

## **TERMINAL EVALUATION**

of the UNDP-supported LDCF/GEF-financed Full-Size Project

Final version v.3

### **Strengthening Climate Information and Early Warning System in Malawi for Climate Resilient Development and Adaptation to Climate Change, Malawi**

GEF Project ID: 4994, UNDP Project ID (PIMS): 5092

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## Profile of evaluators

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## Abbreviations and acronyms

ACPC	Area Civil Protection Committee
AfDB	African Development Bank
APR	Annual Project Review
AWP	Annual Work Plan
AWS	Automatic Weather Station
CCA	Climate Change Adaptation
CDR	Combined Delivery Reports
CO	UNDP Country Office
CP	UNDP Country Programme
CPAP	UNDP Country Programme Action Plan
CSO	Civil Society Organization
DCCMS	Department of Climate Change and Meteorological Services
DCP	Data Collection Platform
DCPC	District Civil Protection Committee
DFID	Department for International Development
DoDMA	Department of Disaster Management Affairs
DRM	Disaster Risk Management
DWR	Department of Water Resources
EAD	Environmental Affairs Department
EOP	End of Project
EWS	Early Warning System
EWS Project	UNDP-supported LDCF/GEF-financed “Strengthening Climate Information and Early Warning System in Malawi for Climate Resilient Development and Adaptation to Climate Change, Malawi” project, further referred to also as the “Project”
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GNI	Gross National Income
GoM	Government of Malawi
HYCOS	Hydrological Cycle Observing System
ICT	Information and Communication Technology
INDC	Intended Nationally Determined Contributions
IR	Inception Report
LDCF	Least Developed Countries Trust Fund
LFA	Logframe Analysis
MAFS	Ministry of Agriculture and Food Security, nowadays Ministry of Agriculture, Irrigation and Water Development
MoAIWD	Ministry of Agriculture, Irrigation and Water Development, formerly MAFS
MoNREM	Ministry of Natural Resources, Energy and Mining
MGDS	Malawi Growth and Development Strategy
MIWD	Ministry of Irrigation and Water Development
MLGRD	Ministry of Local Government and Rural Development
MTE	Mid-Term Evaluation (equivalent to MTR)

MTR	Midterm Review (equivalent to MTE)
MoAIWD	Ministry of Agriculture, Irrigation and Water Development
MWS	Manual Weather Station
NAPA	National Adaptation Programmes of Action
NDRM	National Disaster Risk Management
NGO	Non-Government Organization
ODA	Official Development Assistance
OPC	Office of the President and Cabinet
PB	Project Board
PDF	Project Development Facility
PIMS	Project Information Management System (UNDP GEF)
PIR	Project Implementation Review
PIU	Project Implementation Unit
ProDoc	Project Document
PS DRM	UNDP Programme Support to Disaster Risk Management
RTA	UNDP Regional Technical Advisor
SADC	Southern Africa Development Community
TE	Terminal Evaluation
ToR	Terms of Reference
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCPC	Village Civil Protection Committee
WB	World Bank

## Executive summary

**Table 1: Overview of the project identification**

Project Summary Table				
Project title:	Strengthening Climate Information and Early Warning System in Malawi for Climate Resilient Development and Adaptation to Climate Change, Malawi			
GEF Project ID	4994	Financing	At endorsement (mil USD)	At TE – July 2018 (mil USD)
UNDP Project ID	5092	GEF	3.6	3.6
Country	Malawi	UNDP	6.1	Tbc*
Region	Africa	Government:	3.8383	Tbc*
Focal Area	Climate Change	Other partners:	1.356.607	tbc*
FA Objectives, (OP/SP):	Climate Change Adaptation Objectives: CCA-2, Outcome 2.2, Output 2.2.1; CCA-3, Outcome 3.1, Outputs 3.1.1 and 3.2.1	Total co-financing:	11.294.907	tbc*
Executing Agency	Department of Disaster Management Affairs (DoDMA)	Total Project Costs:	14.894.907	Tbc*
Other Execution Partners Involved	Department of Climate Change and Meteorological Services; Department of Water Resources	ProDoc Signature:		December 6, 2013
		(Operational) Closing Date:	Proposed: December 2017	Actual: September 30, 2018

Note \*: No information on co-financing was provided



**Table 2: Key project milestones**

	<b>Originally expected date</b>	<b>Actual date</b>
PIF Approval date		June 28, 2012
CEO endorsement/approval		September 12, 2013
Agency approval date		December 6, 2013
Implementation start	September 2013	December 6, 2013
Inception workshop	March 2014	March 26, 2014
Midterm evaluation completion	January 2016	January 2017
Terminal evaluation completion	October 2017	August 2018
Project completion	December, 2017	September 30, 2018

**Table 3: Overview of budgeted and actual financial sources spent by end of June 2018**

	<b>Budgeted in Project Document</b>	<b>Actual as of TE in July 2018</b>
<b>GEF financing:</b>	<b>3,600,000 USD</b>	<b>3,620,158 USD</b>
<b>Other co-financing:</b>	<b>11,294,907 USD</b>	<b>Tbc* USD</b>
- <i>UNDP</i>	<i>6,100,000 USD</i>	<i>Tbc* USD</i>
- <i>Government</i>	<i>3,838,300 USD</i>	<i>Tbc* USD</i>
- <i>Other - DFID</i>	<i>1,356,607 USD</i>	<i>Tbc* USD</i>
<b>Total project costs:</b>	<b>14,894,907 USD</b>	<b>Tbc* USD</b>

Note \*: No information on co-financing was provided

As of July 2018, in total 3,596,962 USD have been spent, i.e. 99.9% of the GEF budget of 3.6 mil USD.

## **I. Brief description of project**

The EWS Project was developed as a part of a broad multi-country program that was designed to implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia).

The Project Document described the EWS Project brief as follows:

“The projected climate change scenario in Malawi shows an increase in mean temperature of between 2 and 3°C by 2050, a decrease in total annual rainfall and water availability and increase in erratic rainfall events. Increases in temperature and erratic rainfall will result in more frequent and intense droughts, floods and severe weather – including strong winds and associated storm surges over Lake Malawi.

Such climate-related hazards are already having increasingly adverse effects on the country and future climate change is likely to further exacerbate the situation. A large proportion of the Malawi population has a low capacity to adapt to climate change. Climate change impacts are likely to be particularly negative on Malawi’s rural population as a result of their high dependence on rain-fed agriculture and natural resource-based livelihoods. Malawi’s ability to plan for, respond to, and minimize the impacts of climate change and prevent, respond to and mitigate natural disasters, however, is currently hindered by a limited capacity in the national weather, hydrological and climate observation and monitoring networks. Malawi’s capacity to adapt to climate-related hazards should therefore be developed to limit the negative impacts of climate change and address the country’s socio-economic and developmental challenges effectively.

One way to support effective adaptation planning – particularly for an increase in intensity and frequency of droughts, floods and strong winds – is to improve climate information and early warning systems (EWS). Malawi’s climate information and EWS are limited in their ability to monitor and forecast weather conditions, communicate warnings, respond to disasters, and plan for long-onset changes that require transformation in economic development. Improving climate information and EWS components requires investment in infrastructure and technical capacity. Drought and Mwera wind warnings will provide time for appropriate planning and adjustment of farming and fishing practices respectively. Similarly, flood warnings will enable local communities to move to locations of safety with their possessions, stored food and livestock. For Malawi to improve the management of these climate-related hazards it is necessary to:

1. Enhance the capacity of hydro-meteorological services and networks to understand and predict climatic events and associated risks;
2. Develop a more effective and targeted delivery of climate information including early warnings; and
3. Support improved and timely responses to forecasted climate-related risks.

Barriers that need to be overcome to establish effective EWS in Malawi include the following:

1. Limited financial resources directed towards hydro-meteorological and disaster risk management, which has resulted in an obsolete and inadequate weather and climate observation network;
2. Limited human and technical forecasting capacity; and
3. Reduced and poorly defined coordination of weather and climate information dissemination including early warning preparedness, response, and risk management.

The LDCF/GEF-financed project was designed to strengthen the generation and use of reliable climate information and early warning systems in Malawi, largely through improving national capacities to generate and use climate information in planning for, and management of, climate hazards and long-term strategic planning. This was designed to be achieved by transferring appropriate technology, infrastructure and skills to hydro-meteorological services (DCCMS and DWR), disaster risk management agencies (DoDMA), other weather and climate information user-agencies (MoAFS) and end-users (local communities) in the country.

This EWS Project, implemented by the Department of Disaster Management Affairs under the Office of the President and Cabinet – in collaboration with key Responsible Parties, namely Department of Climate Change and Meteorological Services and Department of Water Resources – was designed to:

1. Establish a functional network of meteorological and hydrological monitoring stations and associated infrastructure to better understand climatic changes;
2. Develop and disseminate tailored weather and climate information (including early warnings for drought, floods and Mwera winds) to meet the needs of end-users in particular local farmers and fishermen in at least 7 disaster prone priority districts, namely Phalombe, Dedza, Kasungu, Lilongwe, Salima, Nkhosvota, Karonga and Nkhata Bay;
3. Integrate weather and climate information and early warning systems into national sector specific policies and district development plans in at least 7 priority disaster-prone districts; and
4. Establish cooperation agreements with national hydro-meteorological counterparts in Mozambique to improve warnings for tropical cyclones, flooding, Mwera winds and drought.

The project was expected to be completed by December 2017; and is embedded in the overarching UNDP support to Disaster Risk Management (DRM) and UNDAF. It specifically responds to the priorities in the Malawi Growth Development Strategy-II on disaster risk reduction, climate change management and food security.” Nine month no-cost project extension was provided, and the EWS Project is scheduled to end by September 2018.

## **II. Project results and terminal evaluation rating**

The EWS Project reflects country priorities as stated in national policies. Malawi Growth and Development Strategy 2017-2022 (MGDS III) identifies disaster risk reduction and resilience building as one of the cross-cutting mainstreamed areas.

Malawi struggles with food security. It heavily depends on smallholder farming, and it suffers from low productivity and from frequent extreme weather conditions. Frequent heavy floods during rainy seasons, and droughts result in losses of property and occasional loss of lives, many people displaced, and a risk of famine if not addressed immediately by international humanitarian aid. Climate change models forecast, that in the future severe weather conditions will be even more frequent and strong.

The key strategic challenge is however growing population that resulted in significant diminution of land farmed by one family (from few hectares to a fraction of a hectare).

In addition to food security, education, healthcare and economic development (including economic reforms and governance improvements) are the highest country priorities<sup>1</sup>.

As one of the poorest countries, Malawi is a beneficiary of an extensive development assistance. International aid is the most visible and one of the largest industries in Malawi. Numerous international projects are implemented in all sectors. However, they all face a risk of lack of post-project financing that hampers their sustainability.

The EWS Project is a typical donor driven project. It was developed within a framework of a broad multi-country program that was designed to implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia). The EWS Project in Malawi did properly address the country priority. However, the project design did not reflect what is actually affordable for Malawi, and did not include the least-cost solution that would be more appropriate for one of the poorest countries, but rather it planned to replicate standard, high-technology based approach common in richer countries.

The EWS Project design focused in Outcome 1 on development of a network of automatic hydro-meteorological stations supported by manual stations to collect data, and to use them in national weather forecasting facilities that would need to be significantly strengthened. Availability of free site-specific weather forecasts based on different global weather forecasting models and internationally available (satellite) data, including numerous free web-based and mobile phone weather forecasting applications, was not considered as an option in the ProDoc design.<sup>2</sup>

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<sup>1</sup> The Malawi Growth and Development Strategy 2017-2022 (MGDS III) identifies five Key Priority Areas: 1. Agriculture, Water Development and Climate Change Management, 2. Education and Skills Development, 3. Transport and ICT Infrastructure, 4. Energy, Industry and Tourism Development, and 5. Health and Population. <http://www.mw.undp.org/content/malawi/en/home/library/the-malawi-growth-and-development-strategy-iii-.html>

<sup>2</sup> There are hundreds of internet-based weather service providers that publish information on localized, site-specific weather forecasts world-wide for free. Windy.com, for example, shows weather forecasts based on three different weather forecasting models: ECMWF 9 km, GFS 22 km, and NEMS 4-12 km. In addition to weather forecasts, Windy.com shows also historical measured weather data (20 days history) from nearby surface meteorological stations, where available. These weather data are supposed to serve as an additional input for global weather forecasting models. In Malawi, Windy.com refers to surface weather data (temperature, dew point, pressure, wind speed and direction, rain) at 20 locations, namely at Ngabu, Bvumbwe, Mimosa, Chichiri, Chileka, Makoka, Mangochi, Monkey Bay, Salima, Dedza, Chitedze, Lilongwe, Kasungu, Nkhota Kota, Mzimba, Mzuzu, Nkhata Bay, Bolero, Karonga, Chitipa.

In Outcome 2, the EWS Project design did not incorporate the experience from NGO-supported community-based EWS projects. These community-based EWS projects were implemented by local people in disaster-prone areas that volunteer to collect water river level data locally, and deliver early warnings to all people within their communities. Although the ProDoc mentioned these results and experience as a lesson learned that was already replicated in Malawi across other districts with support from other projects, it was not included in the EWS Project design.

The EWS Project implementation followed the strategy designed in the ProDoc and procured and installed numerous automatic hydro-meteorological stations, rehabilitated manual stations, procured computers and laptops, simple and smart mobile phones, two-way single-side band radios, office furniture and stationery, etc.

Unfortunately, some of the equipment is not used, and some procured and installed equipment is not operational anymore, even before the EWS Project end, due to lack of funding for operation and maintenance.

District offices of the implementing partner - Department of Disaster Management Affairs (DoDMA), and responsible parties, Department of Climate Change and Meteorological Services (DCCMS) and Department of Water Resources (DWR), are often equipped with multiple computers provided by different donors and projects, only some of them are used and have access to internet, single-side band radios are not utilized, because they are typically switched-off, some mobile phones are not used because they have no air time prepaid. Hydrological manual stations are often not read, because people who read water levels have not been reimbursed since September 2017 (with 10 USD per month). Some data at manual weather stations are not read because of lack of negligible funding needed for purchase of paper for clock based temperature and humidity recorders, for water refilling of evaporation pans, etc. Some river water level gauges and automatic hydro stations have been destroyed by floods, some remote manual stations were vandalized.<sup>3</sup>

DCCMS did not have the capacity to fully utilize frequent weather data collected from newly installed AWSs, and would have to substantially invest in hardware and software upgrades and to build sufficient in-house computer based weather forecasting capacity.

Thus, the EWS Project adopted a major adaptive management approach, and decided to use a free license of the COSMO global weather forecasting model, including free access to actual weather data, and combine it with the ICON model provided also for free by the German

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However, Windy.com reports on a regular basis (one data reading in 1 to 12 hours) only data from 2 locations in Malawi (Lilongwe/Kumuzu International and Blantyre/Chileka airports), which can serve as an input for global weather forecasting models. No data at all, or only 1 to 4 single and partial measurements over a period of 20 days are reported from other 18 meteorological stations in Malawi.

DCCMS updated that Malawi has three global data sharing meteorological stations: Chileka, Kumuzu International and Mzuzu airports, and that data from these and other meteorological stations are shared regionally (e.g. with South Africa Office).

None of the three meteorological stations that share their data globally were rehabilitated by the EWS Project.

<sup>3</sup> See page 46 for more details.

Weather Service DWD to increase the resolution from 13 km mesh down to 7 km and 2 km, and to downscale the global model for localized weather forecasting, including extreme weather forecasting. Only a strong server for management of large amount of data and two standard desk-top computers have been procured and installed for improved weather forecasting utilizing results of the COSMO/ICON model. This adaptive management implemented is rated highly positive.

As a result of this adaptive management implemented, the quality of weather forecasts produced locally by DCCMS has increased significantly, in terms of both frequency and reliability.

Because numerous AWS have been installed with a support from other donors and projects as well, the EWS Project target for newly installed AWS has been significantly reduced to 10 installed AWS with the support from the EWS Project (however, LogFrame target was not revised). The total number of installed AWS in Malawi already reached 63 AWS, and the original EWS Project target of 45 operational AWS has been overcome with installations supported by other donors/projects (baseline was 6 AWS).

The capacity to forecast extreme weather has significantly improved with the utilization of the COSMO/ICON weather forecasting model, and the ultimate goal of the Outcome 1 – to improve weather forecasting and extreme weather forecasting capacity - was accomplished, although no Outcome 1 indicator reflects that. All Outcome 1 indicators focus solely on hydro-meteorological stations in operation.

The Outcome 2 of the EWS Project was designed to efficiently and effectively use the hydro-meteorological and environmental information developed in Outcome 1 for early warnings and long-term development plans. The EWS Project delivered weather forecasts and extreme weather warnings to district centers: district committees, civil protection committees, and district offices of DoDMA, DCCMS, and DWR in all targeted districts, and trained representatives of Village Civil Protection Committees in 11 districts in understanding and interpretation of weather messages and forecasts, on the benefits of early warning systems and the role that communities can play in disaster risk management, and about 600 community members were trained in the use of seasonal rain forecasts.

The EWS Project supported Civil Protection Committees with mobile phones, torches, megaphones, raincoats, etc. However, the EWS Project was not directly involved in ensuring delivery of early warnings within “the last mile” in districts and villages to ultimate end-users, i.e. population living in villages, as demonstrated and replicated by other NGO-supported community-based EWS projects already five+ years ago<sup>4</sup>.

The first ever National Disaster Risk Management Policy of 2015 and the Climate Change Management Policy were developed with a support of the UNDP DRM Programme Support. The first ever Meteorology Policy is in the final stage of approval. Two District Development Plans with information on climate change have been developed, however, without direct support from the EWS Project.

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<sup>4</sup> Annex 2 to the Project Document “Other projects and lessons learned”, page 7, as provided in a Word file “Resubmission Malawi Annexes 11Sept2013”

The goal of the Outcome 2 was only partially achieved, although this is not fully reflected in the LogFrame, especially in the rather general first Outcome 2 indicator of “Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings”. This LogFrame indicator is not specific enough, because most of population have the same access to warnings broadcasted by national radios as before the EWS Project implementation.

Early warning systems have four elements: Risk Knowledge, Monitoring and Warning Services, Dissemination and Communication, and Response Capability<sup>5</sup>.

Implementation of the UNDP-supported GEF-financed EWS Project focused on Monitoring and Warning Services element, and on dissemination of early warnings to district centers. Much less effort has been devoted to early warning disseminations within communities to ultimate end-users/inhabitants of disaster-prone areas, and to developing their risk knowledge and appropriate response capacity.

Improved weather forecasts and early warnings are delivered to district authorities and are broadcasted by national radios in English as well by community radios in local languages. Some weather products such as customized weather forecasts for Karonga were disseminated through community radio stations, seasonal forecasts were also done in some places but local communities have not been sufficiently capacitated to take timely life and wealth-saving action in times of disasters. The DoDMA supported risk knowledge by developing and broadcasting radio programs on impending disaster risks.

In August 2016, the EWS Project supported the “Stakeholder’s Meeting on Enhancing Early Warning System in Malawi: Reviewing EWS and sharing experiences to inform effective preparedness and response” that brought together all parties involved in implementation of EWS projects funded by diverse donors in Malawi. The Proceedings of the 2016 Meeting state that *“It is not clear whether the EWS at the moment is capable of generating and disseminating timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss”*.

The validity of this statement has not changed much by the end of the EWS Project in mid 2018, as reported by various local EWS stakeholders in Malawi.

Overall project results are rated Moderately Unsatisfactory, primarily due to the fact that the project design, although technically-sound, did not reflect actual affordability in Malawi, and the implemented project suffers from inability to finance even low O&M costs. As a result, some installed equipment is not operational anymore and some hydro-met data are not read even before the end of the project. In addition to this, little focus was given on developing early warning dissemination within communities, risk knowledge and appropriate response capacity among population.

Summary of terminal evaluation ratings are shown in Table 4.

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<sup>5</sup> Developing Early Warning Systems: A Checklist, Third International Conference on Early Warning Systems, March 2006, Bonn, Germany, UN/ISDR Platform for the Promotion of Early Warning, [https://www.unisdr.org/files/608\\_10340.pdf](https://www.unisdr.org/files/608_10340.pdf)

**Table 4: Terminal evaluation rating**

Criteria	Rating						Comments
	HS	S	MS	MU	U	HU	
<b>1. Monitoring and Evaluation</b>							
M&E design at entry			<b>MS</b>				
M&E plan implementation				<b>MU</b>			
Overall quality of M&E				<b>MU</b>			
<b>2. IA &amp; EA Execution</b>							
Quality of UNDP implementation		<b>S</b>					
Quality of execution DoDMA, DCCMS, DWR			<b>MS</b>				
Overall quality of implementation/execution			<b>MS</b>				
<b>3. Assessment of Outcomes</b>							
Relevance		<b>R</b>					
Effectiveness				<b>MU</b>			
Efficiency					<b>U</b>		
Overall quality of project outcomes				<b>MU</b>			

HS – Highly Satisfactory, S – Satisfactory, MS – Moderately Satisfactory, MU – Moderately Unsatisfactory, U – Unsatisfactory, HU – Highly Unsatisfactory  
 Relevance: R – Relevant, NR – Not Relevant

<b>4. Sustainability</b>	L	ML	MU	U	Comments
Financial resources				<b>U</b>	See note <sup>6</sup>
Socio-political		<b>ML</b>			
Institutional framework and governance	<b>L</b>				
Environmental		<b>ML</b>			
Overall likelihood of sustainability				<b>U</b>	See note <sup>7</sup>

Sustainability: L – Likely, ML – Moderately Likely, MU – Moderately Unlikely, U – Unlikely

<b>5. Impact</b>	S	M	N	Comments
Environmental status improvement				N/A – Not addressed by the EWS Project
Environmental stress reduction				
Progress towards stress/status				
Impact		<b>M</b>		Note <sup>8</sup>

Impact: S – Significant, M – Minimal, N – Negligible

	HS	S	MS	MU	U	HU	Comments
<b>6. Overall Project Results</b>				<b>MU</b>			

Rating: HS – Highly Satisfactory, S – Satisfactory, MS – Moderately Satisfactory, MU – Moderately Unsatisfactory, U – Unsatisfactory, HU – Highly Unsatisfactory

<sup>6</sup> Unlikely that the O&M funds will be sufficient to keep all installed/rehabilitated hydro-meteorological stations fully operational.

<sup>7</sup> This rating reflects sustainability of project results as per LogFrame, including financial risk to operationality of hydro-meteorological stations installed.

<sup>8</sup> “Moderate” impact reflects better the middle of the scale than “Minimal”, impact on weather forecasting capacity and quality is rated “Significant”



Key factors that influenced low rating include:

- Inappropriate EWS Project design including LogFrame that did not properly address actual affordability for Malawi, namely securing increased O&M funding needed for servicing of installed equipment and hydro-meteorological stations
- Some hydro-meteorological stations installed and equipment procured are not used/ not in operation anymore due to lack of O&M funding
- Early warnings are delivered to district centers only, not much activities have been performed and results delivered by the EWS Project itself in developing and implementing early warning dissemination scheme within communities (except for some trainings and some equipment procurement like torches, megaphones and raincoats). In some districts, other donors funded community-based EWS projects implemented by NGOs.
- NGO-implemented community-based EWS projects funded by other donors, report, in some cases, to be more effective than the national EWS supported by the EWS Project. Community-based EWS based on local, voluntary water level readings indicated flood risks, although the national EWS did not issue any warning, but the actual floods arrived.
- No sufficient evidence in achieving Outcome 2 “Hydro-meteorological and environmental information for early warnings and long-term development plans efficiently and effectively used” reflected also in the project objective “... strengthened information for responding to extreme weather and planning adaptation to climate change in Malawi”. No district development plans were developed with a support from the EWS Project, only 2 district development plans developed with a support from other donors. The National DRM Policy was developed with a support from other project (UNDP PS DRM). Little evidence was found related to achievements in risk knowledge, early warning disseminations within communities, and in developing appropriate response capacity. District level personnel reported to have very limited stake in the project.
- MTR recommendations, including the revision of the LogFrame, although rather formal, were not implemented.

Key EWS Project success:

- Significantly improved weather and early warning forecasting quality, based on free access to global weather forecasting model and data, was implemented as an adaptive management based on the DCCMS initiative.

### **III. Lessons Learned and Recommendations**

#### **Lessons learned**

1. The project design and proposed strategy of the donor-driven EWS Project that increase post-project costs without securing adequate financing, was not appropriate, i.e. was not financially affordable for Malawi, as one of the poorest country. Utilization of free, internet based weather forecasts was not considered as an option. Wholesale adoption of project design and implementation strategies of regionally and internationally designed projects may exhibit implementation and sustainability challenges, especially in low-income countries, if not carefully customized to local conditions.
2. Post-project financing needed to sustain project achievements, and to keep installed equipment operational, is a typical critical factor for project sustainability, especially in low-income countries. Even increase in operation and maintenance costs negligible from a perspective of a rich country may be an insurmountable obstacle to project results sustainability in low-income countries.
3. Large number of internationally funded development projects in different areas implemented in Malawi and in other low-income countries require post-project financing that in total may impose a significant burden on public finance and thus undermine countries' capacity to sustain even the high-priority projects. Prioritizing cash generating projects, including economic reforms, and governance improvements, are critical for an ability of low-income countries to sustain high-priority projects also in other areas.
4. State-of-the-art technology-based projects and even standard solutions used in rich and developed countries may not necessarily be the best, nor affordable option for low-income countries, like projects that require installation of robust infrastructure (for improved localized in-house weather forecasting for example), and projects that increase O&M costs, and impose additional burden on public budgets. Project designs reflecting actual local needs and opportunities, and local affordability, i.e. the least-cost and sometimes also low-tech solutions, with low or no incremental O&M costs, tend to have better prospects of sustainability.
5. Project interventions targeted at working with population in communities, such as EWS projects, tend to deliver better results in more effective and efficient way when implemented by experienced NGOs rather than government and its staff that has its regular daily working obligations.
6. Malawi is strong in policies developed with support from international donors, but it lags behind in coordinated policy implementation. Policies do not seem to be followed by a development of specific single national implementation/action plan. But rather, policy implementation is typically fragmented into numerous ad-hoc individual donor funded projects, whose design and implementation is poorly coordinated, and often overlap. This fully applies also for EWS activities in Malawi.

7. UNDP initiative to coordinate donors and their project initiatives within a limited number of top country priorities is very much needed and may serve as the best example for replication in other countries as well.
8. Tagging of equipment is essential for ease of tracking and transparent inventory management. The EWS Project tagged all installed equipment and this may serve as an example of best practice for replication.

## **Recommendations**

### **UNDP/GEF**

1. When designing new projects especially in low-income countries, always realistically enumerate specific post-project incremental costs, such as operational and maintenance costs, needed for ensuring project sustainability and for reliable operation of installed equipment, and clearly identify credible sources of long-term post-project funding. Only project proposals with enumerated and secured post-project financing in a long-term should be approved.
2. When designing new EWS projects especially in low-income countries, always consider the least-cost option, i.e. utilization of free localized weather forecasts based on different global and regional numerical weather forecasting models that are available from various weather services and numerous internet platforms (such as windy.com, accuweather.com, yr.no, wunderground.com, and many more). Analyze benefits/value added of downscaling weather forecasts locally, and costs needed for hardware and software infrastructure upgrades.

### **GoM/UNDP**

3. UNDP and GoM are encouraged to motivate international donors to support development of a single coordinated long-term DRM/EWS national implementation plan/action plan that would increase ownership and coordination responsibility of the GoM, and allow international donors to finance implementation of specific phases or areas of the DRM/EWS action plan.
4. In any follow-up to this EWS Project, strengthen EWS coordination horizontally and vertically, in order to improve effectiveness of early warning dissemination and to support the goal of prospective development of an integrated nation-wide early warning system. Utilize the experience of NGOs/CSOs in Malawi and consider their active engagement in organizing early warning dissemination within communities, and in developing community-specific concrete response capability and risk knowledge among population.

## **1. INTRODUCTION**

### **1.1 Purpose of the evaluation**

This terminal evaluation was performed at the request of UNDP (the GEF Agency) as a standard mandatory requirement for all UNDP-supported GEF-financed projects. The terminal evaluation mission took place in Malawi, on July 9-17, 2018, and the draft and final Terminal Evaluation Report was submitted in August 2018.

The objective of this evaluation is to assess achievements of project's objectives, affecting factors, broader project impact and a contribution to the general goal/strategy, and a project partnership strategy. It also provides a basis for learning and accountability for managers and stakeholders and for providing recommendations and lessons learned which can be applied to the design of future relevant UNDP projects.

The 2012 UNDP "Project-Level Evaluation - Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects" specifies five complementary evaluation purposes of UNDP-supported GEF-financed projects:

- To promote accountability and transparency, and to assess and disclose the extent of project accomplishments.
- To synthesize lessons that can help to improve the selection, design and implementation of future GEF financed UNDP activities.
- To provide feedback on issues that are recurrent across the UNDP portfolio and need attention, and on improvements regarding previously identified issues.
- To contribute to the overall assessment of results in achieving GEF strategic objectives aimed at global environmental benefit.
- To gauge the extent of project convergence with other UN and UNDP priorities, including harmonization with other UN Development Assistance Framework (UNDAF) and UNDP Country Programme Action Plan (CPAP) outcomes and outputs.

### **1.2 Scope and methodology of the evaluation**

The methodology used for the project terminal evaluation is based on the 2012 UNDP "Project-Level Evaluation - Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects", and it includes following key parts:

- I. Project documents review prior to the evaluation mission and development and submission for approval of the Terminal Evaluation Inception Report
- II. Evaluation mission and on-site visits, interviews with project management, UNDP CO, project implementing partners, representatives of the government, steering committee/project board, project beneficiaries, and other relevant stakeholders and independent experts
- III. Presentation of preliminary findings to UNDP CO representatives and feedback
- IV. Drafting of the terminal evaluation report, ad-hoc clarification of collected information and collection of additional information if needed

- V. Circulation of the draft terminal evaluation report for review and comments
- VI. Finalizing the terminal evaluation report, incorporation of comments received

The terminal evaluation methodology follows the standard evaluation methodology of UNDP-supported GEF-financed projects and it combines review of project documents and files, project deliverables, interviews with relevant stakeholders, analysis of gathered information, presentation of preliminary findings and conclusions at the end of the TE mission, drafting of the TE report, and incorporation of comments received into the final TE report.

The challenge of an external evaluation is always a proper assessment and a good understanding of the local situation and of the local development context, and especially of its evolvement over the project implementation period. The most important source of information are interviews with local stakeholders.

A proper selection of interviewed persons is critical for an ability to get an appropriate and full picture of project implementation. Thus, it was important to have an opportunity to interview project stakeholders with different background and representing different stakeholders/interests in the Project, including governmental and nongovernmental representatives, councils, and other project beneficiaries.

Information and data collection methodology used for the Terminal Evaluation was based primarily on relevant document analysis, situation analysis based on information collected from open sources, own on-site findings and from interviews held with project stakeholders during the TE mission. This methodology combines both, primarily the hard-fact quantitative data, supplemented also with soft-fact qualitative data, and information provided by interviewed individuals. The major underlying assumption and challenge of data collection, is that the information collected is properly verified and interpreted by the TE evaluators, and that in result the information used is unbiased. To minimize the risk of misinterpretation, internal verification and triangulation of data collected has been implemented (information cross-checked across different sources), and a three-step process of both data and findings external validation has been implemented that includes feedback from diverse interviewed parties/project stakeholders, the project team, and UNDP CO.

Analysis of qualitative data was done thematically in accordance with key thematic areas under which guiding questions were developed and responses registered throughout the study. Evaluation site visits were conducted in five districts namely Karonga, Nkhotakota, Dedza, Phalombe and Chikwawa that were systematically and randomly sampled from a sampling frame of 11 districts<sup>9</sup> that was provided by the Client. Multi-stage sampling technique was used to draw the sample of respondents. A total of 11 districts were presented as the sampling frame out of which 5 districts were selected as the target districts. The 11 districts were purposefully grouped into three based on regions (Northern, Central and Southern) and allocations predetermined in the ratio 1:2:2 for North, Central and South to ensure representation from each of the three regions of the country. The choice of the district within the regional grouping was done using simple random sampling through a raffle draw. Within the districts, interviews were held with technical staff from key institutions (DoDMA, DWR and DCCMS). At the national level, key informant interviews were held with representatives of key institutions that were

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<sup>9</sup> Karonga, Rumphi, Nkhatabay, Salima, Nkhotakota, Dedza, Mangochi, Zomba, Phalombe, Chikwawa and Nsanje

deemed to be knowledgeable about the Project including development partners, government institutions, NGOs, Civil Society Organizations and independent consultants (UNDP, DoDMA, DCCMS, DWR, etc.). The list of all institutions and contact persons interviewed is presented in Annex 2. The major limitation to the evaluation was limited availability of quantitative data on achievements from the water sector (Department of Water Resources), and on co-financing provided.

*SWOT analysis of data collection method used:*

- Strengths: All relevant available sources of information are utilized, including quantitative and qualitative data, and hard-fact and soft-fact data (including information provided by individuals representing diverse interests and different levels of unbiasedness);
- Weaknesses: Reliability of information provided differ by source (accuracy, unbiasedness based on diverse experience and interest of individual information providers);
- Opportunities: Reliability of information collected and interpreted in the TE can be verified internally and validated externally; and
- Threats: Risk of data and information misinterpretation due to lack of understanding of local development context.

### **1.3 Evaluation criteria**

The following key evaluation criteria have been used in the terminal evaluation according to the 2012 UNDP “Project-Level Evaluation - Guidance for Conducting Terminal Evaluations of UNDP-Supported GEF-Financed Projects”<sup>10</sup>:

- **Relevance**  
The extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time, and the extent to which the project is in line with the GEF Operational Programs or the strategic priorities under which the project was funded.
- **Effectiveness**  
The extent to which project objective has been achieved or how likely it is to be achieved.
- **Efficiency**  
Cost-effectiveness of funds spent to reach project objectives and results and the extent to which results have been delivered with the least costly resources possible.
- **Results**  
The positive and negative, foreseen and unforeseen changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short to medium-term outcomes, and longer-term impact

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<sup>10</sup> “Project-Level Evaluation - Guidance for Conducting Terminal Evaluations of UNDP-Supported GEF-Financed Projects”, UNDP, 2012, Box 3: UNDP Evaluation Criteria, page 15,

including global environmental benefits, replication effects and other local effects.

- *Sustainability*

The likely ability of an intervention to continue to deliver benefits for an extended period of time after project completion (includes environmental, financial, social-political, and institutional framework and governance sustainability).

- *Impact*

The impact criteria include environmental status improvement, environmental stress reduction and progress towards environmental status improvement and stress reduction.

## **1.4 Structure of the evaluation report**

This terminal evaluation report follows the structure specified in the “Project-Level Evaluation, Guidance for Conducting Terminal Evaluations of UNDP-Supported GEF-Financed Projects”, UNDP 2012.

The terminal evaluation report includes:

- Executive Summary
- Introduction
- Project description and development context
- Findings – project design/formulation, project implementation and project results
- Conclusions, recommendations and lessons learned
- Annexes

## 2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

### 2.1 Project development context

Malawi is a landlocked country in the southeast Africa with the Lake Malawi constituting about one third of the total country area of 118,000 km<sup>2</sup>. The population of 19 million people doubled since 1990.

Malawi ranks among the poorest country in the world. In 2017, it had the second lowest GDP per capita of 338.5 USD (current)<sup>11</sup>, and the sixth lowest GDP per capita in purchasing power parity (current international USD)<sup>12</sup>. 50% of the population live below the national poverty line<sup>13</sup>.

Malawi depends on agriculture production dominated by smallholder farmers producing primarily for own consumption, and on foreign aid.

Key strategic challenge affecting food security is a decreasing size of family owned land used for farming, combined with land degradation, and external weather shocks (droughts and floods). With the growing number of population, average size of land cultivated by a family dropped from a hectare and more to a fraction of a hectare (0.1-0.2 hectares)<sup>14</sup>.

High lending rates of ca 30% p.a. offered by commercial banks in Malawi<sup>15</sup> discourage private debt financed investment and undermine economic development.

Malawi has sub-tropical, relatively dry climate with two seasons: warm, rainy season with 95% of annual precipitation (November to April) and a cool, dry season (May to August)<sup>16</sup>, with relatively frequent floods in rainy seasons and draughts in dry seasons, and strong wind storms over the Lake Malawi region. However, the impact of floods and droughts on loss of lives, loss of agriculture production resulting in a risk of famine and food insecurity, increases with the fast growing population. Climate change models indicate that the magnitude and frequency of floods and draughts will even increase in the future.

The Project Document specified, that from 1979 to 2008, natural disasters in Malawi affected nearly 21.7 million people and killed about 2,596 people. During the 1992/93 rainy season, landslides killed over 500 people and caused extensive damage to infrastructure in parts of Mulanje and Phalombe districts. The 2011/12 droughts had severe effects on food security in 15 districts<sup>17</sup> with ~2 million people affected, particularly in the southern districts. An Economic Vulnerability and Disaster Risk Assessment showed that drought has a greater threat than

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<sup>11</sup> World Bank Data, <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>, July 2018

<sup>12</sup> World Bank Data, <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>, July 2018

<sup>13</sup> World Bank Data, <https://data.worldbank.org/country/malawi>, July 2018

<sup>14</sup> Malawi Poverty and Vulnerability Assessment report, GoM, 2007, quoted in “The efficiency of smallholder agriculture in Malawi”, Hardwick Tchale, World Bank, Malawi, AFJARE, Volume 3, No 2, September 2009, <http://ageconsearch.umn.edu/bitstream/56909/2/0302Tchale.pdf>

<sup>15</sup> 27-35% as of November 2017, Reserve Bank of Malawi, <https://www.rbm.mw/Statistics/BankRates>

<sup>16</sup> Department of Climate Change and Meteorological Services, <https://www.metmalawi.com/climate/climate.php>

<sup>17</sup> Chikhwawa, Nsanje, Phalombe, Zomba, Balaka, Mangochi, Ntcheu, Dedza, Kasungu, Lilongwe, Salima, Nkhonkhotakota, Karonga, Nkhata bay and Machinga



floods in terms of geographical range and likely economic effect<sup>18</sup>. Malawi was found to be worst affected by the droughts of 1987, 1992, 1994, 2004 and 2005.

From January to April 2002, between 500 and 1,000 people died of hunger or hunger-related diseases in the southern and central regions of the country. In 2005, 4.7 million people out of a population of 12 million were experiencing food shortages due to droughts.<sup>19</sup>

The Project Document summarized the rationale for the EWS project as follows:

The increasing incidence of climate-related hazards and their impacts on livelihoods, infrastructure and the environment continue to pose a threat to development and poverty reduction in Malawi, which is the primary goal of the MGDS II of the Government of Malawi (GoM) and of the Millennium Development Goals (MDGs). Without significant adaptation efforts, the negative effects of climate change will undermine years of development assistance and asset accumulation in Malawi. This will threaten macro- and micro-economic stability, socio-economic development, and achievement of the Millennium Development Goals (MDGs) as well as of the Malawi Growth and Development Strategy 2011-2016 (MGDS II). One way to support effective adaptation planning – in particular for an increase in intensity and frequency of droughts and floods – is to improve climate information and early warning systems. Accurate weather and climate information and forecasting are essential for planning and managing economic production and for the provision of social services, particularly under a changing climate.

Monitoring climate change, forecasting impacts and using early warning systems to disseminate data to a range of stakeholders from national to local level are important components of successful long-term adaptation. Meteorological services provide real-time, short-term, seasonal and long-term forecasts – as well as other meteorological parameters – for planning and management of agricultural production, water resource management, solar energy use, research, disaster and rescue operations, transport, trade and tourism, and environmental-related diseases. Meteorological parameters are particularly important for the design, construction and management of physical infrastructure. Furthermore, they are necessary for understanding climate change and variability, as well as climate change impacts on socio-economic development. The more extensive the available information, the better the climate can be understood and future conditions can be assessed, at the local, regional, national and global level<sup>20</sup>.

The GoM recognized the fact that no meaningful reduction in poverty can be achieved in the country without addressing the impacts of disasters and climate change. Thus, it is indicated in MGDS II Theme 3 (2012-2016) that in responding to these challenges, the GoM will implement a number of strategies including:

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<sup>18</sup> IFPRI/RMSI (2010) Malawi: Economic Vulnerability and Disaster Risk Assessment. Economy-Wide Impacts of Droughts and Floods as quoted in the ProDoc

<sup>19</sup> Famine in Malawi: Causes and Consequences, Roshni Menon, 2008, <http://hdr.undp.org/en/content/famine-malawi-causes-and-consequences>

<sup>20</sup> Zhu, X. 2011. Technologies for Climate Change Adaptation – Agriculture Sector – TNA Guidebook Series. UNEP Risø Centre on Energy, Climate and Sustainable Development Risø DTU National Laboratory for Sustainable Energy, Denmark as quoted in the ProDoc.

1. Strengthening disaster risk management coordination mechanisms;
2. Developing an integrated national EWS; and
3. Implementing mitigation measures in disaster prone areas.

## **2.2 Project start and its duration**

Project Document signed:	December 6, 2013
Planned project duration:	4 years (48 months)
Original operational closing date:	December 2017
Actual operational closing date:	September 2018
Actual project duration:	4 years and 9 months (57 months in total)

The Terminal Evaluation mission to Malawi took place on July 8 - 18, 2018.

The draft Terminal Evaluation Report was submitted on August 6, 2018.

Final comments on the draft report were provided to evaluators in December 2018.

The final Terminal Evaluation Report was updated and submitted on December 13, 2018.

### **2.3 Problems that the project sought to address**

According to the ProDoc, the fundamental problem that this project sought to address is that the weather and climate information (including monitoring) and early warning systems in Malawi were not functioning as optimally as they could for effectively supporting adaptive capacity of local communities and key sectors. This constrained management and early warning activities, as well as restricted long-term planning, better knowledge of expected future climate change impacts, in particular those associated with the expected increase in frequency and intensity of droughts, floods and strong winds. The baseline state of climate information and early warning systems in Malawi, if not improved, will significantly undermine social and economic development under a changing climate.

The Project Document identified five key barriers to achievement of Project targets:

- Limited financial resources available for hydro-meteorological services and disaster risk management, which has resulted in obsolete and inadequate weather and climate observation network and reduced capacity of DCCMS, DoDMA and DWR to fulfill their core mandates.
- Limited technical and human capacity for monitoring and forecasting extreme weather and climate change.
- Limited protocols and agreements and related SOPs for DoDMA, DCCMS and DWR at regional, national and local levels with regards to weather, hydrological and climate data and information collection, exchange, analysis, interpretation and early warning dissemination.
- Limited consolidation and linkages of effective governmental and non-governmental weather, hydrological and climate information dissemination channels (including physical mechanisms) and early warning systems.
- Limited capacity at a district level to effectively manage early warning systems and related disaster risk reduction efforts resulting in poor community preparedness and response.

The Project Document highlighted following problems to be addressed by the EWS project:

- Existing weather stations only partially functioned as a result of:
  - vandalism;
  - limited spare parts;
  - inefficient maintenance; and
  - incorrect calibration
- AWS and rainfall logging stations data collection and transmission were hindered by limited airtime availability for GSM transmission and expired licenses for Timeview software.
- Most of the existing stations under the DCCMS were in need of rehabilitation.
  - Manual weather stations had missing or non-functional thermometers, barometers, wind speed and direction masts, solar sensors, radiotelephones for communication, and weather fences

Automatic weather stations had missing or non-functional sensors, data loggers, GPRS modems, dry cells, computer servers and software, power supply, weather fences, solar panels, armored cable, batteries, wind speed and direction masts.

- The DCCMS's radar stations at Lilongwe and Chileka were obsolete and in need of upgrades.
- There were no facilities for lightning detection, and the upper air and pilot balloon stations were non-functional.

**Table 5: Baseline status of existing meteorological and hydrological stations under the Department of Meteorology in Malawi at the beginning of the Project**

Station type	Existing	Fully operational
Full synoptic stations	22 of which 4 are the main aviation stations	4
Rainfall logging gauges	43	0
Automatic Weather Stations	28	0
Volunteer observing stations	53	0
Radar	2	0
Satellite receiving stations	1	1

Weather observations from Malawi were therefore not effectively incorporated into regional and global circulation models.

## 2.4 Immediate and development objectives of the project

The project objective of the LDCF/GEF-financed EWS Project in Malawi was designed “to strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and delivery of available information for responding to extreme weather and planning adaptation to climate change in Malawi”.

The EWS Project was designed with two outcomes:

- Outcome 1: Enhanced capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Department of Water Resources (DWR) to monitor and forecast extreme weather, hydrology and climate change.
- Outcome 2: Efficient and effective use of hydro-meteorological and environmental information for early warnings and long-term development plans.

## 2.5 Baseline indicators and expected results

Following is an overview of project objective and outcome level indicators and EOP targets as specified in the Project Document LogFrame.

In addition to project objective and outcome targets, the Project Document specified also project outputs and indicative activities. Project outputs and indicative activities are not included in the LogFrame matrix.

Expected results include:

**Project objective:** To strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and delivery of available information for responding to extreme weather and planning adaptation to climate change in Malawi

Project objective indicators and EOP targets:

**Indicator:** Capacity as per capacity assessment scorecard

*Target:* Climate Change Assessment capacity scorecard rating is increased to an average of 121 for both men and women (LogFrame Annex 12)

**Indicator:** Domestic finance committed to DoDMA, DCCMS and DWR to monitor and forecast weather, climate and hydrological variability and change

*Target:* >20% increase in domestic financing committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change (including equipment operation and maintenance)

**Outcome 1:** Enhanced capacity of the DCCMS and DWR to monitor and forecast extreme weather, hydrology and climate change

Indicators and targets:

**Indicator:** Percentage of national coverage of climate monitoring network (fully operational)

*Targets:* DCCMS – 77% national coverage of operational manual (71%) and automatic (84%) weather stations (LogFrame Annex 6)

*DWR – 69% national coverage of operation surface manual (100%) and automatic (39%) hydrological stations (Annex 6)*

*Number and Type (operational stations):*

*Automatic weather stations: 45*

*Manual synoptic stations: 22*

*Surface manual hydrological stations:*

*Manual river discharge and water level stations: 208*

*Rainfall logging stations actively transmitted through GPRS network: 53*

**Indicator:** Frequency and timeliness of climate-related data availability

*Targets:* DCCMS: hourly for synoptic stations and daily for rainfall logging gauges.

*DWR: 6 hourly and 2-4 hourly for flood prone areas*

- Output 1.1:** 10 Automatic Hydrological Stations (AHSs) installed in 7 disaster prone districts, namely Karonga, Salima, Nkhota-kota, Rumphi, Nkhata-bay, Dedza and Phalombe and 50 hydrological monitoring stations rehabilitated in key rivers in catchment areas – excluding the districts covered by the SRBI.
- Output 1.2:** 25 automatic, 18 manual and 53 rainfall logging stations rehabilitated and 20 Automatic Weather Stations (AWS) installed to cover blind spots in the existing observation network in the eastern parts of Malawi, Lake Malawi and lakeshore areas including drought and flood prone priority districts, namely Karonga, Salima, Nkhota-kota, Rumphi, Nkhata-bay, Dedza and Phalombe– excluding districts covered by the SRBMP and IFRM.
- Output 1.3:** Weather and climate forecasting facilities upgraded, including building on current and planned upgrades to DCCMS and DWR's data and information management systems under the SRBMP and IFRMS and operationalizing collaboration arrangements and procedures for drought and severe weather monitoring and forecasting between DWR and DCCMS.
- Output 1.4:** Capacity developed for operating and maintaining observation networks and related infrastructure including training 7 meteorological and 6 hydrological technicians, 2 communications operators and system administrators, 25 weather observers and 25 gauge readers, raising local community awareness and developing an O&M toolbox including refresher courses.
- Output 1.5:** Tailored drought, flood and severe weather forecasts and alerts produced – with a focus on agricultural stress and Mwera winds over Lake Malawi– by training 8 meteorological and 3 hydrological forecasters to build in-house capacity.

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

Indicators and targets:

**Indicator:** Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings (disaggregated by gender)

*Target: 17% of men and 17% women with access to improved climate information and flood, drought and Mwera wind warnings (to be confirmed during project inception). Male: 1,093,242, Female: 1,154,912*

**Indicator:** Policies, annual budgets and development plans that integrate climate information (type and level of development plans)

*Target: 7 District Development Plans and 1 National DRM Policy*

- Output 2.1:** Weather and climate information and alerts – including drought, flood and severe weather warnings, integrated cost-benefit analyses and hazard and vulnerability maps – made accessible to decision makers in DoDMA/OPC, MoAFS, MoLGRD, private sector, civil society, development partners and communities.
- Output 2.2:** Weather and climate information mainstreamed into the operationalization of relevant national sector policies, annual budgets and local development plans including the National Disaster Risk Management Policy and District Development Plans in priority drought and flood prone districts – excluding districts covered by SRBMP and IFRM.
- Output 2.3:** Governmental and non-governmental communication channels and procedures for issuing forecasts and warnings are reviewed and strengthened – including standardizing SOPs, alert dissemination systems using a range of successful dissemination approaches and developing a national weather and climate information and early warning system communication and coordination strategy – at a national and local level in 7 priority districts.
- Output 2.4:** Improved enabling environment for development of sustainable revenue streams for DCCMS through the provision of climate services and products.

The output level target of 10 automatic hydrological stations installed was not included into the LogFrame targets.

## 2.6 Main Stakeholders

The lead institution responsible for overall project implementation of all project outputs is the DoDMA, and key project partners are DCCM and DWR.

All project stakeholders identified in the Project Document and their assumed role in the EWS Project are specified in Table 6.

**Table 6: Project Partners, Roles, and Areas of Collaboration**

Output	Lead Partner	Other Implementing Partners	Key responsibilities
1.1	OPC DoDMA	MoWDI (DWR) MoNREM (DCCMS)	Undertake systematic analysis. Procure and install automatic hydrological stations. Undertake repairs. Procure spare parts. Integrate automatic stations into existing DWR network.
1.2	OPC DoDMA	MoNREM (DCCMS) MoWDI (DWR)	Undertake systematic analysis. Procure and install AWSs. Upgrade existing stations. Procure spare parts. Integrate AWSs into existing DCCMS network.

Output	Lead Partner	Other Implementing Partners	Key responsibilities
1.3	OPC DoDMA	MoNREM (DCCMS) MoWDI (DWR)	Procure and install equipment. Upgrade and update the national DCCMS database and information management system. Undertake data rescue and digitization. Develop and implement a protocol and agreement between DRW and DCCMS. Develop and establish a monitoring/forecasting platform and database
1.4	OPC DoDMA	MoNREM (DCCMS) MoWDI (DWR)	Develop an observation network quality control and maintenance toolbox. Develop and implement a management protocol between DRW and DCCMS. Train seven meteorological and six hydrological technicians. Conduct a refresher course for 25 weather observers and 25 gauge readers. Train 1 communications operator and 1 systems administrator. Establish operation and maintenance training facilities. Assist trained individuals to conduct awareness raising with local communities.
1.5	OPC DoDMA	MoNREM (DCCMS) MoWDI (DWR), Department of Surveys (DoS), MoAFS, MoLGRD	Conduct training of 8 and 3 meteorological and hydrological forecasters to build in-house capacity. Develop training packages and toolkits. Undergo short-term hydro-meteorological internships. Develop tailored flood, drought and severe weather forecasts and information.
2.1	OPC DoDMA	MoNREM (DCCMS), MoWDI (DWR), Department of Surveys (DoS), MoAFS, MoLGRD	Undertake a comprehensive assessment of existing centralised and decentralised early warning systems. Develop and implement coordination protocols and agreements among DCCMS, DWR, DoDMA and other related institutions. Develop and promote a general climate/early warning system information platform and database. Training of for producing hazard and vulnerability maps. Develop information, communication and education materials.
2.2	OPC DoDMA	MoNREM (DCCMS), MoWDI (DWR), Department of Surveys (DoS), MoAFS, MoLGRD	Facilitate inter-sectoral sharing of weather and climate. Integrate weather and climate information into national policy. Integrate weather and climate information into District Development Plans. Operationalize revised policy and development plans.
2.3	OPC DoDMA	MoNREM (DCCMS), MoWDI (DWR), Department of Surveys (DoS), MoAFS, MoLGRD, private sector	Develop a national weather, climate information and early warning system communication and coordination strategy. Standardize SOPs. Develop an early warning system dissemination national and local toolbox. Support the dissemination of weather and climate information and warnings. Support the dissemination of weather and climate information and warnings in 7 priority districts. Development an alert dissemination system.



Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

Output	Lead Partner	Other Implementing Partners	Key responsibilities
2.4	OPC DoDMA	MoNREM (DCCMS), MoWDI, (DWR), Department of Surveys (DoS), MoAFS, MoLGRD, private sector	Review DCCMS data policy. Evaluate the costs and benefits of accurate, timely and accessible weather and climate forecasts Evaluate market potential for weather and climate products in Malawi Development of commercial strategy.

### **3. FINDINGS**

#### **3.1 Project design and formulation**

The project was designed as a part of a broad multi-country program that implements similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia).

##### **3.1.1 Project relevance**

The EWS Project was designed in accordance with relevant national policies and international commitments of Malawi, as well as with donors' policies and assistance programs, including:

- 2006 Malawi National Adaptation Programmes of Action (NAPA) and its priorities:
  - Project priority 3: Improving agricultural production under erratic rains and changing climatic conditions (improved early warning systems)
  - Project priority 4: Improving Malawi's preparedness to cope with droughts and floods (strengthening drought and flood forecasting and early warning systems through human and technical capacity building)
  - Project priority 5: Improving climate monitoring to enhance Malawi's early warning capability and decision making and sustainable utilization of Lake Malawi and lakeshore areas resources (climate monitoring and early warning systems for Lake Malawi and lakeshore areas for improving pre-disaster preparedness of rural fishing and farming communities)
- Malawi Growth and Development Strategy II (2011 – 2016) – MGDS II, and its:
  - Theme 3.2: Disaster Risk Management; and two key priority areas:
  - Key Priority Areas: 1.2 Food Security, and 9.1 Climate Change Management
- Millennium Declaration and UN Millennium Development Goals:
  - Goal 1, Target 1C: Halve, between 1990 and 2015, the proportion of people who suffer from extreme hunger and poverty
  - Goal 7, Target 7C: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation
- GEF Result-Based Management Framework for Adaptation to Climate Change:
  - Objective 2: Increase adaptive capacity to respond to the impact of climate change

Outcome 2.1: Increased knowledge and understanding of climate variability and change-induced threats at country level and in targeted vulnerable areas

Outcome Indicator 2.1.1 Relevant risk information disseminated to stakeholders

Output indicator 2.1.2.1 Type and scope of monitoring systems in place

Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses

Output Indicator 2.2.2.1 Percentage of population covered by climate change risk reduction measures

- United Nations Development Assistance Framework (UNDAF) 2012-2016

Outcome 1.3: Targeted population in selected districts benefit from effective management of environment; natural resources; climate change and disaster risk by 2016

Outputs: 1.3.1 Environment, natural resources, climate change and disaster risk reduction mainstreamed in policies, programmes and plans implemented in 14 disaster-prone districts;

1.3.2 Data and knowledge on the impact of climate change, environment and natural resources and disaster risk management made accessible to decision makers and government, private sector and civil society; and

1.3.3 Coordination mechanisms and implementation arrangements for climate change, environment and natural resources and disaster risk management established and used at national level and disaster-prone districts.

- UNDP Strategic Plan

Primary Outcome: Promote adaptation to climate change

- UNDP Country Programme

Outcome 1: National policies, local and national institutions effectively support equitable and sustainable economic growth and food security by 2016

The EWS Project was designed also in compliance with the following national policies:

- Draft National Disaster Risk and Management Policy (NDRMP)
- Draft National Climate Change Policy
- National Strategy for Sustainable Development (NSSD)
- Agriculture Sector Wide Approach (ASWAp)
- National Biodiversity Strategy and Action Plan

### 3.1.2 Project implementation approach

The EWS Project was designed with a strategy to strengthen the

- Generation and use of reliable weather/climate information and
- Early warning systems in Malawi

through improving national capacities to generate and use weather/climate information in planning for, and management of:

- climate hazards and
- long-term strategic planning.

The Project implementation approach was structured into the following main areas of activities that correspond with project outputs:

1. Improvement and strengthening of an existing network of meteorological and hydrological stations that were only partially operational due to vandalism, missing spare parts, inefficient maintenance, and incorrect calibration, in order to generate sufficient data for more accurate and reliable weather forecasts and extreme weather warnings, including floods, wind storms, and droughts
2. Upgrade and development of sophisticated weather forecasting facilities, including data and information management systems, in order to improve quality and frequency of weather forecasts
3. Strengthening of a cooperation and data sharing between DWR and DCCMS
4. Trainings of DCCMS and DWR experts and their regional staff in order to strengthen their capacity in proper operation and maintenance of weather and hydro-stations.
5. Trainings of DCCMS and DWR experts in weather forecasting, including generation of extreme weather warnings
6. Development of a common weather and early warning platform, including protocols, for sharing the information among stakeholders and disseminating it to targeted areas and end users, and trainings of experts in developing hazard and vulnerability maps
7. Mainstreaming extreme weather and climate information into a national DRM policy and district development plans
8. Development of a weather information and EWS communication and coordination strategy and technology-supported weather alerts dissemination
9. Developing commercial weather and EWS products with a potential to generate income

Project implementation approach is specified in a detail for Outcome 1. The ProDoc is less detailed and specific in description of Outcome 2, especially in case of delivering early warnings to end-users in communities, i.e. targeted population in disaster-prone districts, in developing risk knowledge and appropriate response capacity.

The EWS Project design reflects standard practice of developed, i.e. rich countries: having a sufficient network of automatic hydro-meteorological stations for reliable and frequent data collection to be used in locally produced country specific weather forecasting, often combining several forecasting models for comparison. The Project Document considered several technology-based alternatives for hydro-meteorological data collection, management and forecasting, including outsourcing forecasting and data management capacity abroad.

However, this was “not found popular with the GoM as this places data (which is considered a national asset) offshore and it does not build local human and technical capacities”.

During the EWS Project development phase, i.e. during drafting the Project Document, the least-cost but effective option appropriate and affordable for Malawi to utilize publicly available global weather forecast platforms including free weather data for weather and extreme weather forecasting, was not considered.

### 3.1.3 Log-frame analysis

The LogFrame matrix follows in principle the project implementation strategy designed in the Project Document.

The project LogFrame includes in total 6 indicators and 9 end-of-project targets with 20 individual specific EOP targets for project objective and outcomes, as well as baseline, source of verification, and risks and assumptions.

The LogFrame does not specify midterm targets. This undermined monitoring of progress during project implementation period.

The project objective indicator “Capacity as per capacity assessment scorecard” includes 36 additional capacity indicators of departments to produce, package, and disseminate weather/EWS information, and of legislative and governance framework, and for each indicator a baseline and target values are established. There is no information provided on methodology to be used for assessment, nor methodology used during the baseline assessment. Thus, it is not possible to replicate the same methodology at the end-of-project assessment in order to receive comparable results. This type of assessment is also very subjective: it depends on individuals providing the assessment. Thus, the capacity assessment scorecard has very low informational value. It is hardly measurable in an objective way, and thus it is not suitable to serve as a LogFrame SMART indicator to measure cumulative project achievements.

The second project objective indicator – total value of annual budget of DoDMA, DCCMS and DWR does not indicate actual funding provided specifically for operation and maintenance of installed equipment for data reading, collection, processing, and dissemination, including salaries, that is critical for EWS project sustainability. In fact, the value of O&M budget available for installed equipment can be fully independent on the total value of departments’ budget. In addition to that, annual budgets are typically revised during the year and downsized due to budget cuts.

Outcome 1 indicators of national coverage, combining national coverage of manual and automatic stations as a simple average of coverages in %, does not have much informative value. It does not represent the share of districts with operational manual or automatic stations, neither the share of districts with both manual and automatic stations.

Outcome 1 includes, among others, “capacity of the DCCMS to forecast (extreme) weather”. However, there is no stand-alone LogFrame indicator nor target to evaluate this key Project achievement, except for 2 indicators of 36 included in the Capacity Assessment Scorecard. Outcome 1 indicators focus on hydro-meteorological data monitoring. The first Outcome 1

indicator “Percentage of national coverage of climate monitoring network (fully operational)” includes two types of targets: regional coverage, i.e. share of districts with operational hydro-meteorological stations by its type, and number of fully operational hydro-meteorological stations by type, in total 8 targets. Second Outcome 1 indicator focuses on “Frequency and timeliness of climate-related data availability”. The target is defined as a number of fully operational hydro-meteorological stations at the end of the EWS Project. This illustrates weak coordination with other projects implemented in Malawi focusing on EWS and strengthening of hydro-meteorological stations. The EWS Project targets cannot include achievements of other projects. EWS Project targets, equivalent to country targets of operational stations as of beginning of the EWS Project, should have been revised and hydro-meteorological stations supported from other projects subtracted. Only a target of number of newly installed AWS has been revised, but not reflected in the LogFrame.

Outcome 2 indicator “Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings (disaggregated by gender)”, and its baseline and target, are not SMART/specific enough. Weather forecasts and warnings have been published by DCCMS/DWR/DoDMA via media, including radio broadcasters in Malawi, even before the EWS Project, although the quality and frequency of forecasts was significantly lower. All communities and most families have had access to radio broadcasting, including weather forecasts in English and Chichewa, well above the target value of 17% of population. The EWS project did not make any change in percentage of population with access to this information broadcasted via national radio stations before and after the EWS Project, since already at the beginning of the EWS Project the coverage of population by national radios was almost at 100%<sup>21</sup>. The EWS Project was designed to improve the delivery of early warning alerts to the population (and to advise them on response to take). However, the LogFrame target does not evaluate actual delivery of severe weather alerts to end-users, i.e. effectiveness of early warning dissemination within communities, and of actual responses taken.

None of the project objective indicators, nor the first indicators of outcome 1 and 2 are sufficiently “SMART” – specific or measurable, and they do not clearly indicate the progress in EWS Project achievements.

One of the main EWS Project goals (mentioned in Outcome 1) was to produce more reliable and frequent weather forecasts. The LogFrame does not evaluate this specific achievement, it is hidden in the Capacity Assessment Scorecard with a weight of 5% only, and it was partially reflected only in Output 1.3 that is not included in the LogFrame.

Project output targets, as specified in the ProDoc, are not included in the LogFrame matrix, which keeps the total number of targets at a reasonable level. In addition to a LogFrame outcome level target of fully operational meteorological and hydrological stations, output level indicator specifies also a specific target of 10 new automatic hydrological stations installed, which is not included in the LogFrame matrix.

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<sup>21</sup> A 2014 report “Access and Usage of ICT Services Survey that was conducted by the National Statistical Office (NSO) on behalf of Malawi Communication Regulatory Authority (MACRA) shows that about 45% of households in Malawi own a radio and that 96 percent of individuals listen to a radio regardless of ownership of radio (NSO, 2014)

The quality of LogFrame targets specification is rather low and cannot fully reflect achievements of the designed project strategy.

#### 3.1.4 Assumptions and risks

The LogFrame included assumptions and risks for the project objective and for both project outcomes. In addition to the six risks identified and described in the Risk Log, the LogFrame specifies one additional risk.

The Risk Log in the Annex 8 of the Project Document specified six main risks, including their potential consequence, countermeasures/management response, risk type/category, and probability and impact. These risks include:

1. Delayed implementation of baseline projects by the government and donors negatively affects EWS 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.

2. Installed hydro-meteorological equipment fails because it is vandalized or not maintained.

Assumption: Communities living nearby 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.

3. Climate shocks occurring during the design and implementation phase of the EWS project result in disruptions to installed equipment and severely affect communities, prior to the EWSs being established.

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.

4. Local information technology and telecommunications infrastructure restricts the transfer of data from installed equipment to necessary recipients, and restricts communication amongst key players and end-users.

Assumption: Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.

5. 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 co-ordinate with the IP to ensure effective administrative planning, meaning that equipment is procured and installed in a timely manner.

6. Lack of commitment from communities where EWSs 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 to participating in the LDCF project.

The additional risk identified in the LogFrame is:

7. Alerts and warnings required by communities are not feasible to produce due to scientific or technological barriers.

Assumption: The most up to date technology and scientific approaches and advances are feasible and appropriate for meeting the LDCF project needs. The level of error for forecasting is within the minimum thresholds appropriate for the LDCF project activities.

The key risk to project sustainability, which is typical for most donors' interventions not only in Malawi, is availability of adequate post-project financing needed mainly for operation, maintenance and service of purchased equipment. The EWS Project identified the lack of financing for maintenance as one of the problems to be addressed: at the baseline, most of existing weather- and hydro-stations were not fully operational due to lack of maintenance and lack of operational funding, and thus the EWS Project was designed to rehabilitate them.

This key risk was formally addressed in the identified risk #2 "Installed hydro-meteorological equipment fails because it is vandalized or not maintained". However, the assumption and specified countermeasures/management response "Awareness raising activities will be undertaken in target communities to highlight the importance of the installed equipment. In addition, the equipment will be housed within a secure fence." addresses only vandalism, but not the key problem - lack of funding for operation and maintenance.

The ProDoc specifies (Chapter 2.7 Sustainability, paragraph 171, page 68): "Budget allocations for Operation and Maintenance of installed hydro-meteorological equipment are an important part of sustainability of the EWS project interventions. This is particularly relevant to DCCMS, DWR and DoDMA as there is uncertainty as to whether the minimum level of funding required for annual recurrent costs will be made available." In response to this risk of lack of funding for O&M, the ProDoc specified Output 2.4, which included market assessment for commercial weather and climate products in Malawi, and development of 1 – 3 weather and climate products for sale in order to generate sustainable revenue streams.

At the EWS Project design phase, no market nor feasibility analysis were available that would suggest that the proposed solution – development of commercial weather products for sale – would generate sufficient net revenues to cover operation and maintenance costs of the equipment installed by the EWS Project. During the Inception Workshop held in October 2012, the UNDP country office pointed out that previous attempts to engage with private sector as a means of ensuring long-term finance for projects have met with little success.



The key risk of insufficient post-project O&M financing, typical for numerous project implemented in Malawi and elsewhere in the past, although identified, was not sufficiently addressed, and proposed mitigation measures were not enough to effectively mitigate this risk.

### **3.1.5 Planned stakeholder participation**

The Project Document specified key project implementation partners and stakeholders and their responsibilities and areas of collaboration within the EWS Project, see Chapter 3.6 Main Stakeholders for details<sup>2.6</sup>.

Department of Disaster Management Affairs (DoDMA) under the Office of the President and Cabinet was assigned to serve as the lead institution responsible for overall project implementation. Additional main project implementation partners and beneficiaries were Department of Climate Change and Meteorological Services (DCCMS) under the Ministry of Natural Resources, Energy and Mining, and Department of Water Resources (DWR) under the Ministry of Agriculture, Irrigation and Water Development (MoAIWD).

Additional project partners identified in the Project Document included:

- Department of Surveys under the Ministry of Lands, Housing and Urban Development
- Ministry of Agriculture and Food Security (MoAFS) – now Ministry of Agriculture, Irrigation and Water Development (MoAIWD)
- Ministry of Local Government and Rural Development (MoLGRD)
- Village Civil Protection Committee (VCPC)
- District Civil Protection Committee (DCPC)
- Area Civil Protection Committee (ACPC)

### **3.1.6 Linkages between the project and other interventions within the sector**

There have been many initiatives implemented in Malawi over past decades and especially over last years, even before the EWS Project was launched, related to EWS, and/or supporting development and installation of meteorological and hydrological stations, and recently also implementing EWS, both on a national and community levels.

- SADC Hydrological Cycle Observing System (HYCOS) Phase 1 Project – installed six hydrological monitoring stations with automatic Data Collection Platforms in the late 1990s
- Enhancing Community Resilience Project (ECRP, 2011-2015, £21.5 million) funded by the British Department for International Development (DFID), Irish Aid and the Norwegian government, NGO implemented (ECRP and DISCOVER<sup>22</sup>), focused on

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<sup>22</sup> Developing Innovative Solutions to Overcome Vulnerability through Enhanced Resilience

building community resilience, including low-tech community-based early warning systems

- Programme Support to Disaster Risk Management (UNDP, PS DRM, 2012-2016, \$ 1.35 million) - focused on undertaking capacity development at a national, district and community level to reduce disaster risks and shocks to vulnerable communities
- Programme Support to Environment and Natural Resources (UNDP, PS ENR, 2013-2016, \$1.7 million) provided support to the GoM for mainstreaming environment and natural resources management in policies, development plans and programs at national level
- Shire River Basin Management Program Phase 1 Project (SRBMP, 2012-2018, ~\$125 million) funded by the World Bank, implemented by the MoAIWD, aims to establish coordinated inter-sectoral development planning and coordination mechanisms, undertake the most urgent water related infrastructure investments, prepare additional infrastructure investments, and develop up-scalable systems and methods to rehabilitate sub-catchments and protect existing natural forests, wetlands and biodiversity in the Shire River Basin. The project provides irrigation and flood management infrastructure in the Shire River basin, as well as training and infrastructure for the hydro-meteorological services – this includes the installation of considerable ground- and surface-water measuring equipment in the Shire River Basin in order to provide real-time information to a control center within the DWR.
  - Integrated Flood Risk Management Strategy (IFRMS, 2012-2018, \$3.9 million), component of the SRBMP, focused on accurate and timely hydrological measurements. The main aim of IFRMS is to develop a 5-year Action Plan for strategic flood risk management of the Shire River Basin.
- National Climate Change Programme (NCCP) and Programme Support to Climate Change coordinated by the UNDP
- Weather Index-Based Crop Insurance Project (World Bank funded, implemented by Global Facility for Disaster Reduction and Recovery - GFDRR), installed 16 automatic weather stations throughout Malawi
- United States Agency for International Development's (USAID) expanded vulnerability mapping project
- Malawi Vulnerability Assessment Committee (MVAC) is a multilateral committee with members from government, UN, NGOs and civil society. It is mandated with the provision of early warning information with respect to the food security situation in the country.
- Famine Early Warning Systems Network (FEWSNet) provides information for the reduction of famine and drought impacts in Malawi. It conducts regular field assessments of key indicators (crop growth, market prices and trade). This information, combined with regional drought likelihood analyses, is fed into the Ministry of Agriculture, Irrigation and Water Development Information Management System, and it is used in the preparation of monthly reports on food availability and trends.

- Southern African Regional Climate Outlook Forum (SARCOF), which is a Southern African Development Community (SADC) coordinated platform on which Malawi participates in the analysis of regional weather forecasting with SADC.
- Group on Earth Observations' (GEO) AfriGEOSS initiative
- African Monitoring of the Environment for Sustainable Development (AMESD) and Monitoring of Environment and Security in Africa (MESA)
- WMO's Global Framework Climate Services (GFCS) initiative
- The Malawi Red Cross Climate Change Project, funded by the Finish Red Cross, provided mobile weather stations
- Disaster Preparedness ECHO (DIPECHO), launched in 2008, funded by the European Community Humanitarian Office (ECHO), implemented community-based EWS in Chikwawa, Salima and Nsanje districts by international NGOs. It includes simple river level gauges in upstream villages, which are read by community members regularly. Warnings are disseminated to downstream village civil protection committees (CPCs) using mobile phones, megaphones, whistles and community flags. This low-technology warning system has proved to be fairly effective, and the methodology has been adopted by the ECRP.
- Africa Adaptation Programme (AAP, JICA funded), implemented by the UNDP and FAO, established district climate change information centers and implemented community-identified adaptation measures in 7 districts, and a community-based flood warning system in Salima district.
- Southern Africa Flash Flood Guidance (SARFFG) system promotes exchange of information on flash floods between regional meteorological networks. The South African Weather Service (SAWS) is providing information on flash flood warnings. This information is integrated into DCCMS's early warning systems.

Individual projects with weather information and EWS component are implemented at a national and/or local level by various implementing agencies, both national governmental agencies and international NGOs. In general, these projects are initiated and driven by donors, and there is little coordination among individual state agencies, and among the actual needs of Malawi and proposals of donors.

Good experience from the DIPECHO project utilizing low-tech solutions for community-based EWS was replicated in other projects, namely in the ECRP.

Other projects, including this EWS Project, utilize more costly high-tech solutions with automatic weather- and hydro-data remote collection and transfer.

### **3.1.7 UNDP comparative advantage**

UNDP has a demonstrated administrative and project management capacity to implement EWS projects, it is a neutral GEF implementing agency. UNDP has a substantial in-country

and regional expertise and experience from implementing climate change projects in both, Malawi and in other countries of operation in the region and world-wide.

UNDP developed this EWS Project as a part of a broad multi-country program that was designed to implement UNDP-supported similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia). This provided additional opportunities for UNDP in facilitating experience and expertise sharing among these UNDP-supported projects in the region.

UNDP has a long-term EWS related country-specific experience providing its Programme Support on Disaster Risk Management and Resilience Building in Malawi.

### **3.1.8 Replication approach and sustainability**

The Project Document identified three factors supporting future replication of the EWS Project across the country:

1. Lessons learned will be disseminated nationally through training programs, the online platform and toolboxes including courses, handbooks and manuals.
2. Strengthening of capacities among key government stakeholders will enable continued mainstreaming of the use of climate information and early warnings into sectoral planning and decision-making.
3. The position of the EWS Project in UNDP's PS DRM will provide the strongest mechanism for replication. 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 endeavors within Malawi are climate-resilient.

Capacity development was identified in the ProDoc as the main factor with a potential to support project replication across other regions in Malawi.

Although not specifically highlighted in the ProDoc, replication of this technology-based project that installed automatic weather- and hydro-stations and rehabilitated equipment at manual stations, as well as ICT equipment at governmental departments (primarily at DoCCMS, and at DWR and DoDMA) would depend on future funding available from external/international sources.

The Project Document planned that sustainability of EWS Project results will be supported by four factors:

1. Ownership of the EWS Project by government structures, i.e. project implementation by the three governmental departments – DoDMA, DCCMS, and DWR, and involvement of local communities.
2. Phase approach that will enable to learn lessons at early stage of project implementation and apply the gained experience in next project phases.

3. Strengthened O&M budget for installed hydro-meteorological equipment owned by governmental departments by developing for sale commercial hydro-meteorological services.
4. Awareness raising and capacity strengthening at national and local levels.

Although the key assumption for project sustainability – sufficient post-project O&M budget – was identified, and the ProDoc called for strengthening of the O&M budget, it is not clear from the Project Document if the actual O&M budget will be sufficient, since the level of incremental O&M budget needed for operation and maintenance of newly installed and rehabilitated hydro-meteorological stations was not specified/enumerated.

### 3.1.9 Management arrangements

DoDMA was identified as a lead governmental department to serve as a project implementing partner under the NIM modality fully responsible for the overall project management on a daily basis.

The Project Board, consisting of executives of the PS DRM Program and its projects, and National Disaster Preparedness and Relief Committee, was designed to oversee project implementation, including scheduled and ad hoc reviews, and to make key management decisions.

The Project Board was designed to include:

- Executive - representing the National Disaster Preparedness and Relief Committee chaired by the Chief Secretary of the Office of President and Cabinet
- Senior Supplier - UNDP as a GEF implementing agency – project assurance and supervision regarding project feasibility and compliance with donor requirements and rules
- Senior Beneficiary – DoDMA – responsible for daily project management and achievement of expected project results, including drafting work plans and progress reports to be approved by the National Project Director/Director of DoDMA in consultations with UNDP.

Project Board/Steering Committee was designed to be chaired by the Chief Secretary of the Civil Service of the Office of the President and Cabinet, and to include as members representatives of other ministries, UNDP, and NGOs.

The Technical Committee was designed to serve as a project technical advisory board for project implementation and monitoring, and it included representatives of DoDMA, DCCMS, DWR, members of other ministries, Steering Committee, UNDP and NGOs.

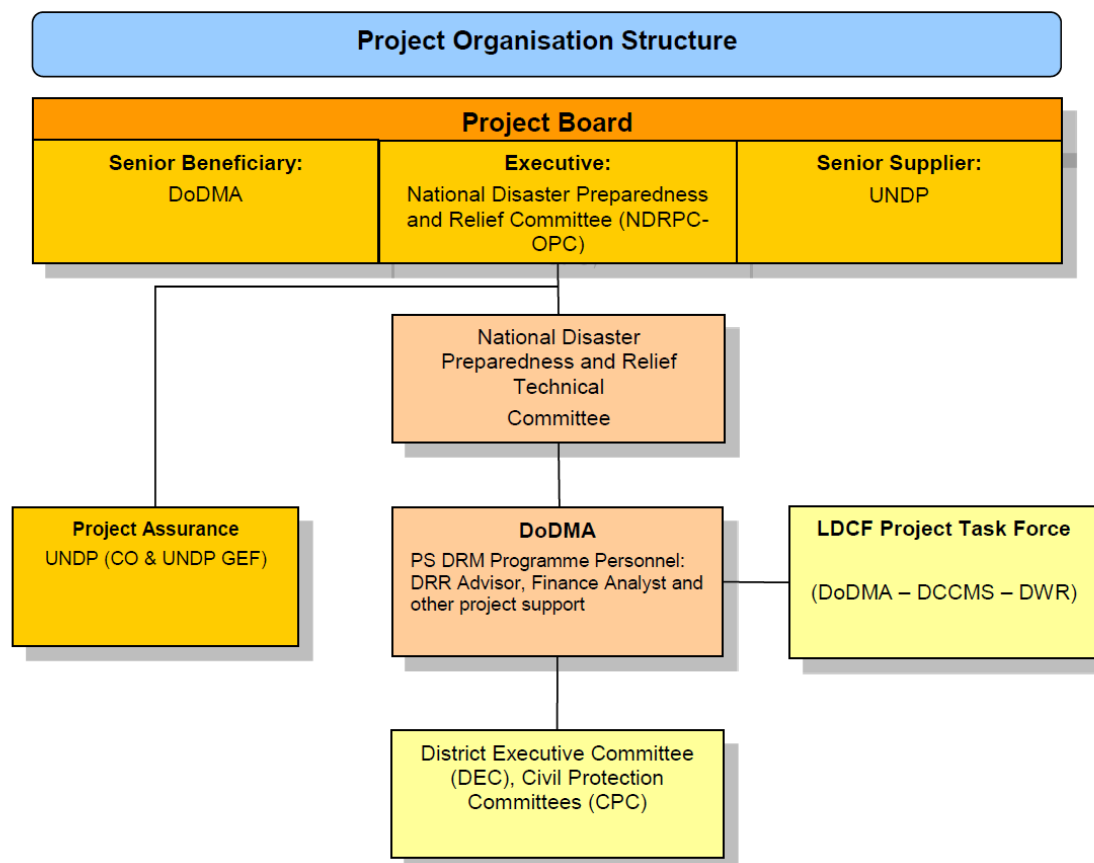
District level coordination was planned to be performed under the guidance of the Directorate of District Planning through the Director of Planning and Development with an executive body being the District Civil Protection Committee.

The EWS Project was implemented by the current staff of DoDMA, DCCMS, and DWR. No project specific experts were hired for a period of EWS project implementation. The only personnel that was recruited for this Project was the Finance and Administration Assistant to

support DoDMA project operations following baseline observation that the Department did not exhibit stringent internal financial controls to meet project expectations. The EWS Project received a short-term support from a UNDP consultant on procurement (UNDP's Procurement Support Office in Copenhagen, Denmark). Sector level coordination was done through focal points from the implementing partners/departments.

The Figure 1 illustrates the organizational diagram of the EWS project.

**Figure 1: Project Implementation Structure as per ProDoc**



### 3.1.10 Lessons learned from other relevant projects

Annex 2 to the Project Document lists three relevant projects and lessons learned utilized during EWS Project design.

Information from the Wellness and Agriculture for Life Advancement project (WALA), implemented by a consortium of international NGOs lead by the Catholic Relief Services, and the Climate Change Project implemented by the Malawi Red Cross with support from the Finish Red Cross and Finish Meteorological Institute only summarize project activities.

Information from the EU-funded DIPECHO project implemented by NGOs summarizes lessons learned from flood early warning systems implemented with support from the DIPECHO project:

- Community based flood early warning system are managed by people who get affected by the floods
- Key to success: proper linking of up-stream and down-stream communities (through CPCs)
- School children and faith leaders are an effective mechanism for awareness raising and disseminating disaster related information to communities<sup>23</sup>
- Drums, whistles, bicycles and local radios have proved to be very effective in communication on disaster warnings within communities as they are easily understood (local, community-based radios broadcast in locally spoken language)<sup>24</sup>

This implies, although it was not explicitly articulated in the ProDoc, that low-tech low-cost community-based flood early warning systems implemented by NGOs with local presence and managed by local people living in flood-prone areas tend to be very effective in implementing community-based early warning systems with low-costs and high-impact. However, this key lesson learned was not reflected in the EWS Project design.

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<sup>23</sup> Quoted from the Annex 2 to Project Document “Other projects and lessons learned”, page 7

<sup>24</sup> Quoted from the Annex 2 to Project Document “Other projects and lessons learned”, page 7

## **3.2 Project Implementation**

### **3.2.1 Project implementation and adaptive management**

The Project was implemented mostly according to the project strategy and a work plan outlined in the Project Document with one major deviation described below.

The Inception Report identified that DCCMS is unable to undertake numerical modelling for weather forecasting due to lack of infrastructure. The major change to the ProDoc outline and the key adaptive management implemented by the EWS Project was that DCCMS decided to improve its weather forecasting capacity by using the COSMO model and ICON model for downscaling. The Consortium for Small Scale Modelling (COSMO) offers a free license for the operational use of the COSMO model (global numerical weather prediction model - NWP) for national hydro-meteorological services in developing countries, including Malawi. In addition to the free license for operational use of, i.e. access to the COSMO model (software) weather forecasting results, the German Weather Service (Deutsche Wetterdienst - DWD) also provides real-time input data for weather forecasting free of charge (lateral boundary data up to 120 h, up to four times daily, based on the analyses at 00, 06, 12 and 18 UTC). DCCMS combines the weather forecasts of the COSMO model with the ICON model provided also by the DWD to increase the resolution of 13 km mesh down to 7 km and 2 km, and for flood, drought and wind storms forecasting.

Thus, DCCMS is now able to generate more accurate, more reliable, more frequent, and more region-specific weather forecasts, including severe weather forecasts (flood, wind storms) for early warnings.

Because several existing AWS stations have been damaged by recent flooding, and other projects funded by other donors installed also AWS, the EWS Project management decided to downsize the output 1.2 target of 20 new AWS installed to 10 AWS<sup>25</sup>. However, this output level target (specified also in an outcome 1 target) has not been revised and updated in the LogFrame.

### **3.2.2 Partnerships arrangements**

The EWS Project was implemented with project partners identified in the Project Document. Other project partners, including other EWS stakeholders and local NGOs/CSOs, have been invited to participate in project coordination meetings and DRM platform meetings. No additional project partners have been actively involved in direct EWS Project implementation. However, there is a large group of other initiatives with EWS component being implemented in Malawi (see Chapter 3.1.6).

For details on project partners involved and their role in the EWS Project implementation see Chapter 2.6 Main Stakeholders, and Table 6: Project Partners, Roles, and Areas of Collaboration.

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<sup>25</sup> It appears that this change was not formally approved by the Steering Committee.



The EWS Project invited various local stakeholders, including NGOs to participate at different project information dissemination events, such as annual project review meetings.

The project did not take the needed effort to partner with like-minded institutions. In some cases, the other projects/institutions were implementing similar interventions in the districts covered by the EWS Project. For example, the Enhancing Community Resilience Programme (ECRP) joint venture with Developing Innovative Solutions to Overcome Vulnerability through Enhanced Resilience (DISCOVER) was implemented in 11 target districts: at least four of which: Chikwawa, Karonga, Salima and Dedza were also targeted by the EWS Project within the same period. This was worrisome to the NGOs/CSOs interviewed. A recommendation was made to the Project in the MTR to enhance its partnership with the NGOs but there is no evidence to suggest that this had happened.

### 3.2.3 Monitoring and evaluation

The Project Document described in detail necessary monitoring framework and evaluation procedures, as required for all UNDP-supported GEF-financed projects.

Specifically, it drafted a Monitoring and Evaluation Work Plan that identified responsible parties for M&E activities, including Inception Workshop and Report, periodic quarterly and annual monitoring and reporting of project progress and performance, annual APR/PIR, Project Board meetings, Midterm Review, Terminal Evaluation, Terminal Lessons Learned Report, and financial audits. For each M&E activity responsible parties have been specified, appropriate indicative budget allocated, and time-frame specified.

According to the M&E plan, key parties responsible for performing project monitoring and evaluation included DoDMA, PS DRM, UNDP Country Office, UNDP-GEF Regional Technical Advisor, and international and local consultants/evaluators.

The project was subject to standard UNDP monitoring and evaluation procedures. Crucial tools used for monitoring and evaluation included the LogFrame, Inception Workshop and Inception Report, Mid-Term Review and Terminal Evaluation, Project Board meetings, and standard UNDP and GEF planning and reporting tools with quarterly and annual frequency, including risk logs in Atlas, GEF tracking tool, Annual Work Plans (AWP), Annual Project Review/Performance Report (APR), Project Implementation Review (PIR).

Project implementation has been reviewed by Steering Committee meetings held in September 2014, February and March 2015, January 2016, February and October 2017.

The EWS Project was formally launched on December 6, 2013 by the signature of the Project Document. Inception workshop was held on March 26, 2014, and the results of the Inception Workshop discussions were summarized in an Inception Report.<sup>26</sup>

The Midterm Review report was submitted in January, 2017, 3 years after the four-year EWS Project start, and one year before the planned end of the Project.

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<sup>26</sup> The first Inception Workshop was held on October 2, 2012 to initiate the process of the EWS Project development. Subsequently, an Inception Report was produced by Mr. James Reeler, International Consultant, summarizing Inception Workshop discussion and mission findings.

The budget for monitoring and evaluation was sufficiently designed to include 117,000 USD as of ProDoc.

LogFrame indicators designed in the ProDoc were not specific enough to properly reflect main project achievements. Main adaptive management implemented, including changes in new AWS target, were not reflected in LogFrame targets revision. The MTR recommendation to revise some of the LogFrame indicators, although it included rather formal revisions, was not implemented and LogFrame was not updated.

Internal project evaluation (PIR) reported as EWS project achievements also results implemented by other projects (number of installed and rehabilitated hydro-meteorological stations), and thus the internal rating did not reflect the actual achievements of the EWS Projects itself.

Terminal evaluation rating significantly differs from the APR/PIR self-evaluation rating (mostly Satisfactory, Low risk), that included results of other projects as well, and from the MTR evaluation rating as well (mostly Moderately Satisfactory, Moderately Likely sustainability). The EWS Project LogFrame did not specify any mid-term targets, but only end-of-project targets. Thus, the MTR could have evaluated only the trend and prospects if end-of-project targets could be met. In addition to that, the MTR evaluation matrix/criteria are partly different from the terminal evaluation matrix/criteria.

#### **3.2.4 Feedback from M&E activities used for adaptive management**

The Inception Report of March 2014 summarized the discussion held during the Inception Workshop and no major amendment to the Project Document was proposed. During the discussion need for synergy and convergence between different ongoing programs and projects, need for improved coordination between various stakeholders and government departments, and need to strengthen maintenance capacity were highlighted.

The Inception Report of 2012 prepared at the launch of the project development phase indicated that “initial consultations did not turn up potential private sector clients for the project to interact with, and the UNDP country office pointed out that previous attempts to engage with private sector as a means of ensuring long-term finance for projects have met with little success”. This activity, developing commercial products for sale to private sector, remained in the EWS Project design, leaving securing sufficient post-project funding for O&M at risk.

The Midterm Review specified 16 recommendations and proposed a revision of the LogFrame.

MTR recommendations included:

- Strengthen partnership with communities and NGOs on EWS dissemination, and with other EWS projects
- Accelerate project implementation, including data sharing protocols, capacity strengthening, development of commercial weather products

- Strengthen project work planning, reporting and monitoring, adaptive management, internal project management and financial planning
- Develop exit-strategy, i.e. post-project sustainability strategy, and a gender strategy
- Create project web site and strengthen EWS Project visibility

The MTR Report was developed and submitted less than one year before planned EWS Project termination. Thus, there was very tight time available for full implementation of MTR recommendations. However, no evidence has been found that the MTR recommendations were incorporated into the EWS Project implementation<sup>27</sup>.

The MTR proposed rather formal changes in LogFrame indicators: split of existing indicators with multiple targets into more indicators that would be more detailed and better linked with the specific targets. MTR also proposed to include three output level indicators to the LogFrame matrix as new outcome level indicators, namely: Number of people trained in technical aspects of O&M of AWS and hydrological stations, Number of meteorological and hydrological forecasters trained, and Number of weather and climate products with commercial potential developed. The LogFrame was not revised according to the MTR recommendations.

No major adaptive management was implemented as a result of formal M&E activities, including Inception Report and MTR. The key and a very positive change to the EWS Project design and a major adaptive management implemented, i.e. improving the quality of weather forecasting based on free access to COSMO global weather forecasting model and data, was implemented thanks to the initiative of the DCCMS experts. However, it was not reflected in the LogFrame revision. In addition to this, lightning detection systems were not procured as initially planned, because of high maintenance costs. However, single side band radios that were not initially in the design, were procured as government found them to be more appropriate.

Terminal evaluation rating:

Monitoring and evaluation design is rated Moderately Satisfactory.

Monitoring and evaluation plan implementation is rated Moderately Unsatisfactory.

Overall quality of monitoring and evaluation is rated Moderately Unsatisfactory.

### 3.2.5 Financial planning and management

The GEF budget of 3.6 mil USD as of the Project Document is shown in Table 7.

**Table 7: Project Budget as of Project Document [USD]**

Year	1	2	3	4	Total	
<b>Outcome 1</b>	286,050	1,171,290	939,600	49,500	<b>2,446,440</b>	68%
<b>Outcome 2</b>	132,050	123,150	236,810	481,550	<b>973,560</b>	27%

<sup>27</sup> The project management explanation for this was that the MTR was delayed. As such, the EWS Project had limited time and budget to adopt and actualize the recommendations.

<b>Management</b>	47,500	47,500	47,500	37,500	<b>180,000</b>	5%
<b>Total</b>	<b>465,600</b>	<b>1,341,940</b>	<b>1,223,910</b>	<b>568,550</b>	<b>3,600,000</b>	100%
	13%	37%	34%	16%	100%	

**Table 8: Annual EWS Project Expenditures (CDR) [USD] as of July, 2018**

	2014	2015	2016	2017	2018	Total	% of budget
<b>Total</b>	<b>535 515</b>	<b>1 425 310</b>	<b>1 188 339</b>	<b>447 798</b>	<b>0</b>	<b>3 596 962</b>	99.9%
<b>% of total</b>	15%	40%	33%	12%	0%	100%	

The Table 8 shows annual project expenditures for each year of EWS Project implementation period as reported in Combined Delivery Reports.

The structure of expenditures provided in CDRs does not allow to track and summarize expenditures as per each project outcome and by project management costs. Total EWS Project expenditures as of July 31, 2018 reached 3,596,962 USD, i.e. 99.9% of the budget.

Expenditures as per UNDP CDRs show expenditures that were either paid directly by UNDP or advance payment to DoDMA in order to be able to pay for expenses of DoDMA, DCCMS and DWR. Thus, the Table 8 reflects time-bound expenditure cash flow of UNDP, but not actual disbursement flow of governmental departments.

The Table 8 suggests that by the end of 2016, 87% of budget has been spent. This reflects the payment made by UNDP CO Malawi, not the actual disbursement by governmental implementing partners. The minutes from the Steering Committee meeting in February 2017 reflect a complaint in a discussion on “low utilization of resources for the EWS Project in some components”.

It was not possible for terminal evaluators to make a detailed analysis of all actual project expenditures and their effectiveness. A rough estimate has been made, based on CDRs reported by UNDP, on a total value declared for purchase of physical equipment by the EWS Project. As per CDRs, in total approx. 1.4 mil USD, or approx. 40% of the budget has been spent on physical equipment, including installation and rehabilitation of hydro-meteorological stations, procurement of computers, communication equipment, mobile phones, furniture, office stationary, etc.

Review of material substance of expenditures declared by DoDMA, DCCMS and DWR was not subject of terminal evaluation.

The EWS Project was subject to four financial audits for each year of the project implementation period, i.e. covering calendar years of 2014, 2015, 2016 and 2017. Financial audits focused on transactions initiated by implementing partner (DoDMA) and paid by UNDP based on Statement of Expenses/Combined Delivery Report (excluding UNDP direct support expenses), and found no objections for years 2014, 2015 and 2016.

In 2017, the financial audit stated some observations that included one high risk observation and five medium risk observations:

High risk observation:

- Fuel costs not supported by adequate documents (1,512 USD)

Medium risk observations:

- DSA payments not supported by attendance sheet of participants (86,000 USD)
- Review of supporting documents by appropriate authority
- Inconsistencies between payment voucher and supporting documents (supporting documents exceeded the payment voucher)
- Double reporting of Bank charges (9.48 USD)
- In some cases (annual) budgets are excessively utilized

Most of the medium risks observations are formal with negligible impact, in one case even eligible costs were not fully claimed.

The Project Management and UNDP Country Management responded to all financial audit observations and improved the control and financial management accordingly.

### 3.2.6 Co-financing and in-kind contributions

The Project Document specified three sources of co-financing in a total value of 11.3 mil USD, namely the Government of Malawi, UNDP and the UK Department for International Development (DFID), and 30.4 mil USD co-financing (or rather parallel financing) provided by other donors to other projects with EWS component in Malawi.

Total four-year budgets of three implementing governmental agencies (DoDMA, DWR and DCCMS) are indicated in the Project Document as the contribution of the Government of Malawi to the EWS Project implementation – total value 3.838 mil USD.

UNDP reported in the ProDoc 6.1 mil USD as co-financing to be provided for the EWS Project, which consists of the total value of a 2014-2016 share of its 2012-2016 Programme Support to Climate Change (PS CC), Environment and Natural Resources (PS ENR), Sustainable Energy (PS SE), and Disaster Risk Management (PS DRM).

The Department for International Development (DFID) reported 1.357 mil USD of the British share in funding of the Enhancing Community Resilience Programme (ECRP) as an EWS Project co-financing.

There are dozens of climate change adaptation and disaster risk management projects implemented in Malawi, both large-scale with budget of more than 100 mil USD (the Shire River Basin Management Program), and small-scale projects, implemented by small foreign and national NGOs and volunteers, and privately funded by donations.

Since there is sufficient co-financing and parallel financing potentially available from other similar projects implemented in Malawi, it is not clear, why only one project funded by other donor (DFID) was identified for co-financing, and why whole department's budgets of DoDMA, DCCMS, and DWR over four-year period of EWS Project implementation, and a full value of

the whole UNDP Programme Support portfolio (CC, ENR, SE, DRM) overlapping with the EWS Project implementation period, were specifically reported as co-financing.

**Table 9: Financial Planning and Co-Financing as of July 2018**

Co-financing (Type/Source)	UNDP own Financing (mill US\$)		Government (mill US\$)		Other Sources (mill US\$)		Total Financing (mill US\$)		Total Disbursement (mill US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants										
Credits										
In-kind support	6.100		3.838		1,357		11.295		11.295	
Other										
<b>Total</b>	<b>6.100</b>		<b>3.838</b>		<b>1.357</b>		<b>11.295</b>		<b>11.295</b>	

No data on actual co-financing were provided.

The planned co-financing of total annual budgets of governmental departments (DoDMA, DCCMS, and DWR) and the value of UNDP Programme Support portfolio to Climate Change (PS CC), Environment and Natural Resources (PS ENR), Sustainable Energy PS (SE), and Disaster Risk Management (PS DRM) does not actually indicate sufficient funding for EWS related activities. Some of the installed and rehabilitated stations are not fully operational even before the EWS Project end due to lack of (negligible) operations and maintenance funding.

There are numerous EWS related projects being implemented in Malawi that can be declared as co-financing and parallel co-financing, that would in total easily exceed the planned co-financing of 11.295 mil USD.

### 3.2.7 Management by UNDP and implementing partner

The Project was managed according to the planned management scheme specified in the Project Document, for details, see the Chapter 3.1.9 and

Figure 1: Project Implementation Structure as per ProDoc.

The EWS Project was implemented by regular staff of three governmental departments, namely the DoDMA, DCCMS, and DWR. The Government of Malawi preferred this option rather than project implementation by hired experts and dedicated time-bound Project Implementation Unit, so that the expertise developed through the project implementation period would be more sustainable and will stay with regular staff in their departments. The EWS Project has only hired a Finance and Administrative Assistant.

However, the challenge of this organizational set-up is that the regular staff have their other work obligations and less experience in activities not directly related to their common work, namely with implementing EWS and organization of early warning alerts' dissemination on a community level to end-users, and in developing risk knowledge and appropriate response capacity.

Additional challenge is having three governmental agencies implementing the EWS Project: DoDMA serves as an implementing partner, and DCCMS and DWR serve as responsible parties. This requires effective cooperation and information sharing vertically and horizontally at all levels, at a central project management level, and at district and community levels.

The project organization worked relatively well for technology specification, procurement and installation of purchased equipment. Much less coordination has been found on a district and community level, both within and across individual departments.

There has been very limited coordination with other relevant projects implemented in the country, except for occasional meetings and annual project review meetings.

Formal project management activities, such as work planning, reporting and approvals were often delayed, Project Board meetings were not organized regularly and frequently enough, especially at the first phase of project implementation, the LogFrame has not been revised, although changes have been recommended by the MTR, and some other changes were approved by the Steering Committee.

Project results below unrevised LogFrame targets (see Chapter 3.3 Results for more details), the fact that some of installed and rehabilitated hydro-meteorological stations do not collect and report data even before project termination, MTR recommendations not implemented<sup>28</sup> - this all suggests that there was insufficient focus on results, except for the weather forecasting model.

UNDP Country Office monitors the implementation of the Project, reviews project implementation progress, and ensures proper use of GEF funds. UNDP was not involved in direct project implementation – except for some cases of equipment procurement.

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<sup>28</sup> The MTR had delayed, it was done only close to a year before scheduled project closure. The MTR report bears a date of January 2017 and the Project was slated for completion in December, 2017.



UNDP's focus on results was demonstrated mainly at the meetings of the Steering Committee, in ad hoc communication with the project implementing partner, and by feedback provided by the UNDP RTA.

Project reporting was based on inputs from the implementing partner that combined results of the EWS Project in some cases with results of other interventions in this field (such as number of AWS retrofitted etc.), as discussed in the TE report. The UNDP CO Malawi was aware of some potential issues in reporting of results especially at the district level and asked the evaluation team to pay a specific attention to it during their evaluation site-visits. The realism of reporting and the focus on results of the implementing partner were limited.

A risk management plan was developed and implemented, however the key risk - lack of O&M funding to sustain project results - was not addressed sufficiently by the EWS Project itself. UNDP CO developed and received funding from the Green Climate Fund for a new follow-up six-year project "M-CLIMES" that scales up modernized EWS, and can potentially finance some of the necessary O&M costs.

As discussed above, the technical support provided by UNDP was limited and included primarily procurement of some equipment.

Country ownership is discussed in detail in the chapter 3.3.5.

Quality of UNDP implementation is rated Satisfactory.

Quality of execution of implementing agency DoDMA, and of implementing partners DCCMS and DWR is rated Moderately Satisfactory.

Overall quality of project implementation and execution is rated Moderately Satisfactory.

### **3.3 Results**

#### **3.3.1 Overall results and attainment of objectives**

The major result of the EWS Project is that the DCCMS now generates and publishes more reliable, more frequent, and more detailed/region specific weather forecasts, including severe weather forecasts.

The DCCMS managed to significantly improve its weather forecasting capacity thanks to major adaptive management implemented, namely by using (for free) global weather forecasting model COSMO and ICON, and by using the weather input data provided also for free by the German Weather Service DWD. The data from the local met stations are supposed to be used for short-term and seasonal weather forecast, and for downscaling of the COSMO Model forecast to local conditions with the ICON model. In terms of forecast, the DCCMS utilizes this data for verification and information generation on weather (as summarized in forecasts in media); weather analysis as part of weather forecasting (thus, plotting of observed data on the charts to get the prevailing weather systems); and global data exchange (observed data from stations is shared regionally and internationally through the Global Transmission System (GTS) thereby contributing to global weather analysis and forecasting.

This significant and positive change to the project outline was not reflected in the revision and update of the LogFrame. Thus, the LogFrame at the end-of-project does not provide a good picture of EWS Project achievements. It measures number of installed and rehabilitated operational meteorological stations by type and location, and frequency of data collection from stations. On the other hand, the LogFrame does not provide any indicator for quality improvement of weather forecasting, except for two indicators in the capacity assessment scoreboard, however, without any specification of assessment methodology to be used.

LogFrame indicators and targets, especially those in Outcome 1, as they were designed, do not reflect actual EWS Project achievements (after adaptive management was implemented, but not reflected in the LogFrame revision).

In addition to improved quality of weather forecasting implemented by the DCCMS, the EWS Project focused on and delivered results primarily in the following three areas:

1. Equipment for hydro-meteorological data monitoring;
2. Equipment and communication platforms for weather and EW information dissemination; and
3. Trainings and capacity strengthening.

Overview of activities performed and achievements as reported by the EWS Project (some activities being supported by other projects/donors):

#### **Ad 1: Equipment for hydro-meteorological data monitoring**

- 10 AWS installed in 6 of 7 priority districts, of which 9 AWS are operational with hourly reporting via GPRS (and not GSM as originally planned) – located at Mayani,

Dzalanyama, Mvera, Chintheche, Chikangawa, Embangweni, Chelinda, Ngabu, Mwimba and Njolomole;

- Servicing of existing AWSs - change of batteries and data loggers;
- 30 evaporation pans in all 21 principal meteorological stations and 9 subsidiary/ Agrometeorological Research stations installed, replacement of thermometers and wind measuring instruments in 15 stations, technical stationery, furniture;
- DCCMS procured 30 computers for data management at station level, 14 laptops;
- 20 Single Side Band Radios for enhanced communication at all weather stations;
- 35 basic phones for water gauge readers and 7 smart phones for District Supervisors;
- Volunteer rainfall stations supported with stationary; and
- Lightning detection sensors not implemented due to too costly operation and maintenance, and concern that data would not be under Malawian control.

## **Ad 2: Equipment and communication platforms for weather and EW information dissemination**

- Weather forecasts and EW distributed to civil protection committees (CPC), as well as at district management level.
- Dissemination of the rainfall seasonal forecast to communities in disaster prone districts of Nkhatabay, Karonga, Rumphi, Nkhotakota, Salima, Dedza, Ntcheu, Balaka, Machinga, Mangochi, Zomba, Phalombe, Nsanje and Chikwawa.
- DCCMS utilizes the World Meteorological Organizations Common Alerting Protocol (CAP) for dissemination of weather information and warnings through using social media.
- WhatsApp Weather Chasers group established for weather forecast dissemination.
- Malawi Weather Facebook account established with 1905 followers – however, the last weather forecast was posted in January 2018, in 2017 only one weather forecast and one seasonal rain forecast posted, more posts available from 2015 and 2016.
- Mobile application Malawi Zanyengo App was developed, not fully operational yet, only 50+ downloads.
- Weekly weather updates and alerts are also being accessed through the 321-service provided by mobile service provider Airtel Malawi and Human Network International (HNI).
- In 2016, five new community based radio stations reported actively weather messages in local languages; 11 national stations are now active in the communication.
- Coordination protocols and agreements among DCCMS, DWR, DoDMA are being developed by the Shire River Basin Management Program funded by the World Bank.

## **Ad 3: Trainings and capacity strengthening**

- 17 meteorologists trained in Linux operating system and weather modeling using the COSMO-model.
- 5 DCCMS officers trained in a two-year advanced meteorological forecasting course (WMO CLASS II) at Institute of Meteorological Training in Nairobi, Kenya.

- 1 DCCMS officer was supported to undergo a post-graduate diploma studies in Operational Hydrology specializing in Early Warning at the University of Nairobi, Kenya.
- 2 DCCMS officers underwent a training course on Nowcasting Techniques on Thunderstorms and Severe Convections in China.
- DCCMS trained 87 meteorological observers, technicians and officers in data management using CLIMSOFT data management software.
- SEBA instrument training and troubleshooting course on DWR automatic river gauge stations in Germany.
- Training in HYDSTRA Hydrological Data Management Information system.
- 25 Water professionals and technicians trained in Integrated Water Resources Management.
- 590 community members (302 women, 288 men) were trained in use of seasonal forecasts.
- Villages Civil Protection Committees (VCPC) in 11 districts received training in understanding and interpretation of weather messages and forecasts, on the benefits of early warning systems and the role that communities can play in disaster risk management.
- Documentary on flooding that occurred in January, 2016 was produced, in order to capture the effects of El Nino weather condition.
- DCCMS has also developed assorted early warning information, education and communication (IEC) materials under the project that have been distributed to district climate information centers and other stakeholders.
- Environmental Sciences and Management Department (ESMD) of the Lilongwe University of Agriculture and Natural Resources was engaged to develop the training package and toolkit.

Project objective and outcome level results and rating are summarized in Table 10: Project results and achievements as per LogFrame targets below.

**Table 10: Project results and achievements as per LogFrame targets**

Rating refers to achievements of targets supported by the EWS Project. Achievements of other projects are not included in the EWS Project LogFrame rating.

Annexes referred to in the LogFrame relate to Annexes to the Project Document.

	Indicator	Baseline	Targets End of Project	Achievements	Rating	Justification for Rating
<b>Project Objective:</b> To strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and available information for responding to extreme weather and planning adaptation to climate change in Malawi.	Capacity as per capacity assessment scorecard (Annex 12).	Average CCA capacity scorecard rating of <b>72</b> across men and women (Annex 12).	CCA capacity scorecard rating is increased to an average of <b>121</b> for both men and women (Annex 12).	<b>143</b> as per draft 2018 PIR	U/A – unable to assess due to no methodology specified neither for baseline nor for EOP	There is no methodology developed for capacity assessment as per capacity assessment scorecard. The same methodology should have been used for baseline and for end-of-project rating. The assessment is thus highly subjective with very limited informative value and low credibility. No objective, evidence-based rating can be provided.
	Domestic finance committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change.	Annual budget of USD allocated to DoDMA, DCCMS and DWR.	<b>&gt;20%</b> increase in domestic financing committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change (including equipment operation and maintenance).	<b>+18%</b> increase in USD (simple average) DoDMA: <b>+78%</b> in USD DCCMS: <b>+20%</b> in USD DWR: <b>- 44%</b> in USD	Total budget: <b>HS</b> Real O&M funding: <b>LU</b>	20% target almost met (weighted average is expected to be higher due to lower DWR budget) However, total budgets do not provide information on how much has been actually allocated for O&M. Stations do not collect and report all data due to insufficient O&M funding available.

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<b>Outcome 1:</b> Capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Ministry of Irrigation, Agriculture and Water Development (MoIAWD) to monitor and forecast extreme weather and climate change enhanced.	Percentage of national coverage of climate monitoring network (fully operational).	DCCMS – <u>15%</u> national coverage of operational manual (15%) and automatic (0%) weather stations (Annex 6).	DCCMS – <u>77%</u> national coverage of operational manual (71%) and automatic (84%) weather stations (Annex 6).	DCCMS: <b>75%</b> total <b>84%</b> - manual	Total: <b>S</b> Manual: <b>HS</b>	84%+35%=119%, 119/2=60%, 60%+15% baseline=75% 21 manual synoptic stations rehabilitated in 18 districts, one of three visited fully operational, i.e. max 19 stations fully operational. 18/26=69%, 69%+15%(baseline)=84%
		DWR– <u>52%</u> national coverage of operational surface manual (85%) and automatic (19%) hydrological stations (Annex 6).	DWR– <u>69%</u> national coverage of operation surface manual (100%) and automatic (39%) hydrological stations (Annex 6).	35% AWS  Manual: <b>112%</b>	AWS: <b>HU</b>  Manual: <b>HS</b>	9 AWS fully operational in 9 districts of 10 AWS rehabilitated in 10 districts 9/26=35% AWS coverage  50 manual hydro stations rehabilitated in 7 hydrological districts, of which ca 40 operational. 7/26=27%, 27%+85%=112% - higher than 100%, (hydrological districts do not follow administrative ones) Target was to increase coverage by 15 percentage points, achieved 27.
		<u>Number and Type (operational stations)</u> Automatic weather stations: <u>6</u>	<u>Number and Type (operational stations)</u> Automatic weather stations: <u>45</u>	AHS: <b>27%</b>  9 AWS fully operational	<b>MS</b>  <b>HU</b>	10 operational AHS of 10 new AHS installed and 2 AHS rehabilitated, in 7 hydrological districts  9 AWS fully operational of 10 AWS rehabilitated (In total 63 AWS new/rehabilitated with support from other projects)
		Manual synoptic stations: <u>4</u>	Manual synoptic stations: <u>22</u>	Max <b>19</b> manual synoptic fully operational	<b>HS</b>	21 manual synoptic stations rehabilitated in 18 districts, one of three visited fully operational, i.e. max 19 stations fully operational
		Manual river discharge and	Surface manual hydrological stations:	Approx <b>40</b> fully operational of		

Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

	Frequency and timeliness of climate-related data availability.	<p>water level stations: <b><u>158</u></b></p> <p>Rainfall logging stations actively transmitted through GPRS network: <b><u>0</u></b></p> <p>DCCMS: i) <b><u>4</u></b> times daily between 5am-5pm for manual synoptic stations; ii) <b><u>once</u></b> a day for AWSs; iii) <b><u>once a month</u></b> for rainfall logging gauges.</p> <p>DWR: <b><u>daily</u></b> to <b><u>monthly</u></b> basis</p>	<p>Manual river discharge and water level stations: <b><u>208</u></b></p> <p>Rainfall logging stations actively transmitted through GPRS network: <b><u>53</u></b></p> <p>DCCMS: <b><u>hourly</u></b> for synoptic stations and <b><u>daily</u></b> for rainfall logging gauges.</p> <p>DWR: <b><u>6</u></b> hourly and <b><u>2-4</u></b> hourly for flood prone areas.</p>	<p>50 rehabilitated</p> <p><b>21</b> conventional rainfall log stations</p> <p>Hourly for AWS, 4 daily readings in manual/rainfall</p> <p>2x per day, in <b>12</b> hours</p>	<p><b>S</b></p> <p><b>U</b></p> <p><b>HS</b></p> <p><b>HS</b></p> <p><b>MS</b></p>	<p>50 manual hydro stations rehabilitated in 7 districts, of which ca 40 operational 10 operational AHS of 10 new AHS installed and 2 AHS rehabilitated (In total 146 manual and automatic hydro stations, of which 37 AHS, in total ca 95 operational)</p> <p>21 conventional rainfall log stations rehabilitated in 18 districts</p> <p>Hourly readings of AWS</p> <p>4 daily readings of manual stations, including rainfall log gauges</p> <p>Reading twice a day, more regularly in critical situations</p>
<b>Outcome 2</b> Hydro-meteorological and environmental information for early warnings and long-term development	Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings	10% of men and 10% women with access to improved climate information and flood, drought and Mwera wind warnings ( <i>to be confirmed during project inception</i> ).	17% of men and 17% women with access to improved climate information and flood, drought and Mwera wind warnings ( <i>to be confirmed during project inception</i> ).	Ca 100% have access to radio broadcasts, same as in baseline	<b>NA</b>	No change from baseline, since the baseline was actually already ca 100% of population (both men and women) with access to early warnings broadcasted by national radio. The value of the target and baseline/indicator is not specific enough. (According to the 2017 comprehensive baseline study of EWS in Malawi, 42.74%)

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plans efficiently and effectively used.	(disaggregated by gender).  2. Policies, annual budgets and development plans that integrate climate information (type and level).	<i>confirmed during project inception</i> . <u>Male: 628,620</u> <u>Female: 663,136</u> <sup>29</sup>  Currently <u>0</u> policies and development plans	<u>Male: 1,093,242</u> <u>Female: 1,154,912</u> <sup>30</sup>  <u>7</u> District Development Plans and 1 National DRM Policy	1 national DRM policy 0 district development plan	<b>U</b>	of the population has access to improved weather forecasts and warnings (7,265,800 people); 42.10% of the communities are involved in communication and dissemination of weather and climate information. This study reflects results of all EWS activities implemented in Malawi, not only of the EWS Project specifically.) 0 district plans with the support from the EWS Project (2 district plans supported by other projects)
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## Indicator Assessment Key

Green = Targets Achieved	Yellow = Target not achieved, minor shortcoming	Red = Target not achieved, important shortcoming
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Rating used:

HS – Highly Satisfactory

S – Satisfactory

MS – Moderately Satisfactory

MU - Moderately Unsatisfactory

U – Unsatisfactory

HU - Highly Unsatisfactory

<sup>29</sup> Based on baseline estimates of 43% of male and female populations in districts covered by the Enhanced Community Resilience Programme (Kasungu, Machinga, Mwanza, Thyolo, and Mulanje) that receive weather and climate information.

<sup>30</sup> Based on 43% of the male and female population that receive weather and climate information in 7 priority districts (Karonga, Salima, Nkhota-kota, Rumphi, Nkhatabay, Dedza and Phalombe) which will benefit from improved climate information and warnings for flood, drought, and Mwera wind warnings and mainstreaming of climate information and EWS into local development plans.



Overall quality of project outcomes and attainment to objectives is rated Moderately Unsatisfactory.

Following is a summary of hydro-meteorological stations rehabilitated/constructed by the EWS Project and fully operational stations as per data available:

**Table 11: Summary of hydro-meteorological stations in operation**

Excerpt from Table 10: Project results and achievements as per LogFrame targets, page 60:

Type of station	Fully operational	Supported by the EWS Project	Fully operational in %
Automated Weather Stations	9	10 rehabilitated	90%
Manual weather/synoptic stations	19 max	21 rehabilitated	90%
Of which randomly visited	1	3 rehabilitated	33%
Automated Hydro Stations	10	12 (10 new + 2 rehabilitated)	83%
Manual Hydro Stations (river water level gauges)	40 (estimate)	50 rehabilitated	80%

Dedza manual met station – no paper for mechanical temperature and humidity recorders. At the time, some data such as continuous record of temperature and relative humidity were not being recorded because the office had run out of graph paper (for about 2 months) for the automatic recorders (e.g. for the Hygrograph).

Ngabu manual met station – no water available for filling evaporation pan as institution water was disconnected due to non-settlement of cumulative bills.

Nkhotakota - river water gauge was partially destroyed by floods and partially vandalized, water level not read since September 2017.

Additionally, one AHS is not operational due to bad network signal.

DWR has shared the distribution of manual and automated hydro stations but it is not providing adequate information on the statistics, including the differences between installed versus operational. These data are not fully consistent, nor in-line with information provided during the evaluation mission in July 2018.

**Table 12: Statistics of Hydro Stations**

No.	District	No. of Stations Rehabilitated/Upgraded		No. of Stations Operational as of July, 2018		Remarks
		Rehab/Manual	Automated	Rehab/Manual	Automated	
1	Dedza	3	2	1	0	Not installed due to lack of resources. Including Monkey bay station
2	Karonga	7	2	4	2	
3	Nkhatabay	6	1	3	1	
4	Nkhotakota	5	2	3	1	Part in Salima
5	Phalombe	3	1			
6	Rumphi	5	1	3	1	
7	Salima	2		2	1	No hydrometric district
	<b>TOTAL</b>	<b>31</b>	<b>9</b>	<b>16</b>	<b>6</b>	

Source: DWR, October 2018

### **3.3.2 Relevance**

The part of the EWS Project objective that concerns “strengthening hydrological monitoring capabilities, early warning systems and available information for responding to extreme weather and planning adaptation to climate change in Malawi” is highly relevant to national policies and development priorities in Malawi, as well as to GEF Operational Programme and GEF and UNDP strategic priorities over the whole EWS Project implementation period. See Chapter 3.1.1 Project Relevance for details.

The first part of the EWS Project objective “strengthening the weather and climate monitoring capabilities” is rather an assumption that these capabilities need to be strengthened for improved weather forecasting and strengthened EWS.

Utilizing internet based global weather forecasting model and globally available data for improved and region-specific weather forecasting in Malawi proved that the assumption of strengthened weather monitoring is not valid for improved weather forecasting capacity.

Project relevance is rated Relevant.

This reflects relevance of the project objective, rather than relevance of specific project strategy outlined in the Project Document that was not designed to be appropriate/affordable for Malawi.

### **3.3.3 Effectiveness of project implementation**

Effectiveness of project implementation evaluates an extent to which an objective has been achieved.

The project objective has been only partially achieved. The implicit project objective of strengthened weather forecasting capacity was achieved. Severe weather forecasting based on global weather forecasting model has been strengthened. EWS have been partially strengthened: technical equipment to facilitate early warning dissemination has been provided. However, effective implementation of EWS and community-based delivery of severe weather warnings was achieved only partially. Local manual reading of upstream river water levels is only partially operational, it is not read and reported regularly, since no reimbursement is provided since September 2017 (i.e. including the last rainy season). Planning adaptation to climate change has been partially achieved (National DRM Policy adopted, but only 2 of 7 target district development plans adopted). Little evidence in achieving improved risk knowledge and appropriate response capacity was found. All GEF project budget resources have been fully spent.

Compared to designed project results and EWS Project budget, the effectiveness of project implementation is rated Moderately Unsatisfactory.

### **3.3.4 Efficiency (cost-effectiveness) of project implementation**

UNDP defines project efficiency (cost-effectiveness or efficacy) as an extent to which results have been delivered with the least costly resources possible.

One of 10 installed automatic weather stations is not operational because it has no mobile signal, 2 of 12 installed automatic river water level stations are not operational, data from rehabilitated manual weather and water level stations are not fully collected due to insufficient O&M budget. The equipment installed has been partially not operational even before project end due to lack of O&M financing, 10% of AWS were installed in a location without a mobile signal, 20% of AHS are not operational because they were damaged by floods. Project funds spent on purchase and rehabilitation of meteorological stations and some other equipment were not effectively spent.

The cost-effectiveness/efficiency of project implementation is rated Unsatisfactory.

### **3.3.5 Country ownership**

The EWS Project is a typical donor-driven project. It was developed within a framework of a broad multi-country program that was designed to implement similar initiatives on climate information and Early Warning Systems in at least 10 countries in Africa (including Benin, Burkina Faso, Ethiopia, Liberia, Malawi, Sierra Leone, São Tomé & Príncipe, Tanzania, Uganda and Zambia).

Formally, the EWS Project is fully owned by the country. It was implemented by regular staff of governmental departments of DoDMA, DCCMS and DWR, new and first National DRM Policy was developed and adopted, EWS is prioritized in national policies developed with donors' support in response to recent tragic floods and droughts that resulted in food shortages and humanitarian crisis, EWS projects have been replicated across the country.

However, the good formal country ownership has not materialized in providing sufficient O&M funding in order to keep all installed equipment operational. With weather stations, it is understandable, since it does not undermine the country's capacity in improved weather forecasting. In case of hydro stations, the lack of funding for water level readers undermines the capacity in the country to issue site-specific flood warnings. The volume of funding is negligible compared to the EWS Project budget: it is an equivalent of 10 USD per month and one reader/hydro manual station, however, in total it represents ca 10%<sup>31</sup> of the DWR budget. Other community-based EWS projects implemented by NGOs in Malawi succeeded to motivate local communities to volunteer in river water level readings, including upstream communities not affected by floods, and thus the operation and readiness of EWS does not depend on O&M funding.

### **3.3.6 Mainstreaming and gender equality**

UNDP through its DRM Programme Support assisted mainstreaming of EWS and DRM into national policies, and provided technical and financial support for development of the National Disaster Risk Management Policy adopted in 2015. There was no evidence found that the

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<sup>31</sup> Need to revise/update after an information on the DWR budget will be provided.

EWS Project supported mainstreaming of EWS and climate change information into two newly developed District Development Plans.

The Project Document also addressed gender equality and stated that: “The project design integrates gender considerations in a Malawi context. The project intends to ensure that women play an adequate part in the early warning system that they benefit from climate information that is relevant to them and their roles, and that the information is presented and transmitted in a way that is accessible to them, considering their specific constraints. Gender-sensitive methods, including gender sensitive household surveys will ensure that women are targeted by systems established.” The project also included one indicator disaggregated by gender: “Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings” with equal targets for both men and women.

Malawi is a country that combines both traditional patriarchal culture (primarily in the north), and matriarchal culture (in central parts and in the south). The EWS Project was designed so that all population would benefit from its implementation equally, there were no specific gender related activities implemented.

The EWS Project addressed both Disaster Risk Management and Climate Change, one of four components of the UNDP Country Program Document for Malawi, 2012-2016, and it is directly relevant to the SDG 13: Take urgent action to combat climate change and its impacts, and indirectly to the SDG 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture, and SDG 1: End poverty in all its forms everywhere. Other UNDP priorities, such as improved governance, were not directly addressed.

### **3.3.7 Prospects of sustainability**

#### **3.3.7.1 Financial risks**

Financial risk, particularly the typical risk of no/low post-project financing for operation and maintenance of installed equipment, is the main risk for sustainability of the EWS Project. Unfortunately, this risk fully materialized already during the project implementation period, when data from manual stations are not fully read due to a lack of (negligible) funding needed for O&M, such as lack of paper for temperature and humidity mechanical recording, water bills not paid and thus water supply was interrupted and thus no water was available to refill evaporation pans (few liters a day maximum), no funding is available since September 2017 for reimbursement of personnel reading river water level data (10 USD per month per person), etc.

The proposed strategy to increase revenues that would help to cover O&M costs failed and no commercial weather services were developed for sale.

Prospects of financial resources sustainability is rated Unlikely.

#### **3.3.7.2 Socio-Political Risks**

There were no significant social, nor political risks to project sustainability identified. However, the government ownership of the EWS Project, although formally declared, did not materialize

in prioritizing EWS through provision of sufficient funding for operation and maintenance. The country depends and relies on development partners for disaster management funding.

The socio-political/economic sustainability is rated Moderately Likely.

#### **3.3.7.3 Institutional Framework and Governance Risks**

No institutional nor governance risks have been identified that might jeopardize project sustainability.

Institutional framework and governance sustainability is rated Likely.

#### **3.3.7.4 Environmental Risks**

One automatic hydro-station was flooded and became inoperable and some manual river water level stations were damaged by floods (and vandalism). No other environmental risks to project sustainability were identified.

Environmental sustainability is rated Moderately Likely.

Overall prospects of sustainability of delivered project results are rated Unlikely.

#### **3.3.8 Catalytic Role**

The EWS Project was not the only one, nor the first project targeting EWS implemented in Malawi. There has been a good practice gained and replicated in Malawi in community-based EWS implemented by NGOs before this UNDP-supported GEF-financed EWS Project was launched. This EWS Project is unique by supporting significant quality improvement of weather forecasting capacity of DCCMS. The EWS Project demonstrated some catalytic role only in providing improved weather forecasts.

#### **3.3.9 Project Impact**

Project impact evaluates impact on environmental status improvement and environmental stress reduction. The EWS Project was not designed with the aim to address environmental status improvement, nor environmental stress reduction. It was rather designed to reduce negative impacts of severe weather conditions, namely floods, strong winds, and droughts on human beings, casualties, and food security.

Despite the fact that recorded casualties have changed year-to-year, there are no statistically relevant data for any conclusions due to short period of data available after improved weather forecasts and EWS have been implemented.

The EWS Project had significant impact on improved quality and reliability of weather forecasts, including forecasting of severe weather conditions, as reported by all stakeholders,

governmental officers, department experts, as well as by general public – end-users of weather forecasts and EWS (Outcome 1). The impact of delivered achievements in Outcome 2 by the EWS Project itself, without achievements delivered by other projects, is much lower.

Overall project impact is rated at the middle of the three level scale, i.e. Minimal in UNDP/GEF scale (more appropriate wording would be Moderate).

## **4. CONCLUSIONS, LESSONS LEARNED AND RECOMMENDATIONS**

In low-income countries, such as Malawi, the critical factor of project sustainability of any donor-funded project intervention that does not generate additional cash income but is designed to have other benefits, is securing of sufficient post-project financing, and especially funding for increased operation and maintenance costs.

The EWS Project is a typical example of a donor-funded, technology-based intervention whose design underestimated the need of secured increased financing for operation and maintenance of installed equipment. As a result, the EWS Project, like many other interventions in the country, leaves the country with newly installed equipment that is partly not operational even before the project end.

Project interventions designed for implementation in low-income countries like Malawi need not only to address the top country priorities, but they need to be affordable for the country as well. Too many priorities identified in donor-supported policies mean that the country has in fact no development priority. Increased operation and maintenance costs needed for servicing newly installed equipment, although negligible for richer countries, may just not be affordable for countries like Malawi, due to lots of priorities and lots of international projects being implemented.

The EWS Project was designed to procure and install in Malawi the state-of-the-art technology for hydro-meteorological data monitoring, collection and management to be used locally for weather forecasting including issuing alerts on severe weather forecasts. This is a standard solution used in richer, developed countries. The EWS Project design did not consider utilizing free web- and mobile phone-based applications providing localized weather forecasts based on global weather forecasting models and data, which is a popular source of free weather forecast information among population even in rich and developed countries.

Project implementation partners, namely the DCCMS, implemented a substantial and less-costly adaptive management that is rated very highly: DCCMS significantly improved quality of its weather forecasting by switching to and utilizing free global weather forecasting model and input data. In addition to the free access to the COSMO weather forecasting model and data, DCCMS uses also free ICON model for downscaling the weather forecasts and increasing the mesh resolution. Malawi uses three AWS stations (Chileka, Kumuzu International and Mzuzu airports) for global data sharing that serve as an input for global weather forecasting models. None of these AWS stations was subject to rehabilitation supported within the EWS Project.

It should be noted that this highly positive and substantial adaptive management was implemented based on the initiative of the DCCMS, but it was not recommended nor reflected by external consultants at the inception phase nor at the MTR.

The EWS Project adjusted its activities and targets to the adaptive management implemented, as well to the activities planned and delivered by other EWS projects implemented in Malawi with a support from other donors. For example, a target of automatic weather stations to be installed with the support of the EWS Project was reduced, activities focused on developing and strengthening of early warning dissemination within communities were reduced to avoid



redundancy where other donors funded NGO-supported community-based EWS projects. However, these changes were not formally reflected in the revised LogFrame matrix.

The EWS Project significantly improved quality of weather forecasting, including severe weather forecasts, and delivery of early warnings to district centers. However, the targets as per unchanged LogFrame were not fully met. These LogFrame targets would be mostly met when results of other EWS projects implemented in the country would be combined with the EWS Project.

This illustrates that there are lots of separate EWS activities implemented across the country. Although this was recognized already in the Project Document, the EWS Project design did not properly address this and did not coordinate well with other interventions planned and implemented within the EWS sector. Despite some coordination efforts of the EWS Project implemented during its implementation period, different early warning systems in Malawi supported by different donors remain rather disintegrated, and lack a full coordination both vertically and horizontally across different sectors and departments at a national and local levels.

The initiative of UNDP Malawi to better coordinate donors, their projects and initiatives in the country, is very much needed and is highly appreciated by the evaluation team. The Government of Malawi should be also invited to these coordination meetings and supported in prioritizing interventions for implementation that address the most urgent needs and actual priorities of Malawi, and interventions that are affordable for Malawi also in terms of sustaining results, i.e. financing of post-project costs.

The EWS Project design, although technically-sound and well-elaborated, is quite complex and reflects best international practices, was not appropriate for actual development situation in Malawi. Among others, it addressed rehabilitation of hydro-meteorological stations that were installed with the support of donors in the past, but not operational anymore due to lack of funding for operation and maintenance. The EWS Project design, however did not address this key challenge of sufficient post-project funding and just repeated mistakes that are so typical for lots of development interventions, and result in installation of expensive technology that is not operational due to lack of rather negligible post-project funding. The ultimate beneficiaries of such failed development interventions are not the intended target groups and population in developing countries, but suppliers of high-cost technology from developed countries.

The EWS Project implementation performed by the DoDMA, DWR and especially DCCMS, significantly improved prospects of ultimate project objective results sustainability through implementation of adaptive management and utilizing free global weather forecasting model and data for improved quality weather forecasting. As a result of this adaptive management implemented based on the DCCMS initiative, lack of funding for operation and maintenance of installed and rehabilitated hydro-meteorological stations, that in several cases already materialized in failure to operate and collect hydro-meteorological data, does not impact ability of DCCMS to generate good quality weather forecasts. Also in other areas, the EWS Project adjusted its activities and targets to activities and deliverables implemented by other donors. Although these results are not perfect in all cases, such as coordination and integration of diverse community-based and national EWS, development of risk knowledge and appropriate response capacity within communities, the actual performance and delivery of the EWS Project implementing partners – within the limits of the designed project - would be rated in the

satisfactory scale. However, the adaptive management implemented was not reflected in the LogFrame revision, and no LogFrame revisions were implemented and formally adopted, neither after a MTR. Thus, the rating according to targets specified in the unchanged LogFrame as per project design in the ProDoc, is significantly lower than the rating of actual EWS Project results, should the implemented adaptive management be reflected in revised LogFrame.

Key factors that influenced low rating include:

- Inappropriate EWS Project design including LogFrame that did not properly address actual affordability for Malawi, namely securing increased O&M funding needed for servicing of installed equipment and hydro-meteorological stations
- Some hydro-meteorological stations installed and equipment procured are not used/ not in operation anymore due to lack of O&M funding
- Early warnings are delivered to district centers only, not much activities have been performed and results delivered by the EWS Project itself in developing and implementing early warning dissemination scheme within communities (except for some trainings and some equipment procurement like torches, megaphones and raincoats). In some districts, other donor-funded community-based EWS projects implemented by NGOs.
- NGO-implemented community-based EWS projects funded by other donors report, in some cases, to be more effective than the national EWS supported by the EWS Project. Community-based EWS based on local, voluntary water level readings indicated flood risks, although the national EWS did not issue any warning, but the actual floods arrived.
- No sufficient evidence in achieving Outcome 2 “Hydro-meteorological and environmental information for early warnings and long-term development plans efficiently and effectively used” reflected also in the project objective “... strengthened information for responding to extreme weather and planning adaptation to climate change in Malawi”. No district development plans were developed with a support from the EWS Project, only 2 district development plans developed with a support from other donors. The National DRM Policy was developed with a support from other project (UNDP PS DRM). Little evidence was found related to achievements in risk knowledge, early warning disseminations within communities, and in developing appropriate response capacity. District level personnel reported to have very limited stake in the project.
- MTR recommendations, including the revision of the LogFrame, although rather formal, were not implemented.

Key EWS Project success:

- Significantly improved weather and early warning forecasting quality, based on free access to global weather forecasting model and data, was implemented as an adaptive management based on the DCCMS initiative.

**Table 13: Terminal evaluation rating**

Criteria	Rating						Comments
	HS	S	MS	MU	U	HU	
<b>1. Monitoring and Evaluation</b>							
M&E design at entry			<b>MS</b>				
M&E plan implementation				<b>MU</b>			
Overall quality of M&E				<b>MU</b>			
<b>2. IA &amp; EA Execution</b>							
Quality of UNDP implementation		<b>S</b>					
Quality of execution DoDMA, DCCMS, DWR			<b>MS</b>				
Overall quality of implementation/execution			<b>MS</b>				
<b>3. Assessment of Outcomes</b>							
Relevance		<b>R</b>					
Effectiveness				<b>MU</b>			
Efficiency					<b>U</b>		
Overall quality of project outcomes				<b>MU</b>			

HS – Highly Satisfactory, S – Satisfactory, MS – Moderately Satisfactory, MU – Moderately Unsatisfactory, U – Unsatisfactory, HU – Highly Unsatisfactory  
 Relevance: R – Relevant, NR – Not Relevant

<b>4. Sustainability</b>	<b>L</b>	<b>ML</b>	<b>MU</b>	<b>U</b>	Comments
Financial resources				<b>U</b>	See note <sup>32</sup>
Socio-political		<b>ML</b>			
Institutional framework and governance	<b>L</b>				
Environmental		<b>ML</b>			
Overall likelihood of sustainability				<b>U</b>	See note <sup>33</sup>

Sustainability: L – Likely, ML - Moderately Likely, MU - Moderately Unlikely, U – Unlikely

<b>5. Impact</b>	<b>S</b>	<b>M</b>	<b>N</b>	Comments
Environmental status improvement				N/A – Not addressed by the EWS Project
Environmental stress reduction				
Progress towards stress/status				
Impact		<b>M</b>		Note <sup>34</sup>

Impact: S – Significant, M – Minimal, N – Negligible

	HS	S	MS	MU	U	HU	Comments
<b>6. Overall Project Results</b>				<b>MU</b>			

Rating: HS – Highly Satisfactory, S – Satisfactory, MS – Moderately Satisfactory, MU – Moderately Unsatisfactory, U – Unsatisfactory, HU – Highly Unsatisfactory

Overall EWS Project rating is Moderately Unsatisfactory.

<sup>32</sup> Unlikely that the O&M funds will be sufficient to keep installed hydro-meteorological stations fully operational. However, this will not hamper the actual ability of DCCMS to generate good quality weather forecast.

<sup>33</sup> This rating reflects sustainability of project results as per LogFrame, including financial risk to operationality of hydro-meteorological stations installed.

<sup>34</sup> “Moderate” impact reflects better the middle of the scale than “Minimal”, impact on weather forecasting capacity and quality is rated “Significant”

## **4.1 Lessons Learned and Recommendations**

### **4.1.1 Lessons learned**

1. The project design and proposed strategy of the donor-driven EWS Project that increase post-project costs without securing adequate financing, was not appropriate, i.e. was not financially affordable for Malawi, as one of the poorest country. Utilization of free, internet based weather forecasts was not considered as an option. Wholesale adoption of project design and implementation strategies of regionally and internationally designed projects may exhibit implementation and sustainability challenges, especially in low-income countries, if not carefully customized to local conditions.
2. Post-project financing needed to sustain project achievements, and to keep installed equipment operational, is a typical critical factor for project sustainability, especially in low-income countries. Even increase in operation and maintenance costs negligible from a perspective of a rich country may be an insurmountable obstacle to project results sustainability in low-income countries.
3. Large number of internationally funded development projects in different areas implemented in Malawi and in other low-income countries require post-project financing that in total may impose a significant burden on public finance and thus undermine countries' capacity to sustain even the high-priority projects. Prioritizing cash generating projects, including economic reforms, and governance improvements, are critical for an ability of low-income countries to sustain high-priority projects also in other areas.
4. State-of-the-art technology-based projects and even standard solutions used in rich and developed countries may not necessarily be the best, nor affordable option for low-income countries, like projects that require installation of robust infrastructure (for improved localized in-house weather forecasting for example), and projects that increase O&M costs, and impose additional burden on public budgets. Project designs reflecting actual local needs and opportunities, and local affordability, i.e. the least-cost and sometimes also low-tech solutions, with low or no incremental O&M costs, tend to have better prospects of sustainability.
5. Project interventions targeted at working with population in communities, such as EWS projects, tend to deliver better results in more effective and efficient way when implemented by experienced NGOs rather than government and its staff that has its regular daily working obligations.
6. Malawi is strong in policies developed with support from international donors, but it lags behind in coordinated policy implementation. Policies do not seem to be followed by a development of specific single national implementation/action plan. But rather, policy implementation is typically fragmented into numerous ad-hoc individual donor funded projects, whose design and implementation is poorly coordinated, and often overlap. This fully applies also for EWS activities in Malawi.

7. UNDP initiative to coordinate donors and their project initiatives within a limited number of top country priorities is very much needed and may serve as the best example for replication in other countries as well.
8. Tagging of equipment is essential for ease of tracking and transparent inventory management. The EWS Project tagged all installed equipment and this may serve as an example of best practice for replication.

#### **4.1.2 Recommendations**

##### **UNDP/GEF**

1. When designing new projects especially in low-income countries, always realistically enumerate specific post-project incremental costs, such as operational and maintenance costs, needed for ensuring project sustainability and for reliable operation of installed equipment, and clearly identify credible sources of long-term post-project funding. Only project proposals with enumerated and secured post-project financing in a long-term should be approved.
2. When designing new EWS projects especially in low-income countries, always consider the least-cost option, i.e. utilization of free localized weather forecasts based on different global and regional numerical weather forecasting models that are available from various weather services and numerous internet platforms (such as windy.com, accuweather.com, yr.no, wunderground.com, and many more). Analyze benefits/value added of downscaling weather forecasts locally, and costs needed for hardware and software infrastructure upgrades.

##### **GoM/UNDP**

3. UNDP and GoM are encouraged to motivate international donors to support development of a single coordinated long-term DRM/EWS national implementation plan/action plan that would increase ownership and coordination responsibility of the GoM, and allow international donors to finance implementation of specific phases or areas of the DRM/EWS action plan.
4. In any follow-up to this EWS Project, strengthen EWS coordination horizontally and vertically, in order to improve effectiveness of early warning dissemination and to support the goal of prospective development of an integrated nation-wide early warning system. Utilize the experience of NGOs/CSOs in Malawi and consider their active engagement in organizing early warning dissemination within communities, and in developing community-specific concrete response capability and risk knowledge among population.

## 5. ANNEXES

### Annex 1: Terminal Evaluation Mission Itinerary

No.	Day	Date	Time		Contact Institution/Person	Planned Activity	District
			From	To			
1	Monday	7/9/2018	9:00	12:00	UNDP (Sothini Nyirenda/Peter Kulemeka/Tapona Manjolo/Mphanda Kabwazi)	Mission Briefing and interview with UNDP Core Team	Lilongwe
			16:00	17:00	Fisheries (Friday Njaya)	Interview with DoDMA Director and Desk Officer	
			17:30	18:30	DoDMA (Stern Kita)	Interview with Key Informant	
2	Tuesday	7/10/2018	10:00	11:30	DWR (Pius Kaunda/James Chitete/Pepani Kaluwa)	Interview with DWR Deputy Director and Desk Officer	Lilongwe
			13:30	15:30	CISONECC (Julius Ng'oma)	Interview with Key Informant	
3	Wednesday	7/11/2018	8:30	9:30	Red Cross (Joseph Moyo/George Mwimaniwa)	Interview with Key Informant	Lilongwe
			10:00	11:00	Christian AID (Sophie Makoloma)	Interview with Key Informant	
			11:30	12:30	Kamdonyo & Associates (Donald Kamdonyo)	Interview with Key Informant	
			14:00	19:00	Travel to Mzuzu		

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No.	Day	Date	Time		Contact Institution/Person	Planned Activity	District
			From	To			
4	Thursday	7/12/2018	9:30	10:30	Karonga District Council (Victor M. Phiri)	Interview with Desk Officer & Project Personnel	Karonga
			10:30	12:00	Site visit to Chilambiro Primary School	Site Visit and Interview with Project Beneficiaries/ACPCs/VCPCs	
			13:30	14:30	Tumtufye Radio Station (Martha Msuku)	Interview with Key Informant	
			12:00	19:00	Travel to Mzuzu		
5	Friday	7/13/2018	9:00	10:00	Nkhotakota District Council (Oswald Nkhuwa)	Interview with Desk Officer & Project Personnel	Nkhotakota
			10:00	14:00	Site visit	Site Visit and Interview with Project Beneficiaries/ACPCs/VCPCs	
			14:00	16:00	Travel to Salima		
			16:00	17:00	Zione Viyazi (Dedza ADDRMO Officer)	Interview with Desk Officer & Project Personnel	Salima
6	Saturday	7/14/2018	9:00	10:00	Dedza District Council (Hananiah Wailesi)	Interview with Desk Officer & Project Personnel	Dedza
			10:30	11:30	Dedza Meteorological Office (Richard Limbanga)	Interview with Desk Officer & Project Personnel	
			11:30	17:00	Travel to Zomba		
7	Sunday	7/15/2018	10:00	12:00	Chikwawa Meteorological Office, Ngabu (Patrick Linosi)	Interview with Desk Officer & Project Personnel	Chikwawa

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No.	Day	Date	Time		Contact Institution/Person	Planned Activity	District
			From	To			
			12:00	16:00			
8	Monday	7/16/2018	9:00	10:00	Phalombe District Council (Davie Chibani)	Interview with DCCMS Director & Desk Officer	Phalombe
			10:00	11:30	Travel to Blantyre	Travel to Phalombe	
			11:30	14:00	DCCMS Headquarters (Amos Mtonya/Emmanuel Ndelemanani)	Interview with Desk Officer & Project Personnel	Blantyre
			14:00	19:00	Travel to Lilongwe		
9	Tuesday	7/17/2018	15:00	16:00	UNDP (Sothini Nyirenda/Peter Kulemekaka), DoDMA (Dalitso Chikoti), CISON ECC (Julius Ng'oma)	Wrap up session in Lilongwe	Lilongwe



## **Annex 2: List of persons interviewed**

### **UNDP:**

Mr. Peter Kulemeka, Monitoring and Evaluation Specialist, Lilongwe  
Mr. Sothini Nyirenda, Programme Analyst, Lilongwe  
Ms. Mphanda Kabwazi, Disaster Risk Management and Resilience Officer, Lilongwe  
Ms. Tapona Manjolo, Programme Specialist, Lilongwe

### **DoDMA:**

Dr. Stern Kita, Chief Mitigation Officer, Lilongwe  
Mr. Dalitso Chikoti, Economist, Lilongwe  
Mr. Davie Chibani, Assistant District Disaster Risk Management Officer, Dedza  
Ms. Zione Viyazi, Assistant District Disaster Risk Management Officer, Dedza

### **DCCMS:**

Mr. Amos Mtonya, Chief Meteorological Officer, DCCMS, Blantyre  
Mr. Emmanuel Ndelemani, Meteorological Technician, Blantyre  
Mr. Patrick Linosi, Meteorological Officer, Ngabu  
Mr. Richard Limbanga, Meteorological Officer, Dedza  
Mr. Victor M. Phiri, Meteorological Officer, Karonga

### **DWR:**

Mr. Hananiah Wailesi, Acting District Water Officer, Dedza  
Mr. James Chitete, Chief Water Development Officer, Lilongwe  
Mr. Oswald Nkhuwa, District Water Supervisor, Nkhotakota  
Mr. Pepani Kaluwa, Deputy Director, Water Resources Department  
Mr. Piasi Kaunda, Hydrological Officer, Lilongwe  
Mr. Siboniso Vangeli, Gauge Reader, Kaombe, Nkhotakota

**OTHER:**

Dr. Donald Kamdonyo, Managing Director, Kamdonyo & Associates, Lilongwe

Dr. Friday Njaya, Director, Department of Fisheries, Lilongwe

Mr. Faustin Kaluwa, Deputy Headmaster, Chilambiro Primary School, Karonga

Mr. George Mwimaniwa, DRR Project Manager, Blantyre

Mr. Joseph Moyo, Disaster Manager, Red Cross, Lilongwe

Mr. Julius Ng'oma, National Coordinator, CISONECC, Lilongwe

Mr. Smith M. Kalambo, Chairperson, Mbande Area Development Committee, Karonga

Ms. Sophie Makoloma, Head of Programmes, Christian Aid, Lilongwe

Ms. Martha Msuku, Station Manager, Tumtufye Radio Station

## **Annex 3: List of documents reviewed**

### **General documentation**

- UNDP Programme and Operations Policies and Procedures
- Project-Level Evaluation, Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects, UNDP, 2012
- GEF Monitoring and Evaluation Policy
- GEF Guidelines for Conducting Terminal Evaluations
- GEF focal area strategic program objectives
- UNDP Development Assistance Framework
- UNDP Country Program Document
- UNDP Country Program Action Plan

### **Project documentation**

- Project Identification Form
- Project Document
- Inception Report
- Midterm Review
- Annual Work Plans
- Annual Project Implementation Reports/Standard Progress Reports
- Project Implementation Review reports
- Project risk log
- Project tracking tool
- Combined Delivery Reports
- GEF Operational Quarterly Reports
- Project Board Meeting minutes
- Midterm Review
- Management response to MTE

### **Other relevant documents**

- Malawi Growth and Development Strategy MGDS II and III
- Developing Early Warning Systems: A Checklist, Third International Conference on Early Warning Systems, March 2006, Bonn, Germany, UN/ISDR Platform for the Promotion of Early Warning
- World Bank Data, <https://data.worldbank.org/>
- Malawi Poverty and Vulnerability Assessment report, GoM, 2007
- “The efficiency of smallholder agriculture in Malawi”, Hardwick Tchale, World Bank, Malawi, AFJARE, Volume 3, No 2, September 2009
- OECD – Development Assistance Committee
- Economy Watch, Malawi Economy, 2010
- Transparency International Corruption Perceptions Index
- Reserve Bank of Malawi, web page <https://www.rbm.mw/Statistics/BankRates>
- Department of Climate Change and Meteorological Services web page, <https://www.metmalawi.com/climate/climate.php>
- Famine in Malawi: Causes and Consequences, Roshni Menon, 2008

## **Annex 4: Summary of field visits, questionnaire used and results**

Interviews with EWS Project stakeholders and field visits were performed in accordance with the Mission Itinerary.

Evaluators used the Terminal Evaluation Questions/Matrix as a tentative plan when preparing for interviews.

All interviews were held in an informal way in order to motivate interviewed parties to provide their views on project results as openly as possible.

In our experience, utilizing formal/written questionnaires always hampers the discussion and tends to answer evaluation questions in more formal/general way.

Anonymized results of interviews have been fully reflected in the terminal evaluation and rating.

## Annex 5: Project Logical Framework Matrix

<b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> National policies, local and national institutions effectively support equitable and sustainable economic growth and food security by 2016.					
<b>Country Programme Outcome Indicators:</b> 1.3.1 Environment, natural resources, climate change and disaster risk management mainstreamed in policies, development plans and programmes at national level and implemented in 14 disaster-prone districts; 1.3.2 Data and knowledge on the impact of climate change, environmental degradation and natural disasters collected and made accessible to decision makers and government, private sector and civil society; and 1.3.3 Coordination mechanisms and implementation arrangements for climate change, environment, natural resources, and disaster risk management established and used at national level and disaster-prone districts.					
<b>Primary applicable Key Environment and Sustainable Development Key Result Area: 3.</b> Promote climate change adaptation					
<b>Applicable SOF (e.g. GEF) Strategic Objective and Program:</b> Climate Change Adaptation Objective 2 “Increase adaptive capacity to respond to the impact of climate change, including variability, at local, national, regional and global level”					
<b>Applicable SOF (e.g. GEF) Expected Outcomes:</b> 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.”					
<b>Applicable SOF (e.g. .GEF) Outcome Indicators:</b> <ul style="list-style-type: none"> <li>• Relevant risk information disseminated to stakeholders;</li> <li>• Type and scope of monitoring systems in place; and</li> <li>• % of population covered by climate change risk reduction measures.</li> </ul>					
	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<b>Project Objective:</b> To strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and available information	1. Capacity as per capacity assessment scorecard (Annex 12).  2. Domestic finance	1. Average CCA capacity scorecard rating of <u>72</u> across men and women (Annex 12).	1. CCA capacity scorecard rating is increased to an average of <u>121</u> for both men and women (Annex 12).	1. Focus group interviews with climate monitoring and EWS-related stakeholders; consultant reports.	<u>Risk:</u> Delayed implementation of baseline projects by the government and donors negatively affects LDCF project outcomes.  <u>Assumption:</u> Baseline projects are implemented according to the timeline identified in the PPG phase of the LDCF project, and achieve the desired outcomes and objective.

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for responding to extreme weather and planning adaptation to climate change in Malawi.	committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change.	2. Annual budget of USD allocated to DoDMA, DCCMS and DWR.	2. <u>&gt;20%</u> increase in domestic financing committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change (including equipment operation and maintenance).	2. Review of DoDMA, DCCMS and DWR annual budgets.	<p><u>Risk:</u> Installed hydro-meteorological equipment fails because it is vandalised or not maintained.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk:</u> Procurement and installation of hydro-meteorological equipment, including hardware and software, is delayed because of complications with</p>
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					<p>the release of funds and/or national procurement procedures.</p> <p><u>Assumption:</u> UNDP CO and HQ will co-ordinate with the IP to ensure effective administrative planning, meaning that equipment is procured and installed in a timely manner.</p>
<p><b>Outcome 1:</b> Capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Ministry of Irrigation, Agriculture and Water Development (MoIAWD) to monitor and forecast extreme weather and climate change enhanced.</p>	<p>1. Percentage of national coverage of climate monitoring network (fully operational).</p>	<p>1. DCCMS– <u>15%</u> national coverage of operational manual (15%) and automatic (0%) weather stations (Annex 6).</p> <p>1. DWR– <u>52%</u> national coverage of operational surface manual (85%) and automatic (19%) hydrological stations (Annex 6).</p> <p><u>1. Number and Type (operational stations)</u></p> <p>Automatic weather stations: <u>6</u></p> <p>Manual synoptic stations: <u>4</u></p> <p>Manual river discharge and</p>	<p>1. DCCMS– <u>77%</u> national coverage of operational manual (71%) and automatic (84%) weather stations (Annex 6).</p> <p>1. DWR– <u>69%</u> national coverage of operation surface manual (100%) and automatic (39%) hydrological stations (Annex 6).</p> <p><u>1. Number and Type (operational stations)</u></p> <p>Automatic weather stations: <u>45</u></p> <p>Manual synoptic stations: <u>22</u></p> <p>Surface manual hydrological stations:</p>	<p>1. Field inspection of AWS sites; review of climate monitoring database.</p>	<p><u>Risk:</u> Delayed implementation of baseline projects by the government and donors negatively affects LDCF project outcomes.</p> <p><u>Assumption:</u> Baseline projects are implemented according to the timeline identified in the PPG phase of the LDCF project, and achieve the desired outcomes and objective.</p> <p><u>Risk:</u> Installed hydro-meteorological equipment fails because it is vandalised or not maintained.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> 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.</p>

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	2. Frequency and timeliness of climate-related data availability.	<p>water level stations: <b>158</b> Rainfall logging stations actively transmitted through GPRS network: <b>0</b></p> <p>2. DCCMS: i) <b>4</b> times daily between 5am-5pm for manual synoptic stations; ii) <b>once</b> a day for AWSs; iii) <b>once a month</b> for rainfall logging gauges.</p> <p>2. DWR: <b>daily</b> to <b>monthly</b> basis</p>	<p>Manual river discharge and water level stations: <b>208</b> Rainfall logging stations actively transmitted through GPRS network: <b>53</b></p> <p>2. DCCMS: <b>hourly</b> for synoptic stations and <b>daily</b> for rainfall logging gauges.</p> <p>2. DWR: <b>6</b> hourly and <b>2-4</b> hourly for flood prone areas.</p>	2. Review of climate monitoring database.	<p><u>Risk</u>: 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.</p> <p><u>Assumption</u>: Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk</u>: 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.</p> <p><u>Assumption</u>: UNDP CO and HQ will co-ordinate with the IP to ensure effective administrative planning, meaning that equipment is procured and installed in a timely manner.</p> <p><u>Risk</u>: Alerts and warnings required by communities are not feasible to produce due to scientific or technological barriers.</p> <p><u>Assumption</u>: The most up to date technology and scientific approaches and advances are feasible and appropriate for meeting the LDCF project needs. The level of error for forecasting is within the minimum thresholds appropriate for the LDCF project activities.</p>
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<p><b>Outcome 2</b> Hydro-meteorological and environmental information for early warnings and long-term development plans efficiently and effectively used.</p>	<p>1. Percentage of population with access to improved climate information and flood, drought and Mweru wind warnings (disaggregated by gender).</p> <p>2. Policies, annual budgets and development plans that integrate climate information (type and level).</p>	<p>1. 10% of men and 10% women with access to improved climate information and flood, drought and Mweru wind warnings (<i>to be confirmed during project inception</i>). <u>Male: 628,620</u> <u>Female: 663,136</u></p> <p>2. Currently <u>0</u> policies and development plans</p>	<p>1. 17% of men and 17% women with access to improved climate information and flood, drought and Mweru wind warnings (<i>to be confirmed during project inception</i>). <u>Male: 1,093,242</u> <u>Female: 1,154,912</u></p> <p>2. <u>7</u> District Development Plans and 1 National DRM Policy</p>	<p>1. Gender-sensitive field surveys undertaken within the 7 priority districts, representative of the local population; consultant reports</p> <p>2. Review of District Development Plans and the NDRMP.</p>	<p><u>Risk:</u> Lack of commitment from communities where EWSs are established undermines the effectiveness of the LDCF project demonstrations. <u>Assumption:</u> 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 to participating in the LDCF project.</p> <p><u>Risk:</u> 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. <u>Assumption:</u> Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk:</u> Alerts and warnings required by communities are not feasible to produce due to scientific or technological barriers. <u>Assumption:</u> The most up to date technology and scientific approaches and advances are feasible and appropriate for meeting the LDCF project needs. The level of error for forecasting is within the minimum thresholds appropriate for the LDCF project activities.</p>
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## Annex 6: Evaluation Consultant Code of Conduct and Agreement Form

### Evaluators:

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

### Evaluation Consultant Agreement Form

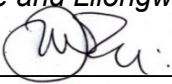
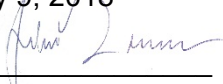
#### Agreement to abide by the Code of Conduct for Evaluation in the UN System

**Name of Consultants:** Jiří Zeman, Welton Phalira

**Name of Consultancy Organization (where relevant):** \_\_\_\_\_

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

Signed at *Prague and Lilongwe* on July 9, 2018

Signature:  

## Annex 7: Terminal Evaluation Questions/Matrix

Evaluative Criteria Questions	Indicators	Sources	Methodology
Relevance: How does 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?			
<ul style="list-style-type: none"> <li>How well does the project align with evolving GEF focal area priorities through GEF 4 5 and 6?</li> </ul>	<ul style="list-style-type: none"> <li>Extent to which UNFCCC and related GEF priorities and areas of work incorporated</li> </ul>	<ul style="list-style-type: none"> <li>Project documents</li> <li>National policies and strategies to implement the UNFCCC, or related to energy more generally.</li> <li>Project partners</li> <li>Project beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
<ul style="list-style-type: none"> <li>How well does the project support the National Climate Change Strategy? Are there linkages with other strategic documents, such as National Development Strategy, INDCs?</li> </ul>	<ul style="list-style-type: none"> <li>Degree to which the project supports national environmental objectives</li> </ul>		
<ul style="list-style-type: none"> <li>Is the project aligned with other donor and Government programmes and projects? Is the project country driven?</li> </ul>	<ul style="list-style-type: none"> <li>Degree of coherence between the project and national priorities, policies and strategies</li> </ul>		
<ul style="list-style-type: none"> <li>Does the project adequately take into account the national realities, both in terms of institutional and policy frameworks in its design and implementation?</li> </ul>	<ul style="list-style-type: none"> <li>Adequacy of project design and implementation to national realities and existing capacities</li> </ul>		
<ul style="list-style-type: none"> <li>Have implementation strategies been appropriate (is the logframe logical and complete)?</li> </ul>	<ul style="list-style-type: none"> <li>Degree to which the project supports objectives of Government energy strategies</li> </ul>		
<ul style="list-style-type: none"> <li>Was the project responsive to threats and opportunities that emerged during the course of the project?</li> </ul>	<ul style="list-style-type: none"> <li>Level of adaptive management related to emerging trends</li> </ul>		
<ul style="list-style-type: none"> <li>Did the project address the needs of target beneficiaries and other stakeholders? Was it inclusive? Were beneficiaries and other stakeholders effectively engaged in implementation?</li> </ul>	<ul style="list-style-type: none"> <li>Degree to which the project supports local aspirations</li> <li>Degree to which the project meets stakeholder expectations</li> <li></li> </ul>		
<ul style="list-style-type: none"> <li>Has the experience of the project provided relevant lessons for other future projects targeted at similar objectives?</li> </ul>	<ul style="list-style-type: none"> <li>Extent to which of lessons learned relating to all facets of the project are documented</li> </ul>		

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Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?			
<ul style="list-style-type: none"><li>How well has the project performed against its indicators and targets?</li></ul>	<ul style="list-style-type: none"><li>Extent to which milestones and targets are achieved as laid out in the logframe and monitoring plan</li></ul>	<ul style="list-style-type: none"><li>Project reports</li><li>Minutes of Project and Steering Committee Meetings</li><li>Local partners and beneficiaries</li><li>Project risks log</li></ul>	<ul style="list-style-type: none"><li></li></ul>
<ul style="list-style-type: none"><li>Which have been the key factors leading to project achievements?</li></ul>	<ul style="list-style-type: none"><li>Achievement of milestones and targets as laid out in the logframe and monitoring plan</li></ul>		
<ul style="list-style-type: none"><li>To what extent can observed results be attributed to the project or not (enabling environment for SHPV, level of uptake of SHP, etc.)? In this respect have there been notable changes in the enabling environment for the project?</li></ul>	<ul style="list-style-type: none"><li>Extent of change to the enabling environment</li></ul>		
<ul style="list-style-type: none"><li>Has the project failed in any respect? What changes could have been made (if any) to the design or implementation of the project in order to improve the achievement of the expected results?</li></ul>	<ul style="list-style-type: none"><li>Evidence of adaptive management and/or early application of lessons learned</li></ul>		
<ul style="list-style-type: none"><li>How has the project contributed to raising capacity of local stakeholders to address aims of the project or of Government?</li></ul>	<ul style="list-style-type: none"><li>Extent of support from local stakeholders</li></ul>		
<ul style="list-style-type: none"><li>What are the views of stakeholders on the implementation and activities of the project? Are there activities missing from the implementation?</li></ul>	<ul style="list-style-type: none"><li>Extent to which stakeholders are actively participating in the project or</li><li>Extent to which beneficiaries were engaged in implementation and monitoring of the project</li></ul>		
<ul style="list-style-type: none"><li>How well were risks, assumptions and impact drivers managed? What was the quality of risk mitigation strategies developed? Were these sufficient? Are there clear strategies for risk mitigation related to long-term sustainability of the project?</li></ul>	<ul style="list-style-type: none"><li>Extent to which project has responded to identified and emerging risks (particularly risks of low participation due to perceived needs for immediate action rather than planning)</li><li>Level of attention paid to up-dating risks log</li></ul>		
Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?			
<ul style="list-style-type: none"><li>Financial efficiency:<ul style="list-style-type: none"><li>Were the accounting and financial systems in place adequate for project management and producing accurate and timely financial information?</li></ul></li></ul>	<ul style="list-style-type: none"><li>Extent to which funds have been converted into outcomes as per the expectations of the ProDoc</li></ul>	<ul style="list-style-type: none"><li>Project financial records</li><li>Project audit reports</li></ul>	<ul style="list-style-type: none"><li></li></ul>

# Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

<ul style="list-style-type: none"> <li>Have funds been available and transferred efficiently (from donor to project to contractors) to address the project purpose, outputs and planned activities?</li> <li>Were funds used correctly – explain any over- or under-expenditures?</li> <li>Were financial resources utilized efficiently (converted into outcomes)? Could financial resources have been used more efficiently?</li> <li>Were issues raised in audit reports and how efficiently were they addressed?</li> <li>Was project implementation as cost effective as originally proposed (planned vs. actual)</li> <li>Did the leveraging of funds (co-financing) happen as planned?</li> </ul>	<ul style="list-style-type: none"> <li>Level of transparency in the use of funds</li> <li>Level of satisfaction of partners and beneficiaries in the use of funds</li> <li>Timely delivery of funds, mitigation of bottlenecks.</li> <li>Coordination and synergies of project funds and co-financing</li> </ul>	<ul style="list-style-type: none"> <li>Project work plans and reports</li> </ul>	
<ul style="list-style-type: none"> <li>Implementation efficiency (including monitoring): <ul style="list-style-type: none"> <li>Was the project implemented as planned, including the proportion of activities in work plans implemented?</li> <li>Has monitoring data been collected as planned, analyzed and used to inform project planning?</li> <li>Has project implementation been responsive to issues arising (e.g. from monitoring or from interactions with stakeholders)?</li> <li>What learning processes have been put in place and who has benefitted (e.g. training, exchanges with related projects, overseas study visits) and how has this influenced project outcomes?</li> <li>Were progress reports produced accurately and timely, and did they respond to reporting requirements including adaptive management changes?</li> <li>Did the project experience any capacity gaps (e.g. staffing gaps)?</li> <li>Has internal and external communication been effective and efficient?</li> <li>How efficiently have resources and back-up been provided by donors, including quality assurance by UNDP?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Extent to which project activities were conducted on time</li> <li>Extent to which project delivery matched the expectation of the ProDoc and the expectations of partners</li> <li>Level of satisfaction expressed by partners in the responsiveness (adaptive management) of the project</li> <li>Level of satisfaction expressed by project team in regard to UNDP back-stopping</li> </ul>	<ul style="list-style-type: none"> <li>Project work plans and reports</li> <li>Local partners</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
<ul style="list-style-type: none"> <li>Efficiency of partnership arrangements for the project <ul style="list-style-type: none"> <li>To what extent were partnerships/linkages between institutions/ organizations/private sector encouraged and supported?</li> <li>Which partnerships/linkages were facilitated? Which ones can be considered sustainable?</li> <li>What was the level of efficiency of cooperation and collaboration arrangements?</li> <li>Which methods were successful or not and why?</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Extent to which project partners committed time and resources to the project</li> <li>Extent of commitment of partners to take over project activities</li> </ul>	<ul style="list-style-type: none"> <li>Project work plans and reports</li> <li>Local partners</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>

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Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?			
<ul style="list-style-type: none"><li>Is the social, legal and political environment conducive to sustainability?</li></ul>	<ul style="list-style-type: none"><li>Extent of supportive policies</li></ul>	<ul style="list-style-type: none"><li>Steering Committee minutes</li><li>Local partners and beneficiaries</li></ul>	<ul style="list-style-type: none"><li></li></ul>
<ul style="list-style-type: none"><li>Are there early signs of activities being taken up by project partners, and plans being developed to sustain them?</li></ul>	<ul style="list-style-type: none"><li>Extent to which partners are considering post-project actions</li></ul>		
<ul style="list-style-type: none"><li>Have partners and stakeholders successfully enhanced their capacities and do they have the required resources to make use of these capacities?</li></ul>	<ul style="list-style-type: none"><li>Extent to which partners and stakeholders are applying new ideas outside of the immediate project context</li></ul>		
<ul style="list-style-type: none"><li>Does the project have a clear exit strategy or transformational strategy?</li></ul>	<ul style="list-style-type: none"><li>Intent to follow-up on the project (on the part of Government and stakeholders)</li><li>To what extent has the exit strategy been implemented</li></ul>		
Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?			
<ul style="list-style-type: none"><li>What impact has the project had on policy, legal and institutional frameworks relating to uptake of renewable energy?</li></ul>	<ul style="list-style-type: none"><li>Evidence of uptake of new technologies</li><li>Extent to which national strategic planning supports project interventions</li></ul>	<ul style="list-style-type: none"><li>Project reports</li><li>Minutes of Steering Committee meetings</li><li>Local partners and beneficiaries</li></ul>	<ul style="list-style-type: none"><li></li></ul>
<ul style="list-style-type: none"><li>What impacts has the project had or is it likely to have on people in the project area in terms of cost-savings, income generating opportunities, etc.?</li></ul>	<ul style="list-style-type: none"><li>Level of satisfaction of project interventions expressed by beneficiaries</li></ul>		
<ul style="list-style-type: none"><li>Has the project had any impact on gender equality and economic empowerment for women and other marginalized groups? Was it intended to?</li></ul>	<ul style="list-style-type: none"><li>Evidence of gender equity in project interventions such as trainings, installed SHP systems and rebates.</li></ul>		
<ul style="list-style-type: none"><li>What lessons can be learned from the project regarding efficiency? Could the project have more efficiently carried out implementation (in terms of management structures and procedures, partnerships arrangements etc.)?</li></ul>	<ul style="list-style-type: none"><li>Level of satisfaction in project implementation arrangements</li><li>Suggestions put forward by partners for possible improvement</li></ul>		

## Annex 8: Terminal Evaluation TOR

### TERMINAL EVALUATION TERMS OF REFERENCE

**For the procurement of a Lead Consultant for terminal evaluation of Strengthening Climate Information and Early Warning System for Climate Resilient Development and adaptation to Climate Change Project**

### GENERAL INFORMATION

**Project/Program Title:** Strengthening Climate Information and Early Warning System in Malawi for Climate Resilient Development and Adaptation to Climate Change Project

**Post Title:** International Consultant

**Duty Station:** Malawi

**Expected Places of Travel:** Selected 5 beneficiary districts

**Duration:** Twenty working days

**Expected Start Date:** Immediately after Concluding Contract Agreement

### INTRODUCTION

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP support GEF financed projects are required to undergo a terminal evaluation upon completion of implementation. These terms of reference (TOR) sets out the expectations for a Terminal Evaluation (TE) of the “Strengthening climate information and early warning systems in Eastern and Southern Africa for climate resilient development and adaptation to climate change – Malawi” project, (PIMS # 5092).

The essentials of the project to be evaluated are as follows:

### PROJECT SUMMARY TABLE

Project Title:	Strengthening climate information and early warning systems for climate resilient development – M			
GEF Project ID:	4994		<i>at endorsement (Million US\$)</i>	<i>at completion (Million US\$)</i>
UNDP Project ID:	PIMS 5092 Atlas ID 00077203	GEF financing:	3,600,000	0.00
Country:	Malawi	IA/EA own:	6,100,000	0.00
Region:	Africa	Government:	3,838,300	0.00
Focal Area:	Climate Change adaptation	Other:	1,356,607	0.00

## Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

FA Objectives, (OP/SP):	CCA-2 Increase adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level  CCA-3 Promote transfer and adoption of adaptation technology	Total co-financing:	11,294,907	0.00
Executing Agency:	Department of Disaster Management Affairs	Total Project Cost:	14,894,907	0.00
Other Partners involved:	Ministry of Environment and Climate Change Management (Department of Climate Change and Meteorological Services, Environment Affairs Department, Department of Forestry, Department of Surveys), Ministry of Water Development and Irrigation (Department of Water Resources), and Ministry of Agriculture and Food Security (MoAFS).	ProDoc Signature (date project began):		6 December 2013
		(Operational) Closing Date:	Proposed: 31 December 2017	Actual: 31 December 2017

### OBJECTIVE AND SCOPE

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

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

#### Project Background:

Malawi's economy is reliant on agriculture, with more than 80% of the population relying on rainfed agriculture for livelihood. In the recent past, Malawi's uncertainty has been increasing attributable to increasing climate related extremes of drought and flooding. Number of vulnerable districts to climate change has been increasing with time, from 6 in 2006 (NAPA, 2006) to 15 in 2015 (Malawi National Disaster Risk Management Policy, 2015). In 2015/2016 and 2016/2017 rainfall seasons, Malawi declared two consecutive state of national disasters both related to climate change. More floods have occurred between 2000 and 2016 than 1970 to 2000, and an example of the loss that arose from 2015/2015 floods was estimated at \$494 million. An annual average of food insecure people rose from 350,000 between 2007 to 2011 to 1,700,000 over 2012-2014, and the population which was declared food insecure in 2016/2017 season was estimated at 6.5 million, which is almost one third of the population. Climate change is also affecting other sectors of the economy in Malawi; water supply, hydro electricity generation, drying of rivers and important lakes like Lake Chilwa, destruction of transport and communication infrastructure and the country is experiencing increasing humanitarian needs.

Demand for climate information is paramount for development planning, and this project was designed to improve the climate information and Early Warning Systems (EWS) which was limited in the ability to monitor and forecast weather conditions, communicate warnings, respond to disasters, and plan for long-onset changes. Improving climate



information and EWS components requires investment in infrastructure and technical capacity which is in a challenge particularly where national resources are limited. The project was designed to provide support in capacity building and infrastructure development that enhances appropriate planning and adjustment of farming and fishing practices respectively thereby reducing vulnerability. Similarly, flood warnings will enable local communities to move to locations of safety with their possessions, stored food and livestock.

The goal of the project was to strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and delivery of available information for responding to extreme weather and planning adaptation to climate change in Malawi. The project had two expected Outcomes:

1. Enhanced capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Department of Water Resources (DWR) to monitor and forecast extreme weather, hydrology and climate change.
2. Efficient and effective use of hydro-meteorological and environmental information for making early warnings and long-term development plans.

### EVALUATION APPROACH AND METHOD

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An overall approach and method<sup>35</sup> for conducting project terminal evaluations of UNDP supported GEF financed projects has developed over time. The evaluator is expected to frame the evaluation effort using the criteria of **relevance, effectiveness, efficiency, sustainability, and impact**, as defined and explained in the UNDP Guidance for Conducting Terminal Evaluations of UNDP-supported, GEF-financed Projects. A set of questions covering each of these criteria have been drafted and are included with this TOR ([Annex C](#)). The evaluator is expected to amend, complete and submit this matrix as part of an evaluation inception report, and shall include it as an annex to the final report.

The evaluation must provide evidence-based information that is credible, reliable and useful. The evaluator is expected to follow a participatory and consultative approach ensuring close engagement with government counterparts, in particular the GEF operational focal point, UNDP Country Office, project team, UNDP GEF Technical Adviser based in the region and key stakeholders. The evaluator is expected to conduct a field mission whose location will be sampled among the following districts; Karonga, Rumphi, Nkhatabay, Salima, Nkhosakota, Dedza, Mangochi, Zomba, Phalombe, Chikwawa and Nsanje).

The evaluator will review all relevant sources of information, such as the project document, project reports – including APR/PIR, project budget revisions, midterm review, progress reports, GEF focal area tracking tools, project files, national strategic and legal documents, and any other materials that the evaluator considers useful for this evidence-based assessment. A list of documents that the project team will provide to the evaluator for review is included in [Annex B](#) of this Terms of Reference.

### EVALUATION CRITERIA & RATINGS

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An assessment of project performance will be carried out, based against expectations set out in the Project Logical Framework/Results Framework (see [Annex A](#)), which provides performance and impact indicators for project implementation along with their corresponding means of verification. The evaluation will at a minimum cover the criteria of: **relevance, effectiveness, efficiency, sustainability and impact**. Ratings must be provided on the following performance criteria. The completed table must be included in the evaluation executive summary. The obligatory rating scales are included in [Annex D](#).

<b>Evaluation Ratings:</b>
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<sup>35</sup> For additional information on methods, see the [Handbook on Planning, Monitoring and Evaluating for Development Results](#), Chapter 7, pg. 163

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1. Monitoring and Evaluation	rating	2. IA& EA Execution	rating
M&E design at entry		Quality of UNDP Implementation	
M&E Plan Implementation		Quality of Execution - Executing Agency	
Overall quality of M&E		Overall quality of Implementation / Execution	
3. Assessment of Outcomes	rating	4. Sustainability	rating
Relevance		Financial resources:	
Effectiveness		Socio-political:	
Efficiency		Institutional framework and governance:	
Overall Project Outcome Rating		Environmental:	
		Overall likelihood of sustainability:	

### PROJECT FINANCE / COFINANCE

The Evaluation will assess the key financial aspects of the project, including the extent of co-financing planned and realized. Project cost and funding data will be required, including annual expenditures. Variances between planned and actual expenditures will need to be assessed and explained. Results from recent financial audits, as available, should be taken into consideration. The evaluator(s) will receive assistance from the Country Office (CO) and Project Team to obtain financial data in order to complete the co-financing table below, which will be included in the terminal evaluation report.

Co-financing (type/source)	UNDP own financing (mill. US\$)		Government (mill. US\$)		Partner Agency (mill. US\$)		Total (mill. US\$)	
	Planned	Actual	Planned	Actual	Planned	Actual	Actual	Actual
Grants								
Loans/Concessions								
a) In-kind support								
b) Other								
Totals								

### MAINSTREAMING

UNDP supported GEF financed projects are key components in UNDP country programming, as well as regional and global programmes. The evaluation will assess the extent to which the project was successfully mainstreamed with other UNDP priorities, including poverty alleviation, improved governance, the prevention and recovery from natural disasters, and gender.

### IMPACT

The evaluators will assess the extent to which the project is achieving impacts or progressing towards the achievement of impacts. Key findings that should be brought out in the evaluations include whether the project has demonstrated: a) verifiable improvements in ecological status, b) verifiable reductions in stress on ecological systems, and/or c) demonstrated progress towards these impact achievements.<sup>36</sup>

### CONCLUSIONS, RECOMMENDATIONS & LESSONS

<sup>36</sup> A useful tool for gauging progress to impact is the Review of Outcomes to Impacts (ROtI) method developed by the GEF Evaluation Office: [ROtI Handbook 2009](#)

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The evaluation report must include a chapter providing a set of **conclusions, recommendations and lessons**.

### IMPLEMENTATION ARRANGEMENTS

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

### EVALUATION TIMEFRAME

The total duration of the evaluation will be 20 working days according to the following plan over a period of 6 weeks:

Activity	Timing	Completion Date
<b>Preparation</b>	4 days	<i>TBD</i>
<b>Evaluation Mission</b>	7days	<i>TBD</i>
<b>Draft Evaluation Report</b>	5days	<i>TBD</i>
<b>Final Report</b>	4days	<i>TBD</i>

### EVALUATION DELIVERABLES

The evaluation team is expected to deliver the following:

Deliverable	Content	Timing	Responsibilities
<b>Inception Report</b>	Evaluator provides clarifications on their understanding of the task, timing and method	No later than 2 weeks before the evaluation mission.	Evaluator submits to UNDP CO
<b>Presentation</b>	Initial Findings	End of evaluation mission	To project management, UNDP CO
<b>Draft Final Report</b>	Full report, (per annexed template) with annexes	Within 3 weeks of the evaluation mission	Sent to CO, reviewed by RTA, Malawi Government, GEF OFPs
<b>Final Report*</b>	Revised report	Within 1 week of receiving UNDP comments on draft	Sent to CO for uploading to UNDP ERC.

\*When submitting the final evaluation report, the evaluator is required also to provide an 'audit trail', detailing how all received comments have (and have not) been addressed in the final evaluation report.

### TEAM COMPOSITION

This evaluation will be conducted by a team of two evaluators; International lead Consultant and National Consultant who will be a team member. The Team leader will have the overall responsibility for the conduct of the evaluation exercise as well as quality and timely submission of reports (inception, draft, final etc). The team Leader will be accountable to UNDP for the delivery results on this assignment.

### Academic Qualifications and experience requirements:

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- c) A Master's degree in Climate Change, Environmental Sciences, Natural Resources Management, Agriculture, Land Management, Water Resources Management, Meteorology or other closely related field (10 points)
- d) Knowledge of UNDP and GEF programming and procedures (25 points)
- e) Previous experience with results-based monitoring and evaluation methodologies (20 points)
- f) Proven experience in leading consultancy teams (10 points);
- g) Technical knowledge in climate change adaptation focal area (hydrological and meteorological systems) with a minimum of 7 years work experience (20 points)
- h) Experience in gender mainstreaming in project planning and implementation (10 points).
- i) Fluency in English, both oral and written is required (5 points)

### EVALUATOR ETHICS

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Evaluation consultants will be held to the highest ethical standards and are required to sign a Code of Conduct (Annex E) upon acceptance of the assignment. UNDP evaluations are conducted in accordance with the principles outlined in the [UNEG 'Ethical Guidelines for Evaluations'](#)

### PAYMENT MODALITIES AND SPECIFICATIONS

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%	Milestone
10%	Submission of TE Inception Report
40%	Following submission and approval of the 1ST draft terminal evaluation report
50%	Following submission and approval (UNDP-CO and UNDP RTA) of the final terminal evaluation report

### DOCUMENTS TO BE INCLUDED WHEN SUBMITTING THE PROPOSALS.

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
- (ii) Provide a brief methodology on how they will approach and conduct the work (if applicable)

2. Financial proposal

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

## FINANCIAL PROPOSAL

The financial proposal shall specify a total lump sum amount, and payment terms around specific and measurable (qualitative and quantitative) deliverables (i.e. whether payments fall in installments or upon completion of the entire contract). Payments are based upon output, i.e. upon delivery of the services specified in the TOR. In order to assist the requesting unit in the comparison of financial proposals, the financial proposal will include a breakdown of this lump sum amount (including travel, per diems, and number of anticipated working days).

### **Travel:**

All envisaged travel costs must be included in the financial proposal. UNDP does not accept travel costs exceeding those of an economy class ticket. Should the International Consultant wish to travel on a higher class he/she should do so using their own resources.

In the case of unforeseeable travel, payment of travel costs including tickets, lodging and terminal expenses will be agreed upon, between the respective business unit and Individual Consultant, prior to travel and will be reimbursed

## EVALUATION

Cumulative analysis: The 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 criteria specific to the solicitation. \* Technical Criteria weight; 70 %\* Financial Criteria weight; 30 %. Only candidates obtaining a minimum of 70 % point would be considered for the Financial Evaluation.

<b>Criteria</b>	<b>Weight</b>	<b>Max. Point</b>
<b><u>Technical</u></b>	70	100 Points
Criteria A: Technical knowledge;  a) A Master's degree in Climate Change, Environmental Sciences, Natural Resources Management, Agriculture, Land Management, Water Resources Management, Meteorology or other closely related field (10 points)	35	

b) Knowledge of UNDP and GEF programming and procedures (25 points)		
<p>Criteria B: Contextual experience and experience</p> <p>a) Previous experience with results-based monitoring and evaluation methodologies (20 points)</p> <p>b) Proven experience in leading consultancy teams (10 points);</p> <p>c) Technical knowledge in climate change adaptation focal area (hydrological and meteorological systems) with a minimum of 7 years work experience (20 points)</p> <p>d) Experience in gender mainstreaming in project planning and implementation (10 points).</p> <p>e) Fluency in English, both oral and written is required (5 points)</p>	65	
<b><u>Financial</u></b>	30	30

#### APPLICATION PROCESS

Applicants are requested to apply online (indicate the site, such as <http://jobs.undp.org>, etc.) by (date). Individual consultants are invited to submit applications together with their CV for these positions. The application should contain a current and complete C.V. in English with indication of the e-mail and phone contact. Shortlisted candidates will be requested to submit a price offer indicating the total cost of the assignment (including daily fee, per diem and travel costs).

UNDP applies a fair and transparent selection process that will take into account the competencies/skills of the applicants as well as their financial proposals. Qualified women and members of social minorities are encouraged to apply.

**ANNEX A: PROJECT LOGICAL FRAMEWORK**

<b>This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:</b> National policies, local and national institutions effectively support equitable and sustainable economic growth and food security by 2016.					
<b>Country Programme Outcome Indicators:</b> 1.3.1 Environment, natural resources, climate change and disaster risk management mainstreamed in policies, development plans and programmes at national level and implemented in 14 disaster-prone districts; 1.3.2 Data and knowledge on the impact of climate change, environmental degradation and natural disasters collected and made accessible to decision makers and government, private sector and civil society; and 1.3.3 Coordination mechanisms and implementation arrangements for climate change, environment, natural resources, and disaster risk management established and used at national level and disaster-prone districts.					
<b>Primary applicable Key Environment and Sustainable Development Key Result Area: 3.</b> Promote climate change adaptation					
<b>Applicable SOF (e.g. GEF) Strategic Objective and Program:</b> Climate Change Adaptation Objective 2 “Increase adaptive capacity to respond to the impact of climate change, including variability, at local, national, regional and global level”					
<b>Applicable SOF (e.g. GEF) Expected Outcomes:</b> 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.”					
<b>Applicable SOF (e.g. .GEF) Outcome Indicators:</b> <ul style="list-style-type: none"> <li>• Relevant risk information disseminated to stakeholders;</li> <li>• Type and scope of monitoring systems in place; and</li> <li>• % of population covered by climate change risk reduction measures.</li> </ul>					
	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
<b>Project Objective:</b> To strengthen the weather, climate and hydrological monitoring capabilities, early warning systems and available information for responding to extreme weather and planning adaptation to climate change in Malawi.	3. Capacity as per capacity assessment scorecard (Annex 12).  4. Domestic finance committed to DoDMA, DCCMS and DWR to monitor extreme weather and climate change.	1. Average CCA capacity scorecard rating of <u>72</u> across men and women (Annex 12).  2. Annual budget of USD allocated to DoDMA, DCCMS and DWR <sup>37</sup> .	1. CCA capacity scorecard rating is increased to an average of <u>121</u> for both men and women (Annex 12).  2. <u>&gt;20%</u> increase in domestic financing committed to DoDMA, DCCMS and	1. Focus group interviews with climate monitoring and EWS-related stakeholders; consultant reports.  2. Review of DoDMA, DCCMS and DWR annual budgets.	<u>Risk:</u> Delayed implementation of baseline projects by the government and donors negatively affects LDCF project outcomes. <u>Assumption:</u> Baseline projects are implemented according to the timeline identified in the PPG phase of the LDCF project, and achieve the desired outcomes and objective.  <u>Risk:</u> Installed hydro-meteorological equipment fails because it

<sup>37</sup>To be confirmed and finalized during the inception phase.

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			DWR to monitor extreme weather and climate change (including equipment operation and maintenance) <sup>38</sup> .		<p>is vandalised or not maintained.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> Information technologies and</p>
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<sup>38</sup>To be confirmed and finalized during the inception phase.



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					<p>telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> UNDP CO and HQ will co-ordinate with the IP to ensure effective administrative planning, meaning that equipment is procured and installed in a timely manner.</p>
<p><b>Outcome 1:</b> Capacity of the Department of Climate Change and Meteorological Services (DCCMS) and Ministry of</p>	<p>1. Percentage of national coverage of climate monitoring network (fully operational).</p>	<p>1. DCCMS<sup>39</sup>– <u>15%</u> national coverage of operational manual (15%) and automatic</p>	<p>1. DCCMS<sup>44</sup>– <u>77%</u> national coverage of operational manual (71%) and automatic (84%)<sup>45</sup> weather</p>	<p>1. Field inspection of AWS sites; review of climate monitoring database.</p>	<p><u>Risk:</u> Delayed implementation of baseline projects by the government and donors negatively affects LDCF project outcomes.</p> <p><u>Assumption:</u> Baseline projects are implemented according to the timeline</p>

<sup>39</sup>There are currently 22 Synoptic Weather Stations in Malawi for which accurate locality data has been obtained, however, only four are fully functional. Based on these data, 4 out of 26 districts in Malawi are covered by the current monitoring network. There are also an additional 53 manual rainfall logging stations that require rehabilitation, however, no accurate locality data was obtained for these.

<sup>44</sup>25 automatic, 18 manual and 53 rainfall logging stations rehabilitated and 20 Automatic Weather Stations (AWS) installed in priority districts

<sup>45</sup> There are currently 26 AWSs requiring rehabilitation in 20 of the 26 districts of Malawi. Through the rehabilitation of this network, as well as the installation of 20 additional AWSs in priority districts, the coverage in Malawi will increase to a minimum of 22 of 26 districts.

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Irrigation, Agriculture and Water Development (MoIWD) to monitor and forecast extreme weather and climate change enhanced.		(0%) weather stations (Annex 6 <sup>40</sup> ).  1. DWR <sup>41</sup> – <b>52%</b> national coverage of operational surface manual (85%) and automatic (19%) <sup>42</sup> hydrological stations (Annex 6) <sup>43</sup> .  <u>1. Number and Type (operational stations)</u> Automatic weather stations: <b>6</b> Manual synoptic stations: <b>4</b> Manual river discharge	stations (Annex 6) <sup>46</sup> .  1. DWR <sup>47</sup> – <b>69%</b> national coverage of operation surface manual (100%) and automatic (39%) hydrological stations (Annex 6) <sup>48</sup> .  <u>1. Number and Type (operational stations)</u> Automatic weather stations: <b>45</b> Manual synoptic stations: <b>22</b>	2. Review of climate	identified in the PPG phase of the LDCF project, and achieve the desired outcomes and objective.  <u>Risk:</u> Installed hydro-meteorological equipment fails because it is vandalised or not maintained. <u>Assumption:</u> 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.  <u>Risk:</u> Climate shocks occurring during the design and implementation phase of the LDCF project result in disruptions to installed equipment and severely
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<sup>40</sup>**Manual:** 4 operational in 4 out of 26 districts, which equates to **15%.****Automatic:** Currently **none** of the 26 automatic weather stations

<sup>41</sup>There are currently 158 operational manual hydrological monitoring stations in Malawi (*Directory of Hydrometric Stations in Malawi, 2012. Ministry of Irrigation and Water Development*). Accurate locality data was obtained from the DWR for 79 of these of these operational hydrological monitoring stations (see Annex 6). Based on these data, 22 of 26 districts (85%) are covered by the current monitoring network.

<sup>42</sup>There are six hydrological monitoring stations with automatic Data Collection Platforms (DCPs), which were installed in the late 1990s under the SADC Hydrological Cycle Observing System (HYCOS) Phase 1 Project. These stations are located in five of the 26 districts in Malawi, namely: Karonga, Nkhata Bay, Mangochi, Machinga and Mulanje. This equates to ~19% coverage.

<sup>43</sup>**Manual:** 158 operational in 22 out of 26 districts, which equates to **85%.****Automatic:** 6 operational in 5 out of 26 districts, which equates to **19%.**

<sup>46</sup>**Manual:** Synoptic weather stations operational in 17 of 26 districts, which equates to **71% .Automatic:** Operational in 22 out of 26 districts, which equates to **84%.**

<sup>47</sup>50 manual hydrological monitoring stations rehabilitated, and 10 automatic hydrological monitoring stations installed in priority districts.

<sup>48</sup>**Manual:** Operational in all 26 districts (**100%.**)**Automatic:** Operational in 10 out of 26 districts, which equates to **39%.**

	<p>2. Frequency and timeliness of climate-related data availability.</p>	<p>and water level stations: <b>158</b></p> <p>Rainfall logging stations actively transmitted through GPRS network: <b>0</b></p> <p>2. DCCMS:</p> <p>i) <b>4</b> times daily between 5am-5pm for manual synoptic stations; ii) <b>once</b> a day for AWSs; iii) <b>once a month</b> for rainfall logging gauges.</p> <p>2. DWR: <b>daily</b> to <b>monthly</b> basis</p>	<p>Surface manual hydrological stations:</p> <p>Manual river discharge and water level stations: <b>208</b></p> <p>Rainfall logging stations actively transmitted through GPRS network: <b>53</b></p> <p>2. DCCMS: <b>hourly</b> for synoptic stations and <b>daily</b> for rainfall logging gauges.</p> <p>2. DWR: <b>6</b> hourly and <b>2-4</b> hourly for flood prone areas.</p>	<p>monitoring database.</p>	<p>affect communities, prior to the EWSs being established.</p> <p><u>Assumption:</u> 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.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> UNDP CO and HQ will co-ordinate</p>
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Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

					<p>with the IP to ensure effective administrative planning, meaning that equipment is procured and installed in a timely manner.</p> <p><u>Risk:</u> Alerts and warnings required by communities are not feasible to produce due to scientific or technological barriers.</p> <p><u>Assumption:</u> The most up to date technology and scientific approaches and advances are feasible and appropriate for meeting the LDCF project needs. The level of error for forecasting is within the minimum thresholds appropriate for the LDCF project activities.</p>
<p><b>Outcome 2</b></p> <p>Hydro-meteorological and environmental information for early warnings and long-term development plans efficiently and effectively used.</p>	<p>2. Percentage of population with access to improved climate information and flood, drought and Mwera wind warnings (disaggregated by gender).</p> <p>2. Policies, annual budgets and development plans that</p>	<p>1. 10% of men and 10% women with access to improved climate information and flood, drought and Mwera wind warnings (<i>to be confirmed during project inception</i>). <u>Male:</u> 628,620 <u>Female:</u> 663,136<sup>49</sup></p>	<p>1. 17% of men and 17% women with access to improved climate information and flood, drought and Mwera wind warnings (<i>to be confirmed during project inception</i>). <u>Male:</u> 1,093,242 <u>Female:</u> 1,154,912<sup>50</sup></p>	<p>1. Gender-sensitive field surveys undertaken within the 7 priority districts, representative of the local population; consultant reports</p> <p>2. Review of District Development</p>	<p><u>Risk:</u> Lack of commitment from communities where EWSs are established undermines the effectiveness of the LDCF project demonstrations.</p> <p><u>Assumption:</u> 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 to participating in the LDCF project.</p>

<sup>49</sup> Based on baseline estimates of 43% of male and female populations in districts covered by the Enhanced Community Resilience Programme (Kasungu, Machinga, Mwanza, Thyolo, Mulanje) that receive weather and climate information.

<sup>50</sup> Based on 43% of the male and female population that receive weather and climate information in 7 priority districts (Karonga, Salima, Nkhota-kota, Rumphi, Nkhata-bay, Dedza and Phalombe) which will benefit from improved climate information and warnings for flood, drought, and Mwera wind warnings and mainstreaming of climate information and EWS into local development plans.

# Terminal Evaluation of the UNDP-supported LDCF/GEF-financed EWS Project, Malawi

	integrate climate information (type and level).	2. Currently <u>0</u> policies and development plans	2. <u>7</u> District Development Plans and 1 National DRM Policy	Plans and the NDRM Policy.	<p><u>Risk:</u> 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.</p> <p><u>Assumption:</u> Information technologies and telecommunications systems implemented or used, where such suitable system already exists, by the LDCF project are best suited to the local context and do not restrict the transfer and communication of information.</p> <p><u>Risk:</u> Alerts and warnings required by communities are not feasible to produce due to scientific or technological barriers.</p> <p><u>Assumption:</u> The most up to date technology and scientific approaches and advances are feasible and appropriate for meeting the LDCF project needs. The level of error for forecasting is within the minimum thresholds appropriate for the LDCF project activities.</p>
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## ANNEX B: LIST OF DOCUMENTS TO BE REVIEWED BY THE EVALUATORS

- Project document
- CEO Endorsement request
- Project Implementation Plan

- Midterm review report
- Project Monitoring reports
- GEF adaptation tracking tools
- Annual Project Implementation (APR) Reports
- Project Implementation Reports (PIR)
- Quarterly progress reports
- Technical committee minutes
- Steering committee minutes
- Project Identification Form (PIF)
- Project Initiation Plan
- Mission reports and lessons learnt studies
- UNDP Development Assistance Framework (UNDAF)
- UNDP Country Programme Document (CPD)

## ANNEX C: EVALUATION QUESTIONS

*This is a generic list, to be further detailed with more specific questions by CO and UNDP GEF Technical Adviser based on the particulars of the project.*

Evaluative Criteria Questions	Indicators	Sources	Methodology
<b>Relevance: How does 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?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Effectiveness: To what extent have the expected outcomes and objectives of the project been achieved?</b>			
•	•	•	•
•	•	•	•
•		•	•
<b>Efficiency: Was the project implemented efficiently, in-line with international and national norms and standards?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Sustainability: To what extent are there financial, institutional, social-economic, and/or environmental risks to sustaining long-term project results?</b>			
•	•	•	•
•	•	•	•
•	•	•	•
<b>Impact: Are there indications that the project has contributed to, or enabled progress toward, reduced environmental stress and/or improved ecological status?</b>			
•	•	•	•
•	•	•	•

**ANNEX D: RATING SCALES**

<p><b><i>Ratings for Outcomes, Effectiveness, Efficiency, M&amp;E, I&amp;E Execution</i></b></p> <p>6: Highly Satisfactory (HS): no shortcomings                      5: Satisfactory (S): minor shortcomings                      4: Moderately Satisfactory (MS)                      3. Moderately Unsatisfactory (MU): significant shortcomings                      2. Unsatisfactory (U): major problems                      1. Highly Unsatisfactory (HU): severe problems</p>	<p><b><i>Sustainability ratings:</i></b></p> <p>4. Likely (L): negligible risks to sustainability                      3. Moderately Likely (ML): moderate risks                      2. Moderately Unlikely (MU): significant risks                      1. Unlikely (U): severe risks</p>	<p><b><i>Relevance ratings</i></b></p> <p>2. Relevant (R)                      1.. Not relevant (NR)</p> <p><b><i>Impact Ratings:</i></b>                      3. Significant (S)                      2. Minimal (M)                      1. Negligible (N)</p>
<p><b><i>Additional ratings where relevant:</i></b>                      Not Applicable (N/A)                      Unable to Assess (U/A)</p>		



## ANNEX E: EVALUATION CONSULTANT CODE OF CONDUCT AND AGREEMENT FORM

### Evaluators:

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

### Evaluation Consultant Agreement Form<sup>51</sup>

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

Name of Consultant: \_\_\_\_\_

Name of Consultancy Organization (where relevant): \_\_\_\_\_

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

Signed at *place* on *date*

Signature: \_\_\_\_\_

<sup>51</sup>[www.unevaluation.org/unegcodeofconduct](http://www.unevaluation.org/unegcodeofconduct)

## ANNEX F: EVALUATION REPORT OUTLINE<sup>52</sup>

- 
- i.** Opening page:
    - f) Title of UNDP supported GEF financed project
    - g) UNDP and GEF project ID#s.
    - h) Evaluation time frame and date of evaluation report
    - i) Region and countries included in the project
    - j) GEF Operational Program/Strategic Program
    - k) Implementing Partner and other project partners
    - l) Evaluation team members
    - m) Acknowledgements
  - ii.** Executive Summary
    - n) Project Summary Table
    - o) Project Description (brief)
    - p) Evaluation Rating Table
    - q) Summary of conclusions, recommendations and lessons
  - iii.** Acronyms and Abbreviations  
(See: UNDP Editorial Manual<sup>53</sup>)
  - 1.** Introduction
    - r) Purpose of the evaluation
    - s) Scope & Methodology
    - t) Structure of the evaluation report
  - 2.** Project description and development context
    - Project start and duration
    - Problems that the project sought to address
    - Immediate and development objectives of the project
    - Baseline Indicators established
    - Main stakeholders
    - Expected Results
  - 3.** Findings  
(In addition to a descriptive assessment, all criteria marked with (\*) must be rated<sup>54</sup>)
  - 3.1** Project Design / Formulation
    - u) Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
    - v) Assumptions and Risks
    - w) Lessons from other relevant projects (e.g., same focal area) incorporated into project design
    - x) Planned stakeholder participation
    - y) Replication approach
    - z) UNDP comparative advantage
    - aa) Linkages between project and other interventions within the sector
    - bb) Management arrangements
  - 3.2** Project Implementation
    - cc) Adaptive management (changes to the project design and project outputs during implementation)
    - dd) Partnership arrangements (with relevant stakeholders involved in the country/region)
    - ee) Feedback from M&E activities used for adaptive management
    - ff) Project Finance:
    - gg) Monitoring and evaluation: design at entry and implementation (\*)
    - hh) UNDP and Implementing Partner implementation / execution (\*) coordination, and operational issues

<sup>52</sup>The Report length should not exceed 40 pages in total (not including annexes).

<sup>53</sup> UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008

<sup>54</sup> Using a six-point rating scale: 6: Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- 3.3** Project Results
  - ii) Overall results (attainment of objectives) (\*)
  - jj) Relevance(\*)
  - kk) Effectiveness & Efficiency (\*)
  - ll) Country ownership
  - mm) Mainstreaming
  - nn) Sustainability (\*)
  - oo) Impact
- 4.** Conclusions, Recommendations & Lessons
  - pp)** Corrective actions for the design, implementation, monitoring and evaluation of the project
  - qq)** Actions to follow up or reinforce initial benefits from the project
  - rr)** Proposals for future directions underlining main objectives
  - ss)** Best and worst practices in addressing issues relating to relevance, performance and success
- 5.** Annexes
  - tt)** ToR
  - uu)** Itinerary
  - vv)** List of persons interviewed
  - ww)** Summary of field visits
  - xx)** List of documents reviewed
  - yy)** Evaluation Question Matrix
  - zz)** Questionnaire used and summary of results
  - aaa)** Evaluation Consultant Agreement Form

**ANNEX G: EVALUATION REPORT CLEARANCE FORM**

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Evaluation Report Reviewed and Cleared by

UNDP Country Office

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

UNDP GEF RTA

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## **Annex 9: Terminal Evaluation Audit Trail**

The Terminal Evaluation Audit Trail was developed and submitted to the UNDP CO Malawi in a separate file.

## **Annex 10: GEF Tracking Tool**

The GEF Tracking Tool with terminal results was reviewed and it is annexed in a separate file.

## Annex 11: Terminal Evaluation Clearance Form

Evaluation Report Reviewed and Cleared by	
UNDP Country Office	
Name: _____	
Signature: _____	Date: _____
UNDP GEF RTA	
Name: _____	
Signature: _____	Date: _____