REPORT
TERMINAL EVALUATION

LIBERIA – GEF 4590 PROJECT STRENGTHENING LIBERIA'S CAPABILITY TO PROVIDE CLIMATE INFORMATION AND SERVICES TO ENHANCE CLIMATE RESILIENT DEVELOPMENT AND ADAPTATION TO CLIMATE CHANGE

PIMS4858 / GEF 4950

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Disclaimer

This Terminal Evaluation (TE) Report was prepared by two (2) Independent Consultants: Alexandre Borde and Angelance Browne. The findings, interpretations, and conclusions expressed herein are those of the authors and do not necessarily reflect the views of the UNDP.

List of Acronyms and Abbreviations

AAL	Average Annual Loss
AFD	French Development Agency
AfDB	African Development Bank
ALM	Adaptation Learning Mechanism
AWP	Annual Work Plan
CC	Climate change
CCA	Climate Change Adaptation
CIRDA	Climate Information for Resilient Development and Adaptation to Climate Change in Africa
CO	Country Office
CPAP	Country Programme Action Plan
CSOs	Civil Society Organizations
DIM	Direct implementation modality
DRR	Disaster risk reduction
EOC	Emergency Operation Center
EPA	Environment Protection Agency
EUD	EU Delegation
EVD	Ebola virus disease
EWS	Early Warning System
FDA	Forestry Development Authority
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GCM	Global Climate Model
GDP	Gross Domestic Product
GEF	Global Environment Facility
GFCF	Gross Fixed Capital Formation
GHG	Greenhouse Gas
GoL	Government of Liberia

IP	Implementing partner
IPCC	Intergovernmental Panel on Climate Change
LDCF	Least Developed Countries Fund
LIGIS	Liberia Institute for Geo-Information Service
M&E	Monitoring and Evaluation
MACs	Ministries Agencies & Commissions
MDGs	Millennium Development Goals
MFDP	Ministry of Finance and Development Planning
MIA	Ministry of Internal Affairs
MLME	Ministry of Land, Mining and Energy
MoA	Ministry of Agriculture
MoGCSP	Ministry of Gender, Children and Social Protection
MoJ	Ministry of Justice
MoT	Ministry of Transport
MTR	Mid-Term Review
NAP	National Adaptation Plan
NAPA	National Action Programs for Adaptation
NC	National Coordinator
NCCS	National Climate Change Secretariat
NDMA	National Disaster Management Authority
NEX	National Execution
NFP	National Focal Point
NGO	Non-Governmental Organizations
NIM	National Implementation Modality
NIMET	Nigerian Meteorological Service
NVE	Norwegian Water Resources and Energy Directorate
OVI	Objectively Verifiable Indicators
PAPD	Pro-poor Agenda for Prosperity and Development
PIF	Project Identification Form
PIR	Project Implementation Review
PMT	Project Management Team
PSU	Procurement services unit
RCS	Regional Support Center
RIA	Roberts International Airport

SCCF	Special Climate Change Fund
SDGs	Sustainable Development Goals
SOPs	Standard Operation Procedures
TE	Terminal Evaluation
TOR	Terms of Reference
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	Unveiling Global Disasters Risk
UNMIL	United Nations Mission in Liberia
USD	US Dollars
WMO	World Meteorological Organization

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GEF Project ID	4950
UNDP PIMS Number	4858
Project starting date	September 2013
Planned end date	September 2017
Effective end date	December 2018
Total allocated resources (USD)	18, 589,700
Co-financing (USD)	11, 659,700
GEF (USD)	6, 730,000
Location	Liberia
Executing Entity/Implementing Partner	Environment Protection Agency
Implementing Entity/Responsible Partners	UNDP/MoT

Evaluators: Angelance Browne and Alexandre Borde

Dates of the Terminal Evaluation: January – March, 2019

Executive summary

The UNDP-GEF funded project entitled “Strengthening Liberia’s Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change” was approved by GEF and commenced in 2013 for an initial period of 4 years. With this Least Developed Country Fund (LDCF), the project provided the required equipment and improved national capabilities to generate and use weather/climate information in the planning for and management of climate-induced hazards. The project is in line with the National Adaptation Programme of Action’s (NAPA) priority, “Improved monitoring of climate change: enhance adaptive capacity through the rebuilding of the national hydro-meteorological and meteorological monitoring system and improved networking for the measurement of climatic parameters”, as well as the framework of the Second Poverty Reduction Strategy (2012-2017) and the Agenda for Transformation (2012 – 2017). Although the project was initially designed for four years, 2013-2017, it had to be extended (no cost extension) for an operational period of five (5) years up to and including 2018.

The Early Warning System (EWS) Project was established as a response to the need to fill critical gaps and address the lack of hydrological and meteorological services resulting from 14 years of civil crises in Liberia. Over the last 5 years, as part of its deliverable, the EWS has procured and installed 11 weather stations and has since been generating meteorological data and climate change information. At the end of the extension period, the project still lacked the capacity to develop a full hydrological information system. Although some minor gains have been made in the past 12 months, there has not been a significant impact in terms of the provision of adequate public information and the means to access these services.

The project was expected to achieve the following results: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards and climate trends; efficient and effective use of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making; and increased awareness in government, private sector and local communities of the major risks associated with climate change, and the use of available information when formulating development policies and strategies.

The project implementation faced several setbacks including delays in recruiting and building capacity in the Project Management Team upon signing of the project document in October, 2013 and subsequent launching in January, 2014. Additional constraints included the slow pace at which the project offices were renovated and equipped; the health crisis in the country (the Ebola epidemic in 2014); the General & Presidential elections (July 2017– June 2018), which slowed down many field-based activities; and the procurement of the meteorological equipment, which was considered cumbersome.

The EWS project phased out at the end of 2018, but it has had limited impacts, and it is not

clear how the results have been utilized by the beneficiaries. This Terminal Evaluation (TE) of the project was carried out during the months of November and December 2018 to evaluate the extent of the activities implemented and lessons learned during the project.

The table below presents data characterizing the project, including major budget lines.

Table 1. Characteristics of the project "Strengthening Liberia's Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change"

GEF Agency Project ID	PIMS 4858
GEF project ID	4950
Country	Liberia
Zone	Africa
Area of intervention	Climate change
Objectives of area of intervention	LDCF
Executive Partner	Environmental Protection Agency (EPA)
Other partners involved	Ministry of Transport (MoT) Meteorology Department; Ministry of Lands, Mines and Energy (MLME) Hydrological Services; Ministry of Internal Affairs (MIA) National Disaster Relief Commission (NDRC); Ministry of Agriculture (MoA); Liberia Maritime Authority (LMA); National Ports Authority (NPA); Ministry of Health (MoH) and Ministry of Planning and Economic Affairs (MoPEA)
Co-financing sources (in US$)	
Institutional Strengthening and Capacity Building of the Energy and Water Resources Cooperation – funded by Norwegian Water Resources and Energy Directorate (NVE) and implemented through MLME	2,690,000
Agriculture Sector Rehabilitation Programme – funded by the African Development Bank and implemented through MoA	2,313,072
MetAgri (Roving seminars on Weather, Climate and farmers) - funded by the World Meteorological Organisation (WMO) and implemented jointly by UN Food and Agriculture Organisation (FAO), WMO and MoT	691,200
GoL, Meteorological Division (within MoT) budget allocation	257,920
GoL, Hydrological Services (within MLME) budget allocation	1,107,508
GoL, National Disaster Relief Commission (within MIA) budget allocation	200,000
GoL, Environmental Protection Agency budget allocation	4,400,000
UNDP Country Programme	200,000
Least Developed Country Fund (LDCF) project grant (in US$)	6,730,000
Total (in US$)	**18,589,700**

Overall Findings

The Terminal Evaluation mission took place in Liberia in December 2018 in order to assess the project's progress and achievements, to learn lessons, and to make recommendations for future adaptation priorities and climate-related information. A few iterations were needed to produce the final version of the TE report in January 2019. The assessment is based on the evaluation criteria of GEF, and the following table summarizes the ratings given under these criteria.

A. Relevance

The project's objectives and implementation were aligned with Liberia's development and environmental strategies, programmes, needs, and priorities. The project is consistent with the National Environmental Policy, which calls for the sustainable management of Liberia's environment and natural resources. Its objectives are also consistent with national priorities, policies, and national strategies according to Liberia's NAPA priority intervention number 2 - "Improved monitoring of climate change: enhance adaptive capacity through the rebuilding of the national hydro-meteorological and meteorological monitoring system and improved networking for the measurement of climatic parameters". Priorities 1 and 3 are already being implemented through LDCF projects. The project was consistent with the urgent needs identified in the NAPA, all of which are relevant for supporting the national development goals as they related to achieving Millennium Development Goals (MDGs) 1, 3, 6 and 7, and Sustainable Development Goal (SDG) 13.

The project document revealed that the project was consistent with some policy documents and national strategies at the time of its preparation. It was especially consistent with the country's INDC in 2015[1], the ratification of the Paris Agreement by Liberia on July 10, 2018, the SDGs 13, and the GCF country programme under way, but also key to national perspectives and aligns with the existing PAPD (Pillar II), and Agenda 2030[2]. Moreover, the UNDP recognizes the importance of preserving the environment and adapting to climate change in its sixth strategic focus. This consistency has been checked and found to be satisfactory during the TE review, knowing that globally, the national policies and strategies that address the issue of climate change remain rare. Concerning national policies to come, the project is already in alignment with the new PAPD (Pillar II), which establishes climate change adaptation as a major challenge.

B. Achievements of outputs

[1]https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Liberia/1/INDC%20Final%20Submission%20Sept%2030%202015.002.pdf
[2]http://lr.one.un.org/content/dam/unct/liberia/docs/UNDAF/0310%20%20UN%20Liberia%20UNDAF%20Road%20Map%20_%20FINAL%20(1).pdf

The project did not deliver all of its outputs within the planned budget and time frame. The achievement of each of the three components was moderate to unsatisfactory compared to expected project outputs, as detailed below.

Under component 1: A modern and fully functional EWS was only partially put in place and is currently delivering weather information. The system comprises 11 automatic weather stations procured and installed on Cell com towers, which are owned by telephone companies and are spread across the country. This equipment has been generating weather information for the past year and a half. This exercise was climaxed with the launching of the newly developed weather site of the Ministry of Transport (MoT). The purpose of this system is principally to broadcasted weather information to enable local farmers as well as other users to make informed decision relative to their dependence on weather for their livelihood. All sites for the installation of this equipment were identified and mapped out by the MoT. The development of an integrated water resource management system was under process at the time of the evaluation, and a dummy of the software was produced for training purposes. The finalized system is expected to be formally launched in March 2019.

Several capacity building and training sessions were conducted to equip staff to use this meteorological data. Firstly, capacity building and requisite trainings were provided by the EWS project in collaboration with the Nigerian Meteorological Service (NIMET) for 27 staff consisting of meteorologist, hydrologists, observers, instrument technicians and officers from various institutions. These staff members therefore acquired the capacity of analyzing and forecasting all hydro-meteorological data generated from the automatic weather stations and publishing weather information for the public, and are currently assigned to the National Meteorological Stations. Secondly, two (2) staff members of the Ministry of Transport benefitted from a training session in 2017 from the company Adcon, as well as a training course in Financial Management of Donor Funded Project for Finance and Administrative Officers in 2016 in Lusaka, Zambia and Manzini, Swaziland. They were therefore equipped with technical expertise on how to extract data and analyze them. Thirdly, in August 2018, the National Climate Change Secretariat (NCCS) collaborated with the MoT and conducted a National & Regional Stakeholders awareness workshop in Bomi County on Early Warning System. The training provided information on the relevance, services, and benefits of sustaining the EWS. The identification of national meteorological centers in four (4) Counties namely: Grand Bassa, Bomi, Bong and Montserrado. The NDMA in partnership with the MIA prepared and completed a national vulnerability map for ten counties in Liberia. This exercise included the Liberia Institute for Geo-Information Service (LIGIS). This map is intended to help both the NDMA and the EWS to know hot zones in Liberia.

Under component 2: Various communication channels, Standard Operating Procedures (SOPs), and legal mandates were developed for disseminating climate information and issuing warnings through government institutions and NGOs. A media training workshop was held for eleven community radio stations from seven counties in Liberia including Grand Bassa, Sinoe, Rivercess, Grand Kru, Maryland, River Gee, and Grand Gedeh counties. These stations received training in order to enhance the ability of their staff to surf the newly developed websites and for them to develop the ability to deliver professional daily weather forecasts based on the information generated by the automatic weather stations installed around the country. MoT & NDMA trained employers in local facilities on the traditional

method for the dissemination of weather and climate hazards held in Nimba County. Participants came from 7 counties: Grand Kru, Maryland, Rivergee, Grand Gedeh, Nimba, Bong, and Lofa Counties. The other training workshop held in Buchanan, Grand Bassa county, included chiefs from Sinoe, Grand Bassa, Monserrado, Margibi, Bomi and Grand Capemount counties. The local stakeholders were trained in traditional methods of information dissemination regarding how climate information obtained and distributed.

Under Component 3: A system was established for inter-ministerial dialogue on incorporating climate change considerations into government policies and strategies. In this regard, the MOT, EPA & MIA held training workshops for local governance structures regarding the need to incorporate climate information in development planning emanating from the local government level. There was also an inter-ministerial dialogue spearheaded by the National Climate Change Secretariat in getting governments involved by using climate information in decision-making processes in Liberia. Recruitment was completed for a National Coordinator for the NCCS based at the EPA and supported by the EWS Project for the life of the project.

C. Effectiveness

Effectiveness relates to the attainment of project objectives and results. To date, the project evaluation found the overall effectiveness of the project to be satisfactory. The achievement of outcomes for all three components is rated as satisfactory indicating that the project's major intended outcomes were delivered, and are expected to feed into a continuing process after project funding. Generally, the project has made acceptable gains in its core activities regarding progress towards achievements for the period under review of project implementation including: the setup of important structures including the Project's Management Team and the Project Steering Committee; the setup of reporting lines/approving authorities in the host institution (the MoT), the National Climate Change Secretariat; the training of meteorologists; the installation of automatic weather stations; the final renovation work undertaken at the RIA; and the final installation of remaining HydroMet equipment. The actors involved are committed to moving the process forward. Specific achievements and results towards the three expected outcomes are detailed in the project result matrix in the annex. There is high expectancy that the outcomes will lead to positive future impacts considering the high level of ownership of the project results at national and district levels, the partnerships built, and the institutionalization of the project's achievements. Finally, it is important to note the joint contribution of UNDP and the GoL towards the project's achievements through the improvement in national government capacity, including the strengthening of institutions, since UNDP has contributed to all of Liberia's most significant priorities.

D. Efficiency

Efficiency focuses on how economically resources/inputs (including funds, expertise, and time) were converted to results or on the optimization of resources mobilized by a project as it relates to the cost effectiveness of the project's outcomes, such as infrastructure or services. In this regard, the project targets were realistic and measurable in terms of capacity building and vulnerability reduction. The TE Team concludes that overall, the project was cost effective. A number of measures to promote cost-effectiveness were identified in the project document and adopted during implementation. The Project implementation was cost-effective and timely, achieving project targets within the planned budget and timeframe. The cost-effectiveness was achieved by establishing strategic and strong partnerships, using a participatory approach, building on existing institutions and initiatives in climate change (through co-financing), as well as through the selection of 11 pilot sites in areas in 9 out of 15 counties in Liberia. The sites were selected on existing institutions, avoiding extra costs for construction of buildings and at the same time, improving the time-efficiency of the project. In addition, the project involved major districts and local communities in the design and implementation of project activities.

E. Factors Affecting Project Performance

The project experienced delays during its onset, primarily due to institutional issues which were beyond the control of the project and delayed the initial implementation of its activities. For instance, the general presidential elections and Ebola crisis affected the implementation of the project in 2014 and 2015. This resulted in a generally slow pace of implementation and missing deliverables. Although the project was launched in January 2014, recruitment and placement of the project's administatative and management staff was only finalized in March 2014; the Project therefore lost almost the entire first quarter of the year to soft activities surrounding the recruitment of project management staff. Activities for the remainder of the first year were largely geared towards finalizing most of the core activities, such as the organization of a statutory information hub responsible for the analysis and population of hydro-meteorological information. The National Meteorologial Center (NMC) situated at the Roberts Inernational Airport (RIA) was built and renovation work was finally completed in 2018; it is currently being furnished before being initiated to fulfill its core purpose.

F. Sustainability

Sustainability focuses on long-term effects of the project and the durability of results and impacts. It assesses the extent to which benefits are likely to continue, after the project has come to an end. Project sustainability is about the capacity to endure. It is about positing the functionality of systems and processes at institutional level, and also putting emphasis on the resilience of the systems and processes. From this evaluation's point of view, the consultants found that there is moderate likelihood that some of UNDPs' interventions will be sustainable.

The consultants established that there is no exit strategy along with little commitment by ministries to ensure the sustainability of the project. Several elements contribute to the vulnerability of this project in the future including the limited resources of the national budget (an important aspect to consider). For instance, there is an urgent need to maintain the installations, by transferring the current database maintenance contract with the private company Earth network[3] to the MoT, to continue to benefit from their technical assistance. Otherwise, the project inputs will be lost.

Another example of the difficulties encountered in achieving country ownership was that, after micro-assessment, the MoT did not have the required rating to enable a proper NIM execution. However, several actions have been taken, as part of a deliberate approach to ensure sustainability as envisaged by the project, including a MoU that is under negotiation with the telecommunication companies to send the weather information by SMS; a resource mobilization strategy put in place which is key to ensure the sustainability by 2020 (for instance, at national level, to continue to work with the company in charge of the running the meteorological information system); linkages made through the project with the Multi Country Programme to Strengthen Climate Information for Resilient Development and Adaptation to Climate Change in Africa (CIRDA).

G. Impact

The consultants found that impact is not significantly visible because major activities leading to tangible outcome were delayed. However, significant progress was made through the institutional anchoring of the project with the mainstreaming of the project implementation team in the governmental ministries; on the other hand, many stakeholders still lack capacities and additional capacity building is needed. The beneficiaries of the project include farmers, fishermen, the general public, and the forestry sector. The automatic weather stations have been installed; however, there is still potential for an increase in the number of beneficiaries. Some individuals are receiving information on their phones and can access the data, but the component 1 needed to generate increased results is not yet installed although it has been procured. However, the GoL and UNDP are committed to ensuring the smooth implementation of the project beyond its official end date. It is expected that in the future, data will be made accessible, especially to the rural population (farmers, fishermen, etc.). This is the principal condition to ensure a significant impact of the project.

H. Partnership

Partnership is the extent to which coordination, collaboration, and synergy are developed and achieved among stakeholders and beneficiaries to produce the desired results of the project. The TE establishes that the UNDP's engagement with partners has been appropriate, effective, purposeful, and well thought-out. The support for the successful implementation of the EWS project has taken on a unified program-based approach, drawing on the technical expertise, activities and experience of the GoL, the UN, development partners, and other non-state actors in Liberia to implement the EWS. UNDP is a key partner of the GoL in the area of energy and environment, climate change, development planning, sustainable economic transformation, SDG implementation at the national level, and capacity building. UNDP, in partnership with EPA, MoT, MLME, NDMA, MoA, MFDP, etc. is engaged in sensitive areas

[3] https://www.earthnetworks.com/

relating to energy and the environment. UNDP's engagement on early warning system, the coastal project, and climate change have been important.

I. Gender & Human Rights

The EWS project took gender issues into consideration, but the content of the project is very technological, and only a limited number of female students choose to specialize in information technology (IT) and data management. However, the consultants found that UNDP has demonstrated commitment in ensuring inclusion and participation of women in the design, implementation, and monitoring of the all interventions in Liberia. This is reflected in UNDP's Strategic Plan (2018-2021), the CPD (2013-2017), and UNDAF (2013-2017) outcomes 1 and 4, all of which have strong elements of gender equality and empowerment in their designs. The EWS capacity building initiatives have targeted women but available data revealed that only a small percentage (five percent) have benefited from increased awareness and training. However, the Government of Liberia, a major partner, is committed to ensuring that women effectively participate in all aspects and spheres of society as reflected in its laws, policies, and international and regional treaties including the National Gender Policy of Liberia, the Liberia's Action plan for implementation on UNSCR, 1325, the AFT, etc.

Overall, the TE assessment revealed that a strategic and systematic effort at mainstreaming gender concerns into energy and environment has been insignificant due to the technical nature of the project. This resulted from the low engagement of females in the sciences. However, in order to improve this situation, the UNDP has provided support for students at three (3) universities, namely: the University of Liberia (MS level), Cuttington University (BS level) and Stella Maris University (BS Level). These universities have incorporated courses into their curriculum to accommodate students in the climate change, energy, and environment areas of discipline at the masters and bachelors levels.

The TE has established that the project has to some extent promoted the fulfilment of human rights in that no discrimination was observed during project implementation. For instance, vulnerable groups, youth, and children were all taken into consideration.

However, the TE also notes that the energy and environment and/or climate change agenda which the EWS supports does not have a human rights component embedded into it, nor did the designing of EWS Project document incorporate human rights explicitly as a cross-cutting issue.

***Table 2**. Rating according to the evaluation criteria of the GEF*[4]

Criterion	Reviewers' Summary Comments	Reviewer's Rating
Attainment of project objectives and results (overall rating)	The project attained several of its objectives but a few could not be reached. The overall rating is MU, with little chances that progress will be made in the future unless an additional international investment is made.	MU
Outcomes		
Overall Quality of Project Outcomes	The targets cover the technical and institutional aspects, but also aspects linked to awareness and dissemination of information. The relevance of the project is significant, but the efficiency is moderately unsatisfactory, given the fact that some results have been delivered with delays, and some could not be delivered. The Ebola crisis was a major impediment to the proper implementation of the project.	MU
-Relevance	CC is a priority issue for Liberia. To achieve a better early warning system, it is essential to adapt to more extreme climatic events by identifying and preventing the climate risks. The objective and outcomes defined by the project are unanimously supported by the stakeholders.	R

[4] UNDP-GEF Guidelines: "Project Evaluation Level" published by UNDP Evaluation in 2012.

Criterion	Reviewers' Summary Comments	Reviewer's Rating
-Effectiveness	The PMT had sufficient time and human resources to manage the project properly. Although the team members were involved and motivated in the implementation, the time allocated to the project was not satisfactory. The location of the procurement activities in Denmark, within the UNDP Procurement Support Office (PSO) did not facilitate the process. While the project was considered as a NIM, in practice, it was a similar to a Direct Implementation (DIM) by UNDP. This has resulted in several activities being completed or almost completed but with little country ownership. Other activities could not be implemented. Questions remain about the functioning and results of the other project entities, such as the various committees.	MU
-Efficiency	***Some activities are not being operationalized or implemented with the resources initially planned. It took too much time to procure some equipment. Recommendations could include extending the project until the end of 2019, but it was not made possible in order to achieve all the project activities.***	MU

Criterion	Reviewers' Summary Comments	Reviewer's Rating
Sustainability of Project Outcomes (overall rating)	The main risk is the lack of coordination and organization between the various actors in the fight against the risks associated with climate change.	ML
-Financial	Financial resources could have been a limiting factor after the project and could have hindered the dissemination of good practices. Still need to develop their financial capacity by searching for private sector investments or cooperating with international funds. The development of EWS can decrease the vulnerability of the country face to Climate Change issues, further increase their capability for more financial and economic activities.	ML
-Socio Political	From the social perspective, the project has considered the gender issues but the content of the project is very technological. But there's other gender related activities of the project focused on training of vulnerable groups has been set. The political situation in Liberia is always difficult.	ML
-Institutional framework and governance	Coordination problems between players and limited support from MoT led to coordination problems. Institutional anchoring of the project with the mainstreaming of the project implementation team in the governmental authorities has already established. Engaged partner like Earth network can provide technical support, but still need to develop stakeholders with capacities as the national institutions are still weak.	L
-Ecological	Installation of EWS can decrease the vulnerability of the agriculture and aqua-agriculture sector, can protect the biological diversity of Liberia, e.g. local species, to avoid being affected by climate disasters.	L

Criterion	Reviewers' Summary Comments	Reviewer's Rating
Impacts	No significantly visible impacts through the implementation of the project. More capacity buildings is needed, more individuals need to get access to the data through the daily weather forecast.	M
Achievement of outputs and activities	Achievement of outputs and activities is not as high as expected due to delays in the implementation. There is a limited satisfying degree of confidence in upcoming results.	MU
Catalytic Role		
-Production of a public good	Weather information is considered a public good. Its use in a more sustainable way will benefit the population, especially farmers, fishermen, etc. After the end of this project, this information should lead to better-informed beneficiaries due to the EWS.	**Medium**
-Demonstration	New agro-meteorological stations have allowed the setting of national weather reports for the first time in the country.	**Yes**
-Replication	This project could be replicated.	**Yes**
-Scaling up	Funding agencies, including the African Development Bank, showed interest in financing the scaling-up of local project activities.	**Yes**
Monitoring and Evaluation (overall rating)	The rating for the M&E is mixed: although the M&E system is not sophisticated, and some indicators had to be redesigned, the PMT was able to provide PIRs with levels of percentage in the achievements of the project.	MU
-M&E Design	The M&E plan defined in the project document is quite classic and relevant as a whole. However, some indicators were not formulated clearly enough or therefore are not feasible and/or applicable now.	MU
-M&E Plan Implementation (use for adaptive management)	The implementation of the M&E was moderately effective: data was made available for some indicators only. The implementation remains perfectible.	MS

Criterion	Reviewers' Summary Comments	Reviewer's Rating
-Budgeting and Funding for M&E activities	Paradoxically, the budgeting and funding for M&E seems limited, and not as developed as planned in the project document.	MU
IA & EA Execution		
Overall Quality of Project Implementation/Execution	Overall, the quality of the project implementation is considered moderately unsatisfactory with some success and hopes for the future. The Ebola crisis and the difficult political context did not help. Interventions, including weather information systems, are very partially on track.	**MU**
-Implementing Agency Execution	UNDP has faced several challenges since the launch of the project, therefore necessitating the adaptation of new implementation planning to develop certain activities in a different way, especially with regards to the fact that the costs of some activities were underestimated and delays occurred due to external factors. Ultimately, the final result is moderately unsatisfactory and it would have been better to state from the beginning that the project would be managed under a DIM rather than a NIM procedure.	**MU**
-Executing Agency Execution	The Ebola crisis and political instability with rotation of several experts and the disappearance of institutional memories in the ministries caused very frequent delays, because each new institutional team needed to reclaim the project. It did not facilitate the task of the PMT. Poor coordination between IP (EPA), RPs (MoT, MLME, NDRC, MoA and EPA) and UNDP CO resulted in institutional problems in execution processes.	**MU**
Country ownership	Country ownership is limited because the project was supposed to be managed as a NIM but, in practice, followed a DIM	MU

Criterion	Reviewers' Summary Comments	Reviewer's Rating
	execution modality involving the UNDP PSO in Denmark. Hence, the national authorities were poorly involved in the process. National capacity building remains crucial.	
Overall Rating	Efforts were made to reach the goals within the 12 month no-cost extension period, but the complex set-up did not allow project implementation to be finalized. Cross-cutting issues, such as gender and human rights, were addressed by the project. Weaknesses lie in the efficiency of the project and also in the monitoring and evaluation plan.	MU

Code:

HS: Highly satisfactory	R: Relevant
S: Satisfactory	NR: Non relevant
MS: Moderately satisfactory	L: Likely
MU: Moderately unsatisfactory	ML: Moderately likely
U: Unsatisfactory	MU: Moderately unlikely
HU: Highly Unsatisfactory	U: Unlikely

Recommendations

The following is a summary of the main recommendations and lesson resulting from the evaluation findings:

Recommendation (1)
Finding: the maintenance of the equipment is important to consider, and efforts should be given to ensure that the GoL will be able to fulfil this duty.

- GoL should demonstrate serious commitment to ensure that the MoT has a budgetary allocation in order to fill the funding gap for the project and to run the meteorological system and the automated stations after 2019.
- GoL in coordination with UNDP should start the transition of the contract with Earth Networks for the maintenance of the existing database, and a further development of the EWS with a higher level of technical support.

Recommendation (2)

Finding: the capacities of the national institutions remain weak.

- GoL should provide additional capacity building trainings to foster the national expertise in meteorological data analysis and to strengthen the capacity for the transmission of weather forecasts.
- The GoL should strengthen institutions and interactions (e.g. between the Emergency Operation Centre and the National Meteorological Centre), not only financially but also institutionally.
- GoL should encourage access of the meteorological data to the national and local media for daily broadcasted weather forecasts.

Recommendation (3)

Finding: The need for technical assistance is high in Liberia, as climate change is having increasing impacts on agriculture and water resources.

- GoL should continue to ensure that the country engages in RM both for assistance that responds to identified situations, and for long-term support and resources mobilization.
- UNDP's recent but already significant experience should be used in the formulation of projects to scale up similar projects in Liberia (e.g. Programme on Climate Information for Resilient Development in Africa-CIRDA).
- GOL & UNDP should ensure capacity building through scientific and technical exchange programmes is done in order to foster smooth future project implementation.

Recommendation (4)

Finding: More and more technical and financial partners are interested in climate change**.**

- GoL with the assistance of UNDP should develop further on the Climate Change adaptation strategies considering its high vulnerability to climate change, especially for the public health and agriculture sector.

Recommendation (5)

Finding: Lack of means including financial, technical, human were observed especially, the equipment and expertise for related technical support.

- GoL should install the missing equipment as soon as possible in order to maintain gains already achieved.

Recommendation (6)

Finding: The country, in particular through activities initiated by the project, is well informed about the new sources of climate finance, first and foremost the Green Climate Fund (GCF).

- GoL with the technical assistance from UNDP should formulate a concept note in order to generalize the project nationally (currently in process, specifically regarding coastal zone adaptation)
- The country should adopt a coherent strategy in terms of raising climate finance.
- A GCF Readiness for the NAP Process should be considered.

- GoL, in partnership with UNDP, should scale up the project with a GEF PIF of circa 10 million USD.

Lessons Learned

The four years of project implementation provided many valuable lessons, yet also involved various challenges which, if properly internalized, could prove useful. This would align with one of the Least Developed Country Fund (LDCF) approaches of learning-by-doing. The following are some of the lessons learned:

- Initially build capacity of technical expertise for future results. Assessment should allow technicians to have ownership in country. Training without practice is almost worthless; due to lack of equipment, many of the trained meteorologists and hydrologists have no means of practicing what they have learned. Trainings being proposed by the EWS Project must be accompanied by actual practice which will lead to a viable hydro-met service for Liberia.
- The project faced challenges in acquiring trainees with requisite backgrounds and employed with Hydro-Met Services in the country. Therefore, more advanced trainings will necessitate the recruitment of math and physics graduates at an early stage. This is an important lesson of the project, explaining some of the failure due to the lack of local expertise in these fields.
- As a result of a lack of expertise in country at inception of the project, several contracts to different service providers were signed, but most of them were individual consultancy services. It it took 2 years to build minimum capacity towards the end of the project. It would be indeed better to keep the current structure as a stable group to reach a more efficient workforce in the future, and strengthen local expertise instead of outsourcing.
- During the disaster, vulnerable groups including women and children were considered. For example, as a result of gender mainstreaming, the psychosocial arm of the NDRA collaborated with the MoGCSP and provided support during the flooding that occurred in Grand Bassa, Montserrado, Bomi Maryland that affected 55,618 persons. It is important to continue investing in the most vulnerable groups.
- The procedures for requesting approval for an activity or funding are slow and can increase the pressure on project duration and delivery. Approval processes should therefore begin early, emanating from the Project Management Unit.
- The EWS Project was designed to be implemented through the issuance of different consultancy contracts to different service providers; however, we have observed that long-term agreements with an expert group or groups that could work alongside with Liberian technicians could perform more efficiently and effectively than individual consultancies. Hence, capacity building via scientific and technical exchange programmes have proven to be more useful.

1. Introduction

1.1. Brief presentation of the project

1.1.1. Climate change in Liberia

Liberia is situated on the Atlantic Coast of West Africa along the wide south-west curve north of the Gulf of Guinea. It covers an area of 38,000 square miles (slightly exceeding 102 thousand square kilometres). The coastal belt is 350 miles long and extends approximately 9 miles (15 kilometres) inland.

Liberia is increasingly vulnerable to climate variability and climate change-related phenomena such as increasing temperatures, extreme weather events (including excessively heavy rains), and rising sea levels. Agricultural productivity is highly vulnerable to the effects of climate change, and saltwater and freshwater fisheries are likely to suffer as sea temperatures increase and coastal ecosystems (mangroves and wetlands) are damaged. Coastal zones, home to the majority of Liberia's population, infrastructure, and economic activity, are facing risks from flooding and erosion associated with sea level rise, which will also lead to salinization of coastal agricultural fields.

Liberia ranks as one of the poorest countries in the world, illustrated by its 2017 GDP per capita of USD 456 (World Bank, 2018), and negative per capita growth. Liberia's economy is still struggling to recover fully from the effects of multiple shocks in recent years, namely the Ebola Virus Disease (EVD) outbreak, the collapse of global commodity prices, the United Nations Mission in Liberia (UNMIL) withdrawal, and the perception of risk associated with the country's political transition in January 2018.

According to Liberia' 2008 National Adaptation Programme of Action (NAPA), recent changes in rainfall patterns have increased the vulnerability of farmers due to the fact that it is becoming increasingly difficult for them to identify the optimal time to plant crops. This contributes to low yields. In addition, the northwest and central regions of Liberia have experienced lower cereal crop yields relative to baseline conditions due to reduced soil moisture. Rainfall changes have also resulted in more pests, weeds, and animal diseases in the near-term. In the long-term, these changes are expected to contribute to species extinction, through a simultaneous reduction in the size of the plant genetic pool and promotion of pest development.

This project therefore seeks to address a fundamental problem facing Liberian communities with regards to climate change: at project inception, the climate monitoring network, archiving databases, access to satellite environmental products and ability to issue forecasts were insufficient relative to the level required for local economic and agricultural development. Coordinated and complete climate information (including weather monitoring and forecasting) is highly necessary for the local development. Prior to the project, there was no existing Early Warning System (EWS) in the various project areas. Hence, the establishment of EWS was considered to be a top priority for the country, in order to enable the dissemination and communication of extreme weather warnings, seasonal outlooks, and increased risks due to

climate change.

The UNDP/GEF project entitled "Strengthening Liberia's Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change" was therefore a follow-up of the 2008 NAPA. It began in September 2013, with the objective of strengthening Liberia's climate-related monitoring capabilities, early warning systems, and information available for responding to climate shocks and planning adaptation to climate change.

The consequences of climate change in terms of loss of human lives, water resources, agricultural production, and infrastructure damage are increasingly precarious. All key sectors of the economy, such as agriculture, infrastructure, fisheries, forestry, and tourism, are already and will continue to be affected by climate change. Adaptation to climate change remains a major issue in Liberia, not only to ensure the sustainable development of the country as well as food security, but also to ensure the stability of public health. Diseases such as cholera, dysentery, and giardiasis, among others, can be predicted through monitoring of rainfall and temperature, which can then help to further protect the most vulnerable populations.

The disasters caused by the climate change impact can lead to losses on Liberia's economy and further increase the vulnerability of vulnerable groups. The main disasters in Liberia are: Extreme Temperature, Flood and Storm. According to a research by Unveiling global disaster risk (UNISDR), a study of Average Annual Loss (AAL) will be shown below[5]:

The AAL is the expected loss per annum associated to the occurrence of future perils assuming a very long observation timeframe, it considers the damage caused on the exposed elements by small, moderate and extreme events and results a useful and robust metric for risk ranking and comparisons.

Average Annual Loss(AAL) by hazard in Liberia						
Hazard	Absolute Million $US	Capital stock %	GFCF %	Social exp %	Total Reserves %	Gross Savings %
Earthquake	0.11	0.006	0.022	0.039	0.022	0.023
Flood	3.06	0.160	0.618	1.097	0.621	0.633
Multi-hazard	3.17	0.166	0.640	1.137	0.643	0.656

1.1.2. Key actors involved in climate change action

This project was fully in line with LDCF/SCCF focal area objective 2: "Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level". Related expected outcomes included strengthening national hydro-meteorological capacities to provide information which can be used to reduce the risk of climate-induced economic losses, as well as increasing the knowledge and understanding of current climate variability and change-induced risks at both the country level and for targeted

[5] https://www.preventionweb.net/countries/lbr/data/

vulnerable areas.

Liberia ratified the UNFCCC in 2002. The country submitted its NAPA in 2008 and, as an LDC, was entitled to benefit from the LDC Fund for the implementation of priority measures identified in its NAPA. It ratified the Paris Agreement on July 10, 2018.

This project was based on the NAPA's second top priority project, identified as "Improving monitoring of climate change with the objective of generating reliable hydro-meteorological data and improving the measurement of climatic parameters". In implementing priority interventions identified in Liberia's NAPA, the project was consistent with decisions adopted by the UNFCCC's ninth Conference of Parties (COP-9) and also satisfies criteria outlined in UNFCCC Decision 7/CP.7 and GEF/C.28/18. The project focus was aligned with the scope of expected interventions as articulated in the LDCF programming paper and decision 5/CP.9. As climate impacts fall disproportionately on the poor, the project recognized the links between adaptation and poverty reduction (GEF/C.28/18, 1(b), 29).

The project was also consistent with various national strategies and plans as well as international agreements and goals. It was consistent with the National Environmental Policy, which calls for the sustainable management of Liberia's environment and natural resources, the National Reconstruction Development Plan (NRDP), and Liberia's targets with respect to the Millennium Development Goals. The project's goal of addressing the urgent needs identified in the NAPA also supported national goals relating to achieving MDGs 1, 3, 6 and 7, as well as the SDGs 13. The project is also aligned with the framework of the Liberian Poverty Reduction Strategy (2008-2011) and corresponding Poverty Reduction Strategy Paper (PRSP) I, which calls for sustaining the environment for the present generation without compromising the ability of future generations to meet their own needs. The PRS's central goal is to revitalize the main economic sectors of the country, notably agriculture, fisheries, and primary industries, in order to contribute to inclusive and sustainable economic development and growth, and to provide food security and nutrition, as well as employment. The project aimed to help strengthen these sectors by providing information that can be used to plan and adapt to changes in climate.

1.2. Objectives and ontext of the Terminal Evaluation

1.2.1. Context of the Terminal Evaluation

The project's key objective was to develop in-country robust weather and climate observation, and forecasting infrastructure, which could be rapidly deployed, and would be relatively easy to maintain and simple to use. Such a weather and climate monitoring system should have provided Liberia with the capacity necessary to develop: (i) an early warning system for severe weather; (ii) real-time weather and hydrological monitoring; (iii) weather forecasting capabilities (Numerical Weather Prediction); (iv) agro-meteorological information and services (including to inform integrated crop and pest management practices); (v) applications related to the construction and management of infrastructure; (vi) land, air, and maritime

transport management; (vii) integrated water resources management; (viii) coastal zone and land management; and (ix) planning and policy making processes.
Capacity and systems to analyze, monitor, and forecast climatic changes was insufficient to satisfy local development needs. Ultimately, the project was intended to increase knowledge and awareness regarding good adaptation practices, climate monitoring, and early warning of climate change risks. Adaptation learning could then be used to guide mainstreaming of adaptation in national fiscal, regulatory, and development policy, in order to support adaptive practices on a wider scale.

The executing partner of the project was Environmental Protection Agency (EPA), in partnership with the United Nations Development Programme (UNDP) as the implementing agency. The purpose of the TE mission was to determine whether the project objectives have been achieved and to determine the lessons learnt from the implementation of the project.

The field mission was conducted by Alexandre Borde and Angelance Browne from December 2nd to 7th, 2018. During the mission, the strengths and weaknesses of the project were analyzed, the achievements were reviewed by activity using the GEF/UNDP evaluation criteria, and the project impacts were assessed. Finally, recommendations to all the stakeholders were formulated through a restitution meeting and are summarized at the end of this document.

As a reminder, the documents produced during the TE were:

- An Inception Report to prepare the TE mission, dated November 30th, 2018
- A presentation of the preliminary findings during an exit de-briefing meeting held on December 7th, 2018 in Monrovia
- The TE draft Report January, 2019
- This Final TE Draft Report

The next section presents the methodology used to conduct the evaluation.

1.2.2. Timetable of the mission

The agenda of the TE mission was submitted during a preliminary meeting with UNDP, the Project Management Unit, the EPA, and the Ministry of Transport on the first day of the field mission, i.e. Monday, December 3rd, 2018.

It was decided that the mission be articulated around i) interviews and meetings with national stakeholders of the project in Monrovia, ii) Two (2) field missions conducted on December 5th, 2018 in Buchanan with the National Coordinator-National Climate Change Secretariat, the EPA, and visits to the Liberia Coastal Project and the Liberia Metrological Center, RIA and iii) a restitution meeting on December 7th, 2018 in Monrovia. The agenda is presented below.

November 21, 2018
Beginning of the work. Submission of the first draft of the Inception Report and the Work

Plan.
December 3, 2018
Meetings with the UNDP CO, the Project Management Unit, and the Ministry of Transport
December 4, 2018
Visit to the National Meteorological Center, Coastal Project, Buchanan, meeting with EPA, National Coordinator, National Climate Change Secretariat.
December 5, 2018
Meetings with the National Disaster Management Authority (NDMA) and the UNDP Programme, E & E Unit, Project Management Unit, field visits to Grand Bassa and Margibi Counties.
December 6, 2018
Meeting at the Ministry of Finance and Development Planning, and drafting of the preliminary findings; meeting with UNDP Programme Staff including: Programme Specialist, Energy & Environment, Team Leader-Sustainable Economic Transformation Pillar, M & E Specialist, etc.
December 7, 2018
Presentation of the first results at a restitution meeting with all stakeholder: debriefing-UNDP, MACs, other stakeholders, etc.
December 30, 2018 – January 31, 2019
Preparation of Draft Structure, Division of Labor Preparation & Finalization of the TE Draft Report for Submission.

1.2.3. Goals and Objectives of the Mission

a) Assess achievements relative to relevance, efficiency, and effectiveness at the end of the project and in particular assess the implementation of the project's planned outputs and performance against actual results achieved by the project and their visibility**;**

b) Assess if the project is successfully mainstreaming other UNDP cross-cutting priorities including gender equality and human rights, among others;

c) Focus on identifying strengths, weaknesses, and challenges during the project execution, the lessons to be learnt and best practices from the project to achieve maximum impact and sustainability of outputs as contributions to medium and long-term outcomes;

d) Review findings and make specific recommendations that could be applied to future and/or on-going projects.

Note: These goals and objectives were followed by the evaluators throughout the mission.

1.3. Methodology for the TE

1.3.1. Methodological approach - *Evaluation criteria and questions*

The evaluation has purposefully applied the OECD/DAC evaluation criteria intended to reflect relevance, effectiveness, efficiency, impact, sustainability, and partnership creation and to address some crosscutting issues, such as gender equality and human rights, in order to achieve its objectives. The consulting team has developed guiding questions, which are embedded within the framework of the evaluation criteria as indicated below:

A. RELEVANCE – *The extent to which the project relates to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional, and national levels,*	
QUESTIONS	• Are the project's objectives consistent with the project and the national policies and strategies? • What is the project's contribution to sectors of agriculture and water? • What is the project's contribution to regional initiatives e.g. financing CCA at the local level? • Is the project locally related and demanded by stakeholders?
B. EFFECTIVENESS – *The extent to which the expected outcomes and objectives of the project have been achieved or are expected/likely to be achieved.*	
QUESTIONS	• What progress has been made towards the achievement of the expected outcomes and expected results? What are the results achieved? • What is the number of direct and indirect beneficiaries (disaggregated by gender)? • Does the programme have effective monitoring mechanisms in place to measure progress towards results?
C. EFFICIENCY – *A measure of how economically resources/inputs (funds, expertise, time, etc.) were converted to results.*	
QUESTIONS	• Was the project implemented efficiently, in line with international and national norms and standards? • Have resources (financial, human, technical support, etc.) been allocated strategically to achieve the project outcomes? • What measures have been taken during planning and implementation to ensure that resources are efficiently used?
D. IMPACT – *Indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status. This includes positive and negative, primary and secondary long-term effects produced by the project directly or indirectly, whether intended or unintended.*	
QUESTIONS	▪ How do the project activities contribute to the decrease of vulnerability to the climate change impacts? ▪ What are the changes being contributed to livelihood through information, adaptation, DRR? ▪ How do the project activities contribute to food security? ▪ What evidence is there that the project has delivered longer-term results?
E. SUSTAINABILITY – *The likelihood of a continuation of benefits from a development intervention after the intervention is completed. To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?*	
QUESTIONS	• Are requirements of national ownership satisfied? Is the project supported by national/local institutions? Do these institutions and actors, including government and civil society, demonstrate leadership commitment and technical capacity to continue to work with the project or replicate it? • What capacity of national partners, both technical and operational, has been strengthened? • To what extent have the project's exit strategies been well planned and successful?

F. **PARTNERSHIP**– *The extent to which coordination, collaboration and synergy are developed and achieved among stakeholders and beneficiaries to produce the desired results of the project.*	
QUESTIONS	• Has the partnership strategy of the project been inclusive, appropriate, and effective? • How is the coordination of the project working among the related stakeholders such as: MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc. • Has UNDP worked effectively with other international delivery partners to deliver on project's initiatives? • How effective has UNDP been in partnering with civil society (where applicable) and the private sector to promote the project's objectives?
G. GENDER EQUALITY – *The extent to which gender main streaming has been factored into the project.*	
QUESTIONS	• To what extent has gender considerations been integrated into the programmed design and implementation? • How has attention to/integration of gender equality concerns advanced the area of work?
H. HUMAN RIGHTS – *The extent to which human rights has been factored into the project to effect positive change.*	
QUESTIONS	• To what extent has the programme actively promoted the fulfilment of human rights? • In its design and implementation, does it include opportunities to integrate human rights in each outcome of the programme and prioritize the principles of accountability, meaningful participation, and non-discrimination?

Guiding questions were also developed in a set of questionnaires located in annex 9 to interview experts from implementing agencies, Ministries Agencies & Commissions (MACs) such as: MFDP, MoA, MoT, MIA, MoGCSP, MLME, NDMA, EPA, FDA, IPs, CSOs, etc. The TE was conducted following the guideline questions provided in the terms of reference (TOR), focusing on Relevance, Efficiency, Effectiveness, Impacts, Sustainability, Country Ownership, Gender Issues, and Human Rights.

Project stakeholders were interviewed in Monrovia and in the field, at RIA and in Buchanan. All project documents were also reviewed, with the collaboration of UNDP and the PMT to enable the TE Team to answer major questions and to facilitate the TE work.

The PMT scheduled all the appointments with the stakeholders who were considered to be the most relevant to meet, at the local and national levels. Finally, a presentation and de-briefing of first results of the TE mission was held on December 7th, 2018 in Monrovia.

The methodological approach for the TE was structured around the key evaluation criteria in order to fully assess the performance of the design and implementation of project activities.

Moreover, the TE was sensitive to participatory and consultative approaches. The process of involving all stakeholders was analyzed. The results of the TE are presented as recommendations, including suggestions on further implementation of the project and its sustainability.

1.3.2 Data Collection Methods

The evaluation was consultative and participatory with a triangulation and complementarity of methods and approaches.

This consisted of:

I. A comprehensive desk review
II. Key informant interviews
III. Site visits: Grand Bassa & Margibi, RIA – National Meteorological Center
IV. Observations.

1.3.2. Site visits

The consultants visited the National Meteorological Center near the Robert International Airport, as well as Buchanan, to meet with the National Coordinator, National Climate Change Secretariat, the Environment Protection Agency (EPA) and the Coastal Project Site on the December 4th, 2018. The purpose of these visits was to see the installations and meet and hold Focus Group Discussions with the beneficiaries.

Table 3. Evaluation of the project zones

	TE – Methodological approach
Grand Bassa County	Site visit, documents and other administrative reports analysed
Margibi County	Site visit, documents and other administrative reports analysed

During the site visits, a methodological order was adopted, with two levels of meetings:

1) *Meetings with national and local authorities:* the first level consisted in meeting national and local authorities involved in the project and based in Liberia. These meetings related to the fieldwork (functioning of the newly installed automated agro-meteorological stations). For each meeting, 2–3 hours were dedicated to the interviews.

1.3.3. Meetings at Central Level

The consultants met with national stakeholders of the project on several occasions and in different contexts. They held bilateral talks with several project partners and entities, particularly with the Ministry of Finance and Development Planning, Ministry of Transport, Ministry of Lands Mines & Energy, and UNDP staff involved in climate change and/or EWS.

It is important to highlight the availability of the contact persons within UNDP, who responded to all issues raised by the evaluation team. The premises were made available to the consultants. Conference calls were held, the first one with UNDP and the Country Office (CO) in Liberia, and the second with the Regional Support Center (RSC) in Addis Ababa.

In addition, the TE team was able to regularly interact with the project coordinator and UNDP CO, to gain a better understanding of the results or the difficulties which arose during the first years of the project, and how they were or could be overcome.

1.3.4. The restitution meeting

On Friday, December 7th, 2018, project stakeholders were invited to the restitution of the first findings of the TE. This meeting took place at the One UN House in Monrovia, from 10:30am to 12:30pm. Participants were able to attend the presentation of the preliminary findings of the project, and to respond and ask the evaluators to answer questions or give clarification and share their point of view if necessary.

1.3.5. Iterations after the field missions with the UNDP and EPA

Several iterations and conference calls were organized after the mission in Liberia in order to discuss some issues related to the TE. This process enabled the TE team to have a final understanding of the TE after the no cost extension period.

1.3.6 Limitation

One glaring limitation to this assignment has been the replacement of government staff in the in the aftermath of last year's elections, resulting in a loss of institutional memory. Most county officials and staff in various ministries with knowledge and experience in Early Warning Systems have been replaced and the new appointees are not up to date with the design and implementation of the programme, which had implications for reliable data collection.

The road network to counties where most installations were done is of very poor quality, rendering the sites themselves almost inaccessible and creating serious challenges for the consultant visits. Two (2) site visits were nonetheless made in Grand Bassa and Margibi counties.

2. Background and context

2.1. Development context

The civil war and a long period of low investment in infrastructure have caused the Liberian hydro-meteorological services to have a limited capacity to monitor, forecast, archive, analyse, and communicate information on water resources and the climate, including the impact of extreme climate events and disasters. This situation proves to be difficult for effective development and planning for adaptation to future climate changes. Although physical data is largely lacking, a variety of changes have been perceived locally, including an increase in: i) temperature; ii) erratic rainfall patterns; iii) floods and iv) crops failures. A climate information and Early Warning System (EWS) was therefore an important part of adapting to the climate change-related impacts, as it increases the resilience to future changes in these climate/weather-related hazards.

At the end of a consultative process of several years, the National Adaptation Programme of Action to climate change (NAPA) was made public in Liberia in 2008[6]. Among the three interventions proposed in the NAPA as adaptation priorities, one focuses on "Improved monitoring of climate change: enhance adaptive capacity through the rebuilding of the national hydro-meteorological and meteorological monitoring system and improved networking for the measurement of climatic parameters". This priority was the focus of the project; the other two priorities have already been implemented through the Least Developed Countries Fund (LDCF) projects.

Following the publication of the NAPA, a project document served as the basis for the signature of a financing agreement between the Government of Liberia, the execution partner (namely, the Environmental Protection Agency (EPA)), and UNDP for both funding and implementing the project entitled "Strengthening Liberia's capability to provide climate information and services to enhance climate resilient development and adaptation to climate change".
It is also worth noting that this intervention had been developed as part of a broad multi-country programme that implements similar initiatives in at least 10 countries in Africa.

The intervention was prepared in accordance with the eligibility criteria of LDCF managed by the Global Environment Fund (GEF/C.28/18, May 12, 2006). Moreover, the project was consistent with the objectives and priorities of the LDCF. It was country-driven and well-

[6] http://unfccc.int/resource/docs/napa/lbr01.pdf

coordinated with a number of GEF and non-GEF projects in the country. In line with the LDCF guidelines, the project had been developed and is implemented using the following approaches: i) participatory; ii) learning-by-doing; iii) multi-disciplinary; iv) complementary and v) gender sensitive.
Overall, the project aimed at improving capacity related to weather, climate, and environmental data (which is sparse and not well connected in Liberia), and at assisting different economic sectors and vulnerable communities to respond to long-term changes in climate and to the short-term impacts of extreme weather events.

The limited capacity for monitoring climate and weather in Liberia was partly attributable to a shortage of appropriate and functioning infrastructure in various components of the observational network, which could also be improved by this project.

2.2. Problems that the project sought to address

The obstacles targeted by the project are listed below. These had been identified as the main problems inherent in Liberia's low capability to provide climate information and services to enhance climate resilient development and adaptation to climate change.

1. Inadequate weather and climate monitoring infrastructure, which limits data collection, analysis, and provision of timely meteorological services.
2. Limited knowledge and capacity to effectively project future climate events as a result of an acute shortage of technology and skilled human resources, as well as access to climate models and hardware.
3. Weak institutional coordination leading to limited packaging, translating, and dissemination of weather and climate information and warnings.
4. No systematic forecasting of climate hazards, analysis of risks, and timely dissemination of warnings and climate-related hazard information.
5. Lack of environmental databases for assessing the risks posed by climate variability and change.

2.3. Project description and strategy

The identification phase of the project focused on actions that could reduce the high vulnerability of populations facing extreme climate change through climate monitoring and prevention, an Early Warning System, and weather forecasting. At this stage, the project proposed to focus on the modernization of the weather forecasting system, the development of an Early Warning System, and the need to take into account the impacts of climate change at the community level and to invest in adaptive measures.

During the formulation phase, the need to strengthen capacities for climate monitoring and forecasting as well as the establishment of the Early Warning System were highlighted as a means to enhance adaptation to extreme droughts and climate change impacts. The expected results of the project were formulated along three axes:

i) Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards, and climate trends;
ii) Efficient and effective use of tailored climate, environmental, and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making;
iii) Increased awareness of the major risks associated with climate change among government actors, in the private sector, and in local communities, and use of available information when formulating development policies and strategies.

Objective:

To strengthen Liberia's climate-related monitoring capabilities, early warning systems, and information available to respond to climate shocks and to plan adaptation measures to safeguard against the risks from climate change.

Expected Outcomes:

1. Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards, and climate trends.
2. Efficient and effective use of tailored climate, environmental, and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making
3. Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.

The overall project objective was developed with two indicators to measure progress:

1. Capacity as per the capacity assessment scorecard.
2. Domestic finance committed to Meteorology Department, Hydrological Services and NDRC to monitor and warn against extreme weather and climate change.

The expected outputs and indicators for the three project outcomes were as follows:

Outcome 1. Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards, and climate trends

- **Output 1.1**. Installation of hydro-metrological weather and flow gauge stations in critical areas across the country with communications and (centralized) archiving technologies at the Meteorology Division and Hydrological Service.
- **Output 1.2**. Technical capacity of staff in the Meteorology division developed to produce daily to seasonal, seasonal to annual, and annual to multi-decadal climate

forecasts, using numerical weather prediction models, seasonal prediction models, and internationally produced forecasts.

- **Output 1.3**. Installation of satellite receivers and other infrastructure (e.g. radars) for monitoring and assessing the changing state of the environment and the impact of current and future climate on key environmental variables for planning food security, water, and land management.
- **Output 1.4**. Staff in Ministry of Land, Mines and Energy (encompassing Meteorology and Hydrology) trained in the use of climate monitoring equipment, tailored forecasts of climate hazards, and use of satellite monitoring for assessing crop production, water resources, wildfires, etc.

The following indicators have been developed:

1. Percentage of national coverage of climate monitoring network (fully operational).
2. Frequency of data transmission and reception.
3. Number of sector-specific, tailored climate information packages produced using improved information.

Outcome 2. Efficient and effective use of tailored climate, environmental, and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making

- **Output 2.1.** Systems and communication with the National Disaster Relief Commission are enabled to use the forecasts (from 1.2), environmental monitoring data (from 1.3), tailored forecasts (from 1.4) and current vulnerability assessments, to forecast where climate-induced risks are high.
- **Output 2.2**. Communication channels for issuing warnings (through both governmental and non-governmental agencies) are enabled (e.g. radio, mobile phones, television, etc.), as well as the procedures and legal basis for the issuing of warnings.
- **Output 2.3.** Three applications of the early warning system (e.g. coastal, agriculture, floods, health, etc.) are identified and outputs from 2.1 and 2.2 are tested for their effectiveness.

The following indicators have been developed:

1. Number of communication channels operational to disseminate climate-related early warnings.
2. Percentage of population within the two target districts with access to improved climate-related flood, storm, and coastal surge warnings (disaggregated by gender).

Outcome 3. Increased awareness in government, private sector, and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.

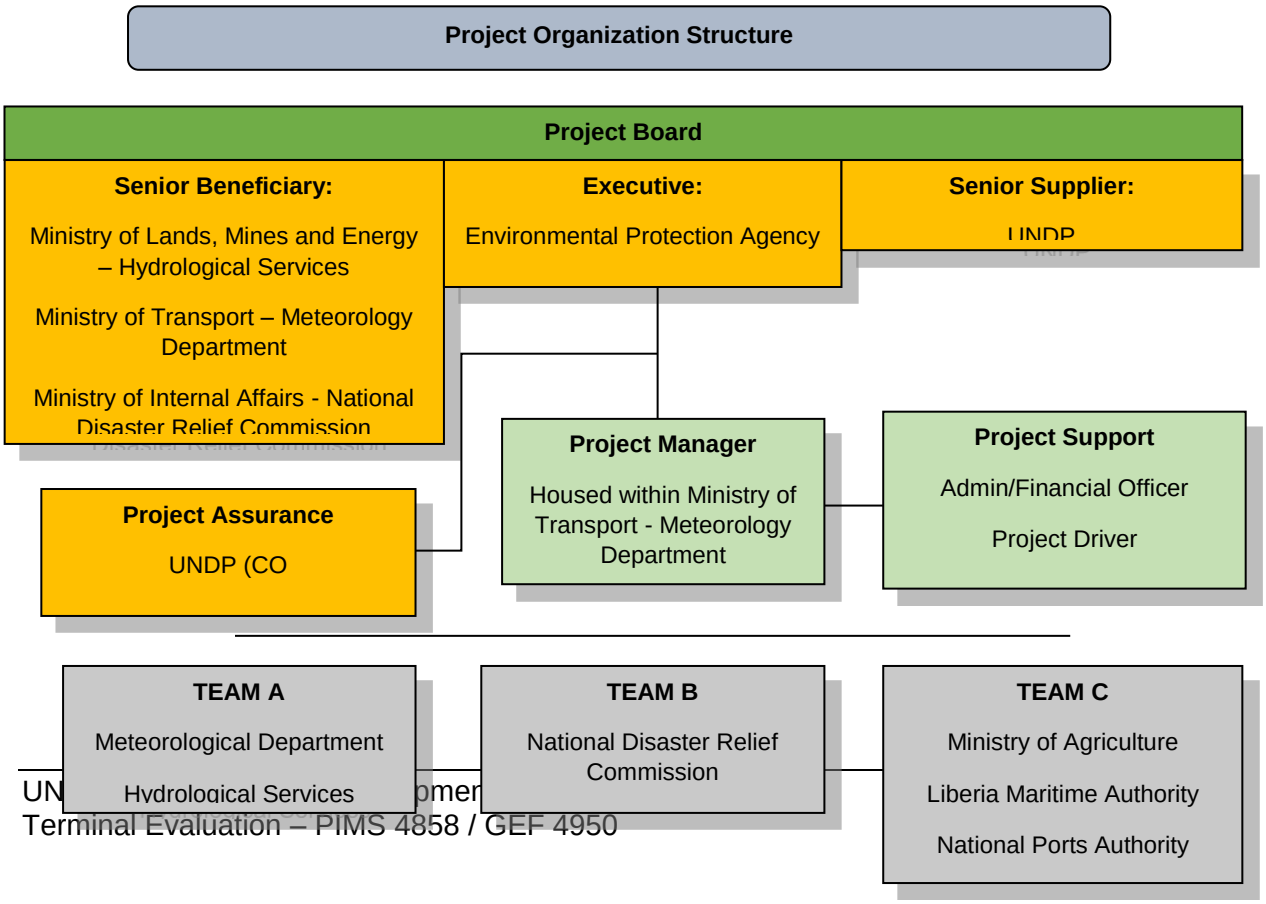
- **Output 3.1.** Regional climate change scenarios are developed for Liberia and used to enable the identification of "hotspots" where climate change is expected to have high biophysical impacts.
- **Output 3.2**. Adaptation options for the most vulnerable communities and livelihoods are made available to communities in light of projected climate change and current vulnerabilities.
- **Output 3.3** A system for inter-ministerial dialogue on incorporating climate change considerations into government policies is established as well as a mechanism for discussing public and private financing of the EWS system.
- Output 3.4 Engagement of the private sector to develop paid-for services through the early warning system and climate change adaptation options.

The following indicator has been developed:

1. Number of development frameworks that integrate climate information in the formulation.

2.4. Project implementation arrangements

The organizational chart below shows the structure of the project.



The Environmental Protection Agency (EPA) functioned as the Implementing Partner (IP) for this project, based on the decision by the government that the EPA should function as the IP for all of UNDP projects within the Energy and Environment Unit for the Programme Period. The Meteorological Department at the Ministry of Transport (MoT) functioned as the lead Responsible Partner (RP), was responsible and held accountable for managing the LDCF project on a day-to-day basis as per UNDP's National Implementation Modality (NIM) procedures.

The decision for the project to follow a NIM procedure was the formal decision made during the formulation stage; however, in practice, the project was developed following a Direct Implementation Modality (DIM) procedure. The NIM is generally applied when there is adequate capacity within the government to carry out the functions and activities of a given project. In this case, the UNDP is responsible for assessing this capacity in the phase of project formulation and one government entity is selected as the Implementing Partner. In contrast, in the DIM procedure, UNDP takes on the role of Implementing Partner and therefore has the technical and administrative capacity to assume the responsibility for effectively mobilizing and applying the required inputs in order to reach the expected outputs. UNDP assumes overall management responsibility and accountability for project implementation. Accordingly, UNDP must follow all policies and procedures established for its own operations.

2.5. Project timing and milestones

At the launch of the project, all stakeholders demonstrated strong engagement in making recommendations with respect to the roles and responsibilities of each key partner in the project, based on the project logical framework, monitoring and evaluation, and major activities planned for the end of 2017. A Project Management Team (PMT) was also established. The Project Board should have been supported by the following roles:

(a) **The Project Assurance**, whose role was to support the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. UNDP-GEF and the UNDP Liberia CO should have provided Project Assurance to the Project Board for the LDCF project.
(b) **The Project Manager**, who had the authority to run the project on a day-to-day basis within the constraints laid down by the Project Board. The Project Manager's prime responsibility was to ensure that the project produces the results specified in the Project Document, to the required standard of quality and within the specified constraints of time and cost. In general, the Project Manager should be selected by the Project Board, and should have skills relevant to the project as a whole (i.e., not only meteorology). The Project Manager should be based within the MoT (Meteorological Division) until the NMA is established, and thereafter should be based within the NMA.

(c) **The Project Support** role was to provide project administration, management, and technical support to the Project Manager. Generally, Project Support should be provided by an Administrative/Financial Assistant and Project Driver recruited through the LDCF project. The UNDP CO should provide further Project Support through a set of support services for the activities of the project (see UNDP Support Services, below).

The Project Manager was supported by teams of Responsible Parties, including MLME, NDRC, MoA, LMA, NPA, MoH and MoPEA. The RPs and key responsibilities are shown for each output in Section 2.9. The IP and RPs played a substantial role in designing the activities for the LDCF project and were involved in the consultations described in "Stakeholder baseline analysis" in Section 2.2. In particular, the Project Manager collaborated with the Project Managers of the other two LDCF projects which were implemented in Liberia to ensure synergies between the projects. The management structure sought to establish a bridge between: i) national authorities responsible for formulating and integrating climate change policies; ii) national, regional, and local authorities responsible for project implementation; and iii) on-the-ground practitioners of climate information management and disaster risk reduction. Continuous monitoring of project progress at all levels was intended to ensure the project activities were always aligned with project goals.

NOTE: The annual work plan developed with the project document is as follows:

Outcome	Output	2013				2014				2015				2016				2017			
Outcome 1: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards, and climate trends.	**Output 1.1** Procurement and installation of 11 AWSs and 6 automatic hydrometric stations, including all associated infrastructure, in critical areas across the country, and rehabilitation of 1 automatic and 1 manual meteorological monitoring station, including communications and centralised archiving technologies.																				
	Output 1.2 Technical capacities of staff in Meteorology Department developed to produce standard and customized weather and climate forecasts and packaging meteorological data and information into a suitable format for user agencies and local community end-users.																				
	Output 1.3 Weather and climate forecasting systems enabled through procuring and installing the required equipment, and through integrating of satellite observations for monitoring and assessing the changing state of the environment and the impact of current and future climate on key environmental variables.																				
	Output 1.4 Staff in MLME, MoA, NDRC, EPA, MoH, LMA, NPA and MoPEA trained to use information from meteorological, hydro-meteorological and satellite monitoring equipment to tailor forecasts for climate-related hazards specific to the respective sectors.																				
Outcome 2: Efficient and effective use of tailored climate, environmental, and socio-economic data to	**Output 2.1** Systems and communication with the NDRC are developed to use hydrological, weather, climate and environmental monitoring data and existing vulnerability assessments to identify areas of high vulnerability to climate change.																				
	Output 2.2 Communication channels, SOPs and legal mandates developed for disseminating climate information and issuing warnings through government institutions and NGOs.																				

produce appropriate information which can be communicated to government entities and communities to enable informed decision-making.	**Output 2.3** Two applications – agricultural and coastal – of the EWS implemented and tested for their effectiveness.																				
Outcome 3: Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies	**Output 3.1** Regional climate change scenarios developed for Liberia and used to enable the identification of 'hotspots' where climate change is expected to have severe biophysical and socio-economic impacts.																				
	Output 3.2 Adaptation options (including EWS-related options) developed for the most vulnerable sectors and local communities based on the identified climate change 'hotspots'.																				
	Output 3.3 A system established for inter-ministerial dialogue on incorporating climate change considerations into government policies and strategies.																				
	Output 3.4 Engagement of the private sector to develop paid-for meteorological and hydrological services, including a mechanism for discussing public and private financing for supporting the generation of climate information and early warnings.																				

Main stakeholders

A list of the key stakeholders involved in the project can be found in the annexes to this evaluation. The list shows the relevant partners and stakeholders for each project outcome and output.

3. Project Evaluation

3.1. Project strategy

Project Design

In this part, the design of the project as outlined in the Project Document is analyzed in order to identify whether the strategy is proving to be effective in reaching the desired results.

Several projects in Liberia and similar initiatives were considered during the designing of the project and its components. Furthermore, the design is based on country ownership, country eligibility and is country driven with relevant national initiatives and frameworks taken into account.

During the project formulation, extensive multilateral stakeholder consultations in the project zones took place. These consultations have ensured that the proposed project is grounded in local realities whilst being aligned to national policy and a stakeholder involvement plan provided a framework to guide interaction between implementing partners and the key stakeholders during the process. The topic of gender was also regarded through stakeholders concerned with promoting the involvement of women during project development and implementation.

An Environmental and Social Screening Procedure (ESSP) was undertaken, but the outcome revealed that further review and management was essential. Also, it was highlighted, that due to the construction and installation of hydro-meteorological equipment, minor environmental impacts are likely because of the displacement of soil or infrastructure. In order to not infringe on cultural or ecological assets, negotiations with the landowners were foreseen regarding the location of the stations. Regarding social impact, the result was net positive, since the project's objective intended to contribute to the reduction and vulnerability of the local communities to climate change impacts.

In addition to that, a detailed risk analysis and consideration of alternatives had been carried out. Yet, it is imperative to mention that the Ebola Virus Disease in Liberia and its impacts pose unforeseen difficulty and had considerable consequence for the timely implementation of the project.

Nevertheless, due to extensive stakeholder consultations and the assured alignment to other initiatives, the project document, its strategy and design can be analyzed as well adapted to the country's EWS development needs.

Results framework / logframe

The logical framework was structured along the general objective, and declined into specific objectives. The evaluation team analyzed each specific objective and planned intervention further below.

When analyzing whether the proposed indicators are relevant and can be evaluated as SMART (specific, measurable, achievable, relevant and time-bound), the following can be said: the consultants consider them as specific, measurable, relevant and time-bound, and in line with the project objective. However, the achievability of the indicators and end of project

targets is questionable, as, after currently 5 years of project implementation, several outputs have not been achieved and are still far off from being fully implemented (please look below in the chapter “Findings” for more details on the implementation).

The projects and its framework support national development goals and plans to achieve international development goals. More precisely, the Millennium Development Goals (MDGs) 1, 3, 6 and 7 have been integrated (MDG 1: Eradicate extreme poverty and hunger, MDG 3: Promote gender equality and women empowerment, MDG 6: Fight malaria, HIV/AIDS, and other diseases, MDG 7: Ensure environmental sustainability).

3.1.1. Indicators

Indicators put in place to achieve the project goals

Within the logical framework, Objectively Verifiable Indicators (OVI) were proposed. Their relevance is analyzed. The logical framework proposes a cross-cutting indicator in order to assess the attainment of the project’s objective as follows:-

- Assess the relevance of the project;
- Assess the efficiency and effectiveness of the project in achieving its intended results;
- Identify the strengths and weaknesses of the project execution;
- Assess the impacts of the project regarding the initial objectives
- Evaluate the results achieved by the project and their visibility;
- Assess the sustainability of outputs as contributions to medium and long-term outcomes;
- Assess if the project is successfully mainstreaming other UNDP priorities such as (gender equality & Human rights, etc.)
- Identify Challenges, lessons learnt and best practices that could be applied to future and on-going projects and;
- Provide recommendations.

A necessary prudence when interpreting indicators, and some may not be achievable

Globally speaking and based on a SMART analysis, the indicators are relevant. They clearly show all aspects to consider in order to measure the progress made. They describe a specific future condition with the project, when compared to a business as usual scenario, they are measurable and not open-ended. However, some formulations in the indicator title could still be rephrased or seem too ambitious, as explained on the previous page. However, since a MTR of this project was not conducted, an adjustment of some indicators could not be done.

3.2. Assumptions and risks

3.2.1. Assumptions

Confrontation of the hypothesis at the design phase of the project and related risks

At the time of the project design, several assumptions were made. It was assumed that:

- Training opportunities provided through the LDCF project result in the development of the required capacity, and the government provides the necessary budget to provide the required institutional framework in which the newly skilled staff can operate.
- The management arrangements established through the LDCF project result in a coordinated approach to implementing the project.
- GoL commitment established during the design phase of the LDCF project is maintained for the project duration.
- Climate change adaptation considerations are included in development framework formulation, based on advancements in climate information and forecasting achieved through the LDCF project.
- Baseline projects are implemented according to the timeline identified in the design phase of the LDCF project, and achieve the desired outcomes and objectives.
- Communities living in proximity to installed hydro-meteorological equipment commit to taking active measures to prevent the equipment from being vandalized; and the equipment is adequately maintained by the responsible institution.
- Any climate shocks occurring whilst the EWSs are being established should not be so severe as to result in a relocation of the communities where the effectiveness of the EWSs should be tested, or to irreparably damage hydro-meteorological equipment.
- Information technologies and telecommunications systems implemented or used through the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.
- UNDP CO and HQ should co-ordinate with the IP to ensure effective administrative planning and the timely procurement and installation of equipment.
- Awareness-raising activities and the demonstration of the advantages of responding to the information provided through the established EWS will ensure the commitment of the communities participating in the LDCF project.

These assumptions were made in 2013 taking into account the fact that there might be some problems at these levels[7]. The TE has provided the best the opportunity to study the situation, for example the risks identified at the start, and where the project stands at the end. Unfortunately, the exercise is uneasy, due to the long period between project formulation and Technical Evaluation.

3.2.1. Risks

Numbers of risks were forecasted at the beginning of the project based on the initial risk analysis, risks can become critical when the impact and probability are high.
Several risks were detected mostly on the sustainability and the M&E of the project, which decreased or will decrease the efficiency of the project:

[7] Annex 1 of the project document lists the potential risks.

1) Human, technical capacity within MoT particularly, as well as MLME, NDRC, MoA and EPA, including within extension service providers and decentralized offices, is insufficient to effectively implement the LDCF project.
2) Poor coordination between IP (EPA), RPs (MoT, MLME, NDRC, MoA and EPA) and UNDP CO results in institutional failure, compartmentalized progress and delayed implementation of the LDCF project.
3) Insufficient institutional support and political commitments from the GoL leads to a decrease in the political will ensured during project design, ultimately destabilizing the LDCF project.
4) The slow pace of policy modification means that identified development frameworks do not integrate climate change in a timely fashion.
5) Delayed implementation of baseline projects by the government and donors negatively affects LDCF project outcomes.
6) Installed hydro-meteorological equipment fails because it is vandalized and/or not maintained.
7) Climate shocks occurring during the design and implementation phase of the LDCF project result in disruptions to installed equipment and severely affect communities, prior to the EWSs being established.
8) Local information technology and telecommunications infrastructure restricts the transfer of data from installed equipment to necessary recipients, and restricts communication amongst key role players and end-users.
9) Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national cumbersome procurement procedures.
10) Lack of commitment from communities where EWS are established undermines the effectiveness of the LDCF project demonstrations.

After the Terminal Evaluation, most of the risks were shown during this period, and brought negative influence to the project's efficiency and development. These risks should be taken seriously and be treated appropriately in Liberian's future development.

3.3. Progress towards results

This section presents the level of implementation of the project for each objective from the project document, and progress on each indicator chosen to monitor the project. Therefore, the first step represents progress towards results in the Result Matrix outlining the implementation rate of the activities and analysing thereinafter the indicators for each project component. Difficulties encountered are detailed for each objective, accompanied by recommendations to overcome them.

The Project progress is analyzed in detail relative to the indicators, and a list of the difficulties and recommendations identified for each project outcome can be found in the *Project Result Matrix–Annex 7*.

3.3.1. Outcome 1: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards, and climate trends.

Achievements

After four years of implementation with acceptable gains, the project has satisfactorily delivered on the majority of the outputs within the planned budget and time frame. Achievement against project outputs under all the four components are as follows:

Output 1.1 Procurement and installation of 11 AWSs and 6 automatic hydrometric stations, including all associated infrastructure, in critical areas across the country, and rehabilitation of 1 automatic and 1 manual meteorological monitoring station, including communications and centralized archiving technologies.

Under Outcome 1, A modern and fully functional EWS was only partly put in place; the functional elements are already delivering weather information. The system comprises of 11 automatic weather stations procured and installed on Cellcom telephone company towers across the country. This equipment has been generating weather information for the past year and a half. This exercise climaxed with the launch of the newly developed weather site of the Ministry of Transport. Broadcast of the weather information will enable local farmers as well as other users, to make informed decisions with regard to their weather- and climate-related livelihood activities. A website was supposed to be established to provide weather data for thirty (30) major cities around Liberia making use of the information generated from the eleven automatic weather stations installed on Cellcom towers. This website was supposed to provide an hourly and ten-day forecast of temperature, humidity, wind direction and speed, and dew point. This website is not functional yet.

All sites for the installation of this equipment were identified and mapped out by the MoT. The Project Team, in cooperation with technical staff of the Ministries of Transport and Lands, Mines and Energy, completed an equipment listing and a specification for the international tender bid (ITB) which was issued by UNDP. An initial meeting was held with the NVE (Norwegian Project), and the Liberia Hydrological Service (LHS), which planned a field mission that identified possible sites for the hydrological observation stations of the EWS Project. An integrated Water Resource Management system was developed. The development stages were thus completed and a dummy of the software was produced for

training purposes. Final works are being carried out for the finalization of the system, which will be formally launched in March 2019.

Output 1.2: Technical capacities of staff in the Meteorology Department developed to produce standard and customized weather and climate forecasts and packaging meteorological data and information into a suitable format for user agencies and local community end-users.

Capacity Building and requisite training was provided by the project in collaboration with the Nigerian Meteorological Service (NIMET) for 27 staff members consisting of meteorologists, hydrologists, observers, instrument technicians, and officers from various institutions sent to Nigeria for 3–12 months. Courses included Aviation Meteorology, Climatology, Agro-meteorology, Meteorological Database Management, and Instrumentation. The courses were completed in September 2017; as a result, these staff members now have the capacity of analysing and forecasting all hydro-meteorological data generated by the automatic weather stations as well as publishing weather information to the public. The staff members are currently assigned to the different National Meteorological Stations.

Two (2) staff members of the Ministry of Transport also benefitted from training in 2017. The training course Financial Management of Donor-Funded Projects was offered to Finance and Administrative Officers in 2016 in Lusaka, Zambia and Manzini, Swaziland. The training equipped them with technical expertise on how to extract data and analyse them.

In August 2018, the National Climate Change Secretariat (NCCS) collaborated with the Ministry of Transport (MOT) and conducted a National & Regional Stakeholder awareness workshop on Early Warning Systems in Bomi County. This training provided information on the relevance, services, and benefits of sustaining the EWS. The event included a technical presentation, group discussions, questionnaires, and solicitation of views/feedback from participants; overall, it provided an opportunity for stakeholders to increase their knowledgeable of efforts made to address impacts of and vulnerability to climate change.

Output 1.3: Weather and climate forecasting systems enabled through procuring and installing the required equipment and through integrating of satellite observations for monitoring and assessing the changing state of the environment and the impact of current and future climate on key environmental variables.

This required the identification of specific sites for national meteorological centres in four (4) counties, namely: Grand Bassa, Bomi, Bong, and Montserrado. Currently, the building housing the Roberts International Airport Meteorological Department is being renovated as a result of a Memorandum of Understanding signed between RIA Management and the Ministry of Transport. It aimed to provide a more efficient strategy or work plan for the identification of the sites for the national meteorological centres.

The National Disaster Management Agency, in partnership with the Ministry of Internal Affairs and the Liberia Institute for Geo-Information Service (LIGIS), prepared and completed a national vulnerability map for ten counties in Liberia. This map is intended to help inform both the NDMA and the EWS about hot zones in Liberia in order to provide warnings with regard to climate vulnerability. The NDMA also conducted an awareness workshop with county superintendents and district commissioners on the activities of the Early Warning System in Maryland County.

<u>Indicators</u>

The most representative indicators of improved capacities are those related to Output 1. Indicators show the national coverage of the climate monitoring network (fully operational).

Table 4: State of indicators corresponding to outcome 1

Indicators	Baseline value	Target value at the end of project	Current state (end of 2018)
1. Percentage of national coverage of climate monitoring network (fully operational)	AWS: 0% Hydrometric stations: 0%	AWS: 100% (at least 9 AWSs). Hydrometric: 100% (at least 6 stations).	AWS: 100% Hydrometric stations: 0%
2. Frequency data transmission	At the beginning, one AWS transmits data at the synoptic hours of (GMT) 06h00, 09h00, 12h00, 15h00, 18h00 and 00h00, although not consistently.	18 AWSs and hydrometric stations (11 new AWSs, 1 rehabilitated AWS, 6 hydrometric stations), transmitting continuously.	Up to December 2018, 20 AWSs were installed and the rest will be installed in early 2019. The website provides hourly temperature data.
3.Number of sector-specific, tailored climate information packages produced using improved information	At the beginning, the only sector-specific information produced was for the aviation sector.	Sector-specific, tailored climate information packages produced for three of the following sectors: agriculture, water, aviation, fisheries/coastal water users, health, tourism, construction, and energy, and road, rail and sea transport.	Sector-specific, tailored climate information packages produced for following sectors: agriculture, water, aviation, tourism, health.

Difficulties

There have been slight delays in answering queries from the PSU since they need to be sent to the CIRDA Technical Team and responses, fed back from UNDP/PSU for procurement. In addition, responses from colleagues in Nigeria were not as prompt as anticipated; they needed to await response prior to undertaking the trip, including the finalization of arrangement modalities for the hydrological training. Installation was particularly difficult due to the heavy rainy season. As a result, renovation delays may result in delays for the installation of further equipment necessary for the publication of HydroMet information.

The difficult choice of the scale

The results of Outcome 1 should take into account local geographical and socio-economic

characteristics in the implementation of the different activities, and enable appropriate agro-meteorological predictions. This appears to be better suited at a local scale and therefore more effective. From the evaluation, it seems the data are used mostly by local beneficiaries (i.e. farmers), rather than at national level for planning purposes.

In terms of the sustainability of the project, it is unlikely that activities will be coordinated after the end of the project, both at the local and the national level. However, it is important to highlight that developing a national policy framework in order to deal with climate change (e.g. a National Climate Change Strategy) is critical to increase the institutional capacity of the country. Currently, there is no such focus. However, adopting this process at the national level would ensure long-term sustainability for the project by enabling pilot sites to increase their activities and replicating them in the country. This is critical for the effective up-scaling of the project activities.

Lessons learnt

Initial capacity building of technical staff

Initially, no capacity building of technical expertise was undertaken to ensure future results. In the absence of expertise in-country at inception of the project, outsourcing became the hallmark. It required two years to build minimum capacity; this capacity building work was undertaken towards the end of the project.

There was an absence of an established database and trained media experts in country to create awareness and sensitization towards the project.

A functioning EWS still to be proven

As described in the Project Document, activities such as putting in place early warning, rapid alert systems, and localized weather reports, as well as mapping vulnerable areas, remain essential for the development of disaster risks reduction strategies. This concerns both awareness raising and eventual climate disaster prevention. The most vulnerable areas are those populated by low-income households, which lack information – a key area in which the project adds, and should continue to add, value.

Lack of integration of local actions at national level

At the national level, it is necessary to capitalize upon the project gains at the local level, in view of replicating project outcomes in other vulnerable areas not covered by this project. This requires a flow of information from local communities to the governmental level, (NDMA, etc.). Capitalizing upon and sharing activities undertaken at the local level is necessary to ensure sustainability. This could be enhanced by providing instructions and recommendations to communities.

Maximum use of the tools such as NAPS

Institutional capacities involve a legislative framework for adaptation to climate change. In the longer term, it is necessary to pursue the development and implementation of regulatory tools on adaptation to climate change. So far, at the national level, the main document on adaptation is the NAPA, but it would be logical to strengthen national institutions, for instance

by starting a National Adaption Plan (NAP)[8] process.

3.3.2. Outcome 2: Efficient and effective use of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making.

Achievements

Output 2.2: Communication channels, SOPs and legal mandates developed for disseminating climate information and issuing warnings through government institutions and NGOs.

In 2018, a Media Training Workshop was held for eleven community radio stations from seven counties in Liberia, namely: Grand Bassa, Sinoe, Rivercess, Grand Kru, Maryland, River Gee, and Grand Gedeh Counties. These stations received training for the purpose of enhancing their ability to surf the newly developed websites and to be able to professionally give daily weather forecasts based on information generated by the automatic weather stations installed around the country. The idea of carrying out this activity at this stage of the project was to ensure that the public is adequately and/or fully aware of the type of information being generated on a daily basis. Immediately after the training, the Ministry of Transport launched the new weather website where media institutions will be able to log on for weather forecasting. The training was conducted at Harper City Hall, Harper City, Maryland. At the end of the training, local journalists were given training on reporting weather data as well as being made aware of the various means through which information can be gathered.

During another training in Nimba Country, MoT & NDMA trained offcers fron the local facilities on the traditional method for the dissemination of weather and climate hazards. Participants came from 7 counties: Grand Kru, Maryland, Rivergee, Grand Gedeh, Nimba, Bong, and Lofa Counties. The other training workshop was held in Buchanan, Grand Bassa county, and included chiefs from Sinoe, Grand Bassa, Monserrado, Margibi, Bomi, and Grand Capemount counties. The local stakeholders were trained in traditional methods of information dissemination, how is climate information obtained and distributed.

Indicators

These indicators indicate the ways in which the project has impacted the population through several dissemination channels.

Table 5: State of indicators corresponding to outcome 2

Indicators	Baseline value	Target value at the end of project	Current state (end of 2018)

[8] http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php

4. Number of communication channels operational to disseminate climate-related early warnings	At the beginning, information was relayed to communities mostly via word-of-mouth, but without the structure of SOPs.	At least 3 of the following: radio, television, print media (newspapers, flyers), word-of-mouth, and mobile phone communication channels operational.	The MoT launched a new weather website. 102 community and national radio stations were trained on climate information dissemination. Local stakeholders were trained in traditional methods of information dissemination.
5. Percentage of population in within the two target districts with access to improved climate-related flood, storm, and coastal surge warnings (disaggregated by gender)	0% of men; 0 % of women.	50 % of men; 50 % of women.	In project staff level, 5 females and 20 males from the Liberia Hydrological Service were trained.

Difficulties

Initial underestimation of certain costs

The major difficulty for this outcome is related to the first output. During the design phase, the costs of some feasibility studies, as well as some construction, were underestimated. In essence, there are high financial risks related to such investment, and the project had to deal with initial underestimation of the costs related to this output, while expectations from the Government of Liberia were high.

The decision to deal with these circumstances was very difficult to make, as it consisted of deciding between abandoning some of the activities for which the costs were not properly assessed, or moving forward considering that there would be inefficiencies and financial gaps. As the first output can be seen as the fundamental part of this part, so the decision was made to moving forward, and at the same time some activities were being abandoned.

Lessons learnt

Adaptation must be seen as a lever to fight poverty. To this end, training and seminars can be organized to strengthen economic expertise on this subject.

Initiate the development of a national strategy for adaptation to climate change

A climate change strategy should be clearly defined, thus providing more visibility to donors. It would result in greater efficiency in the use of financial resources and a framework that encourages donors to allocate more funds for adaptation and mitigation projects. Currently, the project's management does not have plans to develop such a strategy. However, it would be beneficial to sensitize the national authorities to such a strategy in order to initiate some preliminary thoughts on its rationale for contributing to the scaling-up of the project results.

Build Synergies among similar E & E projects

Synergies between the different funded Energy & Environment projects can be built in order to collaborate, coordinate and increase the efficiency of investment.

3.3.3. Outcome 3. Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.

Achievements

Output 3.3: A system is established for inter-ministerial dialogue on incorporating climate change considerations into government policies and strategies.

MoT, EPA, and MIA held training workshops for local governance structures driving the need for climate information in development planning emanating from the local government level. In addition, an inter-ministerial dialogue was spearheaded by the National Climate Change Secretariat about how to get the government involved in using climate information for decision-making processes in Liberia.

Recruitment was completed for a National Coordinator, NCCS based at the EPA and supported by the EWS Project for the four year project lifespan. The recruitment process was done jointly with the EPA, UNDP, MoT, MIA, and MLME. A National Climate Change Secretariat (NCCS) based at the Environmental Protection Agency (EPA) was fully supported by the EWS Project for a period of another year covering the period under review. The EWS contribution was made to the EPA (GEF/LDCF Project is required to contribute funding to the Energy and Environment Project Coordination/Support Office at the EPA).

Indicators

These indicators indicate how the project will impact the government, private sector, and local communities through various dissemination channels.

Table 6: State of indicators corresponding to outcome 3

Indicators	Baseline value	Target value at the end of project	Current state (end of 2018)
6. Development frameworks that integrate climate information in the formulation	**The Agenda for Transformation** (2012-2017) highlights the need to develop climate change mainstreaming and response strategies, but not the need for improved information to inform the strategies.	At least **updated** Agenda for Transformation (to be revised in 2017) to incorporate the availability of	No data available

		climate information into planning for the five year period.	

Difficulties

Difficult to sensitize population: low project visibility

In Liberia, relatively few people are aware of vulnerability to climate change and possible adaptation responses. This is a key part of the rationale of the project; however, it is difficult to sensitize the population on climate change issues, since often their priorities are of a much shorter-term nature given their limited incomes, even for such basic products such as food. It is therefore difficult to make sure these vulnerable populations consider adopting adaptive practices as a priority. As a result, it is important to respond to their short-term needs while preparing these populations for long-term changes.

Fragmented, inconsistent, and missing information

Weather and climate information can take a variety different forms, from weather forecasts disseminated to the population to sophisticated models for research purposes. Taking into account the importance of all possible information uses (awareness raising, decision making, research, etc.), it is worth noting that such varied uses requires rationalizing data management. The difficulty is less about spreading information than reflecting upon and working on the project meta-data, compatibility of data collected, or information storage. Such efforts should be launched so as not to compromise other data uses.

Difficulties also exist relative to collecting and documenting project lessons learned, experiences, and achievements, and then using these to inform the policy development process by capitalizing on the project experiences and results. It is therefore important to build capacities regarding a national expertise to **collect, compile, and analyze** the data.

Lessons learnt

Enhancing the visibility of such a project in the future for better information uses

Efforts must continue in order to enhance the visibility and the impact of the project. Current ongoing workshops should contribute to this; in addition, a communication officer could support these activities.

Organize data access

Measuring data to inform indicators should be done homogeneously across the country or the concerned areas. Data may already be grouped to form a database that will be used during the dissemination of information in the second part of the project. Issues with Earth Networks in the US are still pending, as the data maintenance contract needs to be transmitted from UNDP to the MoT[9]

[9] https://www.earthnetworks.com/

3.4. Project implementation

3.4.1. Implementation Arrangement

It was originally planned to have a NIM procedure, but it practices, with the PSU in Denmark managing the project (in terms of procurement), the implementation arrangement were close to a DIM procedure.

3.4.2. Finance/co-finance

The evaluation team has established that the project was initially designed to cover a four-year period ranging from 2013–2017, but currently has an extended operational period of five (5) years up to and including 2018. Accordingly, in 2018, a no-cost extension was requested as a result of the Ebola crises that affected its operations, plus outstanding procurement activities which necessitated the request for the no-cost extension. The summary of funds reflects an initial total project cost of **US$17,929,700** as per **Table 8-C** (below) representing total committed donor funding. However, of this total amount, **only total GEF funding of US$6,070,000 and UNDP funding of US$200,000 (highlighted) was allocated and received for the EWS project implementation, leaving a funding gap of US$11,659,700 due to non-commitment on the part of the other donors.** The project has 3 outcomes and outputs areas respectively with each reflecting at least 4 major activity levels.

According to the resource table below, resources mobilized by GEF/LCDF for the project to date reflects a total approved project budget of US$6,070,000.00 **(Table 8-A).** Currently, the resources utilized stands at US$3,899,292.1, representing 64% of the total approved budget. The unspent amount of US$2,170,707.29 represents 36% of the approved budget. Average accumulative delivery is 89% as a result of 100% plus delivery in excess of budgetary allotment as reflected in expenditure delivery summary (**Table 8-B).** It is worth noting that, with absorption of the huge unspent amount via the procurement of the hydrological equipment (already in process), a major component needed for smooth implementation of the project along with the completion of all activities in the AWP that have commenced and are in advanced stages of completion at the end of this evaluation period, delivery rate will definitely increase and the project should experience the much needed and expected satisfactory performance.

Resource Table 8 (C): Summary of funds

Donor (s)	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total (US$)
GEF	1,541,600	2,237,950	1,521,100	769,350	6,070,000
NVE	1,345,000	1,345,000	-0-	-0-	2,690,000
AFDB	578,268	578,268	578,268	578,268	2,313,072
WMO	172,800	172,800	172,800	172,800	691,200
GOL	1,491,357	1,491,357	1,491,357	1,491,357	5,965,428
UNDP	50,000	50,000	50,000	50,000	200,000
TOTAL	**51,79,025**	**58,75,375**	**38,13,525**	**3,061,775**	**17,929,700**

RESOURCE TABLE – 8 (A) *Project Budget*

EWS CURRENT PROJECT BUDGET STATUS								
	Year							
Fund	2014	2015	2016	2017	2018	Grand Total	Prodoc Budget	Available Bal.
62160	210,370.73	16,576.24	194,830.86	172,941.36	218,825.59	813,544.78	2,513,000.00	1,699,455.22
62160		35,831.46	418,434.10	1,060,177.55	170,578.83	1,685,021.94	2,323,500.00	638,478.06
62160	21,477.13	33,477.86	283,056.58	230,700.21	380,546.18	949,257.96	930,000.00	(19,257.96)
62160	15,645.69	208,513.69	176,938.11	42,934.90	7,435.64	451,468.03	303,500.00	(147,968.03)
	247,493.55	**294,399.25**	**1,073,259.65**	**1,506,754.02**	**777,386.24**	**3,899,292.71**	**6,070,000.00**	**2,170,707.29**

Resource Table - 8 (B) *Expenditure Delivery Summary*

Activity	Year	AWP/Allocation (USD)	Approved Budget (USD)	Total Utilized (USD)	Unspent Balance (USD)	(%) Utilization (Delivery)
1	2014	247,493.55	2,513,000.00	813,544.78	1,699,455.22	32.4
2	2015	294,399.25	2,323,500.00	1,685,021.94	638,478.06	73.0
3	2016	1,073,259.65	930,000.00	949,257.96	(19,257.96)	102.0
4	2017	1,506,754.02	303,500.00	451,468.03	(147,968.03)	149.0
	2018	777,386.24		64%	36% Unspent	
Grand Total (USD)		**3,899,292.71**	**6,070,000.00**	**3,899,292.71**	**2,170,707.29**	***Average Cumulative Delivery***

3.4.3. IA and EA execution

Globally speaking, the management structures put in place can be evaluated as effective. Bi-annual meetings of the Steering Committee took place and supported the execution of the project.

In terms of the executing partner, the results are considered as moderately unsatisfactory. The project was executed in a complicated overall context (as a result of political instability especially as it relates to the loss of institutional memory due to the rotation of several experts in ministries, as well as the Ebola crisis) which caused various delays, owing to the fact that each new institutional team was not fully ready to willingly reclaim the project. This did not facilitate the task of the PMT, especially at the beginning of the project.

As far as the implementing partners are concerned, UNDP has faced several challenges since the launch of the project. This included difficulties in terms of the need to adapt to the implementation planning process in order to develop certain activities in a different way. In particular, the choice of having a NIM on paper and a DIM in practice made the process very complex and a serious problem. Ultimately, the final result is not satisfactory, and one lesson learnt is that it would be preferable to avoid such set-ups when possible.

3.4.4. Monitoring and evaluation

The project was monitored through the M&E activities set out in the Project Results Framework in Part III of this project document. The M&E budget table is provided in the annexe. The M&E framework is aligned with the AMAT and UNDP M&E frameworks. Overall, the M&E processes have been effective as they were supervised by the M&E Officer in the UNDP Country Office.

Additionally, quarterly work plans were developed and regular progress reports were made. The progress reports for the period under review were prepared on a quarterly basis according to schedule and made available to the consultants. Work plans were completed annually according to UNDP standard procedures. (See EWS zip folders provided by UNDP). This TE is in line with the project expectations, which mandates that at the end of the project, an independent TE will be conducted three months prior to the final Project board meeting and will be undertaken in accordance with UNDP-GEF guidance.

3.4.5. Stakeholder involvement

The PMT played a central role in the implementation of project activities, at both regional and national levels, and the MoT anticipates and/or envisages more responsibility in the future. Most of the institutional partners have demonstrated an important role and strong motivation while participating in the project implementation. This was evident and certainly the case for local entities such as MLME, MoA, EPA, MoP, etc.

3.5. Projects results

3.5.1. Relevance

Relevance examines the adequacy of the project's objectives with the specifics of the situation on which it proposes to act. In this case, it is evident that the project relevance is justified by the baseline situation of critical gaps and a dearth in the hydrological and meteorological services resulting from 14 years of war in Liberia, necessitating urgent attention for these services. The TE asserts that issues related to climate change must be addressed due to adaptation needs and communities' rapidly rising expectations. The project is further highly relevant in order to respond to Liberia's need for climate information, especially in the context of climate change adaptation, water scarcity, and food security concerns in remote areas; this point cannot be stressed enough.

(a) Are the project's objectives consistent with the policies and national strategies plus the evolving needs and priorities of the beneficiaries, partners, and stakeholders?

Liberia has very low capacity to manage climate change-related threats. Particularly, its capacity to synthesise different data on environment, climate, and socio-economic vulnerabilities is extremely limited. In this regard, the projects is consistent with the National Environmental Policy, which calls for the sustainable management of Liberia's environment and natural resources. Its objectives are consistent with national priorities, policies and national strategies according to Liberia's NAPA priority intervention number 2: "Improved monitoring of climate change: enhance adaptive capacity through the rebuilding of the national hydro-meteorological and meteorological monitoring system and improved networking for the measurement of climatic parameters". (Priorities 1 and 3 are already being implemented through LDCF projects.) This LDCF project is consistent with the urgent needs identified in the NAPA, all of which are relevant for supporting the national development goals as they related to achieving MDGs 1, 3, 6 and 7 and SDG 13.

The project document revealed that the project was consistent with some policy documents and national strategies at the time of its preparation. It was especially consistent with the country's INDC in 2015[10], the ratification of the Paris Agreement by Liberia on July 10, 2018, the SDGs, and the GCF country programme under way, but also key to national perspectives and aligns with the existing PAPD (Pillar II), and Agenda 2030[11].The UNDP recognizes the importance of preserving the environment and adapting to climate change in its sixth strategic focus. Overall consistency has been checked and found to be satisfactory during the TE review, knowing that globally, the national policies and strategies that address the issue of climate change remain rare. Concerning national policies to come, the project is already in alignment with the new PAPD (Pillar II), which establishes climate change adaptation as a major challenge.

Interviews revealed that the project's objectives are consistent with the evolving needs and priorities of the beneficiaries (communities), partners, and stakeholders in that climate risks, such as flash floods or droughts, are still major concerns and the population urban, rural, and coastal areas are suffering from the impacts of climate change. It is imperative to provide them with the means to adapt and to gain resilience to face these increasingly recurring

[10]https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Liberia/1/INDC%20Final%20Submission%20Sept%2030%202015.002.pdf

[11]http://lr.one.un.org/content/dam/unct/liberia/docs/UNDAF/0310%20%20UN%20Liberia%20UNDAF%20Road%20Map%20_%20FINAL%20(1).pdf

phenomena. Hence, the TE concludes that the project is relevant to the local and national concerns.

(b) What is the project's Contribution to sectors of agriculture and water?

The project has contributed positively to the agricultural and water sectors at the local level since early warnings and climate hazard mapping disseminated correctly and acted upon appropriately can provide economic benefits to local communities by reducing: i) losses of agricultural produce; ii) damage to infrastructure (roads and bridges); and iii) disruption to people's businesses and other income generating activities. This also has positive implications for people's health and wellbeing and thus benefits communities and social structures.

Communities at the pilot sites are already benefitting and continue to benefit through warnings related to agriculture, coastal management, water, flood management and wildfires. Many of the beneficiaries of the early warnings and climate hazard mapping are women, who comprise 50% of Liberia's population and 54% of the workforce. This is particularly relevant to the agriculture sector where women: i) make up the majority of smallholder farmers; ii) produce as much as 60% of agricultural products; iii) carry out 80% of trading activities; and iv) are most vulnerable to food insecurity.

It is worth noting that there are already several applications of the EWS that are being implemented: an agricultural application in target districts in Grand Gedeh and Bong counties, and a coastal application in target areas in Grand Cape Mount, Montserrado, and Grand Bassa counties. The former counties are those included in the LDCF agriculture project, where measures for increasing climate resilience of local agriculture are being tested, and the latter are those included in the LDCF coastal project, where adaptation measures to protect against sea level rise, storms, sea-surges, and coastal flooding are being tested.

Although the LDCF project has introduced agricultural EWS interventions to target districts in these above counties, improved climate and weather information and timely dissemination of local-level early warnings benefits the entire population of the target county by protecting the agriculture sector from the climate change impact, to gain a higher production of crops, reduce the losses of the agriculture sector in climate change hazard, and ensure the food security for local populations. Based on Liberia's 2008 National Population and Housing Census6, the total populations of Bong and Grand Gedeh counties are 333,481 and 125,258 respectively, representing 10% and 4% of Liberia's total population, respectively. Women comprise 50.6% and 48.1% of the population of these countries, respectively.

Considering the coastal EWS interventions, the total populations of Montserrado, Grand Bassa and Grand Cape Mount counties which will benefit from the interventions are estimated to be 1,118,241; 221,693; and 127,076 respectively, representing 32%, 6% and 4% of Liberia's total population. Women comprise 50.8%, 50% and 48.3% of the population of these countries, respectively.

The integration of adaptation of water resources to climate change in public policies must be strengthened. If the project is extended, it should deliver policy-related interventions, which will hopefully enable the achievement of this objective. Similarly, the thematic strategies not specifically focused on climate and water resources must always take into

account the Common Country Assessment (CCA) and make it more visible in policy documents, otherwise such strategies will be useless with regard to climate change. Therefore, it is advisable to continue raising awareness and capacity building for relevant ministries to improve the consideration of EWS as it relates to the CCA in decision-making.

(c) What is the project's contribution to regional initiatives, e.g. financing CC at the local level?

The project contributes to regional initiatives by strengthening ties and collaboration between regional stakeholders, thereby benefitting individual projects by sharing relevant data and information packages (for example, in the case of shared watersheds and river systems). Stakeholders in Liberia who have and can benefit from participating in regionally-aligned training and workshops include MoT, MLME, MoA, NDRC, EPA, MoH, LMA, NPA, and MoPEA. Relevant national sector policies, strategies, and plans which have and will still continue to be strengthened through regionally-aligned workshops and training activities including the former Agenda for Transformation and new PAPD. The development of standardized processes for disseminating flood, drought, health and other climate-related warnings through NDRC in Output 2.2 (and the priority districts in Grand Gedeh, Bong County, Grand Cape Mount, Montserrado, or Grand Bassa counties in Output 2.3) have and will be enhanced by sharing knowledge, experiences, and best-practices between all project countries participating in regionally-aligned activities. In the case of Liberia, protocols and agreements for strengthening interactions and coordination between MoT, MLME, MoA, NDRCA, and EPA—including those related to the sharing of hydro-meteorological information/data—will be enhanced by including experiences from the other LDCF-funded projects, particularly those in West Africa (i.e. in Benin, Burkina Faso, Sierra Leone, etc.).[12]

Financing climate change at the local and national levels was also part of the project's contribution specified in the ProDoc as follows: "All of the climate information mentioned and provided by the Early Warning System projects will include outputs that will develop a sustainable financing strategy for on-going operation and maintenance of the newly enhanced hydro-meteorological networks. These may include leveraging financing and logistic support from private sector companies and relevant socio-economic sectors, notably agriculture and telecommunications" (Output 3.4). Wherever possible, activities (which include establishing public-private partnerships in various project countries, such as between MoT/NDMA and private sector agricultural companies, mobile phone companies, and agro-forestry companies in Liberia) will be coordinated to assist participating private sector companies to engage efficiently and cost-effectively with the LDCF projects in the different countries. The almost 11 weather stations installed in the counties have contributed and are impacting positively beneficiaries' lives to some extent due to such public-private partnerships. (For example, the involvement of multi-national companies can improve the negotiating position of the government).

The consistency of the project with the policies and strategy of the Global Environment Facility (GEF) is clear since the targeted concerns are the main reason this global funding mechanism was created. In particular, the project is aligned with the strategy developed by the GEF concerning the Focal Area of Climate Change Adaptation, the Strategy on

[12] EWS Prodoc , 2013 Page 14

Adaptation to Climate Change for the Least Developed Countries Fund (LDCF), and the Special Climate Change Fund (SCCF)[13].

The framework document signed with the Government of Liberia provided for the establishment of national adaptation strategies to climate change. The project is consistent with UNDP's Strategic Plan, which puts special emphasis on climate change issues and adaptation actions. The TE establishes that the project is consistent with the policies and strategy of the financial partners. As such, the UNDP should continue to play a central role in ensuring the provision of technical assistance to the project on issues related to climate change.

(d) Is the project locally related and demanded by stakeholders?

The Implementing Partner (IP) and other Responsible Partners (RPs) played a considerable role in determining the activities for the EWS project and were involved in most of the consultation. Stakeholders interviewed by the TE Team also confirmed that the project was relevant in meeting their expectations and needs for ensuring less vulnerability to the impacts of climate change to which they are exposed. In this regard, the TE team sees the need, despite the fragility of national institutions and the fact that many challenges remain, for continued support of local communities, by opening the field sites and the network established in the field to new adaptation projects.

Evidently, the project is locally relevant and demanded by stakeholders. Given that the project phased in late 2018 and that there is a need for continuous utilization of the services by the beneficiaries while ensuring that the gains remain despite challenges, in August 2018, the MoT and the Environmental Protection Agency embarked on a series of outreach efforts to educate national stakeholders. In particular, this included members of the National Legislature, county officials, sector Ministries and Agencies, members of the Liberian media, civil society organizations, rural dwellers, etc. Activities involved brainstorming to identify and mobilize resources for sustaining the outcomes of EWS project, and developing a policy guide for access and usage of the EWS services. The workshop was organized by the EPA through the NCCS in collaboration with the MoT and the UNDP. The primary objective of the workshop was twofold: a) increase awareness among policy makers, the communities in which weather stations are installed, and the general public; and b) brainstorm the way forward for ensuring the sustainability of the EWS. Specific objectives of the event included: (1) Launching the EWS meteorological platform; (2) Presenting its various features and the ways to access information daily; (3) Starting a conversation on country ownership through budgetary allocation, and generating raw data on resource mobilization from external sources on the EWS.

Rating: L

3.5.2 Efficiency

[13] http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF-ADAPTION%20STRATEGIES.pdf

Efficiency focuses on how economically resources / inputs (funds, expertise, time, etc.) were converted to results or the optimization of resources mobilized by the project as it relates to the cost effectiveness of the achievements (infrastructure or services). Efficiency compares the results obtained with the means employed (average financial, human, and material means). The general presidential elections and Ebola crisis affected the implementation of the project in 2014 and 2015 resulting in a slow and difficult pace in the project's implementation as well as missing deliverables.

3.5.3 Cost effectiveness

Cost effectiveness refers to the degree to which the project funds were utilized in an optimal manner in order to achieve project results. The TE Team concludes that overall, the project was cost effective. A number of measures to promote cost-effectiveness were identified in the project document and adopted during implementation:

(1) GoL & project established an effective and locally applicable meteorological monitoring system. This will allow institutional capacity to be built cost-effectively, ultimately assisting in planning and implementing the EWS. Furthermore, this is a more cost-effective approach then attempting to build solely on what is available in-county;
(2) EWS project aligned with existing, related projects in the meteorological and hydro-meteorological sectors. This approach of complementing existing, related projects is more cost-effective than the implementation of a separate initiative, as it will allow the LDCF project to be managed within the existing institutional and management frameworks;
(3) Lessons learned from climate monitoring and early warning interventions were captured and disseminated through inter alia: i) in-house training for technicians; ii) an online platform for the dissemination of tailored information/forecasts and warnings; and iii) a toolbox that will include courses, handbooks and manuals. This integrated approach provides a cost-effective manner of informing and increasing the capacity of an extensive range of stakeholders, which include government technical staff, policy-makers, restoration practitioners, scientists, university students, school children and the general public;
(4) The proposed project outputs and procurements were reviewed and revised to reflect considerations of sustainability and cost-effectiveness;
(5) Working with local partners and within existing systems was a cost-effective approach for ensuring that the climate information generated by the project will be included in policy updates, and that the private sector is engaged by contributing to sustaining the equipment and keeping the communication channels in place and;
(6) The project should create an enabling environment for the engagement of the private sector to develop paid-for services through climate information and EWS commercial products. This will include a future development of a mechanism for discussing public and private financing streams and facilitating the development of business plans to support revenue generation. There is huge potential for improved early warning services and tailored forecasts to generate revenue from the aviation and commercial agriculture sectors.

The various cost-effective measures indicated above have or will be applied by the project and therefore contribute to its satisfactory performance. Amount disbursements in 2014 and 2015 were very low as a result of a slow start to implementation, the Ebola crises and the general presidential election. Implementation of the project activities intensified and remained on course in 2016 and 2017, leading to increase in delivery. By the end of December 2018, almost 89% of the project delivery had been successfully done. However, resources mobilized by GEF/LCDF for the project reflects a total approved project budget of US$ 6,070,000.00. Currently, the resources utilized stands at US$3,899,292.1, representing 64% of the total approved budget, while 36% of the approved budget (total amount of US$2,170,707.29) was unspent. Average accumulative delivery is 89% as a result of 100% plus delivery in excess of budgetary allotment as reflected in expenditure delivery summary **(Resource table 8-B).**

NOTE: Absorption of the huge unspent amount via the procurement of the hydrological equipment worth US$1,200,000 (already in process) will validate the cost effectiveness of the project. This is a major component needed for total successful implementation of the project. This, combined with the completion of all activities in the AWP that have commenced and are in advanced stages of completion at the end of this evaluation period, will increase delivery rate and the project will experience the much needed and expected very satisfactory performance.

(a) Was the project implemented efficiently, in-line with international and national norms and standards?

The project is aligned with the strategy developed by the GEF concerning the Focal Area of Climate Change Adaptation, the Strategy on Adaptation to Climate Change for the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).

The framework document signed with the Government of Liberia provided for the establishment of national adaptation strategies to climate change. The project is consistent with UNDP's Strategic Plan, which puts special emphasis on climate change issues and adaptation actions. The TE establishes that the project is consistent with the policies and strategy of the financial partners. As such, the UNDP should continue to play a central role in ensuring the provision of technical assistance to the project on issues related to climate change.

(b) Have resources (financial, human, technical support, etc.) been allocated strategically to achieve the project outcomes?

Detailed information on resources, refer to section 3.4.2.

(c) What measures have been taken during planning and implementation to ensure that resources are efficiently used?

Some measures have been taken during planning and implementation to ensure that resources are efficiently used according to the National Action Plan and disaster risk management capacity needs assessment developed by MIA and UNDP. These include: (1) A recent stakeholder awareness training conducted in August 2018 by the National Climate Change Secretariat in collaboration with MoT and UNDP on communication (reporting procedures, protocols, and clear indicators); (2) Capacity building for 27 individuals from Nigeria, Ghana, and other countries from various MACs through training. (in addition, NCCS

engagement-GOL/MIA conducted workshop for stakeholders at the local level for superintendents, district commissioners, and chiefs); (3) Procurement of communication equipment to establish and strengthen early warning system at the national and local levels; (4) Preparation of regular EWS reports to be used for planning and decision-making purposes; (5) Website developed by MoT for meteorological information dissemination at the national, county, and community levels; training for MIA/NDMA staff on the use of SPSS and GIS application; (6) Technical support at the national and local levels to integrate the national early warning system within sectorial ministries, departments, and emergency centers; (7) Support in mainstreaming NDMA into development planning; and assistance in establishing disaster risk management structures at national and local levels.

Rating: MS

3.5.2. Effectiveness

Effectiveness measures reflect to what extent the expected outcomes and objectives of the project have been achieved or are expected/likely to be achieved.

(a) What has been the progress made towards achievement of the expected outcomes and expected results? What are the results achieved?

The project attained several of its objectives but a few could not be reached, with little chances that progress will be made in the future unless an additional international investment is made.

Specifically, achievements and results towards the 3 expected outcomes are as follows.

The EWS is delivering early warnings and other climate information to end users through the installation of 11 automatic weather stations via provision of data through Cellcom towers and GPRS communication systems across the country. The EWS is functional and has been generating weather information for the past year and a half. The weather and other information are disseminated on the GSM platform using cell phones, country agricultural officers, districts clans, etc. Weather forecasting is done regularly—at least 3 times daily, along with early warning messages to approximately half a million persons by mobile phones SMS. To date, findings revealed that about 60% of the population interviewed including stakeholders and community dwellers have rated the projects satisfactory for providing alert early warnings about weather and climate. To date, the installation of 11 weather stations (accounting for at least 85% of the project achievements) has resulted in rainfall monitoring and fostering drought preparedness in the pilot counties, thus directly benefitting farmers, who are utilizing rain gauges to record and monitor rainfall in their communities. Reports from farmers indicated that they use the collected data for their agricultural activities, especially monitoring soil moisture content and making decisions based on these collected data. The National Meteorological Station at the RIA collects data that is beneficial to the overall Liberian early warning system.

All of the projects' achievements described above are the result of requisite training provided for 27 staff members who are now meteorologists, hydrologists, observers, instrument technicians, and officers in various institutions. These staff members, who were trained in Nigeria in 2017, are assigned to National Meteorological Stations and have the capacity to analyse and forecast all hydro-meteorological data generated from the automatic weather stations and to publish weather information for the public. They are also equipped to utilize maps in order to know hot zones in Liberia with regard to climate vulnerability and to be able to advise accordingly. Additional training was provided in Financial Management for Donor Funded Projects for 2 Finance and Administrative Officers of the MoT in 2016 and 2017 at Manzini, Swaziland and Lusaka, Zambia, respectively. This training has also equipped the

officers in the use of the instrument and how to extract data and analyse it. A training workshop was held in Maryland County by NDMA and MIA for county superintendents and district commissioners, which created awareness on the activities of the Early Warning System.

In August 2018, an additional awareness workshop on EWS was conducted for national & Regional Stakeholders in Bomi County by the National Climate Change Secretariat in collaboration with the Ministry of Transport. This training enhanced media practitioner ability to surf the EWS websites and to be able to give daily weather forecasts based on the data generated by the automatic weather stations installed around the country.

Finally, the project has achieved its objective and it is successful. It has strengthened and improved Liberia's climate information and early warnings capacity. The projects intervention, which is a successful pilot, has the potential to be replicated to cover the entire country.

(b) Does the programme have effective monitoring mechanisms in place to measure progress towards results?

The project had an effective M&E mechanism in place to measure progress toward results, beginning with the ones set out in the Project Results Framework of the project document that is in alignment with the AMAT and UNDP standard M&E frameworks. This includes: annual and quarterly review of the APR/PIR Progress made toward project objective and project outcomes, including indicators, baseline data and end-of-project targets (cumulative); project outputs delivered per project outcome (annual); lesson learned/good practice; AWP and other expenditure reports; risk and adaptive management; and ATLAS Quarterly Progress Report.

The project results framework, included SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These achievement indicators had means of verification for the project objective, outcomes, and outputs. The indicators were measurable and relevant to the objective, and were achievable within the projects budget and time frame. Also, the ProDoc includes an M&E plan and budget consistent with GEF, UNEP, and UNDP M&E Evaluation Policies. The ProDoc provides a work plan indicating outputs activities and timelines. There is also provision for an independent terminal evaluation to be conducted towards the end of the project. An independent Terminal Evaluation takes place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals.

It is worth noting that indicators identified in the ProDoc, revised at the inception, and implemented during the first phase of the project are relevant for reporting project progress, but some still need reviewing and reformulation in order to effectively measure work progress. What is lacking is the operational aspect of M&E, mainly due to the fact that one staff member on M&E was removed from the Project Management Unit, which affects the efficiency of the M&E system regarding this project. The project monitoring and evaluation

mechanism has been assured by the M&E officer in UNDP CO and more detail can be found in chapter 3.4.3.

Rating: MS

3.5.3. Sustainability

Sustainability focuses on long-term effects of the project and the durability of results and impacts. It assesses the extent to which benefits are likely to continue, after the project has come to an end or in terms of the extent to which there is persistence of benefits resulting from the implementation of the project activities; including replication, up scaling and catalytic effects, which may involve assessing whether a strategy and a system exists to sustain results set out in project design.

(a) Are requirements of national ownership satisfied? Is the project supported by national/local institutions? Do these institutions, including Government and Civil Society, demonstrate leadership commitment and technical capacity to continue to work with the project or replicate it?

Requirements of national ownership are satisfied due to the placement of government structures such as the (EPA, MoT, NDMA, and MLME) which are essential for the project interventions beyond the project implementation. Initially, country ownership was not easily satisfied. For instance, after the micro-assessment for the MoT was completed, the ministry did not have the required rating to enable a proper National Implementation Modality (NIM) execution as such, so Direct Implementation Modality execution by UNDP continued. Presently, there is some flexibility because the project has initiated the participatory approach through collaboration with national government departments in designing the EWS project approach and interventions in order to satisfy national needs.

During the period under review, implementation of some of the project activities included technical capacity building with focus on appropriate government departments that coordinated and/or supported its implementation. National ownership was further intensified through consultation with local communities during the development of early warning systems in the target districts thereby addressing needs identified by local communities and instilling community ownership of the project's activities.

In order to facilitate the effective replication of project, the EWS project will generate improved climate information at a national level, and activate communication channels and procedures for issuing early warnings at a national and local level. This will include the development of a range of alert platforms in the target districts. There is thus considerable scope for replication of activities in the other areas of Liberia where related projects are not operational, using the improved climate information generated at a national level.

It is worth nothing that sustainability of the EWS project will depend largely on the willingness of stakeholders to adopt interventions and continue to pursue them beyond the duration of the project. Suitable technical, legal and institutional capacity is necessary at both local and national level for sustainability to be achieved. This capacity will be further strengthened by: improving institutional coordination within government; building awareness about climate change risks and the benefits of improved climate information

and early warnings from the local to national level; enhancing stakeholder capacity to use the climate information generated through the project; and developing an evidence base to stimulate greater levels of investments in climate information and EWS projects, finally, developing understanding of sector-specific needs and climate information priorities, as well as which policies and strategies are expected to provide economic growth benefits.[14]

(b) What capacity of national partners, both technical and operational, has been strengthened?

The projects has provided both technical and operational capacity building in order to strengthen national partners as follows: training of 27 staff members as meteorologists, hydrologists, observers, instrument technicians, and officers from various institutions in Nigeria for a period of 3–12 months. Courses included Aviation Meteorology, Climatology, Agro-meteorology, Meteorological database management, and Instrumentation. These courses were completed in September 2017. 2 additional staff from MoT were trained in the area of Financial Management for Donor Funded Projects for Finance and Administrative Officer in 2016 and 2017, Manzini, Swaziland and Lusaka, Zambia, respectively. During the same period under review, National Disaster & Management Agency, in collaboration with the Ministry of Internal Affairs, conducted an awareness workshop with county superintendents and district commissioners on the activities of the Early Warning System in Maryland County. In August 2018, an additional awareness workshop on EWS was conducted by the National Climate Change Secretariat in collaboration with the Ministry of Transport for national & Regional Stakeholders in Bomi County. This training enhanced media practitioner ability to surf the EWS websites and be able to give daily weather forecast generated by the automatic weather stations installed around the country.

Considering the involvement of government institutions in the EWS project's implementation (principally, EPA, MoT, MLME, and NDMA), it is evident that there is considerable potential for future incorporation of the project's approaches into on-going planning and strategies. Additionally, it is expected that the strengthening of capacities among key government stakeholders will enable continued mainstreaming of the use of climate information and early warnings into sectorial planning and decision-making.

The training and capacity building of local communities and technical staff regarding the application of climate information and the response to early warnings will ensure that future local-level initiatives in Liberia are climate-aware and able to focus quickly on effective responses/information. Consequently, the EWS project interventions are more likely to be replicated and/or up-scaled to additional counties in Liberia where similar benefits could be realised. However, in order to assure more technical sustainability, a MoU is under negotiation with the telecommunication companies to send the weather information by SMS.

The EWS project has to some extent addressed needs identified by local communities, thereby already instilled community ownership of the project's activities. Government staff are currently involved in these community capacity building exercises, and as a result, the capacity of government staff working within the project to develop and implement climate

[14] EWS ProDoc, 2013-2017

information and early warning-related measures is significantly strengthened, and beneficial for future projects within Liberia.

(c) To what extent have the project's exit strategies been well planned and successful?

Currently, there is no exit strategy provision in the ProDoc. Hence, considering little commitment by ministries to ensure the sustainability of the project and given the limited resources of the national budget, it remains important to consider the maintenance of the installations and to monitor the impacts. Furthermore, in the absence of an exit strategy, ownership by engaging partners like Earth Networks[15] to provide technical support need to be fostered in order to enhance sustainability.

Lastly, efforts for general project sustainability have been made through linkage to the Multi Country Programme in order to strengthen Climate Information for Resilient Development and Adaptation to Climate Change in Africa (CIRDA).

Rating: MS

Sustainability - Project institutional anchorage

Anchor of the project in state structures is necessary to ensure the sustainability of the adopted measures and the pursuit of strategies implemented in the project framework even after it ends. It is clear that this anchorage is lacking for the moment, although policy-related interventions are expected to be delivered later. The implementation of the project should be carried out by state bodies in charge of the sectors concerned by the risks associated with climate change, but the main structure, the National Meteorological Institute within MoT, remains fragile and with limited resources. The reinforcement of capacities of these structures by the Government for the sustainability of adaptation measures accompanying the populations is needed.

Partnerships between national authorities are not sufficient and should be promoted for the long-term maintenance of the project's effects. The commitments of various ministries and national agencies (NDMA, MoA, MoT, EPA, etc.) give hope that these issues will be embedded in various public policies, but an umbrella committee would be necessary to facilitate the synergies between these institutions. It is crucial to build capacity and to develop financial mechanisms within the country in order to enable this commitment to trigger concrete actions.

In this regard, the main risk is the lack of coordination and organization between the various actors in the fight against the risks associated with climate change.

[15] https://www.earthnetworks.com/

Capacity to secure the project achievements

Sustainability is uncertain because the capacity of project stakeholders in the field of Common Country Assessment is still not sufficient. The uncertainty on available human resources after GEF-funded project closure, and the lack of continuity in the acquisition of skills in the field of CCA does not make it easy. Even if the arrangements made by the project to ensure the anchoring of project achievements at the local and national level are weak, it is necessary to also ensure that people remain in place in the long term. In short, sustainability lies in potential additional funding and the continuation of the project with a second phase, rather than the existence of institutions that can meet the needs of CCA.

Social sustainability

The project is currently bringing benefits to the local communities through early warnings, and the quality and availability of climate information. However, these benefits are mainly provided through new or restored facilities, which will need to be maintained. This is both a financial and social issue which requires full attention.

Enabling maintenance of EWS is essential to enable positive project impacts in the long-term. Beyond the transfer of the data, the operations and maintenance of the EWS (operated by Earth Network) must be guaranteed. The issue of budgets for maintenance was raised since the beginning of the project, but there is a general feeling that there is no real uptake at the national level to address this.

Financial sustainability

Resource mobilization is key to ensuring sustainability by 2020 (for instance, at the national level, to continue to work with the company in charge of running the meteorological information system).

A continuity of funding is needed in order to ensure project sustainability, yet commitment of the authorities of the GoL in co-financing of the project is not assured. With limited financial resources in its national budget, the country is still fragile, financially speaking. The bilateral and multilateral donors appear to be the only providers of possible funding short to medium term. The involvement of new donors, to strengthen the capacity of MoT and EPA, should be considered.
It is worth nothing that budgetary allocations for operation and maintenance of installed meteorological equipment is an important part of sustainability of the project interventions. This is particularly relevant to MoT/MLME as there is uncertainty as to whether the minimum level of funding required for annual recurrent costs will be made available. Therefore, the project will develop and implement promising innovative financing options for enhancing the long-term functionality and sustainability of the meteorological observation and forecasting systems. This will involve identifying, developing and promoting public-private partnerships, innovative market-based financing mechanisms, institutional restructuring and cost recovery, i.e. developing operation and maintenance units under MoT/MLME[16].

Environmental sustainability

[16] EWS ProDoc 2013-2017- P.49

The project did not especially focus on environmental issues. However, from a broader perspective on climate change and climate change adaptation in Liberia, it appears that addressing environmental issues is critical decreasing the vulnerability of local communities to climate change in the long-term. In particular, illegal and abusive deforestation, as well as coastal flooding in Liberia, could pose a significant threat to the project outcomes and to the population in general.

3.5.4. Catalytic effect

By focusing on the issue of information access, the project has contributed to the production of a public good for Liberia. Activities related to EWS can and should be replicated in other areas/counties. Training of local and national stakeholders on CCA and EWS issues should also be a priority, since it will enable the replication of project outcomes and lessons learned in other regions. It will also ensure more sustainable impacts of the project.

3.5.5. Impacts

Impacts are indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status. Impacts can be positive or negative, intended or unintended, primary or secondary long-term effects produced by the project directly or indirectly.

Measuring the impacts of the project during the TE (e.g. objectively responding to questions such as: “Is the rural population benefiting from the project better off? If so, by how much?”; “Is the country better prepared to provide in the future, accessible climate change/weather forecasting system because of the project?”; “Did the project implementation turn out to be difficult, given the lack of quantitative data on this issue?”. The most project-specific way to assess the impacts is to interview beneficiaries, which was done by the evaluator during the field visits.

Testimonies of beneficiaries on the effects of the assistance and/or immediate benefit provided by the project specifically targeted the population’s current access to the EWS. A general impression is that, in the short-run, there were no significant visible impacts because major activities leading to tangible outcomes in order to realize the impacts were not achieved. (For instance, the automatic weather stations are installed, prepared to provide information to the beneficiaries in rural areas, but only few of the beneficiaries of the project (farmers, fishermen, the general public, and the forestry sector) can receive information and access to the data due to the absence of the hydrological equipment, an important component that is being purchased but is not yet available for use and is necessary to speed up the process. However, in the long run, projects impacts will be visible. In this regard, both the UNDP and the Government of Liberia have expressed their commitment to have this equipment set up at the National Meteorological Center at RIA with no more delays. **Consequently, all of this will only be realized at the end of project closing given sufficient reasons for project extension beyond the closing.**

(a) How do the project activities contribute to the decrease of vulnerability?

The project activities have contributed immensely to a decrease of vulnerability especially in light of Liberia's fourteen years of civil war and decades of low investment in infrastructure that have left the Liberian hydro-meteorological services with a limited capacity to monitor, forecast, archive, analyse, and communicate information on water resources and climate, including the impact of extreme climate events and disasters. Prior to 1989, Liberia had 47 hydrometric stations throughout the country to monitor meteorological and hydrological parameters. Many of these facilities were damaged or destroyed during the period of civil unrest of 1989-2003.

As a result, most of the established observation stations and weather data were lost. The hydro-meteorological monitoring capacity as extremely low and no recorded data for the recent period exists except for localised data collected by Roberts International Airport (RIA) and the Firestone Rubber Plantations Company. This situation undermined efforts across a range of sectors to understand, quantify, and plan for historical and current climate fluctuations, as well as to develop tools to help plan for adaptation to future climate changes. This is particularly important given that the main economic sectors in Liberia agriculture, fisheries, forestry, and energy were highly vulnerable to climate variability and change.

As a result of the lack of available meteorological data in Liberia, little was known on how the climate is already changing within the country, nor how it may be expected to change in the future. To date, the results of EWS project have shown an increase in: i) temperature; ii) erratic rainfall patterns; iii) floods and; (iv) crops failures. Access to this information can help decrease vulnerability. In order to enhance Liberia's capacity to manage its vulnerability to climate-related hazards and reduce the impact of climate change on critical socio-economic sectors, it is therefore essential to: enhance capacity of hydro-meteorological services and networks for predicting climatic events and associated risks; develop a more effective, efficient, and targeted delivery of climate information including early warnings; and support improved and timely preparedness and response to forecast climate-related risks and vulnerabilities.

(b) What are the changes being contributed to livelihood through information, adaptation, Disaster Risk Reduction (DRR)?

Changes that have contributed to improving livelihoods through information, adaptation, and DRR include the aspects described below.

Currently, through the project, the National Meteo-Station located at the RIA produces data on expected climatic changes, thereby revealing important expected trends for Liberia.,In urban and coastal areas, mean annual temperature is expected to increase at a rate of approximately 0.18 °C per decade and is projected to increase by 2–4 °C by 2100, relative to mean annual temperature in 1960. Annually, projections indicate that "hot" days are expected to occur 24–65% more frequently relative to records over the period 1990-1999 by the 2060s, and 2965% more frequently by the 2090s. Meanwhile, nights are projected to be "hot" 37–89% more frequently by the 2060s and 49–97% more frequently by the 2090s relative to the same baseline. Projections of mean annual rainfall averaged across the country from different models shows a wide range of changes in precipitation for Liberia, but tend towards overall increases, particularly for the periods July–September and October–December. Rainfall during these periods is expected to increase by up to 23% and 32%,

respectively, by the 2090's. Projections also indicate an expected increase in frequency and intensity of extreme weather events such as droughts, floods, and severe storms.

All of this climate information has been made available and shows profound anticipated climate change impacts to different sectors. The data aligns with the National Adaptation Action Plan (NAPA), and the proposed project will provide targeted support particularly for the agricultural sector. However, the proposed interventions will benefit other sectors such as forestry, health, and coastal management.

This is a vast improvement over the past conditions before the project, RIA Automatic Weather Station (AWS) measured only wind speed and air pressure, the temperature and dew point sensors were not working. RIA also maintained manually operated temperature and rainfall sensors, a European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) satellite receiver that was not utilized to its full capacity, and a message processing system used for communicating weather warnings for aviation. Data generated by this equipment was inadequate and inappropriate for developing forecasts and early warnings for climate-related hazards in Liberia, and currently there are were no existing sources of climate-related data other than that collected at the airport. To date, the situation has vastly improved and changes are evident as a result of the implementation of the project.

(c) How do the project activities contribute to food security?

The project activities are in line with the National Adaptation Action Plan (NAPA), which includeds targeted support specifically for the highly vulnerable agriculture sector. Liberia's agricultural sector is critical, comprising 66% of the country's GDP. Over 90% of subsistence farmers depend on rain-fed agriculture and are therefore vulnerable to anticipated changes in rainfall. Recent changes in rainfall patterns due to climate change have made it increasingly difficult to identify the optimal time to plant crops, which hampers crop planning. This problem will worsen over time as a result of further climatic changes; in addition, unpredictable onset and duration of seasonal rainfall will increasingly aggravate pest and disease problems, thereby limiting the productivity of traditional crops. Many strategies to cope with crop failures, which rely on traditional knowledge of local weather, are increasingly ineffective as a result of climate change. The northwest and central regions have experienced lower cereal crop yields because of plant diseases, agricultural pests, soil degradation and lack of water for irrigation. Therefore, the project has contributed to improving food security via its production of data that can be used to improve climate resilience in Liberia's agricultural sector.[17]

(d) What evidence exists that the project has delivered longer-term results?

The project engaged in several activities to aim to ensure longer-term results. Because the enhancement of Liberia's capacity to manage its vulnerability to climate-related hazards and reduce the impact of climate change on critical socio-economic sectors is fundamental to the country's future, it has become essential to: enhance the capacity of hydro-meteorological services and networks to predict climatic events and associated risks; develop a more effective, efficient, and targeted delivery of climate information including early warnings; and support improved and timely preparedness and response to forecast climate-related risks and vulnerabilities.
Achieving these objectives required the project's development of robust, in-country weather

[17] Ibid. P.7.

and climate observation equipment, as well as forecasting infrastructure, which can be rapidly deployed and is relatively easy to use and maintain. An appropriate weather and climate monitoring system will provide Liberia with the capacity necessary to develop: i) an EWS for climate-related hazards; ii) real-time weather and hydrological monitoring; iii) weather forecasting capabilities (Numerical Weather Prediction); iv) agro-meteorological information and services, including integrated crop and pest management; v) appropriate applications related to building and management of infrastructure; vi) improved protocols for land, air and maritime transport management; vii) integrated water resources management; viii) improved protocols for coastal zone and land management; and ix) improved planning and policy-making processes.

Information generated by an enhanced weather and climate observation network will be used constantly to support the development of EWSs targeted to end-users in various vulnerable sectors. The ability to convey clear and timely communications of impending climate-related hazards through EWSs to vulnerable groups and sectors will reduce the impact of climate change on multiple sectors in Liberia. Implementation of the following four elements comprise an effective EWS: i) knowledge of risks and vulnerabilities; ii) climate monitoring and producing of warnings; iii) disseminating warnings; and iv) capacity to respond to warnings and strongly interlinking them with effective communication between all sectors. Ensuring these elements after the project has ended is critical for ensuring long-term results.

Finally, this project should be linked to the Multi Country Programme to Strengthen Climate Information for Resilient Development and Adaptation to Climate Change in Africa (CIRDA). Due to the delays, the project could not readily provide data for daily weather forecasts to the population timely via the media at the time of the project evaluation. It is expected that in the future, data will be made accessible, especially to the rural population (farmers, fishermen, etc.).

Rating: MS

Social economy

Other crosscutting issues are indirectly addressed by the project, including the strengthening of the social economy: for example, farmers should benefit from weather information provided by the project, and this should allow them to be better off. The TE mission found that the crosscutting themes are treated appropriately by the project.

3.5.6. Cross-Cutting Themes

i. Partnership

Partnership is the extent to which coordination, collaboration, and synergy are developed and achieved among stakeholders, beneficiaries to produced desired results of the project.

(a) Has the partnership strategy of the UNDP in project delivery been inclusive, appropriate, and effective?

The TE establishes that the UNDP's engagement with partners has been appropriate, effective, purposeful, and well thought-out. The support for the successful implementation of the EWS project has taken on a unified program-based approach, drawing on the technical expertise, activities, and experience of the GoL, the UN, development partners, and other non-state actors in Liberia to implement the EWS. The Agency is a key partner of the GoL in the area of energy and environment, climate change, development planning, sustainable economic transformation, national implementation of the SDGs, and capacity building. This leadership is recognized, and encouraged moving forward, by the Ministry of Finance and Development Planning and other stakeholders, including IFIs and bilateral donors.

UNDP has also been catalytic in improving national capacities in procurement, a key area contributing to transparency and integrity in public finance management. The evaluation noted that UNDP partnership strategy has been very appropriate and effective. UNDP and partner's support to the GoL has resulted in improving the lives of the people through participatory processes of awareness raising, technical support, policy expertise and coordination and implementation of initiatives that are aligned with the government's national development agenda. With its non-intrusive agenda, UNDP, in partnership with EPA, MoT, MLME, NDMA, MoA, and MFDP, is engaged in sensitive areas of energy and the environment. For example, UNDP's engagement on early warning system, the coastal project, and climate change has been outstanding. Moreover, UNDP's aims of inclusion of and outreach to marginalized communities (as in the coastal project in Bassa) as active agents of their own development, as equal partners, not just as beneficiaries, is an important feature and partnership asset observed by the evaluation team. The consultants note the multiplicity of partners UNDP has, especially with the GoL, which, in many ways, is resulting in fragmentation of funding sources.

(b) How is the coordination of the project working among the related stakeholders such as: MoT , MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc. ?

This project results are expected to overcome barriers affecting the EWS in Liberia by providing the required equipment and improving national capabilities to generate and use weather/climate information in the planning for and management of climate-induced hazards. It will achieve this by coordinating and implementing the transfer of appropriate technology, infrastructure, and skills to the meteorological and hydro-meteorological services (MoT and MLME), user-agencies (EPA, NDMA, MoA, LMA, NPA, MoH and MFDP), and end users (local communities) in the country. The project will provide requisite solution by enhancing capacity to operate and maintaining a climate observation network and using the resultant data to generate tailored, sector-specific information, as well as to develop an

efficient delivery system for the timely dissemination of early warnings and to collect long-term observations for adaptation planning.

Rating: MS

ii. Gender Equality

(a) To what extent has gender considerations been integrated into the programmed design and implementation?

From an evaluation perspective, it is worth mentioning that the EWS project has considered gender issues but the content of the project is very technological, and only a limited number of female students choose to specialize in information technology (IT) and data management. However, the consultants found that UNDP has demonstrated commitment in ensuring inclusion and participation of women in the design, implementation, and monitoring of the all interventions in Liberia. This is reflected in UNDP's Strategic Plan (2018-2021), the CPD (2013-2017), and UNDAF (2013-2017) outcomes 1 and 4, all of which have strong elements of gender equality and empowerment in their designs. The EWS capacity-building initiatives have targeted women, but data available revealed that only a small percentage-five (5%) have benefited from higher awareness and training. Other gender-related activities of the project focused on trainings of vulnerable groups targeting women, children, and the youth. Additionally, the GoL, one of the main project partners, is committed to ensuring that women effectively participate in all aspects and spheres of society as reflected in its laws and policies, including the National Gender Policy of Liberia, the Liberia's Action plan for implementation on UNSCR, 1325, the AFT, and others, and its participation in related international and regional treaties.

(b) How has attention to integration of gender equality concerns advanced the area of work?

Integrating gender equality concerns has advanced the EWS by increasing the technical capacities of female staff through training initiatives. Of the twenty-five (25) staff members , five women and twenty men from the Liberia Hydrological Service, the Ministry of Transport, the Disaster Management Agency and the Liberia Maritime Authority participated. In addition, seven (7) women out of 27 staff members were trained as meteorologists, hydrologists, observers, instrument technicians, and officers from various institutions in Nigeria for a period of 3–12 months. Four (4) females also benefitted from the ADCON training in Lusaka, Zambia in 2017.

Overall, the TE assessment revealed that a strategic and systematic effort to mainstream gender concerns into energy and environment has been insignificant due to the technical nature of the project. This was a result of the generally low engagement of women in the sciences. However, in order to improve this situation, the UNDP has provided support for student at three (3) universities, namely: the University of Liberia (MS level), Cuttington University (BS level), and Stella Maris University (BS level). These universities have

incorporated courses into their curriculum to accommodate students in the areas of climate change, energy, and environment at the masters and bachelors levels.

Rating: MU

iii. Human Rights

(a) To what extent has the programme actively promoted the fulfilment of human rights?

The TE has established during the evaluation that the project has to some extent promoted the fulfilment of human rights in that no discrimination was observed during project implementation. For instance, vulnerable groups, youth, and children were all taken into consideration.

In relation to human rights aspects, Liberia has ratified a wide number of international and regional human rights treaties, including the core UN international human rights treaties, important humanitarian law instruments, the Geneva Conventions and Protocols, and the Rome Statute of the International Criminal Court. Liberia developed a 2013–2018 National Human Rights Action Plan (NHRAP)[18] created to help articulate the advancement of human rights. It guaranteed the overall development of all persons and populations by respecting, defending and promoting their human rights, ensuring the full exercise of civil, political, social, economic, cultural, and environmental rights deemed inseparable, interdependent, and equally essential, while recognizing all human rights contained in international declarations and treaties, in the Constitution and in domestic legislation.

Despite some progress in this regard, it is worth noting that Liberia continues to face a number of challenges that impacted the promotion and protection of human rights.[1] However, projects targeting energy, environmental, and climate issues aim to support right holders and duty bearers and to support equity towards state services in the country. In this way, and through engagement with various types of stakeholders, the project contributes to promoting the fulfilment of human rights.

(b) In its design and implementation, does it include opportunities to integrate human rights in each outcome of the programme and prioritize the principles of accountability, meaningful participation, and non-discrimination?

The TE consultants note that the environment and climate change-related agenda which the EWS supports does not have a human rights component explicitly embedded in it, neither did the designing of EWS Project document incorporate human rights explicitly as a cross-cutting issue. However, the TE team also found that the Liberia Independent Human Rights Commission (INHRC) has prepared a 'Blue Print' that factors and/or incorporates human rights into all aspects of the development agenda. Currently, the INHRC has 23 Human

[18] *The National Human Rights Action Plan of Liberia 2013-2018*

Rights Regional Officers and Monitors already assigned in the 15 counties and has already established several regional offices in the same areas as the EWS operates.

Rating: U

4. Conclusions, recommendations and lessons learned

This section presents the main findings of the mission on the basis of the criteria defined in the methodology. Overall, the project will not meet all of its objectives and outcomes before the end of the project implementation. It has begun to address the key issue of EWS in Liberia, and has provided some improvements in weather information.

4.1. Main findings

The project has generated information, experience, and lessons for climate change adaptation and the development of adaptive practices. However, there are a number of aspects of the project which could be improved, and a number of obstacles which still need to be overcome:

1) The maintenance of the equipment is critical, and efforts should be given to ensure that the GoL will be able to ensure this maintenance.
2) The capacities of the national institutions are still weak.
3) Technical assistance needs are essential in Liberia as climate change has increasing impacts on agriculture and water resources..
4) Lack of means observed.

On the other hand, there are promising advancements regarding climate financing which could address these issues: firstly, an increasing number of technical and financial partners are interested in climate change, and, secondly, the country is well informed regarding new sources of climate finance, first and foremost the Green Climate Fund (GCF), showing capacity to capitalize on these increasing funding sources.

4.2. Performance Rate

The following table concisely summarizes the conclusions of the terminal evaluation on the basis of GEF criteria.

Table 7. Performance Rating Project[19]

Criterion	Reviewers' Summary Comments	Reviewer's Rating
Attainment of project objectives and results (overall rating)	The project attained several of its objectives but a few could not be reached. The overall rating is MU, with little chances that progress will be made in the future unless an additional international investment is made.	MU
Outcomes		
Overall Quality of Project Outcomes	The targets cover the technical and institutional aspects, but also aspects linked to awareness and dissemination of information. The relevance of the project is significant, but the efficiency is moderately unsatisfactory, given the fact that some results have been delivered with delays, and some could not be delivered. The Ebola crisis was a major impediment to the proper implementation of the project.	MU
-Relevance	CC is a priority issue for Liberia. To achieve a better early warning system, it is essential to adapt to more extreme climatic events by identifying and preventing the climate risks. The objective and outcomes defined by the project are unanimously supported by the stakeholders.	R

[19] UNDP-GEF Guidelines: "Project Evaluation Level" published by UNDP Evaluation in 2012.

Criterion	Reviewers' Summary Comments	Reviewer's Rating
-Effectiveness	The PMT had sufficient time and human resources to manage the project properly. Although the team members were involved and motivated in the implementation, the time allocated to the project was not satisfactory. The location of the procurement activities in Denmark, within the UNDP Procurement Support Office (PSO), did not facilitate the process. While the project was considered as a NIM, in practice, it was a similar to a Direct Implementation (DIM) by UNDP. This has resulted in several activities being completed or almost completed, but with little country ownership. Other activities could not be implemented. Questions remain about the functioning and results of the other project entities, such as the various committees.	MU
-Efficiency	*Some a Activities are not being operationalized or implemented with the resources initially planned. It took too much time to procure some equipment. Extending the project until the end of 2019 would have been recommended in order to achieve all the project activities, but an extension was not granted.*	MU
Sustainability of Project outcomes (overall rating)	The main risk is the lack of coordination and organization between the various actors in the fight against the risks associated with climate change.	ML
-Financial	Financial resources could be a limiting factor after the project termination, and could hinder the dissemination of good practices. It is still necessary to develop financial capacity by searching for private sector investments or cooperating with international funds.	ML
-Socio Political	Although the project has considered gender issues, the content of the project is very technological, limiting the possible engagement of women. But there's other gender related activities of the project focused on training of vulnerable groups has been set. The political situation in Liberia is always difficult.	ML

Criterion	Reviewers' Summary Comments	Reviewer's Rating
-Institutional framework and governance	Limited support from MoT led to coordination problems. However, the institutional anchoring of the project through mainstreaming of the project implementation team in the governmental authorities has already established. Engaged partner like the Earth Network can provide technical support; however, there is still a need to further develop stakeholders capacity as the national institutions are still weak.	L
-Ecological	Installation of EWS can decrease the vulnerability of the agriculture and aqua-agriculture sector and protect the biological diversity of Liberia to help reduce the impacts of climate disasters and climate change.	L
Impacts	No significantly visible impacts through the implementation of the project. More capacity building is needed and more individuals need to gain access to the data through the daily weather forecast.	M
Achievement of outputs and activities	Achievement of outputs and activities is not as high as expected due to delays in the implementation. There is a limited confidence in upcoming results.	MU
Catalytic Role		
-Production of a public good	Weather information is considered a public good. Its use in a more sustainable way will benefit the population, especially farmers, fishermen, etc. After the end of this project, there should be better-informed beneficiaries from the EWS.	**M**
-Demonstration	New agro-meteorological stations have allowed the setting of national weather reports for the first time in the country.	**Yes**
-Replication	The project could be replicated.	**Yes**
-Scaling up	Funding agencies, including the African Development Bank, showed interest in financing the scaling-up of local project activities.	**Yes**

Criterion	Reviewers' Summary Comments	Reviewer's Rating
Monitoring and Evaluation (overall rating)	The rating for the M&E is mixed: although the M&E system is not sophisticated, and some indicators had to be redesigned, the PMT was able to provide PIRs with the percentage of achievement of the project.	MU
-M&E Design	The M&E plan defined in the project document is quite classic and relevant as a whole. However, some indicators were not formulated clearly enough or are not feasible and/or applicable now.	MU
-M&E Plan Implementation (use for adaptive management)	The implementation of the M&E was moderately effective: data was made available for some indicators only. The implementation remains perfectible.	MS
-Budgeting and Funding for M&E activities	Paradoxically, the budgeting and funding for M&E seems limited, and not as developed as planned in the project document.	MU
	IA & EA Execution	
Overall Quality of Project Implementation/Execution	Overall, given the Ebola crisis and the difficult political context, the TE considers that the quality of the project implementation is moderately unsatisfactory with some success and hopes for the future. Interventions, including weather information system are on track, although it is still too early to talk about success.	**MU**
-Implementing Agency Execution	UNDP has faced several challenges since the launch of the project, which means sometimes there is need to adapt new implementation planning to develop certain activities in a different way, especially with regard to the fact that the costs of some activities were underestimated and delays due to external factors. Ultimately, the final result is moderately unsatisfactory and it would have been better to state from the beginning that the project would be managed under a DIM rather than NIM procedure.	**MU**

Criterion	Reviewers' Summary Comments	Reviewer's Rating
-Executing Agency Execution	The Ebola crisis, political instability (leading to the rotation of several experts), and dismissal of institutional memory in the ministries caused very frequent delays, because each new institutional team needed to reclaim the project. It did not facilitate the task of the PMT. Poor coordination between IP (EPA), RPs (MoT, MLME, NDRC, MoA and EPA) and UNDP CO results in institutional problems in execution processes.	**MU**
Country ownership	Country ownership is limited because the project was supposed to be managed as a NIM but, in practice, followed a DIM execution modality involving the UNDP PSO in Denmark. Hence, the national authorities were poorly involved in the process. Capacity building of national staff is still crucial.	MU
Overall Rating	Efforts were made to reach the goals within the 12 months no-cost extension period, but the complex set-up did not allow the project implementation to be finalized. Crosscutting issues were addressed by the project such as gender and human rights. Weaknesses lie in the efficiency of the project and also in the monitoring and evaluation plan.	MU

Code:

HS: Highly satisfactory	R: Relevant
S: Satisfactory	NR: Non relevant
MS: Moderately satisfactory	L: Likely
MU: Moderately unsatisfactory	ML: Moderately likely
U: Unsatisfactory	MU: Moderately unlikely
HU: Highly Unsatisfactory	U: Unlikely

Table 8: Progress Towards Results Matrix (Achievement of Outcomes Against End-of-project Targets)

Project Strategy	Indicator	Baseline Level	End-of-project Target	Terminal Level & Assessment[20]	Achievement Rating[21]	Justification for Rating
Objective: **To strengthen Liberia's climate-related monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change**.	Capacity as per capacity assessment scorecard.	Average capacity scorecard rating of **57** across men and women	Capacity scorecard rating is increased to an average of **134** for both men and women			Focus group interviews with climate information and EWS-related stakeholders; consultant reports.
	Domestic finance committed to Meteorology Department, Hydrological Services and NDRC to monitor and warn against extreme weather and climate change.	Annual budget of **US$ 64,480** allocated to Meteorology Department; annual budget of **US$ 276,877** allocated to Hydrological Services; and annual budget of **US$50,000** allocated to NDRC.	**20% increase** in annual domestic finance allocated to Meteorology Department, Hydrological Services and NDRC to monitor and warn against extreme weather and climate change.			Review of annual budgets.
Outcome 1: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme	Indicator 1: Percentage of national coverage of climate monitoring network (fully operational).	AWS: 0% Hydrometric stations: 0%	AWS: **100%** (at least 9 AWSs). Hydrometric: **100%** (at least 6 stations).		MU	Field inspection of AWS sites; review of climate information database.

[20] Colour code this column only
[21] Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

weather, climate-related hazards and climate trends.	Indicator 2: Frequency data transmission.	The 1 AWS transmits data at the synoptic hours of (GMT) 06h00, 09h00, 12h00, 15h00, 18h00 and 00h00, although **not consistently**.	18 AWSs and hydrometric stations (11 new AWSs, 1rehabilitated AWS, 6 hydrometric stations), **transmitting continuously**.		MS	Review of climate information databases.
	Indicator 3: Number of sector-specific, tailored climate information packages produced using improved information.	The only sector-specific information produced is for the **aviation sector**.	Sector-specific, tailored climate information packages produced for three of the following: **agriculture, water, aviation, fisheries/coastal water users, health, tourism, construction, and energy, and road, rail and sea transport**.		MS	Interviews with line ministries and a review of the information packages released.
Outcome 2: Outcome 2: Efficient and effective use of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and	Indicator 4: Number of communication channels operational to disseminate climate-related early warnings.	Information is relayed to communities mostly via **word-of-mouth**, but without the structure of SOPs.	At least 3 of the following: **Radio, television, print media (newspapers, flyers), word-of-mouth and mobile phone** communication channels operational.		MU	Review of SOPs in place, review of records of early warnings issued and received.

communities to enable informed decision-making.	Indicator 5: Percentage of population in within the two target districts with access to improved climate-related flood, storm and coastal surge warnings (disaggregated by gender).	0% of men; 0% of women	**100 %** of men; **100 %** of women		U	Gender-sensitive field surveys undertaken within identified priority sites; consultant reports
Outcome 3: Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.	Indicator 6: Development frameworks that integrate climate information in the formulation.	**The Agenda for Transformation** (2012-2017) highlights the need to develop climate change mainstreaming and response strategies, but not the need for improved information to inform the strategies	At least **updated** Agenda for Transformation (to be revised in 2017)to incorporate the availability of climate information into planning for the five year period.		U	Review updated Agenda for Transformation.

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

4.3. Challenges

Some of the challenges and constraints encountered during project implementation were as follows:

(1) Delay in Procurement of Logistics

Due to the lack of technical capacity in country (as mentioned by the baseline of the project document), the procurement of high tech weather and climate equipment (handled by the UNDP procurement office in Copenhagen in collaboration with the office of the Climate Information for Resilient Development in Africa (CIRDA)) was very problematic. Considering that these procurement activities require six (6) months to one year to complete, this delay inversely affected the implementation schedule.

(2) Limited Technical Capacity

Low technical capacity and limited infrastructure to monitor and predict climate events as indicated in the ProDoc made it difficult to get technical advice in-country about equipment and site selection plus information needed to prepare a bid document for supply of equipment and trainings. More technical training plans are underway for full implementation in 2019.

4.4. The way forward

Due to the setbacks the project encountered and in order to ensure smooth project implementation in 2019, it is incumbent upon the project to focus on equipment purchase and installation, trainings, and eventual generation of climate and hydrological information. In this regard, the following immediate steps are being taken in accordance with the project outputs and challenges faced:

- Negotiation with Earth Networks on the reduction of fees paid for the hosting of weather monitoring equipment and analysis of data. This process has led to a draft MOU that is currently being reviewed with all stakeholders: MFDP, MoJ, MoT, and PPCC.
- Negotiation with the Nigerian Meteorological Training Institute and the Nigerian Integrated Water Resource Institute for continuous training for the Liberian Hydro-Met staff. The Project Team, together with the Ministry of Transport, has engaged both institutions and is working towards an MOU for continuous support from these institutions.
- Installation of hydrological equipment (software for the satellite altimetry to be done by BRL Ingénierie) as engagement continues with service providers for the procurement and installation of automatic hydrological equipment on the six (6) major rivers as well as installation of 5 additional stations for underground water level and water quality measurement stations around the county.
- The Visibility of Hydro-Met activities in Liberia. Make sure the function of Hydro-Met and insure the information on Hydro-Met can be transferred to the local populations in the most effective way via traditional press or applications on mobile phone.

4.5. Conclusion

The Climate Information Resilient Development Project, according to many analysts, should have been the first of the 3 NAPA Projects since the products from this project are useful to enhance the efficacy of the other projects. For example, the Climate Change Agriculture Adaptation Project (CCAAP), now elapsed, tested the use of climate information in adapting agriculture to climate change; the EWS Project therefore cannot afford to stall any longer in putting in place these missing pieces.

After four years of implementation, there have been acceptable gains in core activities of the project: the setup of important structures including the Project's Management Team and the Project Steering Committee; the setup of reporting lines/approving authorities in the host institution (the MoT), the National Climate Change Secretariat; the training of meteorologists; the installation of automatic weather stations; the final renovation work undertaken at the RIA; and the final installation of remaining HydroMet equipment. The implicated actors are committed to moving the process forward as the country sees improvements in national governance and the health crisis (EVD).

To continue to enhance the project's outcomes, some "low hanging fruits" must be utilized, including the wiliness of Nigerian Institute for Meteorological Training and Research (IMTR) to train our staff. We also need to issue a tender for qualify firms to procure equipment and to enter into long-term agreements to maintain equipment, train, and nurture the Liberia Hydrological and Meteorological Services to maturity. Sustainability issues should also be considered central. In this regard, public-private partnerships should be pursued to provide new project funding options; that is, potential users of climate information in the private sector must be identified and sellable products should be designed for their use.

Finally, the provision of the EWS products to the public is critical. The project management team and the Ministry of Transport have engaged media institutions for dissemination of EWS Products. Five staff from the Liberia Broadcasting System (LBC), the ECOWAS Radio, and the Public Affairs Division of the Ministry of Transport have been earmarked for training in public weather presentation at the Nigeria Meteorological Agency. Efforts are been made to fully establish the Liberia Meteorological Agency, which will spearhead and regulate the hydromet services in Liberia.

4.6. Lessons learned

The four years of implementation, while challenging, provided many valuable lessons which may be useful if properly internalized. Such an approach is in compliance with one of the Least Developed Country Fund (LDCF) approach of learning-by-doing. The following are some lessons learned:

- Initially build capacity of technical expertise for future results. Assessment should allow technicians to have ownership in country. Because of a lack of expertise in the country at the inception of the project, outsourcing became the hallmark. It took 2 years to build minimum capacity, which was achieved almost at the end of the project.
- Training without practice is almost worthless; due to a lack of equipment, many of the trained meteorologists and hydrologists are incapable of displaying what they have learnt. Trainings being proposed by the EWS Project must be accompanied by actual practice, which will contribute to a viable hydro-met service for Liberia.
- During the disaster, vulnerable groups including women, children, etc. were considered (eg. as a result of gender mainstreaming, the psychosocial arm of the NDRM collaborated with the MoGCSP and provided support during the flooding that occurred in Grand Bassa, Montserrado, Bomi Maryland that affected 55,618 persons).
- The procedures for requesting approval for an activity or funding are slow and can increase the pressure on project duration and delivery. Approval processes should therefore begin early, emanating from the Project Management.
- The project faced challenges in acquiring trainees with requisite backgrounds and employed with Hydro-Met Services in the country. Therefore, more advanced trainings will necessitate the recruitment of math and physics graduates at an early stage.
- The EWS Project was designed to be implemented through the issuance of different consultancy contracts to different service providers; however, we have observed that long-term agreements with an expert group or groups that could work alongside with Liberian technicians could perform more efficiently and effectively than individual consultancies.

4.7. Recommendations

4.7.1. Provisional recommendations to ensure the sustainability

The following is a summary of the main recommendations and lesson learned that have been generated from the evaluation findings:

Recommendation (1)
Finding: the maintenance of the equipment made is important to consider, and efforts should be given to ensure that the GoL will be able to maintain the equipment

- Ensure that the MoT has a budgetary allocation to run the meteorological system and the automated stations after 2019.
- Start to support the transition of the contract with Earth Networks.
- GoL to demonstrate serious commitment through budgetary allocation for MoT in order to fill the funding gap for the project.

Recommendation (2)

Finding: the capacities of the national institutions are still weak

- The need for more capacity building trainings to foster the national expertise.
- Strengthen institutions and interactions (e.g. between the Emergency Operation Centre and the National Meteorological Centre).
- Encourage the access of the meteorological data by the national and local media for daily broadcasted weather forecasts.

Recommendation (3)

- Finding: Technical assistance needs are essential in Liberia as climate change has increasing impacts on agriculture and water resources
- The GoL continues to ensure that the country engages in RM both for assistance that responds to identified situations, and for long-term support and resources mobilization.
- Provide the country with the recent but already important experience of UNDP in the formulation of to scale up similar projects in Liberia.

Recommendation (4)

Finding: More and more technical and financial partners are interested in climate change**.**

- Focus on adaptation rather than mitigation considering the country's low carbon footprint and its high vulnerability to Climate Change.

Recommendation (5)

Finding: Lack of means observed:
Install the missing equipment as soon as possible in order to maintain gains already achieved.

Recommendation (6)
Finding: The country, in particular through activities initiated by the project, is well informed of the new sources of climate finance, first and foremost being the Green Climate Fund (GCF)

- Formulate a concept note, in order to generalize the project nationally (in process. On what topics-coastal Zone Adapt.
- Adopt a coherent strategy in terms of raising climate finance.
- NAP Process.
- Scaling up : GEF PIF 10 million USD

Table 9. Priorization of the remaining outputs.

Output	Level of priority	Comments
1.4 Staff in MLME, MoA, NDRC, EPA, MoH, LMA, NPA and MoPEA trained to use information from meteorological, hydro-meteorological and satellite monitoring equipment to tailor forecasts for climate-related hazards specific to the respective sectors.	High	Forecasts for climate-related hazards are important to decrease the vulnerability to the most vulnerable populations.
2.1 Systems and communication with the NDRC are developed to use hydrological, weather, climate and environmental monitoring data and existing vulnerability assessments to identify areas of high vulnerability to climate change.	High	Identify the high vulnerability areas in high priority regarding the long process to implement the forecast and monitoring system. They have to first focus on the most vulnerable areas.
2.3 Two applications – agricultural and coastal – of the EWS implemented and tested for their effectiveness.	Medium	
3.1 Regional climate change scenarios developed for Liberia and used to enable the identification of 'hotspots' where climate change is expected to have severe biophysical and socioeconomic impacts.	Medium	
3.2 Adaptation options (including EWS-related options) developed for the most vulnerable sectors and local communities based on the identified climate change 'hotspots'.	Medium	
3.4 Engagement of the private sector to develop paid-for meteorological and hydrological services, including a mechanism for discussing public and private financing for supporting the generation of climate information and early warnings.	High	The government needs to attract the private sector in investing the meteorological and hydrological services, aim to get more funds for further development.

Annexes

ANNEXE 1 - Terms Of Reference

Empowered lives.
Resilient nations.

INDIVIDUAL CONSULTANT PROCUREMENT NOTICE

NATIONAL CONSULTANT TO CONDUCT EVALUATION

PROCUREMENT NOTICE No. UNDP/IC/E&E/012/2018

Date: 30 August 2018 Country: Liberia

Duty Station: Monrovia, Liberia

Description of the assignment: National Consultant to Conduct Evaluation of the 'Strengthening Liberia's Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change'

Project name: UNDP Energy & Environment Project

Duration: 30 days over 5 weeks

Starting date: 24 September 2018

Contract type: Individual Contractor (National)

Languages: English

Proposals should be submitted at the following address: by email to bids.lr@undp.org (Please include procurement notice number in the subject area) no later than Friday, 7 September 2018 at 12:00 PM (GTM).

Any request for clarification must be sent by standard electronic communication to the address or e-mail indicated below: info.lr.procurement@undp.org

UNDP will respond by standard electronic mail and will send written copies of the response, including an explanation of the query without identifying the source of inquiry, to all consultants.

1. Background

Both the Liberia Hydrological and the Meteorological Services are among the least equipped to fulfill their institutional mandates to monitor Earth systems to provide climate information including for

weather, land and water resources useful for environmental management and economic planning in Liberia. The Climate Early Warning System (EWS) Project was identified in 2008 as one of three (3) Liberia's National Adaptation Program of Action (NAPA) Projects. Climate information from the EWS is supposed to inform adaptations measures in the Country.

The EWS Project launched as the last NAPA Project, set in motion activities to reverse a poor baseline for both Hydrological as well as Meteorological Services. An international tender bid (ITB) document being prepared in collaboration with the United Nations Development Program (UNDP) will lead to the procurement of hydro-meteorological equipment to be deployed throughout the Country, training of staff to man the equipment and to operate a hub for hydrological and meteorological activities to be called the National Meteorological Center (NMC).

2. Objective & Scope of Work

The TE team will assess the following four categories of project progress. Specifically, the national consultant will assist the international consultant (lead consultant) to assess the following four categories of the project progress.

I. Project Strategy

Project design:

- Review the problem addressed by the project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the project results as outlined in the Project Document.
- Review the project's relevance of the project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the project design?
- Review how the project addresses country priorities. Review country ownership. Was the project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?
- Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
- Review the extent to which relevant gender issues were raised in the project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Log frame:

- Undertake a critical analysis of the project's log frame indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant, Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.

- Are the project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to, or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits.

II. Progress towards results

Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix below and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table. Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy	Indicator[22]	Baseline Level[23]	Level in 1st PIR (self-reported)	Midterm Target[24]	End-of-project Target	Midterm Level & Assessment[25]	Achievement Rating[26]	Justification for Rating
Objective:	Indicator (if applicable):							
Outcome 1:	Indicator 1:							
	Indicator 2:							
Outcome 2:	Indicator 3:							
	Indicator 4:							
	Etc.							
Output 1.1 ETC								

[22] Populate with data from the Logframe and scorecards
[23] Populate with data from the Project Document
[24] If available
[25] Colour code this column only
[26] Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

In addition to the progress towards outcomes analysis:

- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the project objective in the remainder of the project.
- By reviewing the aspects of the project that have already been successful, identify ways in which the project can further expand these benefits.

iii. Project Implementation and Adaptive Management

Management Arrangements:

- Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
- Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the project's results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

- Consider the financial management of the project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the project? Is the

Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?

- Examine the financial management of the project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

- Project management: Has the project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?

- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?

- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the project management and shared with the Project Board.

- Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)

- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there key stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?

- Review external project communication: Are proper means of communication established or being established to express the project progress and intended impact to the public (is there a web presence, for example? Or did the project implement appropriate outreach and public awareness campaigns?)

- For reporting purposes, write one half-page paragraph that summarizes the project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

iv. Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.

- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long-term objectives of the project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

Are there any environmental risks that may jeopardize sustenance of project outcomes?

3. Deliverables

Output	**Due date**	**Payment terr**
Inception Report	**6 days**	**50%**
Presentation of initial finding	**5 days**	**30%**
Draft Final Report	**9 days**	**20%**
Final Report	**10 days**	

4. Reporting Lines:

A Joint UNDP Country Office and Government of Liberia evaluation and facilitation Team will be established to guide and assist the evaluation process. This team will consist of the head of the climate secretariat, a representative from responsible party and the EPA. The day to day work will be supervised by the UNDP Energy and Environment Programme Specialist. The consultant will report to this team through the UNDP Programme Specialist.

5. Reporting Language:

The reporting language will be in English.

6. Locations of Work:

The duty station of the national consultant is Monrovia. The contractor is expected to travel outside of Monrovia as and when necessary for the duration of the assignment. All costs related to travel shall be borne by the UNDP such as daily living allowances and transportation etc.

7. **Terms of Payment:**

Payments shall be processed within 30 days from receipt of signed and stamped invoice specifying the achieved deliverables as specified in this ToRs with relevant documents evidencing achievement of the given output. All of the deliverables are subject to approval from UNDP Project manager in order to process payments to the contractor. UNDP will not accept any payment request outside of this TOR.

All payments shall be made in USD. All planned costs related to this consultancy must be specified in the proposal by contractor for this assignment.

8. Contracting Authority:

Contracting Authority for this ToR is UNDP - Liberia Country Office, and the contract amount will be provided through the assigned budget under project 00061519, the Energy and Environment Core fund project.

9. **Tax Obligation**:

The Contractor is solely responsible for all taxation or other assessments on any income derived from UNDP. UNDP will not make any withholding from payments for the purposes of income tax. UNDP is exempt from any liabilities regarding taxation and will not reimburse any such taxation to the contractor.

10. **Monitoring and evaluation:**

All activities will be monitored and evaluated based on qualitative and quantitative information. Within the proposal the contractor is requested to submit an M&E plan highlighting what types of data and information will be available when; which will ensure that activities and outputs delivered as part of this activity, is of good technical quality and contribute to the achievement of the project outcomes.

Confidentiality:

The contractor undertakes to maintain confidentiality on all information that is not in the public domain and shall not be involved in another assignment that represents a conflict of interest to the prevailing assignment.

11. **Recruitment Qualifications**

Education: B.Sc or higher in environmental science, Social science, environmental economics or other closely related field.

Experience: At least 4 years of relevant work experience in project monitoring and evaluation

Experience in evaluating GEF projects on climate change adaptation is highly advantageous;

Demonstrated ability to communicate complex issues in a concise and clear manner

Demonstrated experience in mid-term and terminal evaluation

Highly organized with strong analytical and research skill

Experience working within the UN system or other international and governmental entities

Fluency in English both written and oral

Languages: Fluency in written and spoken English is required.

12. Competencies

Corporate Competencies

- Demonstrates integrity by modelling the UN values and ethical standards
- Displays cultural, gender, religion, race, nationality and age sensitivity and adaptability
- Treats all people fairly without favouritism
- Excellent analytical and organisational skills

Functional Competencies

Knowledge Management and Learning

- Promotes a knowledge-sharing and learning culture
- In-depth knowledge of development issues
- Ability to provide and advocate for policy advice
- Actively works towards continuing personal learning and successfully applies newly acquired skills

UNDP is committed to achieving workforce diversity in terms of gender, nationality and culture. Individuals from minority groups, indigenous groups and persons with disabilities are equally encouraged to apply. All applications will be treated with the strictest confidence.

13. Documents to be included when submitting the proposal

Interested individual consultants must submit the following documents/information to demonstrate their qualifications:

1. Proposal:

(i) Explaining why they are the most suitable for the work (1 page); brief methodology on how they will approach and conduct the work

2. Financial proposal

3. Personal CV (P11) including past experience in similar projects and at least 3 references

14. Financial Proposal

The financial proposal shall specify an all-inclusive daily fee. Payments will be made to the Individual Consultant based on specific and measurable deliverables as specified in the TOR upon completion of all deliverables.

Description	Unit	Quantity	Unit Price	Total price
Consultancy/professional fee + living allowance etc: all- inclusive lump sum	days			

15. Evaluation

Individual consultants will be evaluated based on the following methodologies:

Cumulative analysis

Award of the contract will be made to the individual consultant whose offer has been evaluated and determined as:

a) responsive/compliant/acceptable, and

b) Having received the highest score out of a pre-determined set of weighted technical and financial

** Technical Criteria; [70 points]*

** Financial Criteria; [30 points]*

Only candidates obtaining a minimum of 70% of the maximum points would be considered for the financial evaluation.

Criteria	***Weight***	***Max. Point***
Technical		
Criteria A: Technical skills, given by qualifications and training record	*10.5%*	*15*
Criteria B: Overall experience in the provision with the services given above	*24.5%*	*35*
Criteria C: Adequacy of competencies & skills responding to the Terms of Reference , (TOR) ;	*14%*	*20*
Criteria D: *Methodology: relevance to TOR*	*21%*	*30*

<u>Financial</u>	*30 points x price of the lowest price proposed / price of proposal*	*30 points*

ANNEX 2 – Evaluation Activity Schedule

Date	Time	Meetings	Location
3 Dec.	9:30-12:00	Meeting with UNDP Country Office Topic(s): Overview of the mission schedule and general introduction	UNDP Liberia
	14:00-15:30	Meeting with Project Director, a.i. EPA Topic(s): Introduce the Terminal Evaluation team and schedule.	EPA
	16:00–17:30	Meeting with EPA and project team Topic(s): Presentation on evaluation methodology, expected results and work-plan.	EPA
4 Dec.	070:00-18:00	Travel to the Project Field (near the airport), travel back to Monrovia	Field site near Monrovia
5 Dec.	09:30-11:00	Meeting with Ministry of Lands, Mines, and Energy project manager Topic(s): Partnership and mainstreaming synergy building, CCA in mainstreaming of good practices	MLME
	11:30-12:30	Meetings with Ministry of Health	MoH
	14:00-15:30	Meeting with Ministry of Agriculture.	MoA
	16:00-17:30	Meeting with Ministry of Transport	MoT
6 Dec.	09:00-10:30	Meeting with National Disaster Relief Commission	NDRC
	11:00-12:00	Meeting with Liberia Maritime Agency	LMA
	14:00-16:00	Meeting with National Ports Authority	NPA
	16:30-17:30	Meeting with UNDP/SGP and CCBAP Topic(s): VRA and mainstreaming CCA in local planning processes.	UNDP
7 Dec.	09:00-13:00	Restitution Workshop (gathering all the stakeholders)	UNDP or in a hotel conference room
	15:00-17:00	Debriefing meeting	UNDP

ANNEX 3 – Documents received

This list presents a non-exhaustive list of the documents received (included in a ews.zip file):

- 3rd Quarter 2017 Progress Report
- 2016 EWS signed Procurement Plan
- 2017 1st Qrt Work Plan
- Asset Registry 2016
- E and E IAWP 2017
- Environmental and Social Screening Signed Document
- EWS 1st Quarter 2017 Progress Report
- EWS 2015 Annual Progress Report
- EWS 2015 AWP
- EWS 2015 Q3 Work Plan
- EWS 2017 Signed Procurement Plan
- EWS M and E Plan 2015
- EWS M and E Plan 2016
- EWS Q1 2015 Work Plan
- EWS Q2 2015 Work Plan
- EWS 2014 annual report
- EWS LPAC Meeting Minutes 2013
- EWS Project Document Oct. 7, 2013
- Letter from MOT Non Cost Extension for EWS
- Mainstreaming Energy 2015 IWP
- MIA NDRC 1st Qtr 2016 Report
- MIA NDRC 2nd Qtr 2016 Report
- New IP (MOT) Request
- Procurement Plan 2015
- Project Extension Request Form
- Project Board TOR (1)
- Signature specimen
- EWS 2016 Report
- EWS 2nd QUARTER 2016
- EWS-LOGICAL FRAMEWORK

ANNEX 4 - Logical framework

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: Output 2.1.4) Utilization of Natural Resources (land, water and forest) improved; and Output 4.4.4) By 2016, National Disaster Risk Reduction (DRR) policy implemented and supported by a commission/agency with clearly defined mandates

Country Programme Outcome Indicators:

Primary applicable Key Environment and Sustainable Development Key Result Area: Promote climate change adaptation

Applicable GEF Strategic Objective and Program: Objective 2 “Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level”.

Applicable GEF Expected Outcomes: Outcome 2.1“Increased knowledge and understanding of climate variability and change-induced risks at country level and in targeted vulnerable areas”; and Outcome 2.2 “Strengthened adaptive capacity to reduce risks to climate-induced economic losses”.

Applicable GEF Outcome Indicators:

- Relevant risk information disseminated to stakeholders
- Type and no. monitoring systems in place
- % of population covered by climate change risk measures

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
Project Objective: “To strengthen Liberia’s climate-related monitoring capabilities, early warning systems and available information for responding to climate shocks and planning adaptation to climate change.”	1. Capacity as per capacity assessment scorecard. 2.Domestic finance committed to Meteorology Department, Hydrological Services and	1. Average capacity scorecard rating of 57 across men and women (see Annex 5). 2. Annual budget of US$ 64,480 allocated to Meteorology Department; annual budget of US$ 276,877 allocated to Hydrological Services; and annual	1. Capacity scorecard rating is increased to an average of 134 for both men and women (see Annex 5). 2. 20% increase in annual domestic finance allocated to Meteorology	1. Focus group interviews with climate information and EWS-related stakeholders; consultant reports. 2. Review of annual budgets.	Risk: Human, technical capacity within MoT particularly, as well as MLME, NDRC, MoA and EPA, including within extension service providers and decentralized offices, is insufficient to effectively implement the LDCF project. Assumption: Training opportunities provided through the LDCF project result in the development of the required capacity, and the GoL provides the necessary budget to provide the required institutional framework in which the newly skilled staff can operate. Risk: Poor coordination between IP (EPA), RPs (MoT, MLME, NDRC, MoA and EPA) and UNDP CO results in institutional failure, compartmentalized progress and delayed implementation of the LDCF project. Assumption: The management arrangements established

	NDRC to monitor and warn against extreme weather and climate change.	budget of US$50,000 allocated to NDRC.	Department, Hydrological Services and NDRC to monitor and warn against extreme weather and climate change.		by the LDCF project result in a coordinated approach to implementing the project. Risk: Insufficient institutional support and political commitments from the GoL leads to a decrease in the political will ensured during project design, ultimately destabilizing the LDCF project. Assumption: GoL commitment established during the design phase of the LDCF project is maintained for the project duration.
Outcome 1: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards and climate trends.	1. Percentage of national coverage of climate monitoring network (fully operational20). 2. Frequency data transmission.	1. AWS: 0% Hydrometric stations: 0%21. 2. At present, the 1 AWS transmits data at the synoptic hours of (GMT) 06h00, 09h00, 12h00, 15h00, 18h00 and	1. AWS: 100% (at least 9 AWSs). Hyrdometric: 100% (at least 6 stations). 2. 18 AWSs and hydrometric stations (11 new AWSs, 1 rehabilitated AWS, 6 hydrometric stations),	1. Field inspection of AWS sites; review of climate information database. 2. Review of climate information databases.	Risk: Delayed implementation of baseline projects by the GoL and donors negatively affects LDCF project outcomes. Assumption: Baseline projects are implemented according to the timeline identified in the PPG phase of the LDCF project, and achieve the desired outcomes and objective. Risk: Installed hydro-meteorological equipment fails because it is vandalised or not maintained. Assumption:Communities living nearby installed hydro-meteorological equipment commit to taking active measures to prevent the equipment from being vandalised; and the equipment is adequately maintained by the responsible institution. Risk:Climate shocks occurring during the design and implementation phase of the LDCF project result in disruptions to installed equipment and severely affect communities, prior to the EWSs being established.

	3. Number of sector-specific, tailored climate information packages produced using improved information.	00h00, although not consistently. 3. At present, the only sector-specific information produced is for the aviation sector.	transmitting continuously. 3. Sector-specific, tailored climate information packages produced for three of the following: agriculture, water, aviation22, fisheries/coastal water users, health, tourism, construction, and energy, and road, rail and sea transport.	3. Interviews with line ministries and a review of the information packages released.	Assumption: Any climate shocks occurring whilst the EWSs are being established will not be so severe as to result in a relocation of the communities where the effectiveness of the EWSs will be tested. Risk: Local information technology and telecommunications infrastructure restricts the transfer of data from installed equipment to necessary recipients, and restricts communication amongst key role players and end-users. Assumption: Information technologies and telecommunications systems implemented or used, where such suitable system already exist, through the LDCF project are best suited to the local context and do not restrict the transfer and communication of information. Risk: Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with the release of funds and/or national procurement procedures. Assumption: UNDP CO and HQ will coordinate with the IP to ensure effective administrative planning meaning the equipment is procured and installed in a timely manner.
Outcome 2: Efficient and effective use of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making.	1. Number of communication channels operational to disseminate climate-related early warnings.	1. At present, information is relayed to communities mostly via word-of-mouth, but without the structure of SOPs. 2. 0% of men;	1. At least 3 of the following: Radio, television, print media (newspapers, flyers), word-of-mouth and mobile phone communication channels operational.	1. Review of SOPs in place, review of records of early warnings issued and received.	Risk: Lack of commitment from communities where EWS are established undermines the effectiveness of the LDCF project demonstrations. Assumption: Awareness raising activities, and the demonstration of the advantages of responding to the information provided through the established EWS, will ensure the commitment of the communities in participating in the LDCF project. Risk: Poor coordination between IP (EPA), RPs (MoT, MLME, NDRC, MoA and EPA) and UNDP CO results in institutional failure, compartmentalized progress and delayed implementation of the LDCF project.

	2. Percentage of population in within the two target districts with access to improved climate-related flood, storm and coastal surge warnings (disaggregated by gender).	0 % of women23.	2. 100 % of men; 100 % of women24.	2. Gender-sensitive field surveys undertaken within identified priority sites; consultant reports	Assumption: The management arrangements established through the LDCF project result in a coordinated approach to implementing the project. Risk: Human, technical capacity within MoT particularly, as well as MLME, NDRC, MoA and EPA, including within extension service providers and decentralized offices, is insufficient to effectively implement the LDCF project. Assumption: Training opportunities provided through the LDCF project result in the development of the required capacity, and the GoL provides the necessary budget to provide the required institutional framework in which the newly skilled staff can operate. Risk: Insufficient institutional support and political commitments from the GoL leads to a decrease in the political will ensured during project design, ultimately destabilizing the LDCF project. Assumption: GoL commitment established during the design phase of the LDCF project is maintained for the project duration.
Outcome 3: Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.	1. Development frameworks that integrate climate information in the formulation.	1. The Agenda for Transformation (2012-2017) highlights the need to develop climate change mainstreaming and response strategies, but not the need for improved information to inform the strategies	1. At least updated Agenda for Transformation (to be revised in 2017) to incorporate the availability of climate information into planning for the five year period.	1. Review updated Agenda for Transformation.	Risk: The slow pace of policy modification may mean that identified development frameworks do not integrate climate change in a timely fashion Assumption: Climate change adaptation considerations are included in development framework formulation, based on advancements in climate information and forecasting achieved through the LDCF project. Risk: Insufficient institutional support and political commitments from the GoL leads to a decrease in the political will ensured during project design, ultimately destabilizing the LDCF project. Assumption: GoL commitment established during the design phase of the LDCF project is maintained for the project duration.

ANNEX 5 - List of key stakeholders

Outcome	Output	Lead Institution	Key Partners	Key Responsibilities
Outcome 1: Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards and climate trends.	**Output 1.1** Procurement and installation of 11 AWSs and 6 automatic hydrometric stations, including all associated infrastructure, in critical areas across the country, and rehabilitation of 1 automatic and 1 manual meteorological monitoring station, including communications and centralised archiving technologies.	MoT/MLME	MoA, NDRC, EPA	Undertake systematic analysis. Procure and install AWSs and hyrdometric stations. Undertake repairs. Integrate data into established database.
	Output 1.2 Technical capacities of staff in Meteorology Department developed to produce standard and customized weather and climate forecasts and packaging meteorological data and information into a suitable format for user agencies and local community end-users.	MoT	MLME, MoA, NDRC, EPA	Customize the weather forecasting system. Conduct training of meteorologists, observers and officers. Develop the capacity of instrument technicians Develop a climate observation quality control and maintenance toolbox.
	Output 1.3 Weather and climate forecasting systems enabled through procuring and installing the required equipment, and through integrating of satellite observations for monitoring and assessing the changing state of the environment and the impact of current and future climate on key environmental variables.	MoT	MLME, MoA, NDRC, EPA	Procure and install a climate database at NMC. Review and install appropriate telecommunication. Procure and install modern meteorological forecasting stations. Conduct training on the Satellite Distribution System (SADIS).
	Output 1.4 Staff in MLME, MoA, NDRC, EPA, MoH, LMA, NPA and MoPEA trained to use information from meteorological, hydro-meteorological and satellite monitoring equipment to tailor forecasts for climate-related hazards specific to the respective sectors.	MoT, MLME, MoA, NDRC, EPA, MoH, LMA, NPA and MoPEA	Schools, universities, regional training centres	Undertake a comprehensive assessment of the tailored climate information requirements. Develop the capacity of technical personnel from each of MLME, MoA, NDRC, EPA, MoH, LMA, NPA and MoPEA. Develop a statutory regulatory framework to guide information sharing and analysis between the institutions. Cost-benefit analysis. Initiate an outreach programme in schools and universities and provide scholarships.
Outcome 2: Efficient and effective use	**Output 2.1** Systems and communication with the NDRC are developed to use hydrological, weather, climate and environmental monitoring data and	NDRC	MoT , MLME, MoA, EPA	Develop a centralised climate vulnerability and risk database.

of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making.	existing vulnerability assessments to identify areas of high vulnerability to climate change.			Train technical personnel from NDRC on hazard and vulnerability mapping and produce hazard and vulnerability maps Review and propose revisions to planning documents. Build the capacity of national and local government user agencies to effectively support EWS and data/information exchange/sharing protocols.
	Output 2.2 Communication channels, SOPs and legal mandates developed for disseminating climate information and issuing warnings through government institutions and NGOs.	NDRC	MoT , MLME, MoA, EPA	Develop a national weather and climate information and early warning system communication and coordination strategy. Develop a national and local dissemination toolbox. Establish links with local radio stations. Establish links with national television broadcasters. Strengthen traditional 'word of mouth' dissemination system. Establish an Open Data Platform. Establish legal mandates for issuing warnings. Establish call centres/hotline and internet connections
	Output 2.3 Two applications – agricultural and coastal – of the EWS implemented and tested for their effectiveness.	NDRC	MoT , MLME, MoA, EPA	Undertake a rapid, participatory vulnerability assessment. Map sub-basin climate hazards in the priority districts. Train communities. Develop and implement a range of communication strategies. Assess the merits of the different types of communication strategies. Develop and conduct simulation exercises.
Outcome 3: Increased awareness in government, private sector and local communities of the major	**Output 3.1** Regional climate change scenarios developed for Liberia and used to enable the identification of 'hotspots' where climate change is expected to have severe biophysical and socio-economic impacts.	MoT	MLME, NDRC, MoA, EPA	Develop a protocol on generating regional climate change scenarios. Provide training to MoT. Provide workshops to facilitate the understanding of national and local government on the outputs.
	Output 3.2 Adaptation options (including EWS-related options) developed for the most vulnerable	NDRC	MoT , MLME, MoA, EPA	Develop a suite of adaptation interventions for the most vulnerable sectors and local communities.

risks associated with climate change, and use of available information when formulating development policies and strategies.	sectors and local communities based on the identified climate change 'hotspots'.			Undertake consultations with relevant line ministries and vulnerable communities. Develop user-friendly pamphlets and manuals on how community leaders should instruct communities to react once warnings are received. Undertake a campaign at a county level
	Output 3.3 A system established for inter-ministerial dialogue on incorporating climate change considerations into government policies and strategies.	EPA	MoT , MLME, MoA, NDRC	Establish the NCCSC. Undertake a review of governments/policies to identify entry points for climate change adaptation. Assess the recommendations emanating from the development of regional climate change scenarios. Propose revisions to national/sectoral policies/strategies. Engage with government to motivate for budget allocations for the sustainability of LDCF project interventions.
	Output 3.4 Engagement of the private sector to develop paid-for meteorological and hydrological services, including a mechanism for discussing public and private financing for supporting the generation of climate information and early warnings.	MoPEA	MoT , MLME, MoA, NDRC, EPA	Undertake a needs assessment. Establish a consultative forum with major private sector partners. Review the business plans of MoT/NMA, MoA, MLME and NDRC. Facilitate the development of business plans of NMA and by the private sector clients. Establish a public-private partnership between a suitable company and the MoT/NMA.

ANNEX 6 - Evaluation criteria and questions

The evaluation will purposefully apply the OECD/DAC evaluation criteria that speak to: relevance, effectiveness, efficiency, impact, sustainability, partnership and address some cross-cutting issues such as (Gender Equality and Human Rights) in order to achieve its objectives. The consulting team has developed guiding questions, which are embedded within the framework of the evaluation criteria as indicated below:-

RELEVANCE – *The extent to which the project relate to the main objectives of the GEF focal area, and to the environment and development priorities at the local, regional and national levels,*	
QUESTIONS	• Are the project's objectives consistent with the evolving needs and priorities of the beneficiaries, partners, and stakeholders? • What is the project's Contribution to sectors of agriculture and water? • What is the project's Contribution to regional initiatives e.g. financing CC at the local level? • Is the project locally related and demanded by stakeholders?
EFFECTIVENESS - *To what extent have the expected outcomes and objectives of the project been achieved or are expected/ likely to be achieved.*	
QUESTIONS	• What has been the progress made towards achievement of the expected outcomes and expected results? What are the results achieved? • Does the programme have effective monitoring mechanisms in place to measure progress towards results?
EFFICIENCY **-** *A measure of how economically resources / inputs (funds, expertise, time, etc.) were converted to results*	
QUESTIONS	• Was the project implemented efficiently, in-line with international and national norms and standards? • Have resources (financial, human, technical support, etc.) been allocated strategically to achieve the project outcomes? • What measures have been taken during planning and implementation to ensure that resources are efficiently used?
IMPACT **-** ***I****ndications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status? Positive and negative, primary and secondary long-term effects produced by the project directly or indirectly, intended or unintended.*	
QUESTIONS	▪ How do the project activities contribute to the decrease of vulnerability? ▪ What are the changes being contributed to livelihood through information, adaptation, DRR? ▪ How do the project activities contribute to the Food security? ▪ What evidence exist that the project has delivered longer term results?
SUSTAINABILITY - *The likelihood of a continuation of benefits from a development intervention after the intervention is completed. To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?*	
QUESTIONS	• Are requirements of national ownership satisfied? Is the project supported by national/local institutions? Do these institutions, including Government and Civil Society, demonstrate leadership commitment and technical capacity to continue to work with the project or replicate it? • What capacity of national partners, both technical and operational, has been strengthened? • To what extent have the project's exit strategies been well planned and successful?
PARTNERSHIP– *An extent to which coordination, collaboration and synergy are developed and achieved among stakeholders, beneficiaries to produced desired results of the project.*	
QUESTIONS	• Has the partnership strategy of the project been inclusive, appropriate and effective? • How is the coordination of the project working among the related stakeholders such as: MoT , MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc. • How effective has UNDP been in partnering with civil society (where applicable) and the private sector to promote the project's objectives?

GENDER EQUALITY– *An extent to which gender main streaming has been factored into the project.*	
QUESTIONS	• To what extent has gender considerations been integrated into the programmed design and implementation? • How has attention to/ integration of gender equality concerns advance the area of work?
HUMAN RIGHTS - *An extent to which human rights has been factored into the project to effect positive change.*	
QUESTIONS	• To what extent has the programme actively promoted the fulfilment of human rights? • In its design and implementation, does it include opportunities to integrate human rights in each outcome of the programme and prioritize the principles of accountability, meaningful participation, and non-discrimination?

ANNEX 7 - EVALUATION MATRIX

EVALUATION QUESTIONS	INDICATORS (S)	METHOD (S)	DATA COLLECTION PROCEDURES	DATA SOURCE/MEANS OF VERIFICATION
RELEVANCE				
• Are the project's objectives consistent with the evolving needs and priorities of the beneficiaries, partners and stakeholders?	Matching intervention with the capacities and needs for the individuals and institutions. -Existence of needs assessment.	Desk study and interview	Project ProDoc and interview	Review of ProDoc interview & interaction with target beneficiaries.
• To which extent the project contributes to the RGC major policy papers?	Number of lessons learned, practices introduced.	Desk review, reports	Project ProDoc and interview	RGC Policy papers Reports.
• What is the project's Contribution to sectors of agriculture and water?	Resilient techniques and best practices.	Desk review, reports	Project ProDoc and interview	RGC policy and strategic papers, Reports
	Matching intervention of regional initiatives.	Desk review, reports	Project ProDoc and interview	RGC policy and strategic papers, Reports
• What is the project's Contribution to regional initiatives e.g. financing CC at the local level? • Is the project locally related and demanded by stakeholders?	Share of stakeholders locally involved in the project.	Field interviews	Project ProDoc and interview	Beneficiaries and other stakeholders
EFFECTIVENESS				

• What has been the progress made towards achievement of the expected outcomes and expected results? What are the results achieved? • What are the improved capacity of SNAs and local institutions involved in the project in target and non-target areas? • What is the Number (gender disaggregated) of direct and indirect beneficiaries? • Are there adoption of resilient technologies introduced by the project in the target and non-target areas? • Are there any association to the local suppliers such as solar energy, rice seeds, inputs, disaster preparedness materials, etc being created by this project? • Does the programme have effective monitoring mechanisms in place to measure progress towards results?	-Compiling, Listing of results --Mapping achievements against expectations	Desk study & consultation	Projects reports & Consultation notes	Review of projects reports & Interaction, interviews with implementing partners
	Extent of achievements against actual results -Differences planned results & interventions / actual implementation and achievements.	Field interviews, reports	Reports M&E campaign	Review of projects reports & Interaction, interviews with implementing partners
	% (for relative numbers) -Data dis-aggregated by gender -Number of women participating at the various stages of the project implementation	Desk study & consultation	M&E Reports	Review of projects reports
	-Level of affirmation/non-affirmation (yes/no) -listing of results.	Desk study & consultation	Projects reports & Consultation notes	Review of projects reports & Interaction, interviews with implementing partners
	-Mapping and listing of results. -M&E indicators used and shared with partners.	Field visit	Projects reports & Consultation notes	Local stakeholders
	-Consistency of the M&E implementation & reporting. -Existence of areas of the project. -Existence of an analysis of various options.	Desk study & consultation.	Review of Annual, quarterly report & consultation notes.	Desk review, technical report, partners reports, capacity assessments; KII, FGD
EFFICIENCY				
• Was the project implemented efficiently, in-line with international and national norms and standards?	-Matching intervention of similar initiatives.	Desk study & consultation.	Review of Annual, quarterly report & consultation notes.	Desk review, technical report, partners reports.

▪ Have resources (financial, human, technical support, etc.) been allocated strategically to achieve the project outcomes? Is the programme and its components cost-effective? • What measures have been taken during planning and implementation to ensure that resources are efficiently used? What are the factors that should have improved the project delivery? • How is the efficiency and activeness of the project board? • What is the project's experience of the multi-sector approach?	- Level of Cost effectively associated with output and outcomes. -Number of staff and mobilization strategy. -Fund and other resources used.	Desk study and consultation	Review of Annual, quarterly report.	Review of Quarterly program/project Reports and interviews, Interaction with IPs.
	-Evolution of cost effectiveness ratio (if calculable, staff / partners / interventions costs) -Average cost by beneficiary -HR required for implementation of the different activities.	Desk study and consultation	Review of Annual, quarterly report & Consultation Notes	Desk review (technical report, partners reports, capacity assessments); KII Focus group discussion
	-Extend of % of delivery. -Level of Cost Associated with output and outcomes.	Desk study and review	Review of Annual, quarterly report	Desk review (project technical report, partners reports.
	-Extent of engagement -level of coordination and results of outputs.	Desk study and review	Review of Annual, quarterly report, board minutes.	Desk review (project technical report, partners reports, interview of target beneficiaries.
	-Number of participants and results achieved at the various stages of the project implementation	Desk review and reports	Review of Annual, quarterly report	Desk review (project technical reports.
IMPACT				
▪ How do the project activities contribute to the decrease of vulnerability?	-Vulnerability impact -Economic analysis of the status of	Desk review consultation notes	VRA Reports	Desk review (technical report, partners reports, capacity assessments)

▪ What are the perception of people over their future livelihood and DRR? ▪ What are the changes being contributed to livelihood through information, adaptation, DRR? ▪ How do the project activities contribute to the Food security? ▪ What evidence exist that the project has delivered longer term results?	Beneficiaries in targeted project areas			KII, Focus group discussion
	- Level of freedom of speech on the DRR issues. -Existence of needs assessment -Adequacy of the strategy with needs indicators available -Extent of the gaps in needs analysis .	Desk review consultation notes	Review of Annual, quarterly reports.	Desk review (technical report, partners reports; KII, Focus group discussion
	-Ability of beneficiaries to raise their voices during the project activities and to access the project outputs and basic services. -Extend of evidence of an enabling environment created for the rights-holders to claim their rights more successfully and the duty-holders to perform their duties more efficiently?	Desk review consultation notes	Review of Annual, quarterly report & Consultation Notes	Desk review (technical report, partners reports, capacity assessments)KII, FGD
	-Number of beneficiaries locally from the project that are economically sustainable. -Economic analysis of the status of Beneficiaries in targeted project areas.	Desk review consultation notes	Review of Annual, quarterly report.	Desk review Project technical report, partners reports, capacity assessments); KII, FGD
	-Reaction of the government following discussions / comments by donors / IPs, women groups, CSO, NGOs, other target beneficiaries, etc.	Desk review	Review of Annual, quarterly report	Review of Quarterly project Reports and interviews, Interaction with IPs.
SUSTAINABILITY				

• Are there ownership and leadership of the SNAs in maintaining the project achievement?	Inclusion in the local planning process	CIP Documents	Review of Annual, quarterly report & Consultation Notes	Review of annual & quarterly reports and Interaction with implementing and other institutional partners.
• Are requirements of national ownership satisfied? Is the project supported by national/local institutions? Do these institutions, including Government and Civil Society, demonstrate leadership commitment and technical capacity to continue to work with the project or replicate it?	-Process used to foster national ownership and capacity development -Extent of the project fostering national ownership and capacity development -Ability to replicate the practices gained during the interventions -Existence of mechanisms to ensure institutionalization, capitalization and replication of the intervention & results of the project.	Desk review	Review of Annual, quarterly report	Review of annual & quarterly reports and Interaction with implementing and other institutional partners.
• What capacity of national partners, both technical and operational, has been strengthened?	-Steps taken by the project to transfer capacities to MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc? -Steps taken by the project to transfer capacities to other institutional partners	Desk review consultation notes	Review of Annual, quarterly report & Consultation Notes	Review of annual & quarterly reports and Interaction with implementing and other institutional partners
• To what extent has the project been able to promote replication and/or up-scaling of successful practices?	-Availability of mechanism for extension of the program. -Key Innovations from lessons learned identified.	Desk review consultation notes	Review of Annual, quarterly report & Consultation Notes	Desk review (project reports, reports of the partners, prospective reports on donors' strategy in the country) KII and FGD.

• Is there any future project being considered as triggered by this project? • To what extent have the project's exit strategies been well planned and successful? .	-Action Plan or Exit Strategy (mechanisms to ensure institutionalization, capitalization and replication of the interventions & results of the project)	Letter of Agreement	Review of Annual, quarterly report	Desk review (project reports, reports of the partners, prospective reports on security, donors' strategy in the country); KII and FGD
	Extent of planning of exit strategies to be implemented without losing the benefits of the project	Desk review consultation notes	Review of Annual, quarterly report	Desk review (project reports, reports of the partners, prospective reports on security, donors' strategy in the country); KII and FGD.
PARTNERSHIP				
• Has the partnership strategy of the project been inclusive, appropriate and effective? • How is the coordination of the project working among the related stakeholders such as: MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc? • Has UNDP worked effectively with other international delivery partners to deliver on project's initiatives? • How effective has UNDP been in partnering with civil society (where applicable) and the private sector	Frequency of the coordination meetings	Desk review	Review of Annual, quarterly report	Desk review (minutes of coordination meetings, project documents, reports by partners, civil society reports) KII, Focus Group Discussion
	-Reaction of the government following discussions / comments by donors / civil society / UNDP	Desk review consultation notes	Review of projets's Annual, quarterly report	Desk review (minutes of coordination meetings, project documents, reports by partners, civil society reports) KII, Focus Group Discussion
	-Work plans of the other project are available to the project staff and a State structure to ensure coherence of the various initiatives	Desk , reports and consultation notes	Review of project's Annual, quarterly report	Desk review (minutes of coordination meetings, project documents, reports by partners, civil society reports) KII, Focus Group Discussion
	-Extent of coordination, - Level of synergies developed between the different projects?	Desk review consultation notes	Review of Annual, quarterly reports	Desk review (minutes of coordination meetings, project documents, reports by partners, civil society reports) KII, Focus Group Discussion.

to promote the project's objectives?				
GENDER EQUALITY				
• To what extent has gender been integrated into the programmed design and implementation? • To what extend was gender equality and women's empowerment advanced as a result of this intervention?	Data dis-aggregated by gender. -Number of women participating at the various stages of the project.	Desk review consultation notes	Review of Annual, quarterly reports	Desk review (minutes of meetings, content of the trainings project documents, reports by partners, civil society reports); KII Focus Group Discussion.
	-Extent of women ability to raise their voices during the project activities and to access the projects outputs and basic services.	Desk review consultation notes	Review of Annual, quarterly reports	Desk review (minutes of meetings, content of the trainings project documents, reports by partners, civil society reports) KII, FGD.
• How has attention to/ integration of gender equality and human rights concerns advance the area of project work?	-Existence of ethnical / demographic / cultural bias in implementation.	Desk review consultation notes	Review of Annual, quarterly reports	Desk review, project documents, reports by partners, CSO reports) FGD
HUMAN RIGHTS				
• To what extent has the programme actively promoted the fulfilment of human rights? • In its design and implementation, does it include opportunities to integrate human rights in each outcome of the programme and prioritize the principles of accountability, meaningful participation, and	-Mention of human rights in the activities. -Existence of ethnical / demographic / cultural bias in the programme. -Geographical and sectoral coverage of the programme -Level of freedom of speech on the EWS issues.	Desk review consultation notes	Review of Annual, quarterly reports	Desk review (minutes of meetings, project documents, reports by partners, civil society reports), KII, Focus Group Discussions.

non-discrimination? • How has attention to/ integration of human rights concerns advance the area of work?				

ANNEX 8 – Interview Guide

		Project Staff	Partners	External Stakeholders
1	How was the project formulated? To what extent was it participatory and inclusive?	X	X	X
2	To what extent have social, economic and political dynamics been taken into consideration? Which group or areas in Liberia have not been included?	X	X	X
3	Are there gaps between the E&E Project, national policies and strategies? As compared with international standards?	X	X	X
4	To what extent are the project's monitoring mechanisms in place effective for measuring and informing management?	X	X	X
5	How was the prioritization undertaken, including the selection of counties? To what extent have the most relevant activities and outputs selected to achieve the objectives?	X	X	X
6	What needs could not be covered? Have some activities been rejected at the inception stage?	X	X	X
7	How and to what extent was the gender dimension included in the E&E project? Ethnic minorities?	X	X	X
8	How was gender factored in the programme and in the results? How have cultural constraints related to gender been addressed? To what extent do the results differ between male and female?	X	X	X
9	To what extent did the M&E process identify results and limitations of the process across the various implementing partners and participants? How would you suggest improvements in the M&E to enable documenting results at outcome and impact level in the future?	X	X	X
10	How have lessons learned been identified and included in the projects?	X	X	X
11	How was cost efficiency included in the project? Were some of the costs paid by the GOL and why? To what extent have local resources been maximized?	X	X	X
12	Which activities could not be implemented as planned and why? What were the difficulties? To what extent can they be anticipated and planned?	X	X	X
13	How were beneficiaries, trainers and trainees selected? Did these change over the years?	X	X	X
14	To what extent were coordination and the partnership strategy relevant and effective? How have partnerships affected the progress towards achieving the outputs?	X	X	X
15	To what extent were civil society and private sector involved? Are there further opportunities in that respect?	X	X	X
16	To what extent were the trainees / beneficiaries able to use the knowledge/ practices taught during the trainings in their different MACs? How has this been documented?	X	X	X
17	What were the potential limitations to put into practice the learnings of the activities	X	X	X
18	To what extent did you try to overcome potential limitations and difficulties during the projects' implementation?	X	X	X
19	Which changes can be identified in the beneficiary MACS, organizations and to what extent can they be attributed to the project work?	X	X	X
20	To what extent did those changes lead to potential impacts?	X	X	X
21	Can any unexpected positive or negative effects be identified?	X	X	X
22	What would be your recommendations for the potential future of the E&E project operations in Liberia, particularly at the local level?	X	X	X
23	Has the project built synergies with other similar projects being implemented at country level with the United Nations and the Government of Liberia?	X	X	X

Annex 9 - Focus Group Protocol

This Focus Group protocol is a general and draft list of questions which will be further tailored based on initial interviews and depending on the different categories of participants engaged in the focus groups discussion.

1. Why did you take part in this activity?
2. What did you get from this activity?
3. Did it change something in your way of working, living? If so, what?
4. Were there components of this activity useless to your job? Which ones?
5. Were there specific difficulties in the implementation of this activity? What could be improved?
6. Do you also face difficulties in the implementation of what you have learnt / discussed during this activity? Why? How could this be overcome?
7. Do you see other effects of this activity, on your organizations and its performance / results?
8. What would be the priorities in terms of DRR in the country to date?
9. How is the performance of civil servants assessed and to what extent is this effective?
10. How could transparency increase for project implementation?
11. How potential informal rewards practices such as corruption be mitigated?
12. Do you see categories of populations excluded from the potential benefits of the project? Which ones and why?
13. Would you have other recommendations to strengthen the work at the county level?

Annex 10

QUESTIONNAIRES FOR MACS (MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP}

RELEVANCE

1. To what extent is MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH, MFDP engaged in the implementation of the project?
2. Are the project's objectives consistent with the evolving needs and priorities of the beneficiaries, partners, and stakeholders?
3. To which extent the project contributes to the RGC major policy papers?
4. What is the project's Contribution to sectors of agriculture and water?
5. What is the project's Contribution to regional initiatives e.g. financing CC at the local level?
6. To what extent was national ownership and capacity development fostered? What are major areas for improvement?

EFFECTIVENESS

1. In what ways this project could be more effective?
2. What is the Number (gender disaggregated) of direct and indirect beneficiaries?
3. Are there adoption of resilient technologies introduced by the project in the target and non-target areas?
4. Are there any association to the local suppliers such as solar energy, rice seeds, inputs, disaster preparedness materials, etc. being created by this project?
5. What has been the progress made towards achievement of the expected outcomes and expected results? What are the results achieved?

EFFICIENCY

1. In what way this project would have been less costly?
2. Is the programme and its components cost-effective?
3. Have resources (financial, human, technical support, etc.) been allocated strategically to achieve the programme outcomes?
4. What are the factors that should improve project delivery?
5. How is the efficiency and activeness of the project board?
6. What is the project's experience of the multi-sector approach?

IMPACT

1. What is the contribution of the project in the line ministries and commissions in improving their status?
2. How do the project activities contribute to the decrease of vulnerability?
3. What evidence exist that the project has delivered longer term results as compared to other projects from processes through to benefits?

PARTNERSHIP

1. Has the partnership strategy of the project been inclusive, appropriate and effective?
2. How is the coordination of the project working among the related stakeholders such as: MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc.
3. How have partnerships affected the progress towards achieving the outputs of the project?
4. Has UNDP worked effectively with other international delivery partners to deliver on project's initiatives?
5. How effective has UNDP been in partnering with civil society (where applicable) and the private sector to promote the project's objectives?
6. To what extent the project intervention implemented/ coordinated with appropriate and effective partnership and strategies?
7. What has been the nature and added value of these partnerships?

SUSTAINABILITY

1. To what extent is the project taking the necessary steps to transfer capacities and skills to MoT, MLME, MIA-NDRC, MOA, LMA NPA, MOH MFDP, etc.
2. How can you carry over the project results that you have attained after the project phases out?
3. What support would you require to continue and expand what you have achieved?
4. What are your suggestions for future project that would be more valuable to you?

GENDER EQUALITY & HUMAN RIGHTS

1. To what extent is the project bringing about gender transformative changes that address the root causes of gender inequalities – including prevailing social norms, attitudes and behaviors, discrimination and social systems?
2. What factors contribute or influence the project's ability to positively contribute to policy change from a gender perspective?
3. What factors contributed the project's ability to positively contribute to access to justice and human rights?

NOTE **:- General questions which are specifically applicable where and when necessary by the E-Team at interview with various MACS.**

ANNEX 11 – Project Result Matrix

PROJECT RESULTS MATRIX

The following table indicates the Projects' Progress Milestones & Results

PROJECT (S): Strengthening Liberia's Capability to Provide Climate Information and Services to Enhance Climate Resilient Development and Adaptation to Climate Change. (Early Warning System)

OUTCOME (Component)	INDICATOR (S)	OUTPUT-PLANNED RESULT (S)	ACTUAL ACHIEVEMENTS TO DATE
1.1 Increased capacity of hydro-meteorological services and associated networks to monitor and predict extreme weather, climate-related hazards and climate trends.	1. Percentage of national coverage of climate monitoring network (fully operational20). **2.** Frequency data transmission**.** 3. Number of sector-specific, tailored climate information packages produced using improved information. 1. Percentage of national coverage of climate monitoring network (fully operational20).	**Output (1.1)** Procurement and installation of 11 Automatic Weather Stations (AWSs) and 6 Automatic Hydrometric Stations, including all associated infrastructure in critical areas across the country and rehabilitation of 1 automatic and 1 manual meteorological monitoring station, including communications and centralized archiving technologies. **Output (1.2)** Technical capacities of staff in Meteorology Department developed to produce standard and customized weather and climate forecasts and packaging meteorological data and information into a suitable format for user agencies and local community end-users.	▪ 11 automatic weather stations were procured, installed on cell com towers across the country. These equipment have been generating weather information and achieving them for the past one and half year. ▪ Twelve (12) additional automatic weather stations were procured and delivered over the period. This action was followed by a six days training for both installation and data access. Up to December 20, 2018, all civil works for the installations were completed and three of the stations installed and the rest will be installed beginning January 15, 2019. ▪ Development of an integrated Water Resource Management System. The development stages was completed and a dummy of the software was produced for training purposes as well as final works are being carried on for the finalization of the system to be formally launched in March 2019. ▪ MoT developed weather website. Website provides weather data for thirty (30) major cities around Liberia making use of information generated from the eleven automatic weather stations installed on the Orange Towers in (9) counties of Liberia. The website also provides an hourly & (10) days forecasts of temperature, humidity, wind direction and speed, and dew point. One can log unto the website using this address: https://liberia.enterprise.earthnetworks.com ▪ Provided training for 27 staff members as

	2. Frequency data transmission**.** 3. Number of sector-specific, tailored climate information packages produced using improved information.		meteorologist, hydrologists, observers, instrument technicians and officers from various institutions in Nigeria for a period of 3-12 months. Courses included Aviation Meteorology, Climatology, Agro-meteorology, Meteorological database Management and instrumentation. Completion done in September 2017. ▪ Provided training in Financial Management for Donor funded Project for Finance and Administrative Officer in 2016, Manzini, Swaziland. 2 staff of the Ministry of Transport ADCON training in Lusaka, Zambia in 2017. ▪ NDMA and MIA conducted an awareness workshop with county superintendents and district commissioners on the activities of the Early Warning System in Md. County. ▪ NCCS & MOT Conducted National & Regional Stakeholders awareness workshop in Bomi County on EWS-August, 2018. ▪ Trained (25) staff; 5 females and 20 males from NDMA, Liberia Hydrological Service, MoT, Liberia Maritime Authority in Water Resource management, ADCON Equip ment usage. Negotiations are underway with the Nigerian MA, Water Resource Mgt. Institute in Galileo Institute in Israel for training of Liberian hydro met staff in 2019.
2.1 Efficient and effective use of tailored climate, environmental and socio-economic data to produce appropriate information which can be communicated to government entities and communities to enable informed decision-making.	1. Percentage of national coverage of climate monitoring network (fully operational20). **2.** Frequency data transmission**.** 3. Number of sector-specific, tailored climate information	**Output (1.3)** Weather and climate forecasting systems enabled through procuring and installing the required equipment and through integrating of satellite observations for monitoring and assessing the changing state of the environment and the impact of current and future climate on key environmental variables.	▪ National Meteorological Centers (NMC) identified in 4; Counties (Grand Bassa, Bomi, Bong and Montserrado). Building housing the Roberts International Airport Meteorology Department renovated as the NMC and MOU signed between RIA Management and the Ministry of Transport. • MOT in partnership with National Disaster Management Agency (NDMA) completed a national vulnerability map for ten counties in Liberia.) This exercise also included the Liberia Institute for Geo – Information Service

	packages produced using improved information.		(LIGIS).
3.1 Increased awareness in government, private sector and local communities of the major risks associated with climate change, and use of available information when formulating development policies and strategies.	1. Number of communication channels operational to disseminate climate-related early warnings. 2. Percentage of population in within the two target districts with access to improved climate -related flood,storm and coastal surge warnings (disaggregated by gender).	**Output (2.2)** Communication channels, SOPs and legal mandates developed for disseminating climate information and issuing warnings through government institutions and NGOs	▪ MoT & NDMA trained Paramount, Clan,Town Chiefs & Town Crier on the traditional method for the dissemination of weather and climate hazards held in Nimba County. Participants came from 7 counties; Grand Kru, Maryland, Rivergee, Grand Gedeh, Nimba, Bong and Lofa Counties. The other training workshop was held in Buchanan, Grand Bassa county included chiefs from Sinoe, Grand Bassa, Monserrado, Margibi, Bomi and Grand Capemount Counties The local stakeholders were trained in traditional methods of information dissemination, how is climate information obtained and distributed.

	1. Development frameworks that integrate climate information in the formulation.	**Output (3.3)** A system established for inter-ministerial dialogue on incorporating climate change considerations into government policies and strategies.	▪ MOT, EPA & MIA held Training workshop for local governance structure driving the need for climate information in development planning emanating from the local government level. There was also an inter-ministerial dialogue spearheaded by the National Climate Change Secretariat in getting government involved by using climate information in decision making process in Liberia. ▪ Recruitment completed for a National Coordinator, NCCS based at the (EPA and supported by the EWS Project for 4 years project lifespan; the recruitment process was done jointly with the EPA, UNDP, MoT, MIA and the MLME. ▪ EWS contribution was made to the EPA. (GEF/LDCF Project is required to contribute funding to the Energy and Environment Project Coordination/Support Office at the EPA).

RESOURCE TABLE

Table (A) Project Budget

EWS CURRENT PROJECT BUDGET STATUS								
	Year							
Fund	2014	2015	2016	2017	2018	Grand Total	Prodoc Budget	Available Bal.
62160	210,370.73	16,576.24	194,830.86	172,941.36	218,825.59	813,544.78	2,513,000.00	1,699,455.22
62160		35,831.46	418,434.10	1,060,177.55	170,578.83	1,685,021.94	2,323,500.00	638,478.06
62160	21,477.13	33,477.86	283,056.58	230,700.21	380,546.18	949,257.96	930,000.00	(19,257.96)
62160	15,645.69	208,513.69	176,938.11	42,934.90	7,435.64	451,468.03	303,500.00	(147,968.03)
	247,493.55	**294,399.25**	**1,073,259.65**	**1,506,754.02**	**777,386.24**	**3,899,292.71**	**6,070,000.00**	**2,170,707.29**

Table (B) Expenditure Delivery Summary

Activity	Year	AWP/Allocation	Approved Budget	Total Utilized	Unspent Balance	(%) Utilization (Delivery)
1	2014	$ 247,493.55	$ 2,513,000.00	$ 813,544.78	$ 1,699,455.22	32.4
2	2015	294,399.25	$ 2,323,500.00	$ 1,685,021.94	$ 638,478.06	73.0
3	2016	1,073,259.65	$ 930,000.00	$ 949,257.96	$ (19,257.96)	102.0
4	2017	1,506,754.02	$ 303,500.00	$ 451,468.03	$ (147,968.03)	149.0
	2018	777,386.24 (no Cost Ext)		64.%	36%Unspent	
Grand Total		**3,899,292.71**	**$ 6,070,000.00**	**$ 3,899,292.71**	**2,170,707.29**	***Average Cumulative Delivery 89.1%***

Table (C) Summary of funds

Donor (s)	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Total (US$)
GEF	1,541,600	2, 237,950	1, 521,100	769,350	6, 070,000
NVE	1,345,000	1, 345,000	-0-	-0-	2, 690,000
AFDB	578,268	578,268	578,268	578,268	2, 313,072
WMO	172,800	172,800	172,800	172,800	691,200
GOL	1,491,357	1, 491,357	1, 491,357	1, 491,357	5, 965,428
UNDP	50,000	50,000	50,000	50,000	200,000
TOTAL	**51,79,025**	**58,75,375**	**38,13,525**	**3,061,775**	**17,929,700**

TABLE (D) List of informants interviewed

NAME/CONTACT	ADDRESS	TELEPHONE NUMBER
Cleophas Torori	UNDP - Programme	0770003676
K. Ignatius Abedu-Bentsi	UNDP - Policy & Strategic Unit	0770004026
Leifah M. Tulay	UNDP - SET Pillar	0777857738
Dorsla Farcarthy	UNDP - SET Pillar	0886552668
Moses Massa	UNDP - E & E Unit	0770003787
Sheku Babowa	UNDP - E & E Unit	0776313330
Bendu Zaizay	UNDP - SET Pillar	0770003850
Robert Dorlae	UNDP - SET Pillar	0770003792
Amos Borbor	Ministry of Transport	0776454972
Jeremiah Sokan	EPA-Climate Change Secretariat	0770775174
Akoi Isaac Sowogi	National Metrological Center	0770555059
Edward B. Wisseh	National Metrological Center	

Sidiki Quisie	Min. of Finance & Dev. Planning	0777756671
Rose Muchiri	UNDP – C4DE Programme	0770003833
Anthony D. Kpadeh	MLME-Lib. Hydrological Service	0778164594
Momo Kamara	UNDP - GOAL WASH	0886539217
Augustine Kollie	National Disaster Mgt. Agency	0777553459
Abraham T. Tumbey, Jr.	UNDP – E & E Unit	0770004241