Awareness raising platforms should be established at regional, zonal and woreda levels. Attention should be given to opportunities for engagement with schools, since building awareness in children is an effective way to build awareness in adults, particularly in rural communities.

Ensure hydrological observational equipment is fit for purpose

There is some evidence of shaft encoders being installed at sites susceptible to sedimentation build-up. At these sites, sedimentation build-up in the shaft encoders may lead to equipment failure — this was reported to the evaluation team at one site but may have occurred at other sites which were not visited. Shaft encoders should not be installed at sites susceptible to sedimentation build-up and alternative observation equipment should be installed. At sites monitored by shaft encoders, regular equipment maintenance is essential to maintain observational capacity.

0.7 Lessons Learned

National Implementation Modality may not always be appropriate

Under the NIM, financial disbursement to HWQD and NDRMC was delayed. This resulted in the majority of HWQD activities scheduled for 2015 being delayed to 2016. From 2016, UNDP affected payments directly to partners. While this effectively reduced NMAs project implementation

accountability, if effective project management arrangements were in place this would have been mitigated.

Dedicated project Management is essential to maximise effectiveness of project outcomes

Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established. Only a part-time National Project Co-ordinator was appointed. This had a significant impact on inter-agency co-ordination, effective implementation, and monitoring & evaluation. Full time project management services are essential, especially for project's implementing activities with multiple partners.

Community-based awareness raising is essential for sustainability

There is anecdotal evidence that, in communities where awareness raising activities have been implemented, incidents of vandalism/theft of hydromet observational equipment are less frequent. With limited funds available for maintenance and equipment replenishment, equipment theft risks should be minimised as effectively as possible.

Acronyms

ACPC	African Climate Policy Centre
ALM	Adaptation Learning Mechanism
AWP	Annual Work Plan
AWS	Automatic Weather Stations
ATA	Agricultural Transformation Agency
CCA	Climate Change Adaptation
CDR	Combined Delivery Report
CEO	Chief Executive Officer
CIRDA	Climate Information Resilient Development in Africa
CPD	UNDP Country Programme Document
CRGE	Climate Resilient Green Economy
DFID	Department for International Development (United Kingdom)
EPA	Environmental Protection Agency
ETB	Ethiopian Birr
EIAR	Ethiopian Institute of Agricultural Research
EWS	Early Warning System
EA	Executing Agency
FAO	Food and Agriculture Organization of the United Nations
FTC	Farmers' Training Centre
GIACIS	Geodata for Innovative Agricultural Credit Insurance Scheme
GDP	Gross Domestic Product
GEF	Global Environment Facility
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HWQD	Hydrology and Water Quality Directorate
Hydromet	Hydrometeorology
IA	Implementing Agency
I&E	Implementing and Executing Agency
IASM	Integrated African Strategy on Meteorology
IP	Implementing Partner
LDCF	Least Developed Countries Fund
IASM	Integrated African Strategy on Meteorology
LTA	Long Term Agreement
M&E	Monitoring and Evaluation
MoWIE	Ministry of Water, Irrigation and Energy
MoEFCC	Ministry of Environment, Forest and Climate Change
MoFEC	Ministry of Finance of Economic Cooperation
MDG	Millennium Development Goal
MTR	Mid-term Review
MSC	Meteorology Service Centre
NDVI	Normalized Difference Vegetation Index
NAPA	National Adaptation Plan of Action
NAMA	National Appropriate Mitigation Actions
NIM	National Implementation Modality
NDRMC	National Disaster Risk Management Commission
NGO	Non-Governmental Organization
NMA	National Meteorology Agency
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PIF	Project Identification Form
PIR	Project Implementation Report

PMU	Project Management Unit
PRIMAE	Pastoralist Resiliency Improvement and Market Expansion
PRF	Project Result Framework
Prodoc	Project Document
PSC	Project Steering Committee
RBM	Results-Based Management
SOP	Standard Operating Procedure
SMART	Specific, Measurable, Achievable, Realistic and Time
SNNPR	South Nations and Nationalities People's Region
TE	Terminal Evaluation
ToR	Terms of Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WFP	United Nations World Food Programme

1 Introduction

1.1 Purpose of Evaluation

The purpose of the evaluation was to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming.

1.2 Scope and Methodology

The evaluation was undertaken by one international consultant/evaluator, supported by one national consultant/evaluator (the evaluation team). It followed the overall approach and methodology as detailed in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects.

The evaluation included the following key activities:

- Desk review of key project documents and relevant UNDP, GEF and national strategic and legal documents. The full list of documents reviewed is detailed in Annex x.
- Two evaluation field missions¹ to Ethiopia from Monday 12 to Friday 16 February 2018, and from Monday 16 April to Friday 4 May 2018. The itinerary is detailed in Annex 5.2.
- Interviews with key national project stakeholders in Addis Ababa and key regional stakeholders in five of Ethiopia's nine regions namely: Oromia, Afar, Tigray, Amhara and Southern Nations, Nationalities and Peoples' Region (SNNP). The list of interviewees is detailed in Annex 5.3.
- Visits to a 10% sample of Automatic Weather Stations (AWS) (four from a total of 40) and Hydrological stations (six from a total of 60) installed/upgraded by the project. A summary of field visits is presented in Annex 5.4.
- The week following the final field mission, the evaluators submitted preliminary, high-level findings to the UNDP Project Manager and UNDP GEF Regional Technical Advisor.
- The evaluation team obtained additional information via face-to-face meetings (national consultant only) and email after the final field mission.

1.2.1 Data Collection

Four sources of primary data were collected and analysed:

Document Review

Desk review of project documents and relevant UNDP, GEF and national strategic and legal documents undertaken during preparation of the Inception report and continued whilst on mission in Ethiopia. A full list of documents reviewed is included in Annex 5.5.

Semi-structured Interviews

Semi-structured interviews were undertaken with a wide range of stakeholders in Addis Ababa and within the jurisdictions of five Meteorological Branch Office Directorates of the NMA and five Regional Basin Authorities of the HWQD. Notes taken during interviews were transcribed in full, resulting in the production of rich, qualitative data. A full list of interviewees is detailed in Annex 5.3.

¹ Civil unrest in Oromia and Afar regions during the first week of the field mission led to UNDP issuing a travel ban. The evaluation was therefore suspended, necessitating a second field mission.

Addis Ababa

Interviews were held with the UNDP focal point, Finance Unit and Regional Technical Advisor and with key project stakeholders at NMA, HWQD, NDRMC and the Ministry of Finance and Economic Cooperation (MoFECC). A full list of interviewees is detailed in Annex 5.3.

Ethiopia wide

Interviews were held with key stakeholders at five Meteorological Branch Office Directorates of the NMA, five Regional Basin Authorities of the HWQD and, where possible, with branch offices of NDRMC. Observers/technicians were interviewed at each of the hydrometeorological stations visited by the evaluation team. A full list of interviewees is detailed in Annex 5.3.

Opportunistic Informal Discussion

Whenever possible, the evaluators took full advantage of engaging the project team and stakeholders in informal discussions about the project, and the wider climate change issues in the country. These discussions augmented information gathered during interviews and document review and served as another method to triangulate evidence.

Observation of Project Results and Activities at Field Sites

Direct observations of a sample of project installed hydrometeorological stations throughout the jurisdictions of five Meteorological Branch Office Directorates of the NMA and five Regional Basin Authorities of the HWQD were made.

An assessment of project performance was carried out, based against expectations set out in the Project Results Framework (PRF), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation covers the criteria of: relevance, effectiveness, efficiency, sustainability and impact.

Evaluation

As a data collection and analysis tool, an evaluation matrix was compiled, based on questions included in the Terminal Evaluation draft ToR, the Mid-term Review (MTR) and UNDP's Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed projects. Evidence gathered during the TE is outlined in the Evaluation Question Matrix (Annex 5.6). To validate findings, all evidence was triangulated using as many different sources as practicable. The PRF was also used as a tool to assess achievement of project objectives and outcomes (Annex 5.7).

1.3 Structure of Evaluation Report

Following the project description, findings of the evaluation are reported under the following sections:

- Project formulation
- Project implementation
- Project results

1.3.1 Project formulation

Findings reported under this section focus on:

- Clarity, practicality and feasibility of the project's Objective and Outcomes
- The extent assumptions, risks and lessons learned from other relevant projects were incorporated in to project design
- If capacity (funding, staff and facilities) of the Executing Institutions and its counterparts was sufficiently considered when designing the project

- If partnership arrangements, roles and responsibilities and project management arrangements were properly identified and negotiated prior to project approval
- If enabling legislation in support of the project's Objective and Outcomes was in place.

This assessment will support the evaluation team to determine if the planned Outcomes were SMART i.e. Specific, Measurable, Achievable, Relevant and Timebound (Table 1).

Table 1: SMART Criteria

S	Specific: Outcomes must use change language, describing a specific future condition
M	Measurable: Results, whether quantitative or qualitative, must have measurable indicators, making it possible to assess whether they were achieved or not
A	Achievable: Results must be within the capacity of the partners to achieve
R	Relevant: Results must make a contribution to selected priorities of the national development framework
T	Time- bound: Results are never open-ended. There should be an expected date of accomplishment

Source: UNDP (2012). Guidance for Conducting Terminal Evaluations of UNDP Supported, GEF Financed Projects

1.3.2 *Project implementation*

Findings reported under this section focus on:

- Project Monitoring & Evaluation
- Project finance/co-finance
- Implementing Agency and Implementing Partner Execution
- Stakeholder interactions

Project Monitoring & Evaluation

The assessment includes a review of the appropriateness of the M&E plan and the quality of its implementation i.e. the effectiveness of monitoring indicators, compliance with progress and financial reporting requirements and how adaptive management measures were taken in response to monitoring reports (Project Implementation Reports (PIRs) and MTR).

Project Finance/Co-Finance

The assessment includes a review of project finances and co-finances including variances in planned and actual expenditure, and whether there is evidence of additional, leveraged resources committed as a result of the project. Effectiveness of financial planning will be assessed by analysing the robustness of financial control i.e. the extent to which the project manager could make informed decisions about the budget at any time and the level of due diligence in the management of funds. Cost-effectiveness will be assessed by analysing how the planned activities met or exceeded the expected Outcomes over the project's timeframe.

Implementing Agency and Implementing Partner Execution

The assessment includes a review of whether there was sufficient focus on results, the level of Implementing Agency (UNDP) support to the Implementing Partner (NMA) and Responsible Parties, adequacy of management inputs and processes of the Implementing Agency, quality of risk

management, candour and realism in reporting, and Government ownership of the project i.e. ownership of the Implementing Partner.

Stakeholder Interactions

This assessment will include a review of the extent of stakeholder interactions including planned involvement versus actual involvement. Stakeholder interactions include such activities as information dissemination and consultation, as well as active participation in the project.

1.3.3 Project results

In GEF terms, results include direct project outputs, short- to medium-term outcomes, and longer-term impact including global environmental benefits, replication efforts, and other local effects. Findings reported under this section focus on the full scope of a Results-based Management (RBM) chain from inputs to activities, to outputs, to outcomes and impacts.

However, the focus will be at the outcome level, recognising that global environmental benefit impacts are often difficult to discern, and gauging outputs is straightforward but not always sufficient to capture project effectiveness.

Project outcomes are evaluated according to Relevance, Effectiveness and Efficiency, as per Table 2.

Table 2: Outcome Evaluation Criteria

1. Relevance
▪ The extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time. ▪ the extent to which the project is in line with the GEF Operational Programs or the strategic priorities under which the project was funded. ▪ Note: Retrospectively, the question of relevance often becomes a question as to whether the objectives of an intervention or its design are still appropriate given changed circumstances.
2. Effectiveness
▪ The extent to which an objective has been achieved or how likely it is to be achieved.
3. Efficiency
▪ The extent to which results have been delivered with the least costly resources possible; also called cost effectiveness or efficacy.

Source: UNDP (2012). Guidance for Conducting Terminal Evaluations of UNDP Supported, GEF Financed Projects

In addition to assessing project outcomes, the evaluation will include an assessment of country ownership, mainstreaming, sustainability, catalytic role and impact.

1.3.4 Evaluation Ratings

Evidence triangulated from the data collection methods outlined above are rated on the performance criteria shown in Table 3. Rating scales differ for different criteria:

- The effectiveness and efficiency of project outcomes, monitoring & evaluation (M&E) and execution of the Implementing and Executing Agencies (I&E) are rated according to a 6-point scale, from Highly Satisfactory (HS) i.e. no shortcomings to Highly Unsatisfactory (HU) i.e. severe shortcomings.
- Sustainability is rated according to a 4-point scale from Likely (L) i.e. negligible risks that project outcomes will not be sustained to Unlikely (U) i.e. severe risks that project outcomes will not be sustained.
- Impact is rated according to a 3-point scale from Significant (S) to Negligible (N)

- Relevance is rated according to a binary scale i.e. Relevant (R) or Not Relevant (NR)

Table 3: Rating scales.

Ratings for Outcomes, Effectiveness, Efficiency, M&E, I&E Execution	Sustainability ratings:	Relevance ratings:
6: Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives in terms of relevance, effectiveness, or efficiency 5: Satisfactory (S): There were only minor shortcomings 4: Moderately Satisfactory (MS): there were moderate shortcomings 3. Moderately Unsatisfactory (MU): the project had significant shortcomings 2. Unsatisfactory (U): there were major shortcomings in the achievement of project objectives in terms of relevance, effectiveness, or efficiency 1. Highly Unsatisfactory (HU): The project had severe shortcomings	4. Likely (L): negligible risks to sustainability 3. Moderately Likely (ML): moderate risks 2. Moderately Unlikely (MU): significant risks 1. Unlikely (U): severe risks	2. Relevant (R) 1. Not relevant (NR) Impact Ratings: 3. Significant (S) 2. Minimal (M) 1. Negligible (N)
Additional ratings where relevant: Not Applicable (N/A) Unable to Assess (U/A)		

Source: UNDP (2012). Guidance for Conducting Terminal Evaluations of UNDP Supported, GEF Financed Projects

1.4 Ethics

The evaluation was conducted in accordance with the UN Ethical Guidelines for Evaluators and the evaluation team has signed the Evaluation Consultant Code of Conduct Agreement Form (Annex 5.8).

1.5 Constraints and Limitations

Meetings were not held with several stakeholders identified in the Project Document (Prodoc): Ministry of Agriculture, Ministry of Environment and Climate Change and University of Addis Ababa. Despite these institutions appointing representatives to the Project Steering Committee, at the time of the evaluation, it was not possible to arrange meetings with any representatives who had knowledge of the project. However, since these stakeholders were not involved in project implementation, their input to the evaluation was not considered critical.

Given the extensive geographic coverage of the project, it was not possible to visit all regions where project procured hydrometeorological (hydromet) equipment had been installed. Instead, a sample of regions and hydromet sites were visited, based on the following criteria agreed between the evaluation team and the project:

- Drought/extreme weather risk (areas most at risk are Afar, Southern Oromia)
- Security issues
- Logistical feasibility

Based on these criteria, it was agreed that the evaluation team would meet with stakeholders in the following regions (cities): Tigray (Makele), Amhara (Bahir Dar), Oromia (Adama), Afar (Semera) and

SNNP (Awassa). Stakeholders included representatives from regional NMA, HWQD and NDRMC offices and observers/technicians responsible for a sample of hydromet stations

Although the evaluation team planned to hold focus-group discussions with local farmers/beneficiaries to verify the effectiveness of EWS interventions at the local level, the project team and local stakeholders were unable to assist in organising these meetings. Consequently, none were held. This limitation was compounded by the absence of gender disaggregated beneficiary surveys, including vulnerability reduction assessment relative to the baseline, which were planned by the project but not undertaken. This made it impossible to quantify progress towards outcome indicator 2.1: Percentage of population with access to improved climate information and flood and drought warnings (disaggregated by gender).

The GEF Focal Area Tracking Tool was not completed by UNDP at CEO endorsement, mid-term or ahead of the TE. Following repeated requests from the evaluation team, UNDP sent a document after field work was completed. However, the document received was an unpopulated GEF Focal Area Tracking Tool template. Only indicator 2.1.2.1 had been completed. It was concluded that the GEF Focal Area tracking Tool was not utilised as a M&E tool during project design and implementation.

2 Project Description

2.1 Project start and duration

Key project dates are listed below:

PPG Approval:	23 April 2012
PIF Approval:	18 May 2012
Project Approval:	September 2013
Inception date:	25 September 2012
Mid-term Evaluation:	20 June 2016
Project completion (planned):	September 2017
Project completion (actual):	May 2018
Terminal Evaluation:	June 2018

2.2 Problems that the project sought to address

In Ethiopia, climate change, and the limited availability of climate information, has led to increased challenges in managing, planning and coordinating the impact of, and response to, severe weather events. Insufficient coverage of hydromet infrastructure (both automatic weather stations and hydrology gauging stations) coupled with low capacity to analyse and model climate and environmental data, has led to inadequate information to support decision making processes. This weak observational and analytical capability has compounded the difficulty to foresee and manage extreme weather events, and to mitigate long term impacts of climate change on various sectors of the economy.

According to Ethiopia's National Adaptation Programme of Action (NAPA, 2007), for the IPCC mid-range emission scenario the mean annual temperature is predicted to rise by 0.9–1.1°C by 2030; by 1.7–2.1°C by 2050; and by 2.7–3.4°C by 2080; compared to the 1961–1990 normal scenario. This will increase the variability and intensity of extreme weather events, such as heavy rain or drought, compounding the challenges of mitigating and managing severe weather events.

The agriculture sector accounts for 85% of Ethiopia's employment and 42% of its Gross Domestic Product (GDP). This reliance on climate sensitive agriculture presents significant climate change risks in the country.

2.2.1 *Impact on disaster risk management*

Climate change will increase the variability and intensity of extreme weather events and compound the challenges of mitigating and managing these natural disasters. This will have substantial impact on the economy, human assets and human lives.

2.2.2 *Impact on the Agriculture Sector*

In the absence of forecasting infrastructure and capacity, Ethiopia is unable to anticipate and mitigate the impacts of extreme weather events. A recent hydro-economic study suggests that more frequent occurrence of extreme weather events will negatively affect productivity in the agriculture sector². Ethiopia is highly dependent on the agricultural sector, as clearly demonstrated in 2002/3 when drought in certain parts of the country significantly impacted food production, with commensurate impacts on the national economy.

2.2.3 *Impact on the Urban Economy*

Addis Ababa and other cities in Ethiopia will be affected directly, and through its changing relationship with the hinterland. Predicted changes in seasonal rainfall patterns include a significant increase in rainfall between October and December, a likely increase in rainfall during *Kiremt* and a reduction in rainfall between April and June³. It is projected that this will result in increases in flooding and vulnerability of drainage infrastructure and an increase in water-borne and insect disease vectors. The Addis Ababa region relies on water resources, energy and food from its hinterland. As the environment changes in these areas, the supply chains of rainfed crops, water and energy will be under increased risk.

2.2.4 *Development Impacts*

Preliminary climate change assessments predict GDP losses up to 8% per year, based on current climate projections. Reductions of this level will negatively affect the Government's ability to invest in the nation's development. It will be the poorest communities who will be least able to adapt and within, these communities, it is recognised that women are the most vulnerable — the Government of Ethiopia (GoE) recognises that women lack the opportunities afforded to men.

2.3 *Immediate and development objectives of the project*

The overall objective of the project is 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.

The project aimed to transfer weather and environmental observational technology, and build capacity for data analysis, modelling and communication of advisories/warnings by delivering two complimentary outcomes:

1. Enhanced capacity of the NMA and HWQD to monitor extreme weather and climate change.
2. Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term adaptation.

"Strengthening/enhancing drought and early warning systems in Ethiopia" was identified as the second priority in Ethiopia's NAPA, published in 2007. The project also addresses the NAPAs sixth priority, *"Capacity building program for climate change adaptation"*. Ethiopia's Growth and

² Conway & Schipper (2010).

³ Semu (2010). International Water Management Institute

Transformation Plan (GTP, 2010-2015) aimed to “ensure food security at the family, regional and national levels” by doubling domestic agricultural production and recognised climate change as both a threat and an opportunity to for the country. Ethiopia’s Climate Resilient Green Economy Strategy (CRGE, 2011) recognises that building a climate resilient economy requires effective adaptation to minimise potential damage and maximise potential benefits. This project was designed to support the implementation of these strategies.

2.4 Baseline Indicators Established

A review of the baseline situation is listed below:

Knowledge and Capacity to Effectively Predict Future Climate Events

- Limited knowledge and capacity to effectively generate climate information and predict extreme events resulting from insufficient hardware (computational equipment), software (model code and associated routines) and human capacity to programme, run and model code
- Limited awareness of the risks posed by climate change and how these relate to development priorities — no development frameworks incorporate climate change information and GTP I makes only limited reference to climate change risk and climate information
- Forecasts distributed by NMA are not systematically combined with vulnerability analyses to identify risks — NDRMC does not adequately translate forecasts in to sector specific risks e.g. agriculture, health
- No Standard Operating Procedure (SOP) exists for the issuance of alerts from NMA to NDRMC

Climate Information and Early Warning End Users

- Poor understanding of weather information generated by NMA amongst various members of the public, resulting in mistrust of early warning products
- Information generated by NMA is very general and is not combined with vulnerability assessments to identify areas and communities at risk
- Limited public understanding of technical terms used by NMA in communications
- Dissemination of meteorological information, including short- and long-range forecasts and early warnings, sometimes arrive after the event
- Insufficient communication channels such as radio, TV and other media, preventing farmers from accessing and utilising weather forecasts and early warnings
- Use of hydrometeorological information for making early warnings currently low for both women and men (women 6 million; men 8 million)

Hydrometeorological Observation Equipment

- Seventy Automatic Weather Stations (AWS) established nationwide. According to WMO standards, Ethiopia should have approximately 3,000 AWS
- Twelve hundred manual weather stations established nationwide but at least 200 are not functioning correctly due to equipment failure, theft and lack of calibration units
- Weather stations are sparsely and unevenly distributed and concentrated along main roads and urban regions to facilitate access. In areas far from the main road infrastructure, e.g. in pastoralist areas, there is a scarcity of observation equipment
- One partly- and one fully-functioning Upper Air Monitoring Station
- 4 automatic hydrological stations established nationwide
- 489 manual hydrological stations established nationwide but not all are functional due to poor maintenance and theft of measuring gauges

- Hydrology infrastructure insufficient for monitoring lake and river levels/flows and for triggering alerts when flash floods occur

Operation and Maintenance of Hydrometeorological Observation Equipment

- Insufficient recurring budgets and annual fund allocation by GoE limits capacity of NMA and HWQD to operate and maintain observation equipment⁴
- Manual meteorological data is reported to regional authorities monthly, manual hydrological data is reported every four months
- There are often delays reporting regional manually collected data to the Federal level
- Existing infrastructure is old, and often dysfunctional, due to insufficient maintenance and calibration, leading to inaccurate data and gaps in measured time series. Consequently, the capacity to undertake long-term studies is diminished
- Limited availability of trained manpower to maintain equipment
- Limited number of calibration units to calibrate equipment including *inter alia* thermometers, humidity and atmospheric pressure sensors
- Rapidly developing observation and communication technology is leading to compatibility issues and difficulty in accessing suitable and sufficient spare parts for outdated equipment
- Difficulty in communication and compatibility with other regional and international centres e.g. satellite receiving systems, upper air observations
- Insufficient, information, communication and technical personnel
- Increasing frequency of extreme climatic events may damage equipment

2.5 Main stakeholders

The main stakeholders of the project are:

- National Meteorological Agency (NMA) and its 11 Regional branch Directorates
- Hydrology and Water Quality Directorate (HWQD) and its 10 Regional Basin Authorities
- National Disaster Risk Management Commission (NDRMC)
- Ministry of Finance and Economic Cooperation
- Ministry of Water, Irrigation and Electricity
- Ministry of Environment, Forests and Climate Change
- Ministry of Agriculture and Natural Resources
- Ministry of Livestock and Fishery
- Residents in high risk communities
- Farmers and farmer associations

2.6 Expected Results

According to the Prodoc, the expected outputs of the project, organised under two complimentary outcomes are:

Outcome 1: Enhanced capacity of the NMA and HWQD to monitor extreme weather and climate change:

⁴ Project Document reports a ‘recently approved 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’. No operations and maintenance budget for HWQD was identified

- Ten hydrological monitoring stations installed and 50 rehabilitated with telemetry, archiving and data processing facilities
- Forty AWS installed, 200 rehabilitated with telemetry, archiving and data processing facilities, and five calibration units procured
- One upper air monitoring station installed and operating
- Satellite monitoring equipment to receive real time (AMESD) climate and environmental information installed and rehabilitated
- 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

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

- NMAs capacity to make and use climate forecasts (on daily to seasonal basis) is strengthened by training at least five lead forecasters and five hydrology engineers for in house capacity building
- 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
- 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
- Communication channels (e.g. radio, newspapers, SMS, television etc.) and Standard Operating Procedures (SOPs) for issuing warnings through both governmental (woreda.net) and civil society are enabled
- Plan for sustainable financing for the operation and maintenance of the installed EWS developed and implemented, including public and private financing options.

3 Findings

3.1 Project Design/Formulation

3.1.1 Analysis of Project Results Framework

Logic

The Project Results Framework (PRF) identifies the project's objective and two complimentary outcomes. The project objective is strongly aligned with UNDP Country Programme Outcomes and GEF Climate Change Adaptation Focal Area Objectives CCA-2 (Increase adaptive Capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level) and CCA-3 (Promote transfer and adoption of adaptation technology).

While the PRF included in the Project Identification Form (PIF) includes the project's expected outputs, these are omitted from the PRF in the Prodoc. The expected outputs are identified under Section 2.4 of the Prodoc however, no output level indicators are identified or described. The omission of outputs from the PRF, and lack of any output level indicators, compromises the presentation of project logic and limits project capacity to effectively monitor and report progress, and to identify potential adaptive management requirements.

SMART indicators

Progress towards the objective is measured using two indicators. The first indicator *“Capacity as per capacity assessment scorecard”* was not measurable. Whilst the PRF identifies a baseline score of 83 and a target score of 139, the methodology to establish and monitor this score has not been documented or communicated to the evaluation team and no one from UNDP was able to confirm how the scores were determined. The second indicator *“Domestic finance committed to the relevant institutions to monitor extreme climate events”* was not monitored by the project and is outside of the project’s control — no project activities were designed to directly influence domestic financing. The target for domestic finance was 100 M Birr however, only a qualitative ‘low’ baseline was identified. This is despite the Prodoc identifying a “recently approved 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”.

Outcome 1: Enhanced capacity of NMA and HWQD to monitor extreme weather and climate change

Progress towards outcome 1 is measured using two indicators. The first indicator *“Percentage of national coverage of weather/climate and hydrological monitoring infrastructure”* is erroneously articulated. The target *“Increase in 24% national coverage to take steps in achieving NMAs optimal monitoring arrangements as defined in feasibility studies”* is simply the target percentage increase of functioning manual meteorological stations (1240) against the baseline (1000). This is not representative of national coverage, it represents only the target number of manual meteorological stations to be rehabilitated by the project. Secondly, the target only measures the percentage increase in manual meteorological stations, it does not measure the percentage increase for AWS (baseline = 70; target = 110) or hydrological stations with telemetry (baseline = 4; target = 64) which are major focuses of the project. Based on the identified baselines and targets, the target percentage increase for these stations would be 57% and 1,500% respectively. The second indicator *“Frequency and timeliness of climate related data availability”* form a baseline of monthly to daily is satisfactory (though the baseline reported in the Prodoc is four-monthly for manual hydrological stations).

Outcome 2: Percentage of population with access to improved climate information and flood and drought warnings (disaggregated by gender)

Progress towards outcome 2 is measured using three indicators. However, it is unclear how the project would measure the first indicator *“Percentage of population with access to improved climate information and flood and drought warnings”* since no source of verification is identified. The second and third indicators *“Development frameworks that integrate climate information in the formulation [sic.]”* and *“Sector-specific EW products and strategies that integrate climate risk”* have appropriate targets and sources of verification.

3.1.2 Assumptions and Risks

The project’s key risks and assumptions were identified during bilateral consultations with project stakeholders during the project preparation phase. Risks are presented in the risk log under Annex 1 of the Prodoc. Assumptions are identified in the Prodoc but are not recorded in the PRF. The risk and assumptions identified supported the development of activities and planned outputs. For example, *“Unavailability of requisite human resources and data”* and *“Limited capacity within relevant ministries/insufficient qualified human capacity”* ensured the project design had a strong focus on both institutional and technical capacity for planning, designing and implementing local level adaptation actions.

However, several identified risk mitigation measures were not implemented by the project. One of the risk mitigation measures for 'Insufficient institutional support and political commitments', was to secure co-financing for the project. However, interviews with relevant UNDP personnel established that no co-financing was secured. To mitigate the risk of 'Poor co-ordination among implementing and executing agency', clear project management arrangements were proposed. However, project management arrangements were not fully implemented — no Project Management Unit was established and the Project Board (Project Steering Committee) met infrequently. To mitigate the weak mobile telecommunications network, the project proposed 'cost-effective solutions for each particular situation e.g. satellite and/or radio communications. On several occasions during the project, in many localities, the government blocked internet service through sim card or mobile data, often for months at a time.

3.1.3 Lessons from other relevant projects incorporated into project design

This project is one of 10 country-led LDCF-funded projects in Africa focused on strengthening climate information and early warning systems for climate resilient development and adaptation. Other countries receiving support are: Benin, Burkina Faso, Liberia, Sierra Leone, Sao Tome and Principe, Uganda, Tanzania, Malawi and Zambia. The design of this project benefitted from the experience of a regional team of UNDP technical specialists with thematic expertise in areas including: meteorological, climate and hydrological observation networks, weather, climate and hydrological forecasting, data management and archiving, disaster management, agricultural advisories, flood alerts, communication protocols and standard operating procedures, mobile communications, private sector engagement, and development of weather and climate services. The project also benefitted from UNDP experience managing other climate information and early warning projects in Africa, and Asia-Pacific, funded through LDCF, SCCF and bi-lateral funds.

3.1.4 Planned stakeholder participation

During the project preparation phase, three stakeholder consultations were conducted at inception, mid-way through project design and at validation. These consultations included government agencies, national and international NGOs and UN agencies. National government agencies were represented by the Federal Environmental Protection Agency (EPA), Ministry of Water, Irrigation and Electricity, Ministry of Agriculture, NMA, HWQD, NDRMC, Ethiopian Institute of Agricultural Research (EIAR), regional NMA and HWQD branch offices and regional, zonal, and woreda level DRM experts. NGOs were represented by Oxfam America and the Ethiopian Climate Change Forum, and UN Agencies were represented by UNDP, World Food Programme (WFP) and African Climate Policy Centre (ACPC). Additionally, consultations were held with DFID, USAID and the World Bank. The Prodoc states that the Ethiopian Coffee Farmers Association and University of Addis Ababa were consulted however, the Stakeholder Baseline Analysis, presented in Annex VII of the Prodoc, does not identify consultation with these stakeholders (though the University of Addis Adaba is included in the Stakeholder Involvement Plan).

The project developed a Stakeholder Involvement Plan to support the delivery of project outcomes. The plan, detailed in Annex IV of the Prodoc, identifies the proposed involvement of stakeholders in the various activities of equipment procurement and installation, capacity building, communications and financing. This Stakeholder Involvement Plan also identifies members of the Project Board, responsible for providing direction to the Implementing Partner, NMA.

While most relevant government stakeholders were involved in the stakeholder consultations during the project preparation phase and were identified in the Stakeholder Involvement Plan, there was one notable exception: the Ministry of Environment, Forest and Climate Change (MoEFCC) was not consulted during preparation or identified in the Stakeholder Involvement Plan. MoEFCC is

responsible for ensuring environmental rights and objectives, devising environmental policy and coordinating its implementation. Again, it is unclear why they were not consulted as key end-users of climate information. Civil society was under-represented. Since the project aimed to increase access of vulnerable groups to climate information and early warnings, organisations representing these vulnerable groups, particularly those representing women, should have been consulted and actively engaged. The Prodoc identified the need to coordinate closely with the Ministry of Women and Children's Affairs however, there is no evidence that this Ministry was consulted or engaged.

3.1.5 Replication approach

Replication was a core consideration in the design of this project. The climate information and early warning capacity needs, both in terms of infrastructure and human resources, in Ethiopia are significantly greater than the resources available through this project alone and this project may act as a demonstration for other projects to replicate.

For example, this project planned to procure and install 40 AWS. However, the national target, as identified in NMAs Second Growth and Transformation Plan (2015-2019) is 700. At the time of this evaluation, approximately 250 AWS have been procured and installed with the support of various agencies (UNDP met its target and supported the installation of 40 AWS). Similarly, this project planned to procure and install 10 hydrological monitoring stations and rehabilitate a further 50 with telemetry, archiving and data processing facilities. The national target identified in HWQDs Second Growth and Transformation Plan (2015-2019) is to upgrade all surface hydrological stations with telemetry — a target of 540 stations. There is, therefore, significant scope to replicate the installation of hydromet observation equipment, further supporting Ethiopia to reach these targets.

The training and capacity building programme was designed to build core capacity to install, maintain and repair equipment and strengthen technical and human capacity to interpret and communicate climate information and early warnings. This capacity can be widely, and cost-effectively, replicated at the national and regional level. However, staff turnover is a risk to this approach, if lessons learned are inadequately captured and capacity is not replicated rapidly.

As one of 10 country-led LDCF-funded projects in Africa focused on strengthening climate information and early warning systems for climate resilient development and adaptation, lessons learned from each project may be shared widely and replicated. At the global level, the Adaptation Learning Mechanism (ALM), launched by UNDP and other partner agencies in 2007 to systematically document and share knowledge on good adaptation practices and operational guidance, was identified as an important tool to disseminate knowledge and lessons learned. The Prodoc states *“the project will contribute on a regular basis with case studies, successes and challenges faced by the implementation team and learning from the experiences”*.

3.1.6 UNDP comparative advantage

UNDPs comparative advantage lies in the agencies deep multi-level and multi-sectoral commitment to advance the disaster risk, early warning and environmental agenda in Ethiopia. UNDP supported Ethiopia to prepare its First National Communication, in response to its commitments to UNFCCC, and its National Adaptation Programme of Action (NAPA). Subsequently, it has implemented projects to build disaster risk management and early recovery capacity, improving resilience of rural communities to climate shocks and contributing to safeguarding of food security.

This project is in line with UNDP Ethiopia's commitments to support adaptation to climate change and will contribute to UNDPs global climate adaptation strategic outcome: *“Strengthened capacity of developing countries to mainstream climate change adaptation policies into national development plans”*. Furthermore, the overarching strategic approach of the UNDP Country Programme Document

(CPD 2012-2015) is to strengthen capacities of national actors, systems and institutions, through targeted and catalytic interventions that accelerate broad-based development and safeguard development gains against shocks.

UNDPs comparative advantage is further demonstrated by this project's links to other country-led LDCF-funded projects in Africa focused on strengthening climate information and early warning systems for climate resilient development and adaptation, and significant experience implementing GEF Climate Change Adaptation Focal Area projects globally.

3.1.7 Linkages between project and other interventions within the sector

The Prodoc identifies over USD 33M of national programmes/projects that address baseline related problems. The project identified these initiatives as co-financing however, progress and expenditure of these projects was not tracked. The project was designed to build on these initiatives and implement complimentary activities:

- UNDP: Strengthening Capacities for Ethiopia's Disaster Risk Management System (US\$ 13M), which aims to reduce disaster risk and impact of disasters through the establishment of a comprehensive and integrated disaster risk management system
- USAID: Pastoralists Resiliency Improvement and Market Expansion (PRIME) project (USD 10M), which aims to identify and implement actions to reduce vulnerability to climate change
- USAID: Enhanced Livelihoods Application through the Livelihood Integration Unit (US\$ 6.8M), which aims to support the Ethiopian Ministry of Agriculture and the NDRMC to strengthen early warning systems
- ACPC: Support to the National Meteorological Agency (NMA) of Ethiopia in Capacity Building of Climate Monitoring and Upgrading and Expansion of Stream flow Observing and Data Management Systems in Ethiopia (total US\$ 1.2M), which aim to develop NMAs data management capacity, install automatic hydrological observation instruments and develop HWQDs data management capacity
- UNFAO: Strengthening Capacity for Climate Change Adaptation in Land and Water Management with focus on Sustainable Land Management in Ethiopia (US\$ 550,000), which aims to reduce the impact of climate change and variability on smallholder farmers within the Awash Basin
- WFP: Establishment of Automated Weather Stations (AWS) to Improve Timely Provision of Weather Data (US\$ 362,700)
- WFP: Strengthening Early Warning Systems and Disaster Preparedness (US\$ 252,000)
- WFP: Improving Automated Hydrological Data for Flood Model Development (US\$ 115,000)

3.1.8 Management arrangements

Management arrangements identified in the Prodoc were as per UNDPs National Implementation Modality (NIM). The Implementing Partner (IP) for the project was the NMA. The Responsible Parties were HWQD and NDRMC, and their regional offices nationwide.

The proposed Project Board comprised an Executive (Chair), Senior Supplier and Senior Beneficiary. The Executive role was assigned to MoFEDs UN Agencies and Regional Economic Cooperation Director, as the representative of the Government Cooperating Agency, with UNDP proposed as Co-Chair. The Senior Supplier role, which represents the interests of the funder, was assigned to the Head of Climate Change Resilience, Green Growth Unit, UNDP Ethiopia. The Senior Beneficiary role, which represents the interests of project beneficiaries, was assigned to the Director General of NMA.

Project assurance (implementation oversight) was assigned to the UNDP Ethiopia Climate Change and Vulnerabilities team, supported at the regional and global level by UNDP-GEF. Day-to-day project management was assigned to a Project Manager (with appropriate support), with responsibility to plan, coordinate and monitor activities delivered by the IP and responsible Parties. The proposed management arrangements are outlined in figure 1.

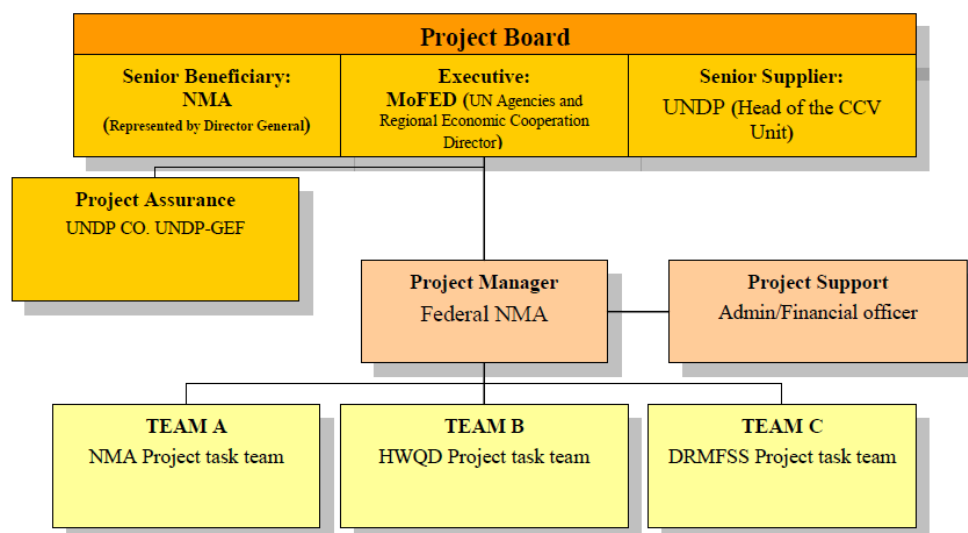


Figure 1. Proposed Project Management Arrangements

3.2 Project Implementation

3.2.1 Adaptive management

The project was designed with two outcomes and eleven outputs (six contributing to outcome 1 and five contributing to outcome 2). However, Annual Work Plans (AWPs) identify a third outcome (note that AWP refers to outcomes as outputs and outputs as activities): *Effective and efficient project management and knowledge management, communication, stakeholder engagement*. This outcome included three outputs (activities): 1) an integrated project management system established to enable coordination, synergy and efficient and effective management of the project and related initiatives; 2) establish project governance structure; 3) put knowledge management and communication strategy in place. The overall target for this outcome was to put in place an integrated Project Management Unit, stakeholder platform, and communication and knowledge management system. While this outcome, and associated outputs, was included in all AWP, progress was not reported in PIRs, where no reference is made to this outcome. The project did not deliver output 1 — no PMU was established and operationalised. This resulted in limited progress towards output 3 — knowledge management and communication. Progress towards output 2 included the establishment of a Project Board (Project Steering Committee) however, although the Project Steering Committee was established, and meetings were regularly held during the first half of project implementation, stakeholder participation was low and the last meeting was held in August 2016.

3.2.2 Partnership arrangements

As planned, a Project Board (Project Steering Committee) was established to provide direction to the IP. Specifically, the planned responsibilities for the Project Steering Committee were to:

- Supervise project activities through monitoring progress and approving annual reports
- Review and approve AWP, financial plans and reports

- Provide strategic advice to the IP and Responsible Parties to ensure integration of project activities with national and sub-national sustainable development and climate resilience objectives
- Ensure inter-agency coordination and cross-sectoral dissemination of strategic findings
- Ensure full participation of stakeholders in project activities
- Assist with organisation of project reviews and contracting consultancies under technical assistance
- Provide guidance to the Project Manager

However, the Project Steering Committee was not well attended by its appointed stakeholders — several members never attended, two members interviewed by the evaluation team could not recollect what the project was about, and one also stated that they were unaware of their responsibilities since no ToR was circulated. The Steering Committee met once in 2014, twice in 2015 and twice in 2016. However, there have been no meetings since August 2016, shortly after the Mid-term Review.

The project is supported by a regional programme implemented by UNDP and funded by LDCF: Climate Information for Resilient Development in Africa (CIRDA). CIRDA supports 10 African countries to strengthen climate information and early warning capacity and provides assistance that would not be financially viable under national projects. The 2015 PIR highlights significant support from CIRDA including:

- Workshop: Inception (14-15 April 2014, Ethiopia): to understand country-specific needs and expectations
- Workshop: Building a Sustainable Climate Change Adaptation and Economic Development Plan (3-5 March 2015, Uganda): to discuss value-added weather and climate services through public-private partnerships to generate revenue and improve public service delivery
- Workshop: A Systems Approach to Designing, Implementing and Utilising Observing Networks (14-16 October 2014, Tanzania): to provide a systems perspective on weather and climate observing networks
- Development of Long Term Agreements (LTAs) with hydromet observational equipment suppliers and services to streamline in-country procurement, reducing prices and expediting delivery lead times
- Facilitation of knowledge-sharing between beneficiary countries via an Information Sharing Platform (website and blog)
- Support to develop public-private sector strategies to pay for tailored climate information products

Despite significant support reported in the 2015 PIR, on-going CIRDA activities are not reported in later years.

3.2.3 Feedback from M&E activities used for adaptive management

Effective adaptive management procedures were not established by the project — the Project Steering Committee was not effective, no dedicated Project management Unit (PMU) was established and the PRF was incapable of measuring output level progress. Furthermore, the GEF Focal Area Tracking Tool was not utilised. Whilst there is no evidence of M&E reported in the PIRs, UNDP did provide a management response to the Mid-term Review. However, many recommendations were not implemented. Further details are provided in the following sections.

3.2.4 Project Finance

The Prodoc identified over USD 33M of co-financing. However, these funds were the sum of identified project finance committed to address project baseline related issues. Expenditure against these projects was not monitored and, during the evaluation missions, the evaluation team confirmed with UNDP that no co-finance was secured. The IP and Responsible Partners stated that they had committed in-kind support in respect of staff time and facilities. Whilst the AWP's record an annual Government in-kind budget of USD 150,000, interviews with relevant personnel did not clarify how this budget was calculated and no expenditure records were maintained.

The total grant value USD 4.5M (reduced from the planned budget of USD 4.9M identified in the Prodoc and PIF) and expenditure was planned over a four-year period: 2014-2017. An independent financial audit of UNDP's Combined Delivery Reports (CDRs), covering the period 1 January 2014 to 31 December 2015, was undertaken and shared with the evaluation team; financial audits for the remaining project period were not available. The CDRs monitored disbursements under three expenditure columns: i) Government; ii) UNDP; and, iii) UN Agencies. These expenditure columns are defined as follows:

- i) Government: IP disbursements of funds advanced by UNDP
- ii) UNDP: direct payments (where IP is responsible for expenditure but UNDP makes direct payment to vendor/consultant on its behalf) and support service payments (where Government and UNDP have agreed that UNDP will provide support services)
- iii) UN Agencies: disbursements to UNDP and Government

However, the scope of the CDR audit was limited to IP disbursements and UNDP direct payments, which accounted for only 25% of total project expenditure over the period audited. Accordingly, only USD 712,881.07 was within the scope of the audit against total expenditure of USD 2,817,959.43. According to the audit report, all out-of-scope expenditure (USD 2,105,078.36) was disbursed by UNDP for support services.

The audit concluded that the CDR statements fairly present the total expenses of USD 712,881.07 (Government: USD 679,166.07; UNDP direct payments: 33,715.00) incurred by the project in accordance with agreed accounting policies and were: i) in conformity with the approved project budget; ii) for the approved purposes of the project; iii) in compliance with the relevant UNDP regulations and rules, policies and procedures; and, iv) supported by properly approved vouchers and other supporting documents. Furthermore, the audit concluded that the statements of assets and cash position present fairly, in all material respects, the balances of assets, equipment, cash and bank balance of the project.

The audit also covered the overall management of the project's implementation, monitoring and supervision. In terms of budget utilisation, project progress and timeliness, the audit concluded that performance was satisfactory, since NMA had utilised 100% of funds advanced over the course of the audit period. In terms of internal control, the audit stated that MoFED's Internal Audit Department monitored project expenditure quarterly and concluded this showed commitment of the Government, IP and Responsible Parties to improve internal control. However, the audit also noted that project fixed assets were not accounted at year end and were not affixed with asset identification numbers.

Whilst the independent financial audit reported positively overall, in 2015 the project experienced major financial management issues, leading to significant implementation delays at HWQD. As IP, NMA was responsible for disbursing funds to the Responsible Parties, following advancement of funds from UNDP. This process proved so inefficient that the delay in HWQD receiving project funds resulted

in almost all activities identified in the AWP for 2015 being rescheduled for 2016. Mitigating this inefficiency, disbursement of funds to the Responsible Parties for activities identified in the AWP for 2016 and 2017 was advanced directly from UNDP. This revised fund disbursement procedure was documented in a multi-lateral agreement between UNDP Ethiopia, the IP and the Responsible Parties (this was not shared with the evaluation team). Whilst this improved fund disbursement efficiency, it effectively undermined the IPs project management responsibilities, compounding those impacts to project monitoring & evaluation, inter-agency co-ordination and cross-sectoral dissemination of strategic findings identified in Section 3.2.2.

PIRs inconsistently recorded and reported against the budget. The basic project and finance data presented in Section A of the 2015 and 2016 PIRs record a total budget of USD 5M. Implementation progress under Section D of the 2017 PIR records a total budget of USD 4.9M however, the under the same section, also records a total ATLAS approved budget of just over USD 6M. The final approved budget was USD 4.5M.

While the CDRs break down expenditure by ATLAS code, they do not breakdown expenditure by outcome, output and activity. The evaluation team requested this breakdown however, the Management Support Unit provided only project budget and expenditure by outcome, as illustrated in Figure 2.

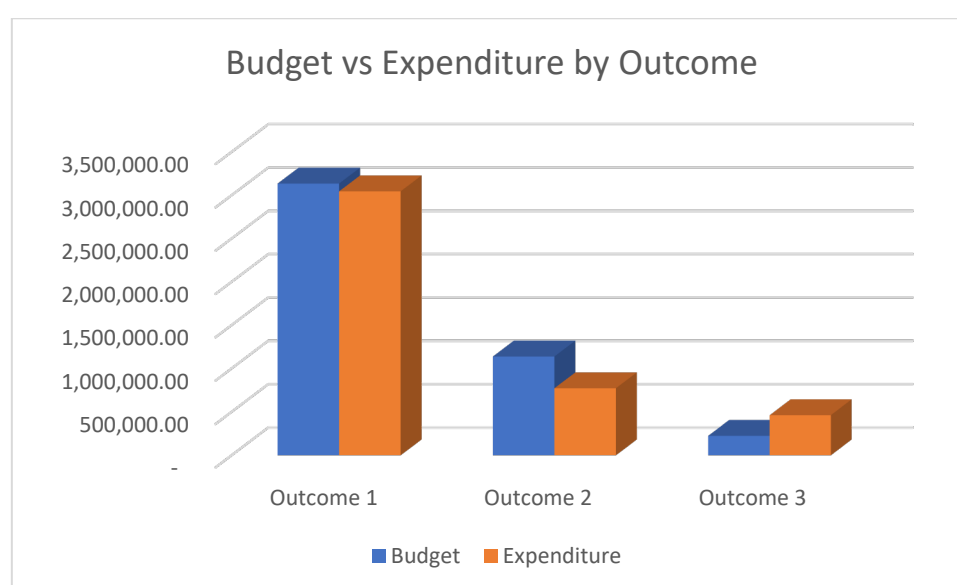


Figure 2: Budget vs expenditure by outcome

This showed a significant underspend of USD 365,883.43 against outcome 2 and a significant overspend of USD 237,798.50 against outcome 3. The overspend against outcome 3 is initially surprising, since no PMU was established. However, UNDP commented that savings incurred by not establishing a PMU, coupled with an underspend against outcome 2, were used to procure a High-Performance Computer costing USD 351,000. It is unclear why this procurement cost has been recorded under outcome 3. Furthermore, the underspend against outcome 2 is surprising. In 2016, HWQD reported that the budget for awareness raising and training of 60 manual hydrology station observers was insufficient and that they would need to identify alternative financing.

In summary, it was difficult to evaluate financial control. The budget approved in the Prodoc was greater than the budget realised; the financial audit covered only two years, and then, only 25% of

total expenditure during that time; financial reporting was inconsistent between PIRs; and CDRs do not breakdown expenditure by outcome, output and activity.

As of 3 May 2018, total project expenditure was USD 4,486,635.18, leaving a surplus of USD 13,364.82. However, TE costs are yet to be disbursed.

3.2.5 Monitoring and evaluation: design at entry and implementation

Monitoring and Evaluation design at entry is rated as: MODERATELY UNSATISFACTORY

The M&E plan outlined in the Prodoc included provision for a Project Inception Workshop, annual APRs/PIRs, Mid-term Review, Terminal Evaluation and periodic site visits. It also stated that the project would identify, and participate in, scientific, policy-based or other relevant networks which may benefit the project through lessons learned; and would interact with other parallel projects to facilitate information flows. The total indicative cost of the M&E plan was USD 97,000, which the Prodoc identified as +/- 5% of the total budget. This calculation is incorrect — the M&E budget was only 2.1% of the total budget, which is unusually low.

As outlined in Section 3.1.1, the Project Results Framework had significant shortcomings including an unquantified objective level capacity assessment baseline and targets, and several outcome level indicator shortcomings. However, most notably, the PRF did not include project outputs and therefore lacked output level measurable indicators. This had a significant impact on the effectiveness of M&E implementation.

Finally, the GEF Focal Tracking Tool was not completed at CEO endorsement. The GEF Tracking Tool is important for measuring progress towards project outcomes and impacts. Completion at CEO endorsement is an important exercise to establish the project's baseline.

Monitoring and Evaluation implementation is rated as: UNSATISFACTORY

M&E during project implementation was particularly weak. As outlined in Section 3.2.2, the Project Board (Project Steering Committee) was not well attended by its appointed stakeholders — several members never attended and two members interviewed by the evaluation team could not recollect what the project was about. Whilst the Project Steering Committee met once in 2014, twice in 2015 and twice in 2016, there have been no meetings since August 2016, shortly after the Mid-term Review was finalised. This limited the effective input of relevant stakeholders and minimised capacity for M&E, inter-agency co-ordination and cross-sectoral dissemination of strategic findings.

Although outcome 3 was focused on project management and stakeholder engagement, no PMU was established by the IP. This was despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment. Therefore, the project lacked a dedicated Project Manager, Administrative and Financial Assistant, and Monitoring & Evaluation Expert. The Project Manager would have had the authority to run the project on a day-to-day basis, ensuring delivery of the projects objective and outcomes to the required quality, on time and on budget. Rather than establishing a dedicated PMU, NMA appointed only a part time National Project Co-ordinator who had significant departmental responsibilities. This significantly limited his time dedicated to project activities and had a major impact on the projects capacity for effective M&E.

Annual PIRs were incomplete, lacked effective reporting towards PRF indicators and did not report directly report against activities identified in the AWP. This made it difficult for the evaluation team to objectively review project progress. For example, PIR 2017 failed to complete sections on critical risk management, adjustments, gender, communicating impact, partnerships and grievances, and the Section G (ratings and overall assessment) was completed by any UNDP country or regional staff. None

of the PIRs reported progress towards capacity assessment scorecards or domestic finance commitments, and progress towards outcome level indicators was not clear or quantifiable. This was particularly true for progress towards outcome 2 indicators. Since outputs were not included in the PRF, there is a complete absence of reporting at the output level and, furthermore, reporting focused on activities under the remit of NMA. This bias was likely because outcome level reporting was led by NMA, and NDRMC and HWQD did not provide direct input. The evaluation team concluded that NDRMC did not produce any regular progress reports (although it is acknowledged that they produced several reports on training activities) and HWQD reporting was limited.

A Mid-term Review was undertaken 6 months later than planned because, as reported in PIR 2015, the National Project Co-ordinator was too busy with day-to-day operational activities to support the review.

The MTR produced a set of recommendations and the management response was shared with the evaluation team. Many recommendations were simply to implement planned activities that had not progressed satisfactorily. The management response to one of these activities — weather-index insurance schemes have been implemented by private companies in collaboration NMA states that this has been achieved. However, there is no evidence of this in PIRs or NMA progress reports. Several recommendations focused on improved reporting procedures, management arrangements and M&E, including the production of quarterly progress reports by NMA, HWQD and NDRMC, regular PSC meetings, the establishment of a PMU and revision of the PRF to include output level indicators. While the management response accepted these recommendations, there is no evidence of management action and the recommendations were not implemented. The only exception to this statement is, following the MTR, NMA began reporting biannually rather than annually. Further recommendations focused on the development of a data sharing guideline, a climate information communication plan, and a standardised, national level climate information training module. For each of these recommendations, ToRs were developed for technical committees and/or national consultants however, there is no evidence that the recommendations were implemented.

Finally, the GEF Focal Area Tracking Tool was not completed by UNDP at CEO endorsement, mid-term or ahead of the TE. Following repeated requests from the evaluation team, UNDP sent a document after field work was completed. However, when document received by the evaluation team was an unpopulated GEF Focal Area Tracking Tool template. Only indicator 2.1.2.1 had been completed. It was concluded that the GEF Focal Area tracking Tool was not utilised as a M&E tool during project design or implementation.

3.2.6 UNDP and Implementing Partner implementation/execution

UNDP Execution is rated as: MODERATELY SATISFACTORY

UNDP CO facilitated extensive international expertise to support equipment procurement and capacity building in support of project outcomes. The multi-country CIRDA programme, implemented by UNDP and funded by LDCF, provided support that would not be viable for a national project — without this support, this project in Ethiopia likely would not have been approved. CIRDA hired experts to collaborate on matters including hydromet technology, data management and collection, private sector engagement and communications. The Long-Term Agreements negotiated by CIRDA with suppliers of hydromet equipment and services streamlined UNDP CO procurement of hydromet observational equipment, reducing costs and delivery lead times. In addition to equipment procurement, UNDP CO facilitated customs clearance, equipment handover to NMA and HWQD and site-based factory-level training for installation, operations and maintenance. With CIRDA support, UNDP CO facilitated extensive international expertise to support cost-effective capacity building for

the IP and Responsible Parties through study-tours and trainings in Austria, China, Finland, Kenya, South Korea and Turkey.

Following significant delays in transfer of funds from the IP to the Responsible Parties, from 2016 UNDP advanced funds directly to HWQD and NDRMC. This improved financial efficiency but effectively reduced NMAs project implementation accountability.

UNDP Co-chaired the Project Steering Committee meetings however, as outlined in Section 3.2.2, meetings were not well attended by appointed stakeholders and several stakeholders never attended. Furthermore, meetings were convened on only four occasions and not since August 2016. This weak aspect of project governance was compounded by the failure of the IP to establish a PMU. In this regard, UNDP should have imposed strong pressure on NMA to establish and implement effective project management arrangements.

As outlined in Section 3.2.5, the quality of annual PIRs was low. This limited UNDPs M&E and risk management effectiveness. Project risks were absent from PIRs, despite significant hydromet O&M issues observed in the field. UNDP should have been more aware of these issues and this highlights insufficient communication between UNDP and the project team.

The risk to O&M sustainability was highlighted as a risk in the Prodoc and increasing commitment of O&M domestic finance to NMA and HWQD was an objective level indicator in the PRF. However, there is no evidence of UNDP actively working towards this indicator. Similarly, there is limited evidence of UNDP activities to support the development of public-private partnerships, to develop payments for climate information services.

NMA Implementation is rated as: MODERATELY SATISFACTORY

The IP established eight task teams responsible for the implementation of project activities and the Responsible Parties each assigned a focal person with responsibility to deliver project outputs, while remaining accountable to the National Project Co-ordinator. However, as outlined in several previous sections, despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no Project Management Unit (PMU) was established by the IP. Therefore, the project lacked a dedicated Project Manager, Administrative and Financial Assistant, and Monitoring & Evaluation Expert. The Project Manager would have had the authority to run the project on a day-to-day basis to ensure delivery of the projects objective and outcomes to the required quality, on time and on budget. Rather than establishing a dedicated PMU, NMA appointed only a part time National Project Co-ordinator who already had significant departmental responsibilities. This significantly decreased NMAs capacity for implementation oversight. For example, PIR 2015 states that the Mid-term review was delayed because the National project Co-ordinator was too busy with day-to-day NMA activities, particularly monitoring and advising the government and general public about the impact of El Nino on rainfall during the period June-September 2015. Mid-way through the project, the National Project Co-ordinator resigned. Whilst he was swiftly replaced, NMA again appointed a part-time position — assigning responsibility to the director of the Meteorological Data and Climatology Directorate.

Inefficient disbursement of funds from NMA to HWQD and NDRMC — due at least in part to a lack of project management capacity — led to almost all HWQD activities scheduled in 2015 being delayed to 2016. In mitigation, UNDP affected direct payments to the Responsible Parties from 2016 onwards. Whilst this improved fund disbursement efficiency, it effectively undermined NMAs accountability.

There was some evidence of insufficient communication between the IP and UNDP. Whilst UNDP considered the Responsible Parties accountable to the National Project Co-ordinator, the National Project Co-ordinator refuted this stating he was responsible only for NMA activities. This was evident in the production of progress reports. NMA produced regular progress reports which focused heavily on NMA led activities. The evaluation team concluded that NDRMC did not produce any regular progress reports (although it is acknowledged that they produced several reports on training activities) and HWQD reporting was limited.

3.3 Project Results

3.3.1 Achievement of objective and outcomes: Effectiveness

Overall achievement of project objective and outcomes is rated as: SATISFACTORY

It was difficult to evaluate the overall attainment of the project objective and outcomes since objective level indicators were difficult to measure and some outcome level indicators were not effectively monitored. Whilst it was not possible to assign a quantified score, through a process of triangulation, a qualitative rating of satisfactory was reached. The evaluation of achievements is summarised below by objective and outcome level indicators. Full details are compiled in Annex 5.7.

Project Objective is rated as: SATISFACTORY

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

Objective indicator 0.1: Capacity as per capacity assessment scorecard

Target	Rating
Capacity assessment scorecard score of 139	Satisfactory
The project team were unable to identify the methodology and corresponding quantification for the capacity scorecard baseline and target assessment. There was evident confusion over how it had been calculated and who had done the calculation. This confusion was not resolved during the evaluation. PIRs did not report progress towards the scorecard target and the MTR did not identify this omission as a constraint to effective M&E, scoring progress towards this target as highly satisfactory without quantifiable evidence. This was a key failing of the MTR. The evaluation team concluded that, whilst a baseline assessment may have been undertaken, country ownership of M&E was low, the baseline assessment had been lost and the target was not monitored throughout the project. Consequently, it is not possible to assign a quantified rating. However, through a process of triangulation, a qualitative rating was reached. Capacity to generate EWS and CI on a national scale has been significantly strengthened. The procurement, installation and operationalisation of AWS, one Upper Air Monitoring Station and telemetry for hydrological gauge stations — and associated trainings on installation, operations and maintenance — has significantly increased spatial and temporal data collection capacity. This increase in AWS reduces the need for data interpolation, significantly improving forecasting capacity and, with data transmitted every 15 minutes, the capacity to monitor extreme short-term weather patterns for issuing warnings. AWS data is sent directly to NMAs central server. Data management capacity was upgraded and future-proofed with the upgrade of NMAs CLIDATA database to the latest version, capable of managing data received from NMAs nationwide target of 700 AWS (as identified in NMAs sector-specific GTP). Twenty-nine NMA staff, mainly from the Data and Climatology Directorate were given factory-level training (Czech Republic trainers) in database installation and management and five NMA forecasters received training in installation and general features of GIS CLIDATA.	

Computational capacity for forecasting was upgraded with the procurement and installation of a High-Performance Cluster (HPC) machine. This is a significant upgrade since, prior to installation, NMA was using PCs which cannot satisfy the requirements imposed by the available input data and the need for storing model outputs. Furthermore, to increase spatial accuracy of forecasts, numerical weather prediction models must be run at resolutions far exceeding the capacity of PCs. Operationalising the HPC has enabled forecasters to run numerical weather prediction models, using all available input data, at the required resolution. This has significantly improved forecasting capacity, accuracy and timeliness, resulting in improved spatial and temporal forecast resolution and, therefore, capacity for climate related decision-making. NMA estimates that the HPC has the computing power of 300 PCs. Twenty experts, drawn mainly from the Meteorological Forecast and Early Warning Directorate — the directorate responsible for running numerical weather models — were given factory-level training in installation (four experts trained), and configuration and modelling.

Bilateral Standard Operating Procedures (SOP) have been developed and implemented detailing service provision procedures between NMA and HWQD and between NMA and DRMFS.

Objective indicator 0.2: Domestic finance committed to the relevant institutions to monitor extreme weather and climate change

Target	Rating
Domestic target financing is 100M Birr per year	Moderately Satisfactory
Whilst a baseline domestic finance figure was identified in the Prodoc (66M Birr), PIRs did not report progress towards the target and the MTR did not identify this omission as a constraint to effective M&E, scoring progress towards this target as highly satisfactory without quantifiable evidence. The project team could not satisfactorily explain how the domestic finance target was set. However, NMAs sector specific GTP II (2015-2019) identifies a recurrent (O&M) budget projection (target) of 97.5 M Birr for the 2016/17 fiscal year and 126.5 M Birr for the 2017/18 fiscal year. In a personal comment from NMAs Director General, the recurrent budget for 2017/18 is 80M Birr. HWQDs GTP II identifies a total government budget of 7.6 M Birr for the 2017/18 fiscal year but does not break this down into capital expenditure and recurrent budget.	

Outcome 1 is rated as: MODERATELY SATISFACTORY

Outcome 1: Percentage of national coverage of weather/climate and hydrological monitoring infrastructure

Outcome indicator 1.1: Percentage of national coverage of weather/climate and hydrological monitoring infrastructure

Target	Rating
Increase in 24% national coverage to take steps in achieving NMAs optimal monitoring arrangements as defined in feasibility studies	Moderately Satisfactory
The end of project target was erroneously articulated — it is not representative of the % increase in national coverage of hydromet monitoring infrastructure. It is simply the target % increase in the number of functioning manual meteorological stations (1240) against the baseline (1000) = 24%. Manual meteorological stations are not the focus of this project.	
National coverage of AWS has increased by 57% however, at the time of reporting, four of these AWS were not transmitting data, reducing this increase in national coverage to 51%. There is Insufficient information to calculate increase in national coverage of hydrological stations with	

telemetry. Despite requesting information, HWQD did not report the status of telemetry stations with radar modems. Of the 40 GPRS equipped hydrological stations procured, only 35 were configured and 32 were installed, representing an increase in national coverage of 700%. However, of these 32, only 22 are transmitting data, reducing this increase in national coverage to 450%.

Outcome indicator 1.2 Frequency and timeliness of climate related data availability

Target	Rating
Daily	Highly Satisfactory
AWS and hydrological stations have the capacity to transmit data to the Federal server every 15 minutes. However, data is transmitted only when the GPRS network is available. Although out of the control of the project, on several occasions, and in many localities, access to Ethio Telecom's mobile data network was blocked by the government, often for many months at a time.	

Outcome 2 is rated as: MODERATELY SATISFACTORY

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

Outcome indicator 2.1: population with access to improved climate information and flood and drought warnings (disaggregated by gender)

Target	Rating
Percentage increase in population who have access to improved EWS/CI (50% increase for women, and 50% increase for men)	Moderately Satisfactory
The project did not report effectively against this indicator. The means of measurement identified in the Prodoc was a gender disaggregated beneficiary survey, including vulnerability reduction assessment relative to the baseline. These surveys and assessments were not undertaken. However, the significant increase in hydromet observation infrastructure, coupled with targeted capacity building activities for NMA, HWQD and NDRMC — including numerous training events, workshops and international study tours — has improved the accuracy and availability of climate information throughout the country. Awareness creation workshops were organised at all meteorological branch directorates for regional government policy makers, women and local community representatives on how to interpret climate information and make use of it to minimise climate related risks. Climate forecasts and impact advisories are disaggregated at the regional and zonal level and disseminated three times a week to a wide variety of stakeholders. These forecasts are used at the federal and regional levels to advise national and regional government offices in decision-making. This was evident during El Niño in 2015/16 when project resources supported the establishment of a national and regional El Niño monitoring and forecasting task force. During this time, accurate forecasting and monitoring supported decision makers and NDRMC to minimise the impact of flooding. PIR 2017 states that, according to the Ministry of Agriculture, climate information flows to the lowest government structure (kabele's). It further states that during the El Niño, 75% of farmers, agricultural extension agents and local disaster risk managers received hydromet advisories and forecasts every two days. However, it is not possible to corroborate this statement since a survey of end-users has not been undertaken.	

Outcome indicator 2.2: Development frameworks (e.g. GTP) that integrate climate information in the formulation

Target At least 2 of the PRSP policy briefs incorporate analyses of risk maps and/or climate change projections influencing long-term planning proposals	Rating Satisfactory
The objective and outcome targets of the project have been incorporated in the pillars of NMA and HWQD sector-specific GTPs. NMAs GTP II is aligned with global and regional perspectives including the Integrated African Strategy on Meteorology (IASM). HWQDs GTP II aims to upgrade all hydrology stations with telemetry. Ethiopia's second National GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services including: <i>"preparation and dissemination of short duration weather forecasting reports twice a day; midterm weather forecast on daily basis; 1-5 days cities weather forecast which could be updated daily as well as regional midterm weather forecast which could be updated yearly"</i>.	

Outcome indicator 2.3: Sector-specific EW products and strategies that integrate climate risks

Target 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	Rating Unsatisfactory
Progress towards this indicator was not effectively monitored or documented and the project team had very little knowledge of progress and achievements. NMAs 2016 half-year progress report states that dialogue was underway between NMA and Ethio Telecom, the provider of internet, SMS and other form of telecommunications in Ethiopia. These discussions did not progress. Mobile communications are state run in Ethiopia and the project was unable to develop a market-based rationale for Ethio Telecom's support. It is unclear how much resource was dedicated to these discussions — NMAs Meteorological Research and Studies Directorate stated that no activities mobile phone-based advisories activities were implemented under this project. The directorate also confirmed that activities were being taken forward under an ADB-Climdev funded project and that a technology and needs assessment, contracted to an Indian company, was ongoing. The project aimed to approach the private sector to increase existing fee structures with existing customers and make additional funds available from insurance companies who expressed a readiness to pay in the national consultation (during the project preparation phase) for weather forecasting services and products. These sectors included includes civil aviation, hydropower, tourism and farmers' associations. The project supported a public-private partnerships finance forum in Adama however, no further details were available, and NMA is currently undertaking a study on payment for meteorological services. One public-private partnership is under development. However, the modality of this partnership with the aviation sector, moreover with Ethiopian Airlines, has not been accepted by contracting parties as the ongoing payment for services was found to be disproportionately small. NMA has initiated negotiations and plans to charge 35M Birr/year for its services. The project planned to develop public-private partnerships with insurance companies with a special focus on weather indexing methods. The updated MTR management response (dated May 2018) stated that <i>"New weather-index insurance schemes implemented by private companies in collaboration with NMA"</i>. However, this there is no mention of this activity in any of the PIRs or NMA quarterly reports and the project team could not provide any further information. The	

comment in the MTR management response may have been in relation to a 2016 workshop to evaluate NMA projects and activities funded by international development organisations. One of the projects presented at this workshop was a GeoData for Agriculture and Water funded project: Weather index-based Credit Insurance pilot project in Amhara, Oromia, SNNP and Tigray regions. Amongst the project's objectives was *"production of Geodata for Innovative Agricultural Credit Insurance Scheme (GIACIS) to Kifiya for premium collection and claim payout according to the respective Kebeles' drought severity identified on the satellite data of Normalized Difference Vegetation Index (NDVI)"*.

Outcome 3 is rated as: UNSATISFACTORY

Outcome 3: Effective and efficient project management and knowledge management, communication, stakeholder engagement

Outcome indicator 3.1: Presence of effective and integrated project management unit

Target	Rating
Put in place an integrated project management unit, stakeholder platform, communication and knowledge management system	Unsatisfactory
Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established by the IP. Therefore, the project lacked a dedicated Project Manager, Administrative and Financial Assistant, and Monitoring & Evaluation Expert. This had a significant impact on project implementation, and monitoring & evaluation. A Project Steering Committee was established and met once in 2014, twice in 2015 and twice in 2016. However, there were no further meetings after August 2016, shortly after the Mid-term Review was finalised. The Project Steering Committee did not effectively perform its function — meetings were not well attended by appointed stakeholders; several members never attended, two members interviewed by the evaluation team could not recollect what the project was about and one stated they were unaware of their responsibilities since no ToR was circulated. However, project advisory committees were established in NMA, NDRMC and HWQD to convene technical consultations. A communication and knowledge management system was not established. NMA launched a bid process but did not receive any tenders. Subsequently, NMA reported that they transferred this budget to UNDP and that UNDP identified a winner. While it is reported that an individual consultant commenced the work, the evaluation team has not seen any outputs.	

3.3.2 Relevance

Relevance is rated as: RELEVANT

The project has made significant contributions to Ethiopia's NAPA (2007), is highly relevant to national development goals and supports the implementation of key policies.

The project has directly supported implementation of NAPA priority 2: *"Strengthening/enhancing drought and early warning systems in Ethiopia"* and NAPA priority 6: *"Capacity building program for climate change adaptation"*. Consistent with Ethiopia's Growth and Transformation Plan (GTP 2016-2020), the project has made important contributions to the implementation of the food security disaster prevention and preparedness strategy, by making early warning systems more accessible and up-to-date, and has supported targets for delivery of meteorological forecasting and early warning services including: *"preparation and dissemination of short duration weather forecasting reports twice*

a day; midterm weather forecast on daily basis; 1-5 days cities weather forecast which could be updated daily as well as regional midterm weather forecast which could be updated yearly”.

The objective and outcome targets have been incorporated in the pillars of NMA and HWQD sector-specific GTPs (II) and NMAs GTP II is aligned with global and regional perspectives, including the Integrated African Strategy on Meteorology (IASM).

The project is highly relevant to the GoE National Policy and Strategy on Disaster Risk Management (2013) and has contributed to two of the three pillars of disaster risk management — prevention and preparedness. It is also highly relevant to Ethiopia’s Climate Resilient Green Economy Strategy (2011), which recognises that building a climate resilient economy requires effective adaptation to minimise potential damage and maximise potential benefits.

3.3.3 Efficiency

Efficiency is rated as: MODERATELY SATISFACTORY

Investments in hydromet observational equipment and institutional capacity building are considered cost-effective. Through the LDCF supported multi-country CIRDA programme, UNDP CO facilitated extensive international expertise to support equipment procurement and capacity building in support of project outcomes. Long-Term Agreements, negotiated by CIRDA with suppliers of hydromet observational equipment and services, streamlined UNDP CO procurement, reducing costs and delivery lead times. And with CIRDA support, UNDP facilitated extensive international expertise to support cost-effective institutional capacity building through study-tours and on-site training. While no co-finance was secured, the project shares complimentary outcomes with several parallel projects and the GoE has leveraged additional finances from international development agencies during project implementation. These additional finances are programmed to further advance implementation of NMAs second sectoral GTP (2015-2019).

The cost-effectiveness outlined above was, to some extent, offset by inefficiencies in project and financial management. The Project Steering Committee did not adequately fulfil its function and no PMU was established. This inadequate project management capacity had an impact on project implementation and likely contributed to the lack of progress towards outcome 2.3, which focused on the development of public-private partnerships as a source of sustainable income for NMA, through tailor-made forecast and early warning products. NMA noted that the 2015/16 El Niño diverted the resources of all project partners for several months, as operational capacity was diverted to monitoring extreme climate events and issuing rainfall and flooding advisories to government stakeholders and civil society. In 2015, financial management inefficiencies significantly delayed disbursement of funds from NMA to HWQD, resulting in almost all 2015 AWP activities being rescheduled for 2016. However, UNDP did implement corrective action and made direct payments to HWQD and NDRMC in subsequent years. At the end of the project, of the 40 hydrological stations with telemetry procured, only 32 were installed, of which 22 were functional. Without this delay, HWQD may have achieved better results within the project’s timeframe.

As one of 10 country-led LDCF-funded projects in Africa focused on strengthening climate information and early warning systems, the project benefitted from a comparison approach regarding costs.

3.3.4 Country ownership

The project was developed in alignment with national strategy. Ethiopia’s first GTP (2010-2015) acknowledged the impact of climate change on the country’s economy and ability to achieve Millennium Development Goal (MDG) targets. Ethiopia’s NAPA identified “*Strengthening/enhancing drought and early warning systems in Ethiopia*” as its second priority; and “*Capacity building program*

for climate change adaptation” as its sixth. The CRGE (2011) —which superseded the Carbon Neutral Climate Resilient Economy (CNCRE, 2010), which itself was developed as part of the NAPA implementation process — identifies the importance of building climate change resilience to achieve the country’s economic growth targets and is based on the National Appropriate Mitigation Actions (NAMA) and Ethiopia’s Programme of Adaptation to Climate Change (EPACC). The EPACC builds on the NAPA and to deliver best practice actions for climate change adaptation.

Stakeholder participation was inclusive during the project preparation phase and three stakeholder consultations were conducted at inception, mid-way through project design and at validation. With the exception of MoEFCC, government stakeholders were well represented during this process. However, academia and civil society were somewhat under-represented. During implementation, country ownership decreased. The absence of an effective Project Steering Committee limited the input of stakeholders and, whilst project advisory committees were established in NMA, NDRMC and HWQD to convene technical consultations, these were not designed to involve the breadth of stakeholders envisaged under the Project Steering Committee. While the IP and Responsible Partners stated that they had committed in-kind support in respect of staff time and facilities, and AWP’s record an annual Government in-kind budget of USD 150,000, there was no evidence to corroborate this — no one interviewed could clarify how this budget was calculated and no expenditure records were maintained. Of particular concern was the evident lack of available budget for hydromet observational equipment O&M. For example, of the 32 hydrological gauges equipped with telemetry installed by the project, only 22 are functional. During the field trip, the evaluation team noted several instances of vandalism and looting, and several solar panels were missing. However, despite regional branches reporting the issues to HWQD at the national level, the only action taken was to record the incidents — no concrete action was taken. As discussed in Section 3.3.6, this represents a significant risk to sustainability.

At the strategic level, ownership remains strong. Improvements in forecasting and early warning capacity have been incorporated as targets in Ethiopia’s GTP II (2016-2020) and project outcomes have been incorporated as the pillars of NMA, HWQD and NDRMC sector-specific GTPs. NMAs GTP (2015-2019) is aligned with global and regional perspectives, including the Integrated African Strategy on Meteorology (IASM).

3.3.5 Mainstreaming

The project objective is directly aligned with Pillar II of Ethiopia’s latest UN Development Assistance Framework (UNDAF, 2016-2020): **Resilience & Green Economy**; specifically, *“better prepare, respond to and recover from emergencies and disasters”*. It is also aligned directly with Pillar II of UNDP’s Country Programme Document (CPD, 2016-2020): **Climate change and resilience-building** and contributes to Pillar III: **Strengthening democratic governance and capacity development**, through its activities focused on institutional capacity building. The project, and UNDAF, are fully aligned with the national development priorities articulated in the second Growth and Transformation Plan (GTP II, 2016-2020).

The project’s outcomes have made significant contributions to national preparedness to cope with natural disasters — droughts and floods — since national capacity to generate climate information and early warnings has been significantly strengthened. However, it is not yet possible to identify effects on local populations. The Ministry of Agriculture report that climate information flows to the lowest government structure (kabele’s) and that, during the El Niño in 2015/16, 75% of farmers, agricultural extension agents and local disaster risk managers received hydromet advisories and forecasts every two days. However, it is not possible to corroborate this statement since planned surveys of end-users were not undertaken by the project. This lack of data on end-user use of climate

information also makes it difficult to evaluate the project's impact on women, who are more vulnerable than men.

The project team was represented well by women — the focal points at HWQD and NDRMC were female. And, whilst it cannot be attributed to the project, women are well represented as hydromet equipment observers/technicians.

3.3.6 Sustainability

Overall Sustainability is rated as: MODERATELY LIKELY

Sustainability is considered here as the likelihood of continued benefit after the project ends. This section considers four risk dimensions: financial, socio-economic, institutional and governance, and environmental. Since all are critical, the overall rating given should not be higher than the lowest rated dimension. All dimensions were rated as moderately likely.

Financial sustainability is rated as: MODERATELY LIKELY

During the project preparation phase, NMA and HWQD emphasised a critical O&M budgetary shortfall for existing hydromet observational equipment, and the need to develop a sustainable finance plan to meet both current and future needs. Both NMA and HWQD confirmed that, while O&M costs are operationalised in annual departmental budgets, budgetary shortfalls remain a critical challenge.

HWQD stated that financial sustainability has not been well considered at the institutional level and that O&M capacity was very limited. Highlighting this shortfall in capacity, of the 32 hydrological stations with GPRS telemetry installed (target = 40), only 22 were functional at the end of the project. HWQD was unable to confirm the specific cause of malfunction for each station however, during the field mission, the evaluators confirmed that at least seven stations were not functioning (four of these were funded by UNDP); four had been vandalised and had vital parts, including solar panels, stolen; two were sending data only intermittently due to connectivity issues; and one had failed due to sedimentation build up in the gauge. While these damages were reported, owing to budgetary and associated capacity constraints, no action was taken. As identified in its GDP II (2015-2019), HWQD has a strategic aim to upgrade all hydrological stations with telemetry. If O&M remains insufficient, investments made by this project, and further capital investments, will not be sustainable.

NMA also confirmed budgetary limitations for O&M. For the 2017/18 fiscal year, NMAs total budget was approximately 175M Birr, of which 95M was allocated to capital projects and 80M was allocated to recurrent costs such as salaries and O&M. However, NMAs sector specific GTP (2015-2019) identifies a 2017/18 budget projection (target) of 278M, of which 126M is allocated to recurrent costs, rising to a total budget target of 318M in 2019/20, of which 178M is allocated to recurrent costs. These sharp increases in O&M targets reflect NMAs GTP II target of 700 operational AWS by 2019. At the time of this report, approximately 250 are operational.

The project had an objective level target so secure 100M Birr of domestic finance for O&M activities. This target fell below NMAs 2017/18 fiscal year target of 126M Birr. Budgetary shortfalls for O&M present a significant financial risk to sustainability. HWQDs GTP II identifies a total government budget of 7.6 M Birr for the 2017/18 fiscal year but does not break this down into capital expenditure and recurrent budget. As stated under indicator 2.3, the project planned to develop public-private partnerships to provide on-going revenue for weather forecasting services and products, including weather-indexing for insurance companies. As reported under section 3.3.1, little progress was made towards this indicator. While NMA is currently undertaking a study on payment for meteorological

services, during project implementation only one public-private partnership was under development, with Ethiopian Airlines. However, the modality of this partnership is yet to be agreed.

In the short term, some O&M costs will be covered by various ongoing and planned international development aid funded projects. However, this is not sustainable in the medium to long-term.

Socio-economic sustainability is rated as: MODERATELY LIKELY

A significant number of observers/technicians — responsible for taking manual measurements at hydromet stations — interviewed by the evaluation team stated that there is little community-level awareness of the long-term value of hydromet observational equipment. Communities are generally unaware of the impact equipment has on improving climate information and early warning advisories so are generally unaware how the equipment may benefit them. This lack of awareness, compounded by poverty, has seen the theft of some solar panels and GPRS equipment, rendering the equipment non-functional. This has proven more of a problem at hydrological stations than AWS. AWS are generally located in urban areas and are fenced. Conversely, hydrological stations are vulnerable to theft since they are often sited distant from settlements, within river valleys; and, for practical reasons, are not fenced. However, hydrological stations mounted on bridges of national strategic importance have encountered no security risks. The 24hr military presence at these sites act as an infallible deterrent.

Addressing community awareness, NMA has invested in sensitisation at some AWS and it is believed that this has been effective. While HWQD has invested in sensitisation at the regional level, sensitisation at the community level is more difficult, and may not have a significant impact on theft and vandalism because of site locations and the absence of other security measures. While employment of guards at high risk sites may offer a relatively cost-effective solution, chronic underfunding of O&M remains a limiting factor.

Institutional Framework and governance sustainability is rated as: MODERATELY LIKELY

Project outcomes are institutionalised into NMA, the Ministry of Water, irrigation and Electricity and the Ministry of Agriculture, and recurrent budgets are allocated to NMA, HWQD and NDRMC for climate information and early warning services. Ethiopia's second National GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services and outcome targets are incorporated in the pillars of NMA, HWQD and NDRMC sector-specific GTPs.

The installation and maintenance of hydromet observational equipment is centralised at the Federal level. This has excluded regional authorities from significant engagement in project activities whilst effectively increasing O&M costs, since even routine maintenance issues require personnel to travel from the capital. Since distances in Ethiopia are often significant, technicians often do not have the required budget to travel to the regions, so routine O&M is overlooked. As hydromet observational infrastructure in Ethiopia continues to expand, further resource pressures will be experienced at the Federal level. Furthermore, there is a lack of communication between HWQD and River Basin Authorities and some confusion over respective roles and responsibilities. This is attributable to insufficient planning for River Basin Authority decentralisation, which was implemented two years ago.

On several occasions, and in many localities, access to Ethio Telecom's mobile data network was deliberately blocked by the government, often for many months at a time. Since hydromet observational equipment relies on the GPRS network to send data to the central server, when there is no mobile data network connection, data cannot be transmitted.

Environmental sustainability is rated as: MODERATELY LIKELY

Climate shocks threatened implementation of activities. NMA noted that the 2015/16 El Niño diverted the resources of all project partners for several months, as operational capacity was diverted to monitoring extreme climate events and issuing rainfall and flooding advisories to government stakeholders and civil society.

Generally, the hydrometeorological infrastructure installed is resilient to Ethiopia's environmental conditions. However, a number of hydrological gauge stations utilise shaft encoder technology. During heavy rainfall or flood events, sedimentation build up stops these gauge stations from taking accurate measurements. Regular maintenance is required during the rains to ensure reliability.

3.3.7 Impact

Impact is rated as: MINIMAL

Impact analysis requires the availability of process indicators and/or verifiable data on changes in socioeconomic or environmental state. These indicators and/or verifiable data were not developed/collected by the project and the GEF Focal-area tracking tool, which is designed to greatly aid in the assessment of impact, was not utilised by UNDP. Therefore, while the rating assigned is based on the findings of the evaluation, it is subjective.

Capacity to generate climate information and early warnings on a national scale has been significantly strengthened, and objective and outcome targets have been incorporated in the pillars of NMA and HWQD sector-specific GTPs and support the implementation of Ethiopia's second GTP (2016-2020). However, while the project has made significant contributions, and has been instrumental in the leveraging and programming of additional funds for this purpose, additional finance is required to fully implement these GTPs — the project made little progress towards establishing public-private partnerships and tailoring products for different sectors. This leaves NMA with limited, external sources of sustainable income and further compounds the issue that, while the project invested significant financial resources in the procurement and installation of hydromet observational equipment, it did not adequately consider risks of equipment theft, vandalism and lack of routine maintenance.

Climate forecasts and impact advisories are disaggregated at the regional and zonal level and disseminated three times a week to a wide variety of stakeholders. These forecasts are used at the federal and regional levels to advise national and regional government offices in decision-making. This was well demonstrated during the El Niño in 2015/16, when project resources supported the establishment of a national and regional El Niño monitoring and forecasting task force and accurate forecasting and monitoring supported decision makers and NDRMC to minimise the impact of flooding. However, there is little evidence that climate information and advisories are reaching local populations in remote rural areas and influencing subsistence farmer behaviour.

4 Recommendations & Lessons Learned

4.1 Recommendations

4.1.1 Design, implementation, monitoring and evaluation of the project

Project design

Identify actions to safeguard public goods

A risk analysis was undertaken during the project preparation phase and is presented in Annex I of the Prodoc. However, while NMA and HWQD emphasised a critical shortfall in O&M budgets, this sustainability risk was not included in the analysis or adequately considered in project design.

Significant resources were invested in procurement and installation of hydromet observation equipment, but risk of equipment theft, vandalism and lack of routine maintenance was not addressed. While it is recognised that, once equipment is handed over to the government it becomes their responsibility, the project should have investigated and budgeted specific actions to minimise risk in the short-term, while longer-term sustainability is developed.

Accurately identify baselines and measurable indicators

The methodology to quantify the baseline capacity assessment score, and measure progress toward the target, was not identified. While scores were assigned, they were had no meaning in the absence of a methodology. Accordingly, it was not possible to quantify progress towards the project's objective.

Include outputs and output level indicators in the PRF

The absence of output level indicators made it difficult to effectively monitor implementation of activities and identify adaptive management in a timely manner.

Project implementation, monitoring & evaluation

Establish an effective Project Steering Committee

The PSC was not well attended by its appointed stakeholders and did not adequately fulfil its function. Several members never attended, two members interviewed by the evaluation team could not recollect the project and one stated they were unaware of their responsibilities, since no ToR was circulated. The PSC has not met since August 2016. The roles and responsibilities of PSC members should be clearly communicated to maximise participation and buy-in of stakeholders.

Establish an Effective Project Management Unit

Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established by the IP. Therefore, the project lacked a dedicated project manager, administrative and financial assistant, and monitoring & evaluation expert. The part-time national project co-ordinator was too busy with day-to-day activities to adequately provide project implementation oversight, and the capacity of focal points at HWQD and NDRMC was also stretched.

Make use of the GEF tracking tool

The GEF Focal Tracking Tool was not completed at any stage of the project. It is an important M&E tool for supporting measurement of progress towards project outcomes and outputs, and for identifying requirements for adaptive management. It also supports the development of impact level indicators. Its omission from this project contributed to evaluators not being able to assign an impact rating.

4.1.2 Actions to follow up or reinforce initial benefits from the project

Identify and assess risks at hydromet sites

During the field mission, the evaluators learned of several incidences of theft and/or vandalism of critical hardware, including solar panels and GPRS units. Of the 32 hydrological stations with GPRS telemetry installed, only 22 were functional by the end of the project. Solar panels and/or GPRS equipment had been stolen at a minimum of four of these stations. Of the 40 AWS installed, four were not functional at the end of the project and solar panels had been stolen at a minimum of two. While the causes of malfunction of the remaining AWS is not known to the evaluators, a further two hydrological sites malfunctioned due to poor internet connectivity, and one malfunctioned due to sedimentation build up in the gauge. Multi-hazard risk assessments should be undertaken to identify broad and site-specific mitigation actions.

Undertake community-based awareness raising of the value of public goods

Generally, there is insufficient community-level awareness of the purpose and value of hydromet observational equipment. Awareness raising campaigns should be implemented to sensitise communities to the role these public goods play in improving the accuracy of climate information and early warnings, and how this benefits civil society. By raising awareness, the incidence of theft and vandalism should be reduced. Several observers suggested an effective medium for awareness raising would be to communicate through religious and other community leaders. Inauguration ceremonies for local stakeholders have taken place at some AWS sites. Apparently, these have been effective at raising local awareness. Opportunities for school visits to AWS and hydrological sites, and the erection of interpretative signage should also be explored.

Maximise land-use at AWS sites

AWS sites are situated on 1 ha land holdings and are enclosed by fencing. The majority of each plot is unused. The sites could host meteorological and climate change education programmes as an effective means of community outreach. During the field mission, the team visited Dangila AWS in Amhara. The observer, using her own resources, had established a small environmental education facility. It was extremely popular with the local community and hosted regular groups, including from the local school. There was evidence of significant impact on local awareness raising. Furthermore, by fully utilising land at AWS sites, NMA would have further leverage to push back against land claims, which have significantly increased in recent years due to escalating land prices.

Where feasible, employ guard at sites situated away from settlements

For sites situated away from settlements and exposed to high risk of theft/vandalism, consideration should be given to employing guards. The minimal cost would be offset by a reduction in capital investments to replace stolen/vandalised equipment. This cost should be built in to recurrent budgets.

4.1.3 Proposals for future directions underlining main objectives

Based on the findings of the evaluation, the following recommendations are expected to underline the project's objective.

Develop a sustainable finance strategy

While the project aimed to approach the private-sector to increase fee structures with existing customers and make additional funds available from new customers, little progress was made. NMA is currently undertaking a study on payment for meteorological services. Through consultation with parallel projects, and building on global best practice, this study should be developed to identify the feasibility of implementing private-sector financial mechanisms. If private-sector financial mechanisms are found to be feasible, a sustainable finance strategy, based on these findings, should be developed and implemented.

Develop a strategy to implement mobile phone-based agricultural advisories

The project aimed to develop a market research plan to implement mobile phone-based agricultural advisories. However, few discussions were held with Ethio Telecom — Ethiopia's mobile telecommunications provider. A parallel ADB-Climdev funded project is undertaking a technology and needs assessment. This assessment should be developed into a strategy to identify the feasibility of implementing mobile phone-based agricultural advisories.

Decentralise operations and maintenance to the regional level

The installation and maintenance of hydromet observational equipment is centralised at the Federal level. There is significant evidence that this is inefficient and ineffective. Capacity for O&M is weak at the regional level and federal level technicians have limited budgets to travel. Equipment failures or theft, though reported, are regularly overlooked, weakening national and regional capacity to generate climate information and early warnings. By decentralising O&M, regional authorities would be empowered as stewards of hydromet observational infrastructure and O&M costs would be

minimised. Senior staff at NMA and HWQD recognise that, as Ethiopia's climate information infrastructure continues to expand, decentralisation is a necessity. As a first step, a capacity needs assessment should be undertaken at all regional NMA and HWQD offices.

Develop an awareness raising communications strategy

Establishing a network of hydromet observational equipment and building capacity for forecasting and early warnings are significant achievements of this project. However, influencing behavioural change to effectively use information and make informed decisions is another challenge. A communications strategy should be developed to identify opportunities for awareness raising platforms at regional, zonal and woreda levels. Attention should be paid to opportunities for engaging with schools, since building awareness in children is an effective way to communicate with adults, particularly in rural communities.

Ensure hydrological observational equipment is fit for purpose

A number of hydrological gauge stations use shaft encoder technology which is susceptible to sedimentation build-up. Sedimentation stops these gauge stations from recording accurate measurements and regular maintenance is required during rains to ensure reliability. Since O&M capacity in Ethiopia is limited, these gauge stations may remain inactive for several months, reducing capacity to monitor river levels and issue flood advisories. Site-specific environmental conditions should be carefully considered when selecting equipment requirements.

4.2 Best practices

Facilitation of international expertise

UNDP facilitated extensive international expertise to support equipment procurement and capacity building in support of project outcomes. The multi-country CIRDA programme, implemented by UNDP and funded by LDCF, provided support that would not be viable for a national project. The Long-Term Agreements, negotiated by CIRDA with suppliers of hydromet equipment and services, streamlined procurement, reducing costs and delivery lead times. With CIRDA support, UNDP facilitated extensive international expertise to support cost-effective capacity building for the NMA, HWQD and NDRMC through study-tours and trainings in Austria, China, Finland, Kenya, South Korea and Turkey.

Mainstreaming project outcomes in operational activities and national strategic plans

Project outcomes are institutionalised into NMA, the Ministry of Water, irrigation and Electricity and the Ministry of Agriculture; outcome targets are incorporated in the pillars of NMA, HWQD and NDRMC sector-specific GTPs; and Ethiopia's second National GTP (2015-2020) incorporates targets for meteorological forecasting and early warning services. Project outcomes supported the establishment of national and regional El Niño monitoring and forecasting task forces. During the 2015/16 El Niño, based on frequently updated forecasting and monitoring, task forces supported decision makers to reduce the impact of heavy rainfall and flooding.

Siting of hydrological gauge stations on bridges of national strategic importance

Many hydrological stations are mounted on bridges of strategic importance and use laser range finder technology to calculate changes in water levels. These bridges are guarded by the military and, by default, hydrological gauges are guarded from vandalism/theft. Since bridges of strategic importance are typically located over wide river crossings, this technology may not always be suitable since water flow may vary significantly across the river bed. However, where environmental conditions allow, siting hydrological stations on bridges is an effective risk management strategy.

4.3 Lessons learned

National Implementation Modality may not always be appropriate

Under the NIM, financial disbursement to HWQD and NDRMC was delayed. This resulted in the majority of HWQD activities scheduled for 2015 being delayed to 2016. From 2016, UNDP affected payments directly to partners. While this effectively reduced NMAs project implementation accountability, if effective project management arrangements were in place this would have been mitigated.

Dedicated project Management is essential to maximise effectiveness of project outcomes

Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established. Only a part-time National Project Co-ordinator was appointed. The absence of a project manager, and associated support services had a significant impact on inter-agency co-ordination, effective implementation, and monitoring & evaluation. Full time project management services are essential, especially for project's implementing activities with multiple partners.

Community-based awareness raising is essential for sustainability

There is anecdotal evidence that, in communities where awareness raising activities have been implemented, incidents of equipment vandalism/theft are minimised. With limited funds available for maintenance, it is essential to minimise risk of equipment theft as effectively as possible.

5 Annexes

5.1 ToR

5.2 Itinerary

5.3 List of persons interviewed

5.4 Summary of field visits

5.5 List of documents reviewed

5.6 Evaluation Question Matrix

5.7 Summary of results

5.8 Evaluation Consultant Agreement Form

Annex 5.1: Terms of Reference



Empowered lives.
Resilient nations.

ETHIOPIA

TERM OF REFERENCE (ToR)

FOR THE RECRUITMENT OF INTERNATIONAL INDIVIDUAL CONTRACTOR (IC) to undertake Terminal Evaluation of SCIEWP

Preamble

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of Strengthening Climate Information and Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change Ethiopia.

GENERAL INFORMATION

Services/Work Description:	Recruitment of International and National Consultants for Terminal Evaluation
Project/Program Title:	Strengthening Climate Information and Early Warning
Post Title:	International Consultant
Consultant Level:	TBD
Duty Station:	Addis Ababa / Home-based / Country Office
Expected Places of Travel:	Abobo;Laeli Maichew;Bore;Gurage;Chifra;Dangila;Jigiga;Bullen;Girawa;Adaba) where AWS installed and 10 sites (Amerti Nesh;Fincha;Gilgel Gibe - 1;Legedadi;Baro Gambella;Kelafo;Melka wakena;Gibe at Ambelti;Aba samuel) where hydrological gaging stations established in the river basins
Duration:	45 working days
Expected Start Date:	Immediately after Signing the Contract

I. BACKGROUND / PROJECT DESCRIPTION

The project was designed to strengthen the capacity of the Government of Ethiopia to observe, analyses and forecast climate information to This initiative will support the National Climate Resilient Green Growth Strategy, and will result in strengthening the observational and analytical capacity of the national hydro-met services and its early warning system, and supporting the disaster risk management

and development planning agencies in their effort to adapt to climate change. Enhance their early warning systems and for climate resilient development and adaptation to climate change.

The project objective is to strengthen the climate monitoring capabilities, early warning systems and available climate-related information for responding to climate shocks and planning adaptation to climate change in Ethiopia. The project aims at transferring weather and environmental observational technology as well as build capacities for data analysis, modelling and communication of advisories/warnings by delivering two complementary outcomes. These are presented in figure 1 as a set of outcomes and outputs that together deliver a strengthened EWS and increase the capacity of early warning systems and long term planning for climate change adaptation.

The two complementary outcomes are:

1. Enhanced capacity of the National Meteorology Agency and the Hydrology and Water Quality Directorate to monitor extreme weather and climate change
2. Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term adaptation.

The TE will be conducted according to the guidance, rules and procedures established by UNDP and GEF as reflected in the UNDP Evaluation Guidance for GEF Financed Projects.

The objectives of the evaluation are to assess the achievement of project results, and to draw lessons that can both improve the sustainability of benefits from this project, and aid in the overall enhancement of UNDP programming. The TE will cover the entire programme of this GEF project

II. SCOPE OF THE WORK

The consultancy work will be conducted at national level in the selected (National Disaster Risk Management Commission; National Metrological Agency; Ministry of Water Irrigation and Electricity and other relevant institutions) .Moreover the consultants will conduct field mission in the selected ten places.

III. EXPECTED OUTPUTS AND DELIVERABLES

- a. Inception Report
- b. Draft Report
- c. Final Report

No.	Deliverables / Outputs	Estimated Duration to Complete	Review and Approvals Required
1	Draft Inception Report	7 Working days	UNDP and NMA
2	Final inception report	3 days after sub mission of draft inception report Working days	UNDP and NMA
3	Draft report	21 working days after the sub mission of the inception report	UNDP and NMA
4	Final Report	14 working days after the sub mission of the draft report	UNDP and NMA

IV. INSTITUTIONAL ARRANGEMENT / REPORTING RELATIONSHIPS

The principal responsibility for managing this evaluation resides with the UNDP CO in Ethiopia. The UNDP CO will contract the evaluators and ensure the timely provision of per diems and travel arrangements within the country for the evaluation team. The Project Team will be responsible for liaising with the Evaluators team to set up stakeholder interviews, arrange field visits, coordinate with the Government etc

VI. DURATION OF THE WORK⁵

The consultancy work will take place 45 working days

VII. QUALIFICATIONS OF THE SUCCESSFUL INDIVIDUAL CONTRACTOR (IC)

a. Education:

A Master's degree in Climate Change, Environmental Sciences, Natural Resources Management, Agriculture, Land Management, Water Resources Management or other closely related field.

b. Experience:

- ❖ Minimum 7 years of relevant professional experience on environment and climate change adaptation (20 points)
- ❖ Knowledge of UNDP and GEF evaluations
- ❖ Technical knowledge in the targeted focal area(s) Climate Change/climate information and Early warning
- ❖ Experience working in Africa

c. Language:

Fluency in English, both oral and written, is required

d. Functional Competencies:

- Practical experience in organization management, strategic planning of associations and public organizations at the national and regional level;
- Experience in formulating development strategies and policies;
- Excellent public speaking and presentation skills]
- Computer skills: full command of Microsoft applications (word, excel, PowerPoint) and common internet applications will be required.

e. Core Competencies:

- Demonstrates integrity by modelling the UN's values and ethical standards
- Promotes the vision, mission, and strategic goals of UNDP;
- Displays cultural, gender, religion, race, nationality and age sensitivity and adaptability
- Treats all people fairly without favouritism;
- Fulfils all obligations to gender sensitivity and zero tolerance for sexual harassment.

VIII. CRITERIA FOR SELECTING THE BEST OFFER

Upon the advertisement of the Procurement Notice, qualified Individual Consultant is expected to submit both the Technical and Financial Proposals. Accordingly; Individual Consultants will be evaluated based on Cumulative Analysis as per the following scenario:

- Responsive/compliant/acceptable, and
- Having received the highest score out of a pre-determined set of weighted technical and financial criteria specific to the solicitation. In this regard, the respective weight of the proposals are:

- a. Technical Criteria weight is **70%**

⁵ The IC modality is expected to be used only for short-term consultancy engagements. If the duration of the IC for the same TOR exceeds twelve (12) months, the duration must be justified and be subjected to the approval of the Director of the Regional Bureau, or a different contract modality must be considered. This policy applies regardless of the delegated procurement authority of the Head of the Business Unit.

- b. Financial Criteria weight is **30%**

Criteria	Weight	Max. Point
Technical Competence (based on CV, Proposal and interview (if required))	70%	100
Criteria a. Understanding the Scope of Work (SoW); comprehensiveness of the methodology/approach; and organization & completeness of the proposal	50 %	50
Criteria b: Educational back ground	20%	20
Criteria c : Similar past experiences	30%	30
Financial (Lower Offer/Offer*100)	30%	
Total Score	Technical Score * 70% + Financial Score * 30%	

IX. PAYMENT MILESTONES AND AUTHORITY

- Specify the key outputs or milestone activities for which payments will be made, the corresponding percentage of the contract price that will be paid per milestone/output, including all the conditions/documentations required prior to the release of any tranches of payment.

The prospective consultant will indicate the cost of services for each deliverable in US dollars **all-inclusive⁶ lump-sum contract amount** when applying for this consultancy. The consultant will be paid based on the effective UN exchange rate (where applicable), and only after approving authority confirms the successful completion of each deliverable as stipulated hereunder.

The qualified consultant shall receive his/her lump sum service fees upon certification of the completed tasks satisfactorily, as per the following payment schedule:

Installment of Payment/ Period	Deliverables or Documents to be Delivered	Approval should be obtained	Percentage of Payment
1 st Installment	At the sub mission and approval of the Inception report	UNDP and NMA	10%
2 nd Installment	submission and approval of the 1 st draft terminal evaluation report	"	40%
3 rd Installment	submission and approval of the final terminal evaluation report	UNDP; NMA and Regional Technical Advisor	50%

X. RECOMMENDED PRESENTATION OF TECHNICAL PROPOSAL

For purposes of generating quotations whose contents are uniformly presented and to facilitate their comparative review, a prospect Individual Contractor (IC) is given a proposed *Table of Contents*. Therefore prospective Consultant Proposal Submission must have at least the preferred contents which are outlined in the IC Proposal Submission Form incorporated hereto.

XI. CONFIDENTIALITY AND PROPRIETARY INTERESTS

The Individual Consultant shall not either during the term or after termination of the assignment, disclose any proprietary or confidential information related to the consultancy service without prior written consent. Proprietary interests on all materials and documents prepared by the consultants under the assignment shall become and remain properties of UNDP.

⁶ The term "All inclusive" implies that all costs (professional fees, travel costs, living allowances, communications, consumables, etc.) that could possibly be incurred by the Contractor are already factored into the final amounts submitted in the proposal

XII. ANNEXES TO THE TOR

Existing literature or documents that will help Offerors gain a better understanding of the project situation and the work required should be provided as annex/es to the TOR, especially if such literature or documents are not confidential.

This TOR is approved by: [\[indicate name of Approving Manager\]](#)

Name:

Designation:

Signature

Date Signed:

Annex 5.2: Itinerary

Date	Day	Region	Activity
16/04/18	1	Oromia	Visit to Modjo Hydrology Station in Oromia
		Oromia	Visit to Hombole Hydrology Station in Oromia
17/04/18	2	Oromia	Held discussion with Mr Asalifew, Director, Eastern and Central Oromia, MSC
		Afar	Visit to Adaytu Hydrology Station Hydro-station in Afar
		Afar	Visit to Mille Hydrology Station Hydro-station in Afar
18/04/18	3	Afar	Visit to Chifra AWS in Afar and then travel to Tigray
19/04/18	4	Tigray	Discussion with Mr Aregawi Dirar, Hydrologist, Tigray Region HWQD
		Tigray	Discussion with Mr Tilahun Wub, Meteorologist, Tigray Region MSC
		Tigray	Visit to Mesebo AWS, Tigray Region
		Tigray	Discussion with Mr Lij Alem, Tigray Region EW & emergency Response Team Leader
20/04/18	5	Tigray	Visit to Embamidre Hydrology Station Hydro-station in Tigray Region
21/04/18	6	Tigray	Visit to Dedebit Hydrology Station Hydro-station in Tigray Region
22-23/18	7 & 8		Travel from Tigray to Amhara Region
24/04/18	9	Amhara	Discussion with Mr Gedamu Chane, Hydrologist, Abbay River Basin, In Bahir Dar Town, Amhara Region
		Amhara	Discussion with Mr Nigatu Melise, Head, Western Amhara, MSC
		Amhara	Visit to Dangla AWS in Amhara Region
25/04/18	10	Amhara	Visit to Debremarkos AWS in Amhara Region
26/04/18	11	SNNPR	Discussion with Mr Samuel Tilahun, Senior Technician, SNNPR, MSC
27/04/18	12	SNNPR	Visit to Sodo AWS in SNNPR
		SNNPR	Discussion with Mr Mesfin Mengesha, Basin Study and Information Management Team Leader and Mr Birhanu Legesse Hydrologist, SNNPR River Basin
28/04/18	13		Travel to Addis Ababa
29/04/18	14	Addis Ababa	Drafting preliminary findings
30/04/18	15	Addis Ababa	Discussion with Mr Melese Lemma, Director, Meteorological Data and Climatology Directorate, NMA
		Addis Ababa	Discussion with Mr Fetene Teshome, Director General, NMA
01/05/18		Addis Ababa	National Holiday
02/05/18	16	Addis Ababa	Meeting with Mr Ababu Anage, National Climate Change Specialist, UNDP
		Addis Ababa	Meeting with Ms Semunesh Golla, Director, HWQD; and Mr Mohammed Ali, Hydrologist, HWQD
03/05/18	17	Addis Ababa	Skype discussion with Mr Benjamin Larroquette, Regional Technical Advisor UNDP-GEF, UNDP Regional Service Centre
		Addis Ababa	Meeting with Mr Getenet Demissie, Finance Section, UNDP
		Addis Ababa	Discussion with Ms Yemenezwork Girefe, Former Manager, Export Credit Guarantee and Special Fund Administration Bureau, Development Bank
		Addis Ababa	Discussion with Dr Driba Koricha, Former Director, Meteorological Data and Climatology Directorate, NMA

Annex 5.3: List of persons interviewed

Institution	Name	Role
UNDP Ethiopia	Mr Ababu Anage	National Climate Change Specialist
	Mr Getenet Demissie	Finance section
UNDP Regional Service Centre	Mr Benjamin Larroquette	Regional Technical Advisor UNDP-GEF
National Meteorological Service Agency	Mr Fetene Teshome	Director General
	Mr Melesse Lemma	Director, Meteorological Data and Climatology; National Project Co-ordinator UNDP SCIEWP
	Mr Asaminew Teshome	Lead Forecaster
	Dr Diriba Korecha	Previous Director, Meteorological Data and Climatology Directorate
	Mr Asalifew	Director, Eastern and Central Oromia Meteorology Service Centre
	Mr Samuel Tilahun	Senior Technician, SNNPR, Meteorology Service Centre
	Mr Tilahun Wub	Team Leader, Tigray, Meteorology Service Centre
	Mr Nigatu Melisse	Director, Western Amhara
	Mr Dawud Hussen	Observer, Afar, Chifra site
	Mr Jara Jango	Observer, SNNP, Sodo site
	Mr Tesfaye Bura	Observer, SNNP, Sodo site
	Ms Dejitinu Tamene,	Observer, Amhara, Dangile site
	Ms Agere Asfaw	Observer, Amhara, Debremarkos site
	Mr Yibelu Gesesse	Observer, Amhara, Debremarkos site
Hydrology and Water Quality Directorate	Ms Semunesh Golla Seyom	Director, Hydrology, Water Quality Directorate; SCIEWP focal point
	Mr Mohammed Ali	Hydrologist, Hydrology, Water Quality Directorate
	Mr Aregawi Dirar	Hydrologist, Tigray Region
	Mr Mesfin Mengesha	Team Leader, SNNP
	Mr Birhanu Legesse	Hydrologist and Field Operation, SNNPR
	Ms Adanech Gizaw	Observer, Awash Basin Authority, Modjo site
	Mr Genet Bogale	Technician, Oromia
	Mr Roba	Observer, Oromia, Hombole site
	Mr Mekonnen Mekete	Observer, Tigray, Embamidre site
	Mr Mebrahtom	Observer, Tigray, Dedit site
National Disaster Risk Management Commission	Ms Almaz Woldetsadik	Team Leader, Early Warning and Emergency Response Team; SCIEWP Focal point
Ministry of Finance and Economic Cooperation (MoFEC)	Mr Admassu Feyssa	Officer

Annex 5.4: Summary of field visits

Filed visits were made over a 13-day period from 16 April to 28 April 2018 by David Wright, International Consultant; and Gizachew Getaneh, National Consultant. Field notes compiled by Gizachew Getaneh.

Awash River Basin (in Oromia and Afar regions)

Vist to Modjo Hydrology Station, 16 April 2018

Modjo Hydrology Station, located in East Shoa zone and Boset Woreda , The station was established long ago and during Imperial regime. Ms Adanech Gizaw, observer, had had 38 years of work experience. She registers data using parameters surface station twice in a day. With the reosue from the project the manual station upgraded to automatic by installing telemetry. Although the local staffs unaware of the status of automatic station replied it was updated in the first year or initial stage of the project. Data transmitted directly to the federal data gateway.

According to local staff The Awash Basin Office relies more on information registered manually; and collected twice in a day. During dry season usually between early October and late May, technician sent by Branch Basin Office to collect data once in three months. As flash flooding most common During wet season, between June and September, as flash flooding common manual data registration is frequent. Whilst at the station, according to the discussant, average water level/height reaches 0.9m during dry season and 9 meters during wet season.

Vist to Hombte Hydro Station, East Shoa zone in and Bora woreda, 16 April 2018

The team met Roba, the observer, hired recently by the Awash Basin. Pervious the site was manual and upgraded to automatic with the instalment of telemetry by the project. The telemetry calibrated to send data every 15 minutes. Awash Basin Brach Office had no information with the status of the operation of the automatic station. In the event of the damage maintenance took quite considerable time. At the time of visit of the station, for example, the solar panel was stolen and telemetry not operational. The sustainability of the hydrology station appears critical as looting of solar panel was common. Naturally guarding of the hydrology station is difficult options as it is located deep in the forest.

Eastern and Central Oromia, Meteorology Service Centre, 17 April 2018

Mr Asalifew, Director of the Center

Due to the project 10 AWS were installed. Data sent to the Central Gateway in Addis Abeba where data analysis and forecast happening and later three days or 10 days forecast and seasonal information disseminated. Routine data dissemination is of two types: directly sent to concerned bodies or sectors by SMS/email/phone or weather information disseminated using media mainly radio and television.

According to the informant, the MSC has inter-sectorial communication with Agriculture, Health, Water and the community at grass root level as well. Sectors consult MSC for any decision involving weather data. With the implementation of the project the Centre managed to enhance its capacity in terms of skilled manpower and ability to forecast.

In the early days the farming community used to rely more on traditional forecast and have little regard to information disseminated by meteorological stations. Although the discussant has witnessed dynamics of noticeable change in accepting weather forecast data by community in recent years.

Challenge had been inherent drawbacks of inevitable margin of error in forecasting even in areas of optimal distribution of weather stations and where fair quality data generated. We require more AWS to minimize such error.

Afar Region

Visit to Adaytu Hydrology Station, 18 April 2018

The hydrology station established several decades ago. The team escorted to the site individual delegated by Awash Basin Branch office. Observer assigned to the site to take manual records of hydrology data twice in a day, at 6:00am and 6:00pm. Recently the station is upgraded with the support of the project by installing telemetry. The telemetry calibrated to report hydrology data every 15 minutes to data base at Federal Hydrology and Water Quality Directorate. The parameter of manual stationed installed close to ruins of old bridge to seek to provide safeguarding from flooding. The telemetry suspended on newly constructed bridge on Awash River that passes at the periphery of Adaytu town. The bridge was guarded by military men assigned by government who also delegated to guard the station. The challenge may be the life of the telemetry is contingent on the life span of the bridge. Again the government assigned military personnel guarding the bridge provides default protection to the telemetry. The challenge may be the status of the telemetry is contingent on the life of the bridge. Until time of this terminal TE operation and management of telemetry has been the role of Federal Water Quality Directorate.

Visit to Mille Hydrology Station, 18 April 2018

The telemetry suspended on old and abandoned bridge constructed on Mille. Intermittent and lack of signal was challenge with the operation of telemetry. From other perspective, the establishment of hydrology station dictated by place where bridge constructed. At the spot, where the station established the River water flows over wide space of riverbed of more than 100 meters. The water distributing over wider space and thin and reduced water pressure and does not report the real condition of flood.

The manual (staff gauge) fixed to the side of the bank the River. The observer registers hydrology data twice in a day. Data sent to region (head office) once in three month time appears the norm.

Visit to Chifra Automatic Weather Station (AWS), 19 April 2018

The team held discussion with Dawud Hassen, observer, at the Station. The past manual station upgraded to AWS in 2017 in the middle of the town over wide tract of estimated one ha of land. AWS calibrated to send data every 15 minutes. Similarly, manual recording takes place five times in a day at three hours interval between 6:00am and 6:00pm and sent at 9:00am every day to to Region Office. No damage happened to the AWS and if it does maintenance is the responsibility NMA. Installed AWS at old weather stations appears better protected in part due to presence of technicians who also guarding the site,

The technician uses the site as demonstration from self-initiation. According him the use of weather data practically helps in agricultural production decision. He had been cultivating variety of crops in the compound using manual weather information.

Regional Office did hold awareness rising four weeks ago regards its importance and operation. This should have been done at installation. Whilst, according to him, still farmers/pastoralists rely on traditional early warning for their production and marketing decision.

Deterioration of the condition of fence mainly concrete bar supporting barbed wire predisposes AWS to damage and looting. It requires quick maintenance of the fence, poor quality poles moulded from concrete and iron, supporting horizontally running barbed wire.

Tigray Region Field Visit

Visit to HWQD, 19 April 2018

The team held discussion with Mr Aregawi Dirar, hydrologist, representing HWQD for Tigray Region. In the discussion it was intended to have overview of the project in general and hydrology stations in particular in the region. According to him, the total of 55 hydrology stations was available in the region following major river basin of *Tekeze*, *Denakil* and *Mereb*. The project installed 14 automatic hydro-stations in five districts. Two years after implementation of the project Aregawi trained in Australia for four days with the operation and maintenance of hydrology equipment; and he later trained other personnel on job who had actively participated in the instalment of hydro-stations.

At hydrology-stations and with complementary objectives both automatic and manual parameters were available. Automatic parameters transfer data as per the configuration of the system. Manual data registered two times in a day and sent to the region after four months. After two years of project implementation trainings carried out at woreda level and participants were from administration office and sector delegates such as Agriculture and water supply office. Training topics emphasized on advantages and management of stations and the need to provide protection and safeguarding stations any form damage.

According to him challenges include: centralized and delay in maintenance of damaged parameters in the stations, shortage of O&M budget at local level; and lack of enough protection and physical damage to stations as located far from settlement. He suggested to conduct continuous and enough and relevant trainings for low level staff; to decentralize operation and maintenance through allocating budget, assign guards for hydrology stations, and conduct need assessment and socio-cultural studies before establishments of stations.

Visit to Tigray MSC, 19 April 2018

Discussion was held between the team and Mr Tilahun Wub, delegated by the Center. The MSC had three sub-cases: Agro-meteorology, health-meteorology and hydrology. The project supported the Centre mainly in the areas of capacity building through training of personnel and installment of AWS.

According to the discussant the plan by the project was to establish five AWS (at *Messobo*, *Meseret*, *Axum*, *Adigrat*, *Humera*, Airport, *Atsbi* and *Dansha areas*) and all conducted according to the plan. The challenge was physical damage/vandalised inflicted to the two (*Messobo* and *Meseret*) due to looting because of lack of proper protection. The AWS⁷ damaged after one year operation beyond rehabilitation/maintenance of local means. The cases of damage reported immediately after the event to NMA and in response technicians sent and reached to the site after two months.

⁷ Parameters of AWS damaged some taken away during this TE.

About nine personnel trained with the support of the project abroad in areas of operation and maintenance of equipment; and same training cascaded down at local level.

Means of dissemination of weather information are face to face discussion, bulletin and radio. Face to face discussion or workshop organized every three months and more than 30 participants present to workshops. Farmers in turn supposed to get weather information from extension agents who participated in the workshops. Bulletins published every ten days and sent to institutions who demand weather information. Radio locally called *Dimtse Woyane* and had air time twice a week and every time broadcast had been for three minutes. Technical taskforce, originating from stakeholder institutions, mandated to conduct agricultural assessment two times in a year, during *belg* season (extends between February and May) and *meher* season (extends between June and September). The major challenges include vandalism/theft of parts of AWS⁸ and situation was worse was the newly established AWS which lack observes.

Visit to Tigray Early Warning Response and Food Security Directorate, 19 April 2018

Discussion held with Mr Lij Alem, EW & emergency response team leader

Of six zones in the region three zones have been affected by disasters due to climate change.

No focal person for the project delegated by the Office and unaware what impact may have had. Provided general information on how DRMFSS issue advisories. Stated getting info to kebele level is challenging as extension services are weak.

Not enough AWS in the region.

Visit to Western Amhara

Visit to Western Amhara MSC, 24 April 2018

The team discussed with Mr Nigatu Melise, Director

Western Amhara comprises five zones namely: West Gojjam, East Gojjam, North Gonder, South Gondar and Awi; and the MSC centre for Eastern Amhara located in Kombolcha.

Western Amhara had 27 surface and 24 AWS⁹. All the 24 AWS upgraded¹⁰ and installed by various agencies (11 AWS upgraded by ATA, 4 or 5 by the project and others through assistance obtained from Australian Government). The stations had between eight and ten parameters; the later stations had 11 parameters. The stations configured to send data every time to Federal gateway; and no direct data access at local level and no means of detecting the operational status of parameters.

At national level 22 technicians participated 10 days training organized in Finland and the Centre sent one technician. Other participants were from other MSCs, HWQD and DRMFSS. The theme of training was largely on establishment and operation of AWS and data interpretation and analysis.

The regional office currently tasked to conduct impact analysis of surface/manual vs AWS and planned to accomplish at the end of 2018.

⁸ Upgraded stations to AWS had already observers assigned to them with twin roles of registering data from manual parameters as well as guarding sites.

⁹ 247 AWS was available at national level and plan to increase to 700 during GTP II

¹⁰ Upgrading refers to changing manual/surface to automatic stations and add other parameters as well

The stations had four classes/grades: 1st, 2nd, 3rd, and 4th. There were between eight and ten parameters and occupy 100X100 or one ha of land allotted for first grade standard; and had no security challenges as observers who act also as default guardian of the stations. The 3rd and 4th standards established around or within the perimeter of schools due to security concerns.

The obvious impact of the project could be increase access of weather data of pocket areas as a result of increase in the number of stations; and collate real time data with increased frequency from several parameters that ultimately reduce inevitable margin of error due to change of surface to AWS.

All the established AWS working properly and only encounter equipment failure. A water gauge broken and the case reported to NMA and fixed soon.

Reporting to Federal level was monthly and quarterly. Seasonal and monthly forecast broadcasted on TV/Radio; and ten day/monthly/seasonal bulletin prepared. ATA, DRMFSS, Red cross and Aviation were major users of climate and weather information.

The challenge had been absence and weak internet signal that affect the proper functioning of AWS though later improving; poor awareness and difficulty of securing land for the establishment of AWS; vandalism of parts of installed equipment. The establishment and maintenance of climate and weather equipment and dynamic skill transfer happens to be expensive and while budget allocated by the Government was not enough and the Organization forced to seek assistance.

Visit to Dangila AWS, Amhara, 24 April 2018

The team met with Ms Dejitinu Tamene¹¹, observer, according to them the manual station established in 1988 and upgraded with the support of the project in 2016.

Manual data recording 5X in a day and reporting between 8:30am and 9:00am every day to the region.

Herself and spouse work as observers and manage and safeguarding the security of the compound. The Site finely managed with vegetables and bounded by tall hedgerows and well-regarded compound and had the feeling of a homestead. The compound well integrated to the community and security has never been an issue. It appears Model Weather Station in the region and frequently visited by students and other concerned organizations.

Visit to Debremarkos AWS, Amhara, 25 April 2018

The team met Ms Agere Asfaw and Mr Yibelu Gesesse, observers, according to them surface station upgraded to AWS with the support of the project in 2016. The adjacent earthen and open field used to serve as small airport later abandoned. Several parameters were looted including radio and communication was through mobile phone.

Security was the challenge because it was poorly fenced and located in the middle of the town, and before guards working at abandoned airport used to safeguard the station.

Mertolemariam Hydrology station, discussion through phone with Abba Gebremariam, Observer, 25 April 2018

Previously it was surface station and upgraded to hydrology station with telemetry. Regional office and local observer independently confirmed the station not functioning since August 2017 due theft

¹¹ Ms Dejitinu, inspirational woman finely managed the compound

of solar panel, i.e., after operation ceased after one year of service. The case reported to Federal HWQD and in response a team came after four months and did nothing.

The team decided not to ground truth on this basis, plus a 500km round trip.

Visit to SNNPR MSC, 26 April 2018

The team discussed with Mr Samuel Tilahun, MSC delegate.

According Samuel, and at the time of this TE, there was the total 171 both surface and AWS in the region. In the last five years 40 surface stations were upgraded to AWS through the support obtained from different projects of which UNDOP supported SCIEWP was among them. The Ethiopian Agricultural Transformation Agency (ATA)¹² and NGOs such as Farm Africa and Mercy Corps were supporting the initiative and establishment 10 and 12 AWS respectively, though the discussants unable to tell the AWS sites supported by SCIEWP.

Instalment and maintenance of AWS had been exclusively the responsibility of NMA and during incident of damage and for major maintenance technicians sent by NMA to sites which is believed to be inefficient. AWS calibrated to send data automatically every 15 minutes, as elsewhere, to Federal NMA and where data analysis, operational and malfunctioning parameters are detected.

AWS not necessary confined to political boundaries; and some spatial areas in Oromia namely areas in Moyale, Ziway and Jimma had been treated by the MSC in SNNPR.

Challenges include the increment in prices of land in recent years even in remote locations which interfere in the acquisition of land (land ownership certificate) for the establishment of new AWS and preservation of already operational sites. Lack of decentralization reported and perceived as major challenge. Apparently responsibility of regions reduced to cleaning and safeguarding instruments from physical damage. Intermittent and weak internet signal affect the functioning of the AWS,

Visit to Sodo AWS, SNNPR, 27 April 2018

The station located in Wolaita zone in Sodo town on one ha (10,000 m²) of land. **The team had discussed with observers**, Mr. Jara Jango and Mr. Tesfaye Bura. The surface station upgraded to AWS in 2017. Inauguration or awareness creation forum organized a year ago in inviting authorities from all hierarchical levels and community representatives and community members.

According to technicians, data recorded from operational manual parameters five times in a day; and reporting was once every day at 9:00am through mobile phone. Security was critical and of the surface stations about four parameters were stolen or damaged. Given inspection been taking place twice in a year and replacement of lost parameters and parts not realized until this TE. Vandalism, encroachment of illegal construction around the station and lack of land ownership certificate were major challenges. They also stated, small payment made to them unable to motivate them for better action.

Field visit to SNNPR Basin Study, Hawassa, 27 April 2018

¹² ATA established five AWS in the perimeter of Farmers Training Centres (FTCs) where it is better protected from human/animal induced physical damage; and could be taken as a lesson in establishing AWS in the absence of an observer

The team interviewed Mr Mesfin Mengesha, Basin Study and Information Management Team Leader; and Mr Birhanu Legesse Hydrologist.

SNNPR Basin Study had branch offices in Ziway Oromia and Arbaminch in SNNPR.

According to discussant several institutions supported the establishment of hydrology station though difficult to differentiate sites these agencies. Of the four planned telemetry two established in their area by SCIEWP. One was installed on Lake Abbaya Outlet and Kulfo River and the other on Upper Gelana River at Worabi near Yirga Cheffe. Telemetry installed relatively in better secure areas where observes provide guarding sites; and no monitoring took place to telemetry thus far.

Quarterly and annual report prepared and sent to Federal level and concerned bodies in the region.

Challenges: the Rift Valley Rivers are characterized by a lot of sediment at times flash flooding evidenced deposit around areas of shaft encoder/sensor that interfere with its operation; and believe the equipment not suited to Rift Valley River; the centralization of operation and maintenance of hydrology station; drawback with targeting of technicians for training; failure to obtain permission from Ethio Telecom delegated by Government to manage equipment using sim card; the lack of comprehensive assessment and master plan required in establishing hydrology stations.

Annex 5.5: List of documents reviewed

Project Documents

- Project Information Form (PIF), 18 May 2012
- Project Document, Strengthening Climate Information and Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change — Ethiopia, PIMS 5095
- Project Inception Report, October 2012
- Request for CEO endorsement
- LPAC meeting minutes, 5 August 2013
- Project Implementation Plan
- Annual work plan 2013/14
- Annual work plan 2014/15
- Annual work plan 2015/16
- Annual work plan 2016/17
- Project Implementation Report (PIR) June 30 2015
- Project Implementation Report (PIR) June 30 2016
- Project Implementation Report (PIR) June 30 2017
- Mid-term Review (MTR), 20 June 2016
- MTR Report Audit Trail, undated
- MTR Management Response, May 2018
- NMA First year report, December 30, 2014
- NMA Second year report, January 2016
- Quarterly Progress Reports, 2016-Q1Q2, Q3Q4; 2017-Q1Q2, Q3Q4
- Combined Delivery Reports, 2014, 2015, 2016, 2017
- Independent Auditors Report, for period 1 January 2014-31 December 2015
- Early Warning and Emergency Response Analysis, NDRMC, February 2018
- Early Warning Bulletin, NDRMC, February 2018
- National Flood Alert for Kiremt Season 2017, NDRMC, June 2017
- National Flood Contingency Plan 2017 *kiremt*, Joint Government - Humanitarian Partners, 19 July 2017
- Standard Operating Procedure (SOP) for the Use of Weather Forecasts of the National Meteorological Agency of Ethiopia, Undated
- Cost-benefit analysis, Strengthening Climate Information and Early Warning Systems in Africa for Climate Resilient Development and Adaptation to Climate Change – Ethiopia, Alemu Mekonnen, February 2018
- Proposed Design for Hydrological Data Sets Management at Ministry of Water, Irrigation and Electricity of Ethiopia, Samson Mengistu, April 2017
- Training Needs Assessment on Weather and Climate Related Information, DRMFSS, 2015

UNDP documents

- United Nations Development Assistance Framework (UNDAF) for Ethiopia, 2016-2020
- Country Programme Document (CPD) for Ethiopia, 2016-2020
- Assessment of Development Results, Evaluation of UNDP Contribution, Ethiopia 2016

Government documents

- National Adaptation Programme of Action (NAPA), 2007

- Federal Government of Ethiopia Climate Resilient Green Economy, Green Economy Strategy, 2011
- Federal Government of Ethiopia Growth and Transformation Plan I, 2010-2015
- Federal Government of Ethiopia Growth and Transformation Plan II, 2015-2020
- NMA, Second Growth and Transformation Plan, 2015-2019
- HWQD, Second Growth and Transformation Plan, 2015-2019

Annex 5.6: Evaluation question matrix

Evaluative Questions	Indicators	Sources	Methodology	Terminal Evaluation Findings
Preparation & Readiness				
Were project objectives and outputs clear, practicable and feasible within time frame?		Logframe Project Document	Logframe review Interviews with project implementing agency and UNDP	- Project objectives and outcomes are clearly articulated in the log frame however, objective level indicators were not measurable - There is no evidence that the baseline capacity assessment was undertaken and no baseline budget for maintenance and operation of hydrometeorological has been identified. Therefore, not possible to assess if objectives were feasible within the time frame, or monitor progress towards these objectives
How were the capacities of the executing institutions considered during project design?		Progress reports Audit reports	Document review Interviews with project implementing agency and UNDP	- The project preparation phase consulted national agencies and stakeholders and regional meteorological and hydrological offices. - Three consultations were undertaken at i) inception stage, ii) mid-way through project design and iii) validation stage - The NMA and the HWQD reported that knowledge and capacity to effectively predict extreme weather events was limited and should be strengthened during implementation. - It is unclear how capacity was quantified - since there is no evidence of a baseline capacity scorecard assessment. UNDP are unclear if this was undertaken despite a baseline and target being included as an objective level indicator.
Were the partnership arrangements properly identified and roles and responsibilities negotiated prior to project approval?		MoU arrangements	Document review Interviews with project implementing agency and UNDP	- Partnership arrangements were fully identified during the project preparation phase - NMA was the Implementing Agency. Responsible Parties were HWQD, the National Disaster Risk Management Commission (NDRMC) [formerly known as Disaster Risk Management and Food Security Sector (DRMFSS)] and the regional offices of NMA, HWQD and NDRMC

Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate project management arrangements in place at project entry?		Interview records Progress reports	Document review Interviews with project implementing agency and UNDP Field visits	- Facilities (i.e. buildings, staff and access to land) were in place at project entry - No co-finance was secured. However, counterparts did make unquantified in-kind contributions (i.e. buildings, staff time) - Enabling legislation was supported by Ethiopia's Growth and Transformation Plan (GTP 2010-2015) and the Carbon Neutral Climate Resilient Economy (CNCRE). - Project management arrangements were fully identified during the project preparation phase. However, these arrangements were not strongly reflected during project implementation. - No Project Manager Unit was established. NMA appointment of a part-time National Project Co-ordinator only. - The Project Steering Committee was not well attended by appointed stakeholders and did meet after August 2016.
How were lessons from other relevant projects incorporated in the project design/ implementation?	Reference to other projects/ programmes	Interview records Project fact sheets/ reports	Document review Interviews with project implementing agency and UNDP	The stakeholder baseline analysis reviewed all past and existing successful and unsuccessful activities by government, donors, NGOs and private sector institutions. These lessons learned were used to refine project design.
What are the Project Management arrangements?			Document review Interviews with project implementing agency and UNDP	National Implementation Modality (NIM)
Relevance: To what extent is the project relevant to the GEF Focal Area and to development priorities at the local, sub-national and national level for reduced vulnerability and increasing resilience and increased adaptive capacity in Ethiopia				
Has the project supported concrete adaptation activities of the National Adaptation Programme of Action that anticipate and address adverse effects/events of climate change?	Relevance between project and national and sector-wide plans to integrate adaptation strategies and measures	Project Document National Policies - NAPA	Document review Interviews with project implementing agency and UNDP	Project supports implementation of NAPA priorities 2 and 6: <i>Strengthening/enhancing drought and early warning systems in Ethiopia</i> and <i>Capacity building program for climate change adaptation</i>
What problem and development opportunity defined in the Growth and Transformation plan has the project addressed (What was the need and demand for the project)?	Relevance to climate change adaptation specific measures integrated with national plan	Project Document National policies: Growth and Transformation Plan I & II Climate Resilient Green Economy Strategy	Document review Interviews with project implementing agency and UNDP	The first GTP (2010-2015) aims to "ensure food security at the family, regional and national levels". Ethiopia's second GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services

Effectiveness:				
What risks were experienced during project implementation?	>Risk and assumptions during project planning >Quality of existing information systems to identify risks >Quality of risk management implemented by project	UNDP ATLAS risk logs Project Document	Interviews with project implementing partners and agency	- PIRs were incomplete and did not report risks - Several risks were identified in the Project Document and the project was affected to varying extents by many of these including 4) Poor co-ordination among implementing and executing agency (no PMU established, infrequent Project Steering Committee meetings); 5) Local IT and telecommunications infrastructure weak; and, 7) Work progresses in a compartmentalised fashion and there is little integration - Project was affected by vandalism/equipment theft. This risk was not identified in the Project Document. - Insufficient procedures and funding for maintenance of hydrometeorological equipment. No evidence of damaged/stolen equipment being replaced, despite requests by observers and regional offices
How well are risks, assumptions and impact drivers being managed?	>Risk and assumptions during project planning >Quality of existing information systems to identify risks >Quality of risk management implemented by project	UNDP ATLAS risk logs Project Document	Interviews with project implementing partners and agency	- Additional risks experienced during implementation included: - Mobile communications network frequently interrupted by government in several localities, often for months at a time - System induced centralisation of operations that deny local stakeholders to detect malfunctioning parameters required for quick fix and sustainable operation - Inadequate and absence of local awareness creation forums and inadequate guarding of assets/equipment - Employee turnover
What was the quality of risk mitigation strategies developed? Were these sufficient?	>Risk and assumptions during project planning >Quality of existing information systems to identify risks >Quality of risk management implemented by project	UNDP ATLAS risk logs Project Document	Interviews with project implementing partners and agency	Risks were not reported in the PIRs and were inadequately dealt with by project Steering Committee
Efficiency: Was the project implemented efficiently?				

Finance & Cost Effectiveness				
Was project implementation (outcomes and outputs) as cost effective as originally proposed (planned vs. actual including co-financing)			Interviews with project implementing partners and agency	There was no significant difference between total project budget and total project expenditure.
Do financial reports clearly disaggregate expenditure vs budget for all sources of finance, including cash and in-kind financing?				- CDR reports do not disaggregate expenditure by outcome or activity - No co-finance secure however, government in-kind contributions were not monitored
Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information?				CDR reports do not break down expenditure by outcome, output and activity
Do financial audits cover entire project period?				No, only 1 January 2014-31 December 2015
What was the impact of project co-finance on the project outputs and outcomes?				No co-finance. In-kind government contributions have not been quantified
Is there evidence of additional, leveraged resources that have been committed as a result of the project?				No evidence of leverage but significant evidence of replication
Did the project use a benchmark or comparative approach? (Any comparison with other SCIEWP projects?)				Alignment with CIRDA programme; project was developed in parallel with a further 9 parallel projects across Africa
M&E and Adaptive Management				

Were the output and outcome indicators effective i.e. SMART?		Project Document	Document Review	• No capacity assessment scorecard was developed for the baseline and no monitoring of capacity was undertaken during project implementation • Domestic finance commitments to the implementing partners was not monitored • No effective Outcome indicators were developed to monitor % of population with access to climate information and early warning advisories • No Output level indicators
How frequently does the Project Manager monitor progress amongst partners?		Project management meeting minutes	Document review Interviews with project implementing agency and UNDP	• No Project Manager and no PMU established • Project Steering Committee limited effectiveness • National Project Co-ordinator compiled PIRs annually • HWQD and NDRMC did not submit regular progress reports • However, technical committees established and evidence of ad hoc communications
Was adaptive management used or needed to ensure efficient resource use?		Project management meeting minutes PIRs Quarterly progress reports	Document review Interviews with project implementing agency and UNDP	• Adaptive management was limited, reflecting weak M&E procedures
Were any changes to the project articulated in writing and then considered and approved by the project steering committee?		Project management meeting minutes PIRs Quarterly progress reports	Document review Interviews with project implementing agency and UNDP	• Management accepted all MTR recommendations. However, no evidence that these were considered/approved by Project Steering Committee
Has the project mainstreamed adaptive management tools within the national agencies system for tracking progress and results?			Document review Interviews with project implementing agency and UNDP	• No
Were progress reports produced accurately, timely and responded to reporting requirements including adaptive management changes?		PIRs Quarterly progress reports	Document review Interviews with project implementing agency and UNDP	• PIRs were incomplete and did not effectively report against indicators

Management response and adaptive management to PIRs (Yr 1, 2, 3)		PIRs	Document review Interviews with project implementing agency and UNDP	No management response to PIRs has been shared with the evaluators
Management response and adaptive management to MTR		Recommendations in MTR (p 35) 1) Capacity to monitor extreme weather/climate change 2) Use of hydro-met and env info for EW and adaptation 3) Project implementation & adaptive management 4) Sustainability	Document review Interviews with project implementing agency and UNDP	- Management response accepted all MTR recommendations. However, no evidence that these were considered/approved by Project Steering Committee management. Management response not signed off until after project end - Post MTR, PIRs did not monitor implementation of recommendations
Did any management responses materially change the project outputs or outcomes?		PIRs Project management meeting minutes	Document review Interviews with project implementing agency and UNDP	No
Were PIR self-evaluation ratings consistent with MTR and TE findings?		PIRs MTR	Document review Interviews with project implementing agency and UNDP	PIRs and MTR generally awarded higher scores than TE
Implementing Agency execution (UNDP)				
What was the timeliness and quality of UNDP technical support to the Implementing Partner?		Progress reports Management meeting minutes	Document review Interviews with project implementing agency and UNDP	- Facilitated extensive international support in a timely manner - Did not pressure NMA to establish PMU for effective implementation and M&E

Risk management - did UNDP identify problems in a timely manner and accurately assess risks?		Progress reports ATLAS logs Management meeting minutes	Document review Interviews with project implementing agency and UNDP	• Critical Risk Management sections of PIRS was not completed
Were there any significant implementation problems? If so, how did UNDP react?		Progress reports ATLAS logs Management meeting minutes	Document review Interviews with project implementing agency and UNDP	• Ineffective Project Steering Committee • Delay in transfer of funds to HWQD
Was there an appropriate focus on results?				• Yes
Implementing Partner execution (NMA, HWQD)				
Adequacy of management inputs and processes, including budgeting and procurement			Interviews with project implementing agency and HWQD	• Project Management Unit not established with impacts on implementation effectiveness • Procurement of equipment was managed by UNDP
Risk management - were problems identified in a timely manner and accurately assessed?				• Some challenges not adequately identified and addressed, for example equipment looting
Stakeholder Interaction				

Did the project consult with (and make use of skills) of appropriate government agencies, local government, NGOs, farmers, community groups, private sector and academia?			interviews with project implementing agency, NMA and HWQD, and UNDP	- During the Project Preparation Phase, the project consulted with national agencies and stakeholders including: Federal EPA, National Meteorological Services Agency (NMSA), Ministry of Water and Energy, DRMFS, regional Meteorological and hydrological offices and regional, zonal and woreda level DRM experts - The stakeholder consultation also included other government agencies, national and international NGOs (Oxfam America, Climate Change Forum, Ethiopia), civil society (Ethiopia Coffee Farmers Association), donors, UN agencies and research centres and Universities - During implementation, further consultations were held with Telecommunication Corporation, Information Network Security Agency (INSA), and Ethiopian Roads Authority - The project sought technical support services from overseas universities for training of technicians on weather and climate forecasts and development of tailored warnings/advisories - Training on equipment installation and O&M was sought and provided in situ by the factories who supplied the equipment - There is no evidence that local farmers and community groups were consulted
Were vulnerable farmers/communities actively involved?				There is no evidence that local farmers and community groups were consulted
Did the project seek active participation from stakeholders during 1) project design; 2) implementation; 3) M&E?				- The project strived to have active participation of stakeholders during project design, less so during implementation - Project M&E was weak and stakeholders were not consulted to address implementation issues
Communications				
Has the project developed a communication plan to bring about awareness of the project outcomes to improve timely, accurate and user-friendly climate information services and early warning products?	Existence and quality of dissemination mechanism to share findings, lessons learned and recommendation on effectiveness of project	Communication plan	Interviews with project implementing agency and UNDP	This has not been completed
Country Ownership				

Were the relevant country representatives from government and civil society involved in project identification/planning/implementation?		Meeting minutes	Document review Interviews with project implementing agency and UNDP	Stakeholder involvement during implementation was weakened due to ineffective project Steering Committee
Did the government maintain its financial contribution to the project?		Audit reports Project accounting records	Document review Interviews with project implementing agency and UNDP	- No co-finance was committed by the government, in-kind support was identified but not monitored - The project had an objective level target to secure domestic finance of 100m Birr/yr for O&M of hydrometeorological capacity. This target was too low and was not monitored
Have project outcomes contributed to national development plans and priorities?	Plans and policies incorporating initiatives	Government approved plans and policies	Document review Interviews with project implementing agency and UNDP	The objective and outcome targets of the project have been incorporated in the pillars of NMA, HWQD and NDRMC sector-specific GTPs. NMAs GTP is aligned with global and regional perspectives including the Integrated African Strategy on Meteorology (IASM). Ethiopia's second National GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services
Has the government approved policies or modified regulatory frameworks in line with the project's objectives?	Plans and policies incorporating initiatives	Government approved plans and policies	Document review Interviews with project implementing agency and UNDP	Project objectives were aligned with existing policies, programmes and plans
Mainstreaming				
How has the project helped to successfully mainstream other UNDP priorities in the UNDP country programme (Country Programme Document)				- This project has significantly contributed to Pillar II of UNDP Ethiopia's CPD: Climate Change and Resilience Building - This pillar is designed to provide upstream and downstream support for implementation of the CRGE Strategy by targeting the relevant line ministries, regional governments and local communities
How has project contributed to poverty alleviation, improved natural resource management arrangements with local groups, gender equality?				- By providing improved climate information and early warnings at the regional level and by disseminating this information through various communication channels, the project has made contributions to poverty alleviation - There is no evidence of improved natural resource management arrangements with local groups - There is no evidence of improved gender equality

How has the project considered gender (e.g. project team composition, outreach to women's groups)?				There is no evidence that the project actively considered gender
Catalytic Role				
Explain catalytic role/ replication effect on other projects in country/ region	Reference by other projects	Project fact sheets/ reports	Document review Interviews with project implementing agency and UNDP	The project is one of several project's in Ethiopia which are working towards strengthening climate information and early warnings through the procurement and installation of equipment and capacity building of federal and regional capacity. Lessons learned from this project have been incorporated in to parallel projects
Impact: What are the potential and realized impacts of activities implemented by the Project				
Have activities (achieved/planned) supported by the project, increased resiliency to climate variability and change at community, national and regional levels?	% of geographical area with access to improved climate information services % of geographical area with access to improved, climate-related early-warning information	Field Visits Annual Progress Report	Interviews with project implementing agency and partners	There is a significant increase in hydromet observational equipment coverage and capacity for forecasting and early warnings
Were weather conditions during implementation period affecting the performance of the activities (delivered outputs), either positively or negatively?	Capacities of national, regional and zonal institutions to implement and monitor adaptation strategies and measures/ responses	Field Visits Annual Progress Report	Interviews with project implementing agency and partners	The installation of some hydrology gauge and AWS stations was delayed by El Nino

What type of adaptive management process and procedures were tested and established by the project?	Institutional arrangements to lead, coordinate and support integration of climate change adaptation measures with development actions	Field Visits Annual Progress Report	Interviews with project implementing agency and partners	Strengthening climate information and early warning capacity through the procurement and installation of hydrometeorological equipment, procurement and installation of analytical hardware and software and capacity building at the federal and regional level for interpretation and dissemination of weather forecasting and climate advisories
Sustainability: Likelihood of sustainability at project termination				
Are adaptation activities delivered by the project sustainable at community/regional/national levels to maintain and avert impacts/risks of climate change?	>Quality and Evidence of sustainability strategy >Degree to which Project activities and results have been streamlined into agency/directorates/departments	Project Partners Field Visits	Interviews with project implementing partners and UNDP Field: Meteorological Branch Directorates and Hydrology Water Quality Centres	- The project outcomes are closely aligned and coordinated with efforts already underway in Ethiopia to promote development and MDG targets which are resilient to climate change - The project has experienced vandalism and looting at several hydrological gauge station sites and a number of AWS sites. - Risk has not been mitigated
Is the project planning to up-scale and replicate the results to achieve sustainability of the project?	Number/quality of replicated innovative initiatives	Field Visits Annual Progress Report	Interviews with project implementing agency and partners, NMA-Meteorological Branch Directorates and HWQD Centres	Significant scale up is planned and institutionalised in sector-specific GTPs

Does the project plan to align and streamline the developed human & technical capacity of implementing agency and partners through the project within the national capacity building process for operating and scaling up climate data/information and early warning communication, research and institutional development?	Elements of management functions, set up at the appropriate levels (national, regional, zonal, woreda and kebele) in terms of adequate structures, systems, skills, and interrelationships with line-departments /agency/commission	Field Visits Annual Progress Report	Interviews with project implementing agency and partners, NMA-Meteorological Branch Directorates and HWQD Centres	• With the overall aim of national capacity building, the project introduced technologies, installed equipment and trained manpower for implementing partners to scale up climate data/information and early warning communication, research and institutional development • However, with the inactive Project Steering Committee, the impact the project had on improving the effectiveness of institutional coordination between relevant government ministries was limited
Has the project established cross-sectoral-inter-agency/departmental agreements and standard operating procedures to share climate data, information, advisories, early warning information including financial & institutional arrangement to sustain adaptation activities within the national growth and transformation plan?	Capacities of national and regional institutions to identify, prioritize, implement adaptation measures and integrate relevant policies, plans and associated processes for climate and early warning information	Field Visits Annual Progress Report	Interviews with project implementing agency and partners	• Standard Operating Procedures (SOP) have been developed that details service provision procedures between NMA, HWQD and NDRMC • One-way communication between local stations and federal gateway has excluded regional/local institutions and third parties from directly accessing data and operational status of assets/equipment required for sustained function • The project aimed to approach the private sector to increase existing fee structures with existing customers and make additional funds available from insurance companies who expressed a readiness to pay (in the national consultation) for weather forecasting services and products. • These sectors include civil aviation, hydropower, tourism, farmers' associations however, progress is limited
How does the project plan to collaborate, coordinate and converge with other parallel projects/initiatives of national ministries, its related departments and international agencies, for adaptation to climate change, at community, national, regional level?	Degree to which project activities and results are owned by agency/directorates/commission	Field Visits Annual Progress Report	Interviews with project implementing agency and partners	• Planned National Framework on Climate Services to ensure future doors operate in line with sectoral GTP

Risk management: Are there clear strategies for risk mitigation related with long-term sustainability of the project?				
Financial Risk				
What financial and economic instruments/mechanisms have been established to ensure ongoing benefits after project?				- The project planned to leverage national budget funds which are recurrently allocated for the O&M of hydrometeorological equipment and infrastructure however, progress was limited - O&M budget remains critical risk and undermines objectives of the project
What on-going arrangements exist with the public/private sector?				Limited public-private partnerships. Modality of agreement with Ethiopian Airlines is under discussion
Socio-economic Risk				
Is country ownership sufficient for the project to be sustained?			Observation of assets and activities; and interviews with project stakeholders	There is a significant reliance on ongoing international donor support for capital expenditure and O&M
Is there sufficient public/stakeholder awareness in support of the project's long-term objective?			Observation of assets and activities; and interviews with project stakeholders	- Awareness of the value of hydrometeorological equipment is very limited at the community level. - Efforts should be made to hold inauguration ceremonies when equipment is installed to inform local communities of the function and benefits of the equipment and to instil a sense of ownership and pride in the facilities - Efforts should be made to engage with local religious leaders who can play a leading role in sensitising local communities to the importance of hydrometeorological equipment
Does the project have an appropriate exit strategy? Has it been implemented?				- Project was implemented in partnership with respective public institutions/agencies; and assets and activities remain their responsibility - The project is implemented in parallel with several other initiatives - The project would have benefitted from a more realistic exit strategy which aimed to build adequate O&M capacity (procedural, technical, financial)
Institutional Framework & Governance Risk				
Do policy and regulatory frameworks support the project's objective and outcomes?				- Yes, sectoral GTPs, second national GTP and CRGE
Environmental Risk				
Is project supported infrastructure resilient to storm events?				A number of hydrological gauge stations are susceptible to sedimentation build up (Shaft Encoders). These gauges may become inactive during flood events due to increase sedimentation build up.

Annex 5.7: Summary of Results

Highly Satisfactory (HS); Satisfactory (S); Moderately Satisfactory (MS); Moderately Unsatisfactory (MU); Unsatisfactory (U); Highly Unsatisfactory (HU)

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
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					S
0.1 Capacity as per capacity assessment scorecard	0.1 Limited capacity to generate EWS and CI on a national scale for extreme hydrometeorological phenomena. No Standard Operating Procedure (SOP) for alert communication by NMA to DRMFSS Current score: 83	0.1 Capacity assessment scorecard score of 139	0.1 Not quantified by project	0.1 The project team were unable to identify the methodology and corresponding quantification for the capacity scorecard baseline and target assessment. There was evident confusion over how it had been calculated and who had done the calculation. This confusion was not resolved during the evaluation. PIRs did not report progress towards the scorecard target and the MTR did not identify this omission as a constraint to effective M&E, scoring progress towards this target as highly satisfactory without quantifiable evidence. This was a key failing of the MTR. The evaluation team concluded that, whilst a baseline assessment may have been undertaken, in-country ownership of M&E was low, the baseline assessment had been lost and the target was not monitored throughout the project. Consequently, it is not possible to assign a quantified rating. However, through a process of triangulation, a qualitative rating was reached. Capacity to generate EWS and CI on a national scale has been significantly strengthened. The procurement, installation and operationalisation of AWS, one Upper Air Monitoring Station and telemetry for hydrological gauge stations — and associated trainings on installation, operations and maintenance — has significantly increased spatial and temporal data collection capacity. This increase in AWS reduces the need for data interpolation, significantly improving forecasting capacity and, with data transmitted every 15 minutes, the capacity to monitor extreme short-term weather patterns for issuing warnings. AWS data is sent directly to NMAs central server. Data management capacity was upgraded and future-proofed with the upgrade of NMAs CLIDATA database to the latest version, capable of managing data received from NMAs nationwide target of 700 AWS (as identified in NMAs sector-specific GTP). Twenty-nine NMA staff, mainly from the Data and Climatology Directorate were given factory-level training (Czech Republic trainers) in database installation and management and five NMA forecasters received training in installation and general features of GIS CLIDATA.	S

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
				Computational capacity for forecasting was upgraded with the procurement and installation of a High-Performance Cluster (HPC) machine. This is a significant upgrade since, prior to installation, NMA was using PCs which cannot satisfy the requirements imposed by the available input data and the need for storing model outputs. Furthermore, to increase spatial accuracy of forecasts, numerical weather prediction models must be run at resolutions far exceeding the capacity of PCs. Operationalising the HPC has enabled forecasters to run numerical weather prediction models, using all available input data, at the required resolution. This has significantly improved forecasting capacity, accuracy and timeliness, resulting in improved spatial and temporal forecast resolution and, therefore, capacity for climate related decision-making. NMA estimates that the HPC has the computing power of 300 PCs. Twenty experts, drawn mainly from the Meteorological Forecast and Early Warning Directorate — the directorate responsible for running numerical weather models — were given factory-level training in installation (four experts trained), and configuration and modelling. Bilateral Standard Operating Procedures (SOP) have been developed and implemented detailing service provision procedures between NMA and HWQD and between NMA and DRMFS.	
0.2 Domestic finance committed to the relevant institutions to monitor extreme weather and climate change	0.2 Existing budget plans do not have sufficient funds to maintain and operate environmental monitoring infrastructure Current budget: low	0.2 Domestic target financing is 100M Birr per year	0.2 Not quantified by project	0.2 Whilst a baseline domestic finance figure was identified in the Prodoc (66M Birr), PIRs did not report progress towards the target and the MTR did not identify this omission as a constraint to effective M&E, again scoring progress towards this target as highly satisfactory without quantifiable evidence. The project team could not satisfactorily identify how the domestic finance target was identified. However, NMAs sector specific GTP (2015-2019) identifies a recurrent (O&M) budget projection (target) of 97.5 M Birr for the 2016/17 fiscal year and 126.5 M Birr for the 2017/18 fiscal year. In a personal comment from NMAs Director General, the recurrent budget for 2017/18 is 80M Birr. HWQDs GTP II identifies a total government budget of 7.6 M Birr for the 2017/18 fiscal year but does not break this down into capital expenditure and recurrent budget.	MS
Outcome 1: Enhanced capacity of NMA and HWQD to monitor extreme weather and climate change					

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
1.1 Percentage of national coverage of weather/climate and hydrological monitoring infrastructure	1.1 Meteorological stations: - 1000 Manual - 70 automatic Hydrological stations: - 489 manual - 4 with telemetry	1.1 Increase in 24% national coverage to take steps in achieving NMAs optimal monitoring arrangements as defined in feasibility studies Meteorological stations: -1240 manual -110 automatic Hydrological stations: -439 manual -64 with telemetry	1.1 24% increase in national coverage of manual meteorological stations; 57 % increase in national coverage of AWS; insufficient information to calculate increase in national coverage of hydrological stations with telemetry Meteorological stations: - 184 manual stations rehabilitated with spare parts - 40 AWS procured, installed and configured. As of April 2018, 36 of these were operational and transmitting data Hydrological stations: - 60 telemetry stations procured; 40 with GPRS transmission, 20 with radio modem. For the GPRS system, 35 were configured, 32 installed of which two were stolen. Of those installed only 22 are functional; 8 are not transmitting data but the cause of malfunction is unknown	1.1 The end of project target was erroneously articulated — it is not representative of the % increase in national coverage of hydromet monitoring infrastructure. It is simply the target % increase in the number of functioning manual meteorological stations (1240) against the baseline (1000) = 24%. Manual meteorological stations are not the focus of this project. National coverage of AWS has increased by 57% however, at the time of reporting, four of these AWS were not transmitting data, reducing this increase in national coverage to 51%. There is Insufficient information to calculate increase in national coverage of hydrological stations with telemetry. Despite requesting information, HWQD did not report the status of telemetry stations with radar modems. Of the 40 GPRS equipped hydrological stations procured, only 35 were configured and 32 were installed, representing an increase in national coverage of 700%. However, of these 32, only 22 are transmitting data, reducing this increase in national coverage to 450%.	MS
1.2 Frequency and timeliness of climate	1.2 Monthly	1.2 Daily	1.2 Every 15 minutes	1.2 When functioning correctly, AWS and hydrological stations with telemetry transmit data every 15 minutes	HS

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
related data availability					
Outcome 2: Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term development plans					
2.1 Percentage of population with access to improved climate information and flood and drought warnings (disaggregated by gender)	2.1 Use of hydrometeorological and environmental information for making early warnings currently low for both women and men. Women: 6 million Men: 8 million	2.1 Percentage increase in population who have access to improved EWS/CI (50% increase for women, and 50% increase for men) Women: 9 million Men: 12 million	2.1 Not reported	2.1 The project did not report effectively against this indicator. The means of measurement identified in the Prodoc was a gender disaggregated beneficiary survey, including vulnerability reduction assessment relative to the baseline. These surveys and assessments were not undertaken. However, the significant increase in hydromet observation infrastructure, coupled with targeted capacity building activities for NMA, HWQD and NDRMC — including numerous training events, workshops and international study tours — has improved the accuracy and availability of climate information throughout the country. Awareness creation workshops were organised at all meteorological branch directorates for regional government policy makers, women and local community representatives on how to interpret climate information and make use of it to minimise climate related risks. Climate forecasts and impact advisories are disaggregated at the regional and zonal level and disseminated three times a week to a wide variety of stakeholders. These forecasts are used at the federal and regional levels to advise national and regional government offices in decision-making. This was evident during El Niño in 2015/16 when project resources supported the establishment of a national and regional El Niño monitoring and forecasting task force. During this time, accurate forecasting and monitoring supported decision makers and NDRMC to minimise the impact of flooding. PIR 2017 states that, according to the Ministry of Agriculture, climate information flows to the lowest government structure (kabele's). It further states that during the El Niño, 75% of farmers, agricultural extension agents and local disaster risk managers received hydromet advisories and forecasts every two days. However, it is not possible to corroborate this statement since a survey of end-users has not been undertaken.	MS
2.2 Development	2.2 Currently no development frameworks	2.2 At least 2 of the PRSP policy	2.2 Project objective and outcome targets incorporated in sector-	2.2 The objective and outcome targets of the project have been incorporated in the pillars of NMA, HWQD and NDRMC sector-specific GTPs. NMAs GTP is aligned with global and regional perspectives including the	S

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
frameworks (e.g. GTP) that integrate climate information in the formulation	incorporate climate change information	briefs incorporate analyses of risk maps and/or climate change projections influencing long-term planning proposals	specific GTPs. NMAs GTP aligned with global, regional and national perspectives, including the Integrated African Strategy on Meteorology (IASM). Ethiopia's second National GTP includes targets for delivery of meteorological forecasting and early warning services	Integrated African Strategy on Meteorology (IASM). The GTPs of HWQD and NDRMC were not made available to the evaluation team however, the team were informed that HWQD plans to upgrade 90% of manual stations with telemetry equipment. Ethiopia's second National GTP (2015-2020) incorporates targets for delivery of meteorological forecasting and early warning services including: <i>"preparation and dissemination of short duration weather forecasting reports twice a day; midterm weather forecast on daily basis; 1-5 days cities weather forecast which could be updates daily as well as regional midterm weather forecast which could be updated yearly"</i> .	
2.3 Sector-specific EW products and strategies that integrate climate risks	2.3 Limited number of tailor made and sector specific meteorological products Limited public-private partnerships and pay for services contracts	2.3 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	2.3 Not achieved	2.3 Progress towards this indicator was not effectively monitored or documented and the project team had very little knowledge of progress and achievements. NMAs 2016 half-year progress report states that dialogue was underway between NMA and Ethio Telecom, the provider of internet, SMS and other form of telecommunications in Ethiopia. These discussions did not progress. Mobile communications are state run in Ethiopia and the project was unable to develop a market-based rationale for Ethio Telecom's support. It is unclear how much resource was dedicated to these discussions — NMAs Meteorological Research and Studies Directorate stated that no activities mobile phone-based advisories activities were implemented under this project. The directorate also confirmed that activities were being taken forward under an ADB-Climdev funded project and that a technology and needs assessment, contracted to an Indian company, was ongoing. The project aimed to approach the private sector to increase existing fee structures with existing customers and make additional funds available from insurance companies who expressed a readiness to pay in the national consultation (during the project preparation phase) for weather forecasting services and products. These sectors included includes civil aviation, hydropower, tourism and farmers' associations. The project supported a public-private partnerships finance forum in Adama however, no further details were available, and NMA is currently undertaking a study on payment for meteorological services. One public-private partnership is under development. However, the modality of this partnership with the aviation sector, moreover with Ethiopian Airlines, has not been accepted by contracting parties as the ongoing payment for services was found to be	U

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
				disproportionately small. NMA has initiated negotiations and plans to charge 35M Birr/year for its services. The project planned to develop public-private partnerships with insurance companies with a special focus on weather indexing methods. The updates MTR management response (dated May 2018) stated that <i>“New weather-index insurance schemes implemented by private companies in collaboration with NMA”</i>. However, this there is no mention of this activity in any of the PIRs or NMA quarterly reports and the project team could not provide any further information. The comment in the MTR management response may have been in relation to a 2016 workshop to evaluate NMA projects and activities funded by international development organisations. One of the projects presented at this workshop was a GeoData for Agriculture and Water funded project: Weather index-based Credit Insurance pilot project in Amhara, Oromia, SNNP and Tigray regions. Amongst the project’s objectives was <i>“production of Geodata for Innovative Agricultural Credit Insurance Scheme (GIACIS) to Kifiya for premium collection and claim payout according to the respective Kebeles’ drought severity identified on the satellite data of Normalized Difference Vegetation Index (NDVI)”</i>.	
Outcome 3: Effective and efficient project management and knowledge management, communication, stakeholder engagement					
3.1 Presence of effective and integrated project management unit (PMU)	3.1 No project management structure, communication strategy and knowledge management system exists	3.1 Put in place an integrated project management unit, stakeholder platform, communication and knowledge management system	3.1 Not achieved	3.1 Despite budgetary allocation from LDCF, allocation of offices at NMA and procurement of office equipment, no PMU was established by the IP. Therefore, the project lacked a dedicated Project Manager, Administrative and Financial Assistant, and Monitoring & Evaluation Expert. This had a significant impact on project implementation, and monitoring & evaluation. A Project Steering Committee was established and met once in 2014, twice in 2015 and twice in 2016. However, there were no further meetings after August 2016, shortly after the Mid-term Review was finalised. The Project Steering Committee did not effectively perform its function — meetings were not well attended by appointed stakeholders; several members never attended, two members interviewed by the evaluation team could not recollect what the project was about and one stated they were unaware of their responsibilities since no ToR was circulated. However, project advisory committees were established in NMA, NDRMC and HWQD to convene technical consultations.	U

Indicator	Baseline	End of Project Target	End of Project Status	Terminal Evaluation Comments	Rating
				A communication and knowledge management system was not established. NMA launched a bid process but did not receive any tenders. Subsequently, NMA reported that they transferred this budget to UNDP and that UNDP identified a winner. While it is reported that an individual consultant commenced the work, the evaluation team has not seen any outputs.	

Annex 5.8: Evaluation Consultant Agreement Form

Evaluator:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. Should provide maximum notice, minimize demands on time, and respect people's right not to engage. The evaluator must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. The evaluator is not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluator should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, the evaluator must be sensitive to and address issues of discrimination and gender equality. Should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, the evaluator should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Is responsible for their performance and their product(s), and responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation Consultant Agreement Form¹

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: David Wright

Name of Consultancy Organization (where relevant): _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at place on date Cape Town, 8 June 2018

Signature:  _____

Annex 5.9: Report Audit Trail

Annexed in a separate file.