UNEP GEF PIR Fiscal Year 2023

Reporting from 1 July 2022 to 30 June 2023

INSTRUCTIONS TO COMPLETE THIS PIR

1. PROJECT IDENTIFICATION

1.1. Project details

Identification Table		GEF ID.: GEF ID.: 6926	Umoja WBS: SB-013200
		SMA IPMR ID: *Insert*	Grant ID: *Insert*
		Project Short Title: *Lesotho EWS 2*	
Project Title		*"Strengthening climate services in Lesotho for climate resilient development and adaptation to climate change (2nd phase of the LMS/GEF/UN ENVIRONMENT LDCF NAPA Early Warning Project)"*	
Duration months	*Planned*	60 months	
	Age	*30*	
Project Type		*Full-sized Project*	
Parent Programme if child project		*NO*	
Project Scope		*National*	
Region		*Africa*	
Countries		*Lesotho*	
GEF Focal Area(s)		*Climate Change Adaptation*	
GEF financing amount		*US$ 5,000,000*	
Co-financing amount		*US$ 37,060,000*	
Date of CEO Endorsement/Approval		*25 March 2019*	
UNEP Project Approval Date (Decision Sheet)		*25-03-2019*	
Start of Implementation (PCA entering into force)		6 November 2019	
Date of Inception Workshop, if available		*4 November 2020*	
Date of First Disbursement		*6 March 2020*	
Total disbursement as of 30 June 2023		*1,575,988*	
Total expenditure as of 30 June 2023		*767,000*	
Midterm undertaken?		*No*	
Actual Mid-Term Date, if taken		*No*	
Expected Mid-Term Date, if not taken		*April 2024*	
Completion Date	*Planned – original PCA*	*October 2024*	
	Revised – Current PCA	*Insert date as per last revision/ no cost extension if any*	
Expected Terminal Evaluation Date		*April 2026*	
Expected Financial Closure Date		*2027*	

1.2. Project description

The focus of this project is the need to reduce the country's vulnerability and risk to climate change hazards, characterized by irregular and unpredictable rainfall associated with increased floods and landslides as well as seasonal and prolonged droughts, through the development of an Early Warning System (EWS) and enhancing the availability of climate information for long-term planning. The project will be demonstrated in six pilot sites to test the effectiveness of the EWS on "nowcast" weather, flood forecasting and advisories capacity. The LDCF project will achieve this goal through three Components:

***Component 1:** Establishment of necessary infrastructure and human capacity in LMS to enable a fully functional national EWS. Under Component 1, gaps related to the Hydrometeorological infrastructure and capacity of human resources will be bridged through five Outputs which overall aim is to enhance the LMS & MAFS monitoring network and stregthen the human capacity through massive training so to develop a Nowcast based, Medium, Short-term and seasonal forecasting system to support the Early Warning System (EWS);*
***Component 2:** Creation of institutional mechanisms for coordination and implementation of EWS in Lesotho and for use of climate information generated in Component 1 in policy making and sector planning. Component 2 of the project intends to enhance national institutional capacity for taking-up of hydrometeorological services by creating a coherent framework for issuing early warning and advisories in Lesotho.*
***Component 3:** Pilot testing of EWS protocols and response strategies and sustainability plan. In this Component the project will build on the results and lessons achieved in the baseline, to create and pilot test a fully functional national EWS reaching the majority of vulnerable stakeholders in Lesotho. For that, the project will identify the most appropriate and effective channels for communication of climate early warnings to different stakeholders and for different types of weather events/warnings.*

The implementing partner is the Ministry of Energy, Meteorology and Water Affairs (through the Lesotho Meteorological Services (LMS) as lead coordinator for climate change issues in Lesotho) who will execute the project nationally in close collaboration with other national institutions which include the Lesotho Disaster Management Authority (DMA), the Ministry of Agriculture and Food Security (MAFS), National University of Lesotho (NUL) – Department of Geography and Environment Science and Department of Soil Science and Resource Conservation, Ministry of Forestry, Range and Soil Conservation (MFRSC), Ministry of Water: Department of Water Affairs (DWA), Department of Environment (DE) - Ministry of Tourism, Environment and Culture, Bureau of Statistics (BO) as responsible parties, as well as the NGO's & CBO's collaborating in local level pilot interventions of the project in selected pilot communities.

1.3. Project Contacts

Division(s) Implementing the project	*Climate Change Adaptation Unit* *Climate Branch* *Ecosystems Division*
Name of co-implementing Agency	*Lesotho Meteorological Services*
Executing Agency(ies)	*Lesotho Meteorological Services*
Names of Other Project Partners	*Lesotho Disaster Management Authority (DMA),* *Ministry of Agriculture and Food Security (MAFS),* *Ministry of Water: Department of Water Affairs (DWA),* *Department of Environment (DE),* *Ministry of Tourism, Environment and Culture,* *Bureau of Statistics (BO),* *Ministry of Forestry, Range and Soil Conservation (MFRSC),* *National University of Lesotho (NUL) –* • *Department of Geography and Environment Science and* *Department of Soil Science and Resource Conservation*
UNEP Portfolio Manager(s)	*Jessica Troni*
UNEP Task Manager(s)	*Essey Daniel*
UNEP Budget/Finance Officer	*Bwiza Odemba*
UNEP Support/Assistants	*David Ocholla, Ruth Mutinda*

EA Manager/Representative	*Mokoena France*
EA Project Manager	*Mosuoe Letuma*
EA Finance Manager	*Makatleho Matabooe*
EA Communications Lead, if relevant	*N/A*

2. OVERVIEW OF PROJECT STATUS

2.1 UNEP PoW and UN

UNEP Current Subprogramme(s)	*Thematic: Climate action, Nature action*
PoW Indicator(s)	**Strategic objective 1**: "Climate stability". **PoW 2023-2023 Indicators:** (i) Number of national, subnational and private-sector actors that adopt climate change mitigation and/or adaptation and disaster risk reduction strategies and policies with UNEP support (ii) Amounts provided and mobilized in $ per year in relation to the continued existing collective mobilization goal of the $100 billion commitment through to 2025 with UNEP support (iv) Positive shift in public opinion, attitudes, and actions in support of climate action as a result of UNEP action
UNEP previous Subprogramme(s)	*If the Subprogramme has changed, please indicate previous subprogramme(s)*
UNSDCF / UNDAF linkages	*United Nations Development*
Link to relevant SDG Goal(s)	• Goal 1: End poverty in all its forms everywhere. • Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture. • Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable; and • Goal 13: Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy; and • Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
Link to relevant SDG Target(s)	*Assistance Plan | 2016–2021* Goal 13: Targets 13.1, 13.2 and 13.3 Goal 15: Targets 15.3 and 15.5

2.2. GEF Core Indicators:

GEF Core or sub indicators targeted by the project as defined at CEO Endorsement/Approval, as well as results.

Indicators	**Targets – Expected Value**			**Materialized to date**
	Mid-term	**End-of-project**	**Total target**	

Number of direct beneficiaries	39,195 people in 3 districts benefit from 30% reduction in loss and damages	39,195 people in 6 districts benefit from 50% reduction in loss and damages	*Fill*	*127 males and 129 females (Early warning messages dissemination of seasonal climate forecast and advisories for preparedness and better planning against climate hazards for DRR)*
Number of people with enhanced capacity to identify climate risk and/or engage in adaptation measures	At least 30 percent of targeted population (gender disaggregated) in the 6 districts receive early warnings, advisories and weather-related messages by Year 3 and act on them.	39,195 people in 6 districts benefit receive early warnings, advisories and weather-related messages by Year 5 and act on them.	*Fill*	*597 males726 females (awareness on climate change and its impacts, early warning for DRR)*
Training	At least 30 % of training plan targets achieved or close to being achieved by the end of the year 3.	At least 5 Agrometeorologists, 4 Forecasting officers, 20 senior technical officers and 10 GIS/IT technicians and 6 IT maintenance engineers are trained.	*Fill*	*Three LMS employees (1 female and 2 males) graduated on BSc Honours in Meteorology, two candidates (2 males) yet to complete next year. Eleven LMS candidates (9 males and 2 females) trained on installation, configuration and running of numerical weather prediction model for detection and monitoring of extreme weather events. 21 LMS employees (7 males and 14 females) started training on Basic Instruction Package for Meteorological Technicians. 7 LMS employees (6 males and 1 female) trained on Website Content Management for early warning messages dissemination.*

2.3. Implementation Status and Risk

[complete the fiscal year and select: 1st PIR; 2nd PIR; …. Final PIR; select HS; S; MS; MU; U; HU; unknown; not rated to rate the progress towards outcomes and outputs in third and fourth lines; select H; S; M; L; to rate risks for the fiscal year you are reporting in the fifth line. Add more columns if needed]

	FY 2021__	FY 2022__	FY 2023__	FY 20__	FY 20__
PIR #	1st	2nd	3rd	4th	….
Rating towards **outcomes (DO)** (section 3.1)	MS	S	MS		
Rating towards **outputs (IP)** (section 3.2)	MS	MS	S		
Risk rating (section 4.2)	M	S	M		

Summary of status. Please structure as follows, highlighting progress, challenges and main achievements, as needed:

Initially, the project faced some delays, from the start till March FY2020, given the need for setting up of office for the PMU, contracting the CTA. Regrettably, all activities were suddenly brought to a standstill due to the outbreak of the COVID-19 Pandemic and the restrictions on the movements of the citizens all around the country and globally. One immediate consequence of this situation was the immediate cancelation of the foreseen first visit of the CTA to the country indefinitely due to global travelling restrictions. Nevertheless, Inception Workshop was successfully organized and delivered with participation of 55 participants, the maximum number of individuals allowed to gather due to COVID-19 restrictions and 84 participants including those from the districts who connected online and attended the workshop virtually through the MS Teams Platform.

Although the activities were affected in this way by the COVID-19 constraints for several months and these are still behind schedule, project implementation is progressing with key achievements being outlined below. To ensure good coordination and maximum benefit on the existing synergies between the GEF – EWS project and AF-WFP project, both projects share the same Project Steering Committee, housed in one building and both report to Director LMS for execution of day-to-day plans and activities. Moreover, the two projects agreed on contributing towards the payment of Chief Technical Advisor that is engaged by the GEF-EWS project still to ensure well-coordinated and complementary of project activities right from the designing and planning of activities. The three projects have together established a Technical Working Group at the national level, that provides the technical backstopping to the design of activities. There is also a proposal for LRCS to be a member of the PSC.

Under Component 1, the project contributed to cover the gaps in the LMS & MAFS monitoring network by conducting a baseline assessment with LMS to determine the actual number of stations per category that are required. Following the Baseline Assessment report on equipment, procurement has been launched for the following automatic weather stations:

- Agrometeorological stations (9)
- Synoptic stations (1)
- Climate stations (15)
- Lightning detection system (3)
- Rainfall stations (48)

A number of parts will also be procured to repair the old automatic weather stations, these include solar panels, temperature, rainfall, wind and pressure sensors. Simultaneously, the baseline assessment with LMS included the need for increasing the Computing Power and the ancillary equipment to support a “nowcast” based, Medium, Short-term, and seasonal forecasting system. Therefore, the Procurement under way will also include a High-Performance Cluster Computer (HPC) and acquire 5 advanced running LINUX workstations (fast, high memory capacity and high resolution) to archive and process data from EWS network.

In addition, still under Component 1 the project also contributed towards the strengthening of LMS Human capacity to use the rehabilitated and upgraded network by conducting a Human Resource capacity needs assessment for LMS staff which allowed the identification of relevant training courses/ on-the-job capacity development programmes. Owing to this exercise the following Training Courses and Capacity Development Programmes have been identified:

A. Training Programmes:
    - BSc Hons in Meteorology (14 candidates)
    - Meteorological Technician Basic Instruction Package (BIP-MT) (34 candidates)
B. Capacity Development Programmes:
    - Automatic Weather Stations (AWS) Management (10 candidates)
    - Meteorological Broadcasting (13 candidates)
    - Numerical Weather Prediction (NWP) (10 candidates)
    - Quality Control of Climate Data (9 candidates)
    - Coding and decoding of meteorological messages (6 candidates)
    - Climate modelling, including climate change scenarios development (12 candidates)
    - High Performance Computing
    - GIS, Data and Information
    - Early Warning Message Packaging
    - Seasonal Forecasting

Currently, the first 5 out of the 14 candidates have already been enrolled with University of Pretoria for the bridging course to BSc Honours in Meteorology. The project team has approached various institutions for the provision of additional courses required with considerations of availability of full-time online courses to avoid covid-19 related restrictions.

The assessment further identified a need for long term training on Electronics to enable deeper understanding of AWS and how they function, and on NWP to enable usage of various models that could assist in making the consensus forecast.

The MESA project was identified, during the design of EWS II project, as having the products that would add a lot of value for monitoring and informing early warning system in the four monitoring services. Given the Covid-19 related constraints in procurement, the PMU and CTA have begun an internal assessment of the current status of operationality of the "The Monitoring of the Environment for Security in Africa — MESA" system hosted five Lesotho institutions and identify any constraints that needs to be addressed to make it operational again while waiting for the GMES the next MESA follow-up programme. The host institutions are the National University of Lesotho, Disaster Management Authority, Department of Environment, Ministry of Agriculture and Food Security and Lesotho Meteorological Services.

The Monitoring of the Environment for Security in Africa (MESA) was focused on using Earth Observation (EO) data and information products for environment and sustainable development, specifically designed for African users at continental, regional and national levels. At the Southern African Development Community SADC region, the MESA project was aimed to develop and operate four (4) main monitoring services, covering Agriculture services, Drought services, Flood services and Wildfire services for the purpose of early warning.

Under Component 2, the project established the national Technical Working Group (TWG) with a cluster for provision of technical backstopping at the national level. The TWG serves this project, the Adaptation Fund funded "Improving adaptive capacity of vulnerable and food-insecure populations in Lesotho — (IACoV)" project and the Red Cross "Forecast Based Financing" project and is composed of various stakeholder institutions and has five clusters namely Capacity Building & Training, Communications & Awareness, Early Warning, Finance and Livelihoods. District-level TWGs will also be formed to ensure ownership of project activities by the district authorities and technocrats. This will contribute towards the objective of component 2 for the creation of institutional mechanisms for coordination and implementation of EWS in Lesotho and for use of climate information generated.

Under Component 3, the project developed the Terms of Reference (TORs) for Baseline and Vulnerability Assessment Consultancy and launched the procurement process. COVID-19 related constraints have been delaying the conclusion of this process. However, it is expected that the Consultancy firm will undertake the on-the-ground activities by the 3rd Quarter depending on the restrictions to be put in place by the Government due to COVID-19. The development of a baseline survey and collection of as much relevant qualitative and quantitative data/values as possible on the status of all indicators, will support implementation of all project Outcomes and Outputs in the results framework and relevant indicators in the GEF Tracking Tool. This Consultancy will also gather primary data on loss and damage from previous climate shocks as the baseline to measure project effectiveness. Information gathered by this Consultancy will contribute for the climate change risk mapping in 6 project Districts and the planning of community awareness raising activities.

Rating towards outcomes: The rating is MS. Due to the unforeseen delays in the start of key activities such as Baseline and Vulnerability Assessment, hindering movement of international and national consultants, some subsequent activities could not start. However, as a counter strategy, the PMU together with the CTA and LMS conducted LMS baseline assessment on equipment and human resource, resulting in preparation of HPC and AWS tender documents and enrolment of BSc Honors students.

Rating towards outputs: The rating is S. Most of the follow up activities could not start, but a lot of groundwork has been made, particularly on activities in outputs 1.1, 1.3 and 1.4.

Overall risk rating: The overall risk rating for implementation is rated M. While the overall risk is moderate, the PMU has identified specific risks that rate high and need close monitoring and enhancement of mitigation strategies. The significant delays in procurement of HPC and Automatic Weather Stations is

continuing to negatively impact on most subsequent activities. The PMU and CTA are engaging strongly with WFP to speedup delivery of this equipment under the Service Level Agreement. [section will be uploaded into the GEF Portal]

2.4. Co-financing

Planned Co-finance Total: **Actual to date:**	*37,060,000* *Cumulative $11,442,665 constituting 30.1% of the total co-finance budget as at 31 December 2022*
Progress	*(Maximum one paragraph)* *At the time of Project development, the project activities were built from existing development baseline initiatives at national and regional level foreseen to contribute to $37,060,000 as co-financing. However, since then, several of the projects have been completed and the overall co-financing scenario has changed. Of particular importance are the following baseline projects which have already contributed to in-kind and cash co-financing to the LDCF-funded project:* • *AF-WFP Project "Improving Adaptive Capacity of Vulnerable and Food Insecure Populations in Lesotho (IACOV)" grant contributions of $1,865,000 in cash towards the acquisition of HPC cluster computer procurement of Automatic weather stations, capacity building of LMS of Seasonal Forecasting and Anticipatory Action Planning among others. On seasonal (long-range) forecasting, IACOV in collaboration with the International Research Institute for climate and Society in Columbia University, New York, to feel the LMS observations data gabs using satellite date and other tools. They have also bult LMS Capacity on pyCTP are one of powerful tools for long-range forecasting. For early warning enhancement, the project is working with LMS on Anticipatory Planning to enable triggering of early warning messages.* • *This equipment will serve both projects and will in Outcome 1 contribute towards strengthening of sub-seasonal to seasonal precipitation and temperature forecasting to feed into National Early Warning System to trigger early action through government safety net programmes. In addition, this project also intends to strengthen access to better climate and weather information through the identification of most suitable dissemination channels; and to carry out training and capacity building of key stakeholders including media, NGOs, ICT providers, community radios, Red Cross, District Disaster Management Teams (DDMTs), Village Disaster Management Teams (VDMTs). All these activities will be in support of this EWSII project overall objectives..* • *Red Cross Forecast Based Financing project grant contributions of $110,000 in cash towards drought Scoping, Setting triggers for snow and cold waves as well and seasonal forecast verification. These activities contribute to strengthen the institutional mechanism for disaster risk governance at both the national and local levels; and to reduce hazard exposure and vulnerability to disasters through comprehensive public and private investments in DRR. These specific objectives concur towards the achievements of this EWSII Outcome 2.* • *The SADC MESA follow up project, ClimSA has commenced and to this effect, a $25,000 worth server has been delivered in Lesotho for both Numerical Weather Prediction and Environmental monitory system, to enhance the country's early warning activities to ensure the communities resilience against the impacts of climate change.*

	• *The project has also secured Co-financing from the National University of Lesotho (NUL) of 1,300.000USD through the establishment of an MOU where NUL will develop some of Project's key activities.* • *UNEP and LMS are exploring additional co-financing opportunities including attract an additional Co-financing from the Intra-ACP Climate Services and Related Application programme (ClimSA) which was initiated through a partnership between the EU and the OACPS Secretariat. Once the project provides LMS access to satellite data, co-financing will be approximately 400,000 in kind.* *In summary, the financing from the activities of these three projects is additional to the GEF grant and is directly supporting the achievement of the project objective especially outcomes 1 and 2.*

2.5. Stakeholder engagement

Date of project steering committee meeting	*3rd to 5th May 2023*
Stakeholder engagement	*Both the AF-WFP and the Red Cross aim at the strengthening of EWS seasonal forecast and advisory component. Therefore, they both share two of the districts EWSII is working and major stakeholders at national level. For this reason, we also share the same PSC and TWGs.* *The main stakeholders identified under the stakeholder participation plan in the CEO endorsement have been engaged in the project implementation. This includes the Lesotho Disaster Management Authority (DMA), the Ministry of Agriculture and Food Security (MAFS), National University of Lesotho (NUL) – Department of Geography and Environment Science and Department of Soil Science and Resource Conservation, Ministry of Forestry, Range and Soil Conservation (MFRSC), Ministry of Water: Department of Water Affairs (DWA), Department of Environment (DE) - Ministry of Tourism, Environment and Culture, Bureau of Statistics (BO) as responsible parties. The above sstakeholders were consulted throughout the implementation period for various reasons to: i) discuss common implementation issues during the Inceptions Workshop; ii) to assess the status of the MESA Platform; iii) LMS has been proactive in the undertaking of the Baseline Assessment on equipment and human resources.* *The project is in the process of signing specific and tailored MoUs with the various stakeholders and so that each of them will be in charge of developing specific Project Output/activities. Therefore, it is expected that:* • *LMS will lead some of the Outputs/activities of Component 1, particularly those concerning the installation of the new equipment under procurement and operationalization of the monitoring network. The procurement and acquisition of this equipment is already underway and a formal MOU with LMS will be drafted to guide the installation process as well as the operationalization of the monitoring network.* • *LMS, NUL & MAFS will be leading the Organisation and delivery of the Training programme for technical staff on Middle Meteorological Technician Course (MMTC) – Met Observers WMO Class III. The MoU has been signed and was launched in May 2023. The action plan that implements the MoU has also been signed and several course has commenced. The course is delivered in partnership with Regional Meteorological Training Centre Pretoria with WMO's financial support* • *LMS and NUL are in charge of the Establishment of Climate Change Information Platform (EWS-CCIP). This activity is included in the above MOU and has commenced. A ClimSA (SADC MESA followup project) server has been recently delivered and is currently being connected. Products from*

	ClimSA will be incorporated in the CCIP for early warning products and services. • *LMS and NUL will lead the activities related to the development of Climate change risk mapping to be carried out in 6 project Districts. This activity will start in August 2023.* • *LMS and DMA will lead the activities related to the establishment of the Community based EWS (CB-EWS) piloted and evaluated is developed in 6 Districts*. DMA is the mandated institution for delivering Early Warning in the country, and at the district level, they administer District Disaster Management Teams and deal directly with the target communities utilizing their already operational district structures. MOUs will be signed with DMA at the national level, but commitment will cover the district offices to utilize their already operational district structures. Also, the District Planning Units under the Local Government act shall ensure proper coordination at the districts. *This activity is foreseen to start in F*ebruary*2024.* [section will be uploaded into the GEF Portal]

2.6. Gender

Does the project have a gender action plan?	*Yes,*
Gender mainstreaming	*The implementation of the different project activities up to this date namely the Inception Workshop, the various PSC meetings and the Establishment of Technical Working Group (TWG) ensured that gender equity was taken into account, and it will continue to be in future planned activities. For example, as part of the participatory approach developed for the Baseline and VIA study, District and Village Disaster Management Teams (DDMT & VDMT's), extension officers in the project sites and local authorities, CBOs and CSOs in the remote districts engaged on the generation of local risk and vulnerability maps will ensure women's attendance and fair representation in the workshops, to guarantee gender inclusivity and consideration of their needs, capacities, knowledge and role in the communities. In addition, gender rights and protection against any harassment have been strengthened in the recently developed Grievance Redress Mechanism document specifically developed for this Project.* *Moreover, gender disaggregated indicators and targets have also been defined in the results framework and the draft M&E strategy of the project. Four of the eight Outcome indicators in the project results framework monitor gender equity. Currently Project Manager, is responsible for implementation of the GAP while awaiting the contract of the M&E officer which will be in place by the next PIR.*

2.7. Environmental and social safeguards management

Moderate/High risk projects (in terms of Environmental and social safeguards)	Was the project classified as **moderate/high risk**? *No* If yes, what specific **safeguard risks** were identified in the SRIF/ESERN? *If yes, describe the specific safeguard risks that were identified in the SRIF/ESERN.* This project was screened a low risk project in the UNEP Screening note. As the project will development of EWS and ancillary risk and hazard prediction and projections, it is expected to have net environmental and social benefits through risk and hazard prediction and projections that will be used to anticipate negative

	impacts into communities and environment. Land required for installation of meteorological equipment is minimal and there is no expected land acquisition in this project. All the communities, NGOs and CBOs contacted were willing to engage and collaborate in the project design process and no human-right issues have been identified. Hence, the proposed project has minimal or negligible environmental and social impacts that could affect indigenous people or other vulnerable groups of the communities where the project will be piloted. In addition, the Grievance Redress Mechanism has been developed and the first draft has been presented to the PSC. It is currently under further development and will be shared with broader stakeholders for inputs and adoption. The Environmental, Social and Economic Review Note conducted during the design of the project still holds and no need for modifications.
New social and/or environmental risks	Have any new social and/or environmental risks been identified during the reporting period? *No new social or environmental risk has been identified to date*
Complaints and grievances related to social and/or environmental impacts (to be filled in by TM and EA)	*/No* The project has not received any complaints related to social and/or environmental impacts (actual or potential) during the reporting period. However, as a matter of precaution a Grievance Redress Mechanism strategy has been developed and the first draft has been presented to the PSC. It is currently under further development and will be shared with broader stakeholders for inputs and adoption.
Environmental and social safeguards management	The project intends to establish a fully functional national EWS, capable of providing timely and relevant warnings to a wide group of stakeholders and sectors at the national, regional, and local level. Mechanisms have been put in place for enhanced coordination of policy and sector planning in response to scenarios generated from the improved EWS, including systems to better couple climate and socioeconomic data and scenarios. At CEO Endorsement/ Approval the project ESE Screening Decision classified the project as Low risk with negligible Negative impacts and no further study or impact management being required. Therefore, the project will not likely result in significant, irreversible environmental and/or social impacts as assessed at CEO approval. However, some additional or modified potential risks of unintended environmental and social impacts have also been identified during project implementation, as outlined below. One of these is the likelihood of having inequitable negative impacts on gender equality and/or the situation of women and girls. For that, a Grievance Redress Mechanism has been developed and the first draft has been presented to the PSC. It is currently under further development and will be shared with broader stakeholders for inputs and adoption. Finally, one potential risk that has not yet materialized but that should be monitored, is related to the theft and Vandalism of early warning and climate monitoring equipment. This is a risk of eventual conflict with surrounding communities.

2.8. Knowledge management

Knowledge activities and products	This LDCF project builds on earlier project and strengthens those previous activities by including among other activities, a component aimed at increasing awareness and capacity for government and local stakeholders for reducing risks of climate induced losses in the agriculture sector. Specifically, a knowledge outreach programme for awareness raising and training on climate change risk

	impacts is designed and implemented to enhance decision-making and foster public awareness. It is anticipated that training events will take place at national, district and community level aiming at raising awareness of senior Government technical officers and policy makers linked to planning and risk prevention drawn from the major sectors as well as district community leaders as trainers on Climate Change impacts Vulnerability Assessment and EW preparedness. Communication of warnings and advisories to users and remote communities in the six target districts will be carried out using a variety of channels and vehicles from the traditional media channels (newspaper, radio & TV) to local community radios (LCRs) and community gathering using local languages for a speedy and targeted dissemination. The dissemination of vulnerability mapping work and risk assessment conducted in the target districts as well as the project results will be carried out among other means through an interactive user-friendly web portal established under the DMA and to be developed through the EWS-CCIP. Workshop and trainings will also be delivered. The training sessions of senior Government technical officers and policy makers and district community leaders coupled with the results from the participatory risk/hazard mapping and climate change projections and resulting impacts of such risks will facilitate the mainstreaming of climate change impacts on the sector planning at national and district/community level. [section will be uploaded into the GEF Portal]
Main learning during the period	*Procurement of specialised equipment/ services should be tendered in different lots to enable specialising suppliers to tender for any lot, as opposed to combining the items in one tender. This would significantly speed up procurement processes*

2.9. Stories to be shared

Stories to be shared	• The project facilitated development of seasonal climate outlook for the 2022/2023 rainfall season and its dissemination through National Outlook Forum (NCOF) in Maseru and District Outlook Forums (DCOFs) in Qacha's Nek, Mokhotlong, Thaba-Tseka, Berea, Leribe, Botha-Bothe, Quthing, Mohale's Hoek and Mafeteng for preparedness and better planning. The initiative went a long way and was highly appreciated by the district techno grads and the community leaders. However, there is still a big gap in the interpretation of meteorological products such as the seasonal forecasts. It is therefore recommended that further training be conducted at district and piloting community councils levels. • Awareness (public gatherings) on Climate Change, Early Warning and the importance of Automatic Weather Stations conducted from the December 2022 to June 2023 in the villages where AWSs will be installed to sensitize communities to protect the AWS equipment. All the districts have been covered, but the campaigns were confined to the only villages when new AWSs will be installed. The communities appreciated the information shared but in most cases, they needed more detailed clarifications, particularly on climate change impacts as most of them have since been associating the impacts with cultural and religious believes. They highly welcomed the activity that is going to gather the indigenous knowledge and compare with the meteorological observations with the intensions of documenting the synergies. [section to be shared with communication division/ GEF communication]

3. PROJECT PERFORMANCE AND RISK

3.1 Rating of progress towards achieving the project outcomes (Development Objectives)

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating[1]
Objective: *To strengthen the climate monitoring capabilities, early warning systems and human resources in Lesotho in order to effectively address climate impacts and better plan adaptation to climate change*	# maloti lost per year due to climate-related impacts	The vulnerability of the sites is high. The baseline losses and damages will be determined during the inception phase.	***N/A***	50 percent (%) reduction in loss and damages for 50% of the people living in the 6 project communities (total population: 78391 in 366 villages)	30%	The project strategy is for early warning advisories to be acted upon by communities to reduce loss and damage. The process to develop the early warning advisories has been started through three key steps: i) setting up coordination structure ii) procuring systems and training for staff to run the EWS and iii) EW advisory development by scoping out the hazards and impacts to be mitigated.	MS
Outcome 1 *Hydrometeorological infrastructure is installed, and capacity of human resources built that will cover the country-wide needs to sustainably operate it, building on the recent identification of specific software and hardware equipment and*	1.1. Number of fully operational additional AWS to strengthen current LMS networks.	1.2. No fully operational network stations with a number of faulty AWS, no Agromet stations, not automatized rainfall stations.	***N/A***	1.1 A total of 76 AWS which includes,9 Agromet, 1 Synoptic, 3 Lightning, 48 rainfall stations and 15 climate stations installed. 1.2 About 6 new stations sites established and rehabilitation of 20 stations are in operation in the LMS network by the end of project.	40%	*The AWSs are expected to be delivered by September 2023 and installation will follow next. The entire process is expected to last till December 2023. As the main High Performance Computer has been also delivered and installed and the LSM personnel trained by the end of August it is anticipated that once all stations are installed they start sending data to the server computer by December 2023.*	*S*

[1] Use GEF Secretariat required six-point scale system: Highly Satisfactory (HS), Satisfactory (S), Marginally Satisfactory (MS), Marginally Unsatisfactory (MU), Unsatisfactory (U), and Highly Unsatisfactory (HU).

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating[1]
associated training in Lesotho	1.2 Number of fully operational additional AWS to strengthen current MAFS Agromet network.	1.2 Four deceased Agromet AWS not functioning in the target areas.	***N/A***	1.2 At least 4 new Agromet AWS in operational in the MAFS network by the end of the project.	30%	The project contributed to cover the gaps in the MAFS monitoring network by conducting a baseline assessment with LMS to determine the actual number of stations per category that are required. Contract has been signed for the supply and installation of AWS by SIAP+MICROS. The contract has been effective from October 2022 to August 2024. The expected time of delivery of the 9 Agrometeorological stations is August 2023. Civil works to be completed by July 2023. Installation is planned to start immediately after delivery and be completed by December 2023.	*S*

	1.3 Number of trained technical staff for strengthening LMS forecasting and development of early warning & advisory products.	1.3. Inadequate quantity and quality of human resources to carry out early warning & advisory products. Detailed baseline situation to be determined at the inception phase.	***N/A***	1.3 At least 5 Agro-meteorologists, 4 Forecasting officers, 20 senior technical officers and 10 GIS/IT technicians and 6 IT maintenance engineers are trained. 1.4A gender balance achieved in the selection and participation of the trainees.	40%	In addition, still under Component 1 the project also contributed towards the strengthening of LMS Human capacity to use the rehabilitated and upgraded network by conducting a Human Resource capacity needs assessment for LMS staff which allowed the identification of relevant training courses/ on-the-job capacity development programmes. Owing to this exercise the following Training Courses and Capacity Development Programmes have been identified: C. Training Programmes: - BSc Hons in Meteorology (14 candidates) - Meteorological Technician Basic Instruction Package (BIP-MT) (34 candidates) D. Capacity Development Programmes: - Automatic Weather Stations (AWS) Management (10 candidates) - Meteorological Broadcasting (13 candidates) - Numerical Weather Prediction (NWP) (10 candidates) - Quality Control of Climate Data (9 candidates) - Coding and decoding of meteorological messages (6 candidates) - Climate modelling, including climate change scenarios development (12 candidates) - High Performance Computing - GIS, Data and Information - Early Warning Message Packaging - Seasonal Forecasting The training is intended for the already employed staff of LMS. Maybe the best way at this point is just to collect gender segregated data. The Baseline assessment shall determine the targets for these. **Currently, the first 7 (6 males and 1 female) out of the 14 candidates have already been enrolled with University of Pretoria, 4** for the bridging course to BSc Honours in Meteorology	*MS*

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating[1]
						and 3 for the actual BSc Honours in Meteorology. The Memorandum of Understanding has been sent to NUL for review to guide the partnership between LMS and NUL and development and delivery of Basic Instruction Package for Meteorological Technician (BIP-MT) course (WMO Class III equivalent). Several meetings have been held with WMO Education and Training and WMO RTC Pretoria for involvement, guidance and partnership moving forward. MOU signed between LMS and NUL. The BIP-MT training with the support of WMO RTC Pretoria and NUL has started in June 2023 for the first 21 trainees (**7 males and 14 females**). Two (2) candidates were accepted for 2nd year BSc Hon in Meteorology program with University of Pretoria to be enrolled full time in 2023 after successful completion of 1st year bridging program. Due to study leave challenges their acceptance letters have been differed to next year 2024. Three (3) students (**1 female and 2 males)** have successfully completed BSc Hons in Meteorology and graduated on the 20th of April 2023.	

Project objective and Outcomes	Indicator	Baseline level	Mid-term target	End-of-project target	Progress as of current period (numeric, percentage, or binary entry only)	Summary by the EA of attainment of the indicator & target as of 30 June 2023	Progress rating[1]
Outcome 2 *Enhanced institutional capacity for take- up of hydrometeorological services*	2.1 Number of Economic risk models and advisories, and establish roles and responsibilities are developed for the 6 Districts at the end of the project	2.1. No Economic risk models and advisories and establish roles and responsibilities have been developed in the 6 districts.	***N/A***	2.1 Economic risk models and advisories, and establish roles and responsibilities are developed in all 6 districts by the end of the project. 2.2 A gender balance achieved in the Working Groups convened for the advisories development,	30%	The project developed the Terms of Reference (TORs) for Baseline and Vulnerability Assessment Consultancy and launched the procurement process. Following the retender process, the award letter to the preferred bidder has been approved. The date and time for negotiation and signing of the contract will be in July 2023. This Consultancy will also gather Information contributing for the climate change risk mapping in 6 project Districts and the planning of community awareness raising activities which will eventually feed into the Economic risk models.	*MS*
Outcome 3 *More effective, efficient, targeted and sustainable delivery of timely climate information including early warnings to local communities*	3.1 Percentage of targeted population (men and women) in the 6 districts receiving early warnings, advisories and weather-related messages to test effectiveness of EWS as end users.	3.1 Currently there is no targeted dissemination of early warnings, advisories and weather-related messages through Local Radios and/or wireless communication channels in the 6 target districts.	***N/A***	3.1 At least 50 percent of targeted population (gender disaggregated) in the 6 districts receive early warnings, advisories and weather-related messages by Year 5 and act on them.	30%	This is contingent on finalizing Outcome 2 deliverables.	*MS*

3.2 Rating of progress implementation towards delivery of outputs (Implementation Progress)

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
COMPONENT 1: Establishment of necessary infrastructure and human capacity in LMS to enable a fully functional national EWS.					

[2] Outputs and activities (or deliverables) as described in the project logframe (and workplan) or in any updated project revision.
[3] The completion dates should be as per latest workplan (latest project revision).
[4] As much as possible, describe in terms of immediate gains to target groups, e.g. access to project deliverables, participation in receiving services; gains in knowledge, etc.
[5] To be provided by the UNEP Task Manager

Output 1.1: To cover the gaps in the LMS & MAFS monitoring network: 3 synoptic stations, 15 new automatic rain gauges, 6 new Agromet stations are installed following WMO standard; and 12 manual stations are upgraded following WMO standards to address the Minimata Convention requirements, 12 other Stations of various types are repaired.	*December 2023*	**38%**	*45%*	The revised terms of reference and Technical Specifications for the Supply and Installation of Automatic Weather Stations (AWS) and Integration of data from old Automatic Weather Stations was finalized. The WFP Long Term Agreement (LTA) approach was utilized however, limitations were identified, resulting the second retendering for the Automatic Weather Stations. To increase the competitiveness, six bidders were also invited from the previous UNEP procurement of the similar equipment, however, only a total of three bidders (but still enough for competitiveness) submitted proposals which are considered for assessment/ evaluation. Evaluation/ assessment conducted for the three bidders who submitted proposals. Held meetings to seek technical and financial clarifications from the three bidders. Working towards awarding the contract to the preferred bidder(s). The tender shall also integrate data from old stations into one central database to be provided with the new AWSs. A Baseline Assessment was conducted together with the CTA and LMS to determine the actual number of stations per category that are required. The procurement has been launched for the following automatic weather stations: - Synoptic stations (1)[6] - Climate stations (15)[7] - Lightning detection system (3)[8] - Rainfall stations (48)[9] Initiated consultations with Department of Civil Aviation to ensure that the rehabilitation process will not be negatively affected by the Airport Upgrading project. Service providers have been contacted for assessment of the possibility of optic fibre network and its requirement. The service provider has indicated that LMS headquarters is within their optic fibre network. Awaiting quotations from service provider for upgrading both networks. The issue of sustaining the network costs beyond project lifetime should be addressed by Output 1.5 Site visits were conducted by one supplier to assess the telecommunications and network of LMS Headquarters and Forecasting Office at Moshoeshoe I International Airport and still awaiting for the quotation for the indicative costs to check the procurement method to be used. Signed contract for the supply and installation of AWS by SIAP+MICROS for the following stations: - Synoptic stations (1)[10] - Climate stations (15)[11]	*MS*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
				- Lightning detection system (3)[12] - Rainfall stations (48)[13] The contract has been effective from October 2022 to August 2024. There have been delays on production of the equipment by the supplier. The reviewed expected time of delivery of stations is August 2023. Civil works to be completed by July 2023. Installation is planned to start immediately after delivery and be completed by December 2023. Training scheduled in October 2023. The same supplier of new AWSs has been assigned to assess the status of old AWSs and make recommendations for replacement of malfunctioning sensors, as well as integration of data from old AWS into a new central database. According to the results of assessment report submitted by the Optec company subcontracted by SIAP+MICROS, several parts will be procured to repair the old automatic weather stations, these include solar panels, temperature, rainfall, wind, and pressure sensors, depending on the final assessment report. Purchase order issued for network upgrade of Forecasting Office at Moshoeshoe I International Airport. Request letter to extend government fibre network link for LMS at Moshoeshoe I has been made to Ministry of communications.	

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
Activity 1.1.1 *optional (to be decided by TM[14])*					

[14] The Task Manager will decide on the relevant level of disaggregation (i.e. either at the output or activity level).

Output 1.2: A Nowcast based, Medium, Short-term and seasonal forecasting system is developed through the strengthening of Forecasting tools.	*December 2023*	**22%**	70%	Signed contract for: I. Supply of hardware and Operationalisation of High-Performance computer and 5 Linux-based workstations by Datacentrix. II. Installation and customisation of Numerical Weather Predictions models to enhance early warning products by Weather Information Solutions (WIS). The High-Performance computer and 5 Linux-based workstations has been delivered in April 2023. The contract for NWP models was adjusted to enable the supplier (WIS) to carryout installation of Limited area model (WRF) and hands-on training in January 2023, before the actual delivery of the HPC. The inception reports have been reviewed and signed. LMS is also in talks with the ICON model developers for free operational license of ICON model, ICON replaces COSMO. Installed WRF model on LMS mini-cluster and conducted hands on trainings for LMS personnel. Facilitated training on Website content management by WIS to enhance information dissemination platforms to make weather and climate information readily available for early warning. Received log in credential for ICON and have started installation of ICON model on the mini cluster while waiting for the signed copies of the licence. Conducted stakeholder consultative meetings for development of impact-based forecasting tools. Development of severe weather forecasting diagnostic and impact-based forecasting to follow installation of limited area models on the HPC. The ToRs for selective tendering for SADIS have been finalised. Limited competitive tendering for the supply and installation of SADIS have been approved by the tender panel, tender notice to potential suppliers to be issued in July 2023. MOU between LMS and NUL has been signed which will address MESA-SYNEGIE activities. LMS has recently received new server (MESA follow up system) from SADC ClimSA programme. The server has various products for Agriculture, Early Warning and Fire. Arrangements are underway to host the servers in the government data centre.	*S*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
				The workstations have been procured under the Service Level Agreement signed between UNEP and WFP and are about to be installed and operationalised. The tender evaluation for installation and operationalisation of models on the HPC was completed and will be soon the preferred bidder has been awarded the contract. The WRF model has been installed in the mini cluster and training conducted for LMS Forecasters and Technicians. The ICON model shall be installed in July 2023 when the configuration of HPC has been completed. This will also be followed by training The LMS Nowcast based, medium, short term and seasonal forecasting system will be achieved after the installation of HPC, the (2-way VSAT- SADIS and MESA follow up GMES system, as well as the training on practical and operational use of HPC for data mapping and installation, configuration and automation of the WRF and COSMO Limited Area Model. The SADC MESA followup project, ClimSA has started and a server has been received by LMS. The server is currently being installed at the data centre in the Ministry of Science and Technology. The ClimSA products will be used for monitoring of hazards for early warning purposes, and they will be integrated in other forecasting tools and products. Approval by the new ministry has been attained to conduct limited tendering since SADIS is a highly specialised product that very few companies provide globally. The tender will be issued during the second week of July.	

Output 1.3: Human capacity programme to use the rehabilitated and upgraded network is developed through training of existing staff and new recruitments including at least 5 Agro-meteorologists, 4 Forecasting Officers, 20 Senior Technical Officers and 10 GIS/IT operators/Technicians and 6 IT Maintenance & Repair Technicians	*2025*	**32**	55%	The Baseline and Vulnerability assessment award decision that was made by the previous Ministry has been adopted by the new Ministry. Currently drafting the contract which shall be signed during July 2023. The first 5 of 14 candidates have enrolled with University of Pretoria for the bridging course to BSc Honours in Meteorology. Training institutions have been approached for provision of other courses, and the issue of making provision for fulltime online training has not been secured. The Human Resource capacity assessment was finalized for LMS staff and identified relevant training courses/ on-the-job capacity development programmes offered by South African Weather Service (SAWS), University of Pretoria (UP) and University of Cape Town Climate Systems Analysis Group (UCT CSAG). Based on the Capacity Assessment together with what is available on the market, the following Training Courses and Capacity Development Programmes have been identified: E. Training Programmes: - BSc Hons in Meteorology (14 candidates) - Meteorological Technician Basic Instruction Package (BIP-MT) (34 candidates) F. Capacity Development Programmes: - Automatic Weather Stations (AWS) Management (10 candidates) - Meteorological Broadcasting (13 candidates) - Numerical Weather Prediction (NWP) (10 candidates) - Quality Control of Climate Data (9 candidates) - Coding and decoding of meteorological messages (6 candidates) - Climate modelling, including climate change scenarios development (12 candidates) - High Performance Computing - GIS, Data and Information - Early Warning Message Packaging - Seasonal Forecasting The assessment further identified a need for long-term training on Electronics to enable deeper understanding of AWS and how they function, and on NWP to enable usage of various models that could assist in making the consensus forecast.	*S*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
				Out of the planned 14 candidates, seven (7) students are undertaking BSC Hons in Meteorology program at University of Pretoria three of which have completing and graduated in April 2023. Two students were not successful in the course. The last two candidates will undertake their last year in 2024 where their admission was deferred due to late awarding of study leave by the Government. An MoA between LMS and NUL was signed in January 2023. The Action Plan of this MoA was signed and officially launched in May 2023. The funds will therefore be transferred for NUL to execute the activities. The MoA among other activities, will ensure development of course material and training on GIS/IT and Agrometeorologists. Two (2) candidates were accepted for 2nd year BSc Hon in Meteorology program with University of Pretoria to be enrolled full time in 2023 after successful completion of 1st year bridging program. Due to study leave challenges their acceptance letters have been differed to next year 2024. Three (3) students have successfully completed BSc Hons in Meteorology and graduated on the 20th April 2023.	

Output 1.4: Advanced Meteorological Technician Course (AMTC) - Met Forecasters WMO Class II and Middle Meteorological Technician Course (MMTC) – Met Observers WMO Class III professional courses developed to meet the needs generated through staff turnover.	*December 2024*	**20%**	*40%*	AMTC refers to the old WMO Class II course or equivalent, and this has been replaced by the BSc Honors in Meteorology course that was identified by the Capacity Assessment Report conducted at the beginning of the project, and the progress made so far has been reported under output 1.3 above. To this effect, 7 out of 14 candidates have enrolled with the University of Pretoria since March 2021. At CEO, the output 1.4 refers to Middle Meteorological Technician Course (MMTC), however within the WMO Class III refers to the Aeronautical Meteorological Observer (AMO) as specified in the WMO Basic Instruction Package for Meteorologist Technician (BIP-MT) as a specialty for aviation purposes. In order to avoid further delays in implementing this activity, the project relies on the outcome of the internal Baseline Assessment that was conducted together with the CTA and LMS which has confirmed the need for a course development to train about 34 Middle Meteorological Technician Course (MMTC) – Met Observers WMO Class III. The National Meteorological Technician Expert was engaged since mid-March 2022 for a period of 24 months. The National Meteorological Technician Expert is coordinating this activity under the PMU guidance, bringing together all the partners, i.e., NUL, LMS, MAFS, WMO RTC Pretoria, WMO ETRP, etc. The primary purpose of this assignment is to manage the overall activities linked to Meteorology foreseen to be implemented by the project, but in particular to provide support in the 26 organization and implementation of the training programme to selected LMS staff to attain competency as Aeronautical Meteorological Observer (AMO) as specified in the WMO Basic Instruction Package for Meteorologist Technician (BIP-MT). Therefore, the assignment will cover detailed planning of the training modules for aeronautical observers (BIP-MT) at LMS. Several meetings have been held with NUL, WMO RTC Pretoria and WMO ETRP separately. The draft MOU has been shared and discussed with NUL and awaiting feedback from NUL. It is expected that this Expert will start to develop the activity from next September. Developed a program for BIP-MT training for Lesotho Meteorological Services with WMO Regional Training Centre, Pretoria. The courses will be delivered by NUL, and Eight (8) local trainers selected by RTC Pretoria with close supervision of RTC Pretoria. About 42 personnel will be trained. This is also factored in the Memorandum of Agreement between NUL and LMS. WMO gave a positive response to support RTC Pretoria and Lesotho. Contract	*S*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
				between WMO and RTC signed for the delivery of the BIP-MT program. The BIP-MT program started in June 2023 with Mathematics and Physics courses for the first batch of 21 trainees supported by NUL and WMO RTC Pretoria. The program will take about 4 to 5 months (June to October 2023) for the first batch and will continues for the other 21 trainees for similar program.	
Output 1.5: A financing plan developed for sustainability of operation and maintenance of installed EWS and human capacity.	*December 2024*	**N/A**	*0%*	This activity will be developed in the 4th year of the project.	*N/A*
COMPONENT 2: Creation of institutional mechanisms for coordination and implementation of EWS in Lesotho and for use of climate information generated in Component 1 in policy making and sector planning.					
Output 2.1: A Climate Change Information Platform (EWS-CCIP) for inter-institutional data sharing and hazard monitoring & disaster risk assessment for scaling up of hazard and vulnerability mapping for the pilot regions in support of the EWS is established.	*December 2023*	**15%**	*35%*	The implementation oF Output 2.1 was delayed due to 1.The lengthy Procurement Process carried out by WFP that required coordination from the regional office to ensure that technical support was provided towards the selection process. 2. Global shortage of chips and sensors due to the Ukraine crisis affected the price and availability of equipment required. However, efforts were made by modifying some of the configuration and alternative and similar equipment was secured by the Provider. The 5 workstations procured with the HPC have been delivered and are yet to be installed as there was a problem of display cables which were not compatible the supplier had to return them and supply compatible cables. The tender panel has approved limited tendering for procurement of the SADIS system. MoA between LMS and NUL has been signed in January 2023. Signed the Action Plan and officially launched the MoA in May 2023. The initial 20% of MoA amount has been transferred to NUL to start activities. The MoA with NUL contains among others this activity where NUL will be tasked to develop a web-based Climate Change Information Portal to serve a platform for early warning dissemination among other functions. Various stakeholders will have different user-rights in the system depending on the roles and responsibilities they play as per the Standard Operating Procedures and institutional mandates on the early warning system.	*MS*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
Output 2.2: Economic risk models developed for 5 sectors (Agriculture, Livestock, Settlements, Health and Water (Dam) for a range of climate hazards in representative areas of the country	*April 2024*	**15%**	*25%*	The National Technical Working Group (TWG) has been established in collaboration with this project's two sister projects. Due to its big size, the TWG is made up of five clusters name Early Warning, Livelihoods, Finance, Capacity building & Training and Communications & Public Awareness. At the districts TWGs have been temporarily established under the leadership of Disaster Management Authority as a key stakeholder for project implementation, while District Planning Units are being resuscitated and support and coordinate all projects being implemented in the districts. The tender panel has approved that the preferred bidder for the Baseline and Vulnerability Assessment tender be awarded following retendering processes. To proceed with contract negotiations and signing for the work to begin.	*MS*
Output 2.3: Five (5) sets of sector-based EW advisories developed	*April 2024*	**10%**	*15%*	This Output is intrinsically connected with capacity of LMS to launch forecasting products which in turn depends on the operationalisation of the HPC as well as the training of specialised officers who will run the forecasting models. Currently the installation and operationalisation of WRF on the HPC cluster is underway and the first report is being analysed. Currently LMS is able to make a 6-day forecast at 6km resolution. It is expected that by the end of September 2023 this operational forecasting will be finalised using the old AWS. Although procurement of new AWS was delayed due to the Ukraine crisis and procurement process, it is anticipated that by the beginning of next year, first quarter, data from the newly installed AWSs will be fed into the model in the HPC and the process of producing seasonal and "nowcast" forecasting products will be finalised. The full operationalization of HPC will start the process of development and dissemination of early warning and sector-specific advisory messages following modeling of weather and climate. Furthermore, this Output will also be implemented in simultaneous with Output 3.2. to ensure that the advisory messages become part of the test scope. The User Needs Assessment consultancy report is under report.	*MS*

Outputs/Activities[2]	Expected completion date[3]	Implementation status as of 30 June 2021 (%)	Implementation status as of 30 June 2022 (%)	Progress rating justification[4], description of challenges faced and explanations for any delay	Progress rating[5]
Output 2.4: Multi-sector protocols developed and national EWS framework built.	*December 2023*	**2%**	*10%*	The Baseline and Vulnerability assessment consultancy has been greatly delayed due to the lengthy and rather inefficient government procurement processes After several attempts LMS finally selected a suitable Service Providers and the draft contract for the said consultancy has been sent to the Provider which is expected to start the work by the end of August 2023. The results will provide details of the current early warning system including the institutional roles and provide a platform for enhancement of regulatory frameworks and protocol, also building on the standard operation procedures for climate and early warning services.	*MS*
COMPONENT 3: Pilot testing of EWS protocols and response strategies and sustainability plan					
Output 3.1: Climate change risk mapping carried out in 6 project Districts (to complement the 3 done already under Phase 1 of the project) and disseminated in order to raise awareness and support for engaging in EWS and to validate or finetune Environment the sectoral advisories	*December 2023*	*0%*	*0%*	This activity will be informed by the Baseline Vulnerability Assessment activity	*N/A*
Output 3.2: Community based EWS (CB-EWS) piloted and evaluated is developed in 6 Districts including at least Quthing, Thaba-Tseka and Mafeteng, Tsoelike Catchment (Qacha's Nek district), Khubelu (Mokhotlong District) and Upper Hlotse –Mamafubelu (Leribe district) to enhance and test its impact on risk reduction in sectors and population.	*June 2024*	*0%*	*0%*	Community based EWS (CB-EWS) will be developed, piloted and evaluated in 6 Districts once the Seasonal and "nowcast" forecasting systems are already operationalized and advisories and Warning are being disseminated.	*N./A*
Output 3.3: A knowledge outreach programme for awareness raising and training on climate change risk impacts is designed and implemented to enhance decision-making and foster public awareness.	*June 2024*	*0%*	*0%*	Once the Seasonal and "nowcast" forecasting systems are already operationalized and advisories and Warning are being disseminated a portal will be created in a manner that it also forms part of CB-EWS testing. It will be developed following the results of Baseline vulnerability and shall be improved based on the feedback on early warning activities and drills.	*N/A*

4. Risk Rating

4.1 Table A. Project management Risk

Risk Factor	EA's Rating	TM's Rating
1. Management structure – Roles and responsibilities	*L*	*L*
2. Governance structure – Oversight	*M*	*M*
3. Implementation schedule	*S*	*M*
4. Budget	*L*	*L*
5. Financial Management	*L*	*L*
6. Reporting	*L*	*L*
7. Capacity to deliver	*L*	*M*

If any of the risk factors is rated a Moderate or higher, please include it in table B below.

4.2 Table B. Risk-Log

Risk	Risk affecting:	Risk Rating							Variation respect to last rating	
	Outcome / outputs	CEO ED	PIR 1	PIR 2	MTR	PIR 3 (this PIR)	PIR 4	PIR 5	Δ	Justification
1. Theft and Vandalism of early warning and climate monitoring equipment. (Technical & Operational)	Outcomes 1-3	M	L	L		L			↓	The risk is very low at this moment, as LMS has not yet started to install the equipment across the country. So far, no incidences of vandalism have been experienced on the LMS facilities. Conducted awareness (public gatherings) on Climate Change, Early Warning and the importance of Automatic Weather Stations conducted from the 05th to 16th December 2022 and from 12th to 25th April 2023 in the villages where AWSs will be installed to sensitize communities on Climate Change, Early Warning and the importance the AWS equipment in their respective communities. All the 10 Districts have been covered. The awareness was carried out to address the challenge of vandalism of meteorological equipment by members of the society and covered cause and impacts of climate change, extreme events that result from climate change and the importance of effective early warning system to protect life and property of the communities, and the importance of AWSs as the sources of early warning information.
2. Delayed policy level adoption of EWS protocol	All outcomes & outputs	M	L	L		L			=	There has been no change at his level.

3. Unavailability of requisite human resources and data (Strategic & Operational)	Output 1.2	H	H	H		M			=	Procurement processes for the recruitment of consultants have been lengthy, due to bureaucracy required in the process. The Procurements processes of the Baseline and Vulnerability Assessment has taken too long, including retendering and has recently been affected by the change of ministries. Similarly, data collection has not yet been initiated due to lateness and lengthiness in the procurement process for the acquisition of Automatic Weather Stations (AWSs) and the High-Performance Computer (HPC) and ancillary parts which has been conducted by the World Food Programme (WFP) locally. The RFP went through several corrections and adjustments to align with what is in the market. (e.g The Supply and operationalisation of HPC tender had to be split into two lots because there were no suppliers who are able to provide both the HPC hardware and the Numerical Weather Prediction models).
4. Local IT and telecommunications infrastructure weak e.g. international bandwidth and local mobile telecommunications networks (Strategic & Operational)	Output 1.2	M	M	M		L			=	The initial assessment of old AWS was done, though the report was not accepted since it did not give a true reflection of status of AWSs. The secondary assessment is underway. The inhouse capacity of IT at LMS has improved with qualified personnel and training on HPC management, and LMS has now been able to manage IT network. However, the meteorological network infrastructure management still have several gaps which the project has started addressing.
5. Limited Institutional capacity to effectively tackle all project components in simultaneous (Strategic and organizational)	Outcomes 1-3	M	M	L		M			=	Given the COVID-19 constraints, the PMU had been under pressure to fulfil the daily necessary actions related to everyday project implementation activities particularly those concerning the Training and Capacity development and Establishment of the various monitoring networks. The PMU had identified the vital role of coordinating activities under the PMU guidance, bringing together all the partners, i.e. NUL, LMS, MAFS, DMA, etc, among other responsibilities. This idea also came as a means to recover the time that was lost due to Covid-19 pandemic. The National Meteorological Technician is already working alongside the Project Management since 17th March 2022 to support the implementation of activities of Component 1 on full time basis until December 2024. It is however necessary to secure funds to enable extension of contract until the closure of the project. This officer is also supporting the activities related to the operationalisation of the Monitoring Networks and Training & Capacity Development. The PMU has developed the ToRs for M&E Officer's engagement as a full-time position, not consultancy as initially designed. The M&E Officer shall assist in framing, implementation, coordination and reporting of activities that run concurrently with the efforts to gain the lost time due to Covid and challenges in tendering processes as well as delivery of equipment which has also been negatively affected by the

										Rassia - Ukraine war. The M&E shall also coordinate activities for Mid-term review.
6. COVID-19 related constraints	All outcomes & outputs		M	L	L	L			↓	There have been implementation delays experienced due to COVID-19 related measures, including travel restrictions which has prevented the CTA to pay the expected technical visits to the country, restrictions on gatherings such as meetings and training events which has caused sluggishness on the implementation process, and challenges to international travel. However, with the relaxation of international restrictions on COVID-19, it was possible for CTA to carry out his first visit to the country between 26th March to 8th April 2022 as well as 25th Apr - 8th May 2023, in order to participate in the PSC meeting and other Stakeholders engagements.
7. Poor coordination among institutions	Outcomes 2-3		M	L	M	L			=	Risk of poor coordination among institutions, particularly DMA and LMS. This risk is not considered to be high at this stage as the implementation of the activities on the ground at district level have not yet started. However, this risk should be monitored closely once the dissemination of Early Warning message to communities at district level starts. The first high level meeting was the first high-level meeting between the PMU, LMS and DMA was held during CTA's visit to the country and work plan was established to be included under the NUL MOU which is now under implementation. With the new government, LMS and DMA are now in the same Ministry and this will make coordination work very easy and effective. However, given the delays in the implementation of Project activities this risk is still to be considered as potential.
8. Uncertainty on the MESA follow up Programme			M	L	M	L			=	The establishment of the Climate Change Information Platform (EWS-CCIP) for inter-institutional data sharing and hazard monitoring & disaster risk assessment for scaling up of hazard and vulnerability mapping for the pilot regions in support of the EWS depends greatly on the MESA follow up programme. The MESA follow-up project, ClimSA has now commenced, and products will be able to inform EWS
9. Procurement delays of synoptic stations						M				Service providers notified the project that they have constraints sourcing chips required for the synoptic stations. The shortage was attributed to the conflict in Ukraine. Service provider has proposed a new timeline to provide synoptic stations.
10. Governance Structure						M				The Lesotho Met Services has moved from the Ministry of Energy Meteorology and Water Affairs to the Ministry of Defence. While the project does not currently foresee any changes in decision making structures, delays might be experienced until LMS is fully integrated into the Ministry of Defence structure
Consolidated project risk					L	L			↓	*This section focuses on the variation. The overall rating is discussed in section 2.3.*

Table B. Outstanding Moderate, Significant, and High risks

Risk	Actions decided during the previous reporting instance (PIR_{t-1}, MTR, etc.)	Actions effectively undertaken this reporting period	Additional mitigation measures for the next periods		
			What	When	By whom
Risk 3. Unavailability of requisite human resources and data (Strategic & Operational)	Actions identified at CEO endorsement: This risk will be mitigated through: • the provision of training and capacity-building activities to local stakeholders to support various activities; and • the allocation of adequate funds to hire an experienced and competent management team and supporting consultants where required. Furthermore, procurement processes will be expedited with a view to filling positions in accordance with the workplan	To address the overall originally identified risk of inadequate human resources and capacity, the following actions have been undertaken: • the allocation of adequate funds to hire an experienced and competent management team and supporting consultants. • A Project Management Unit (PMU) was set up and a Project Manager (PM), A Project Secretary, Financial & Administration Officer together with a driver were hired. • In addition, a Chief Technical Adviser was contracted to work in consultation with the PM and provide technical guidance and advice for the effective implementation of the project and achievement of the planned results. • the provision of training and capacity-building activities to local stakeholders to support various activities; and To address the specific significant risk of slowness of the procurement processes due to systemic issues in the	To address the risk of inadequate human resources and capacity: - Engagement of several regionally based training Institutions such as the University of Pretoria, Department of Geography, Geoinformatics and Meteorology, where five LMS candidates are already enrolled in the WMO Class I / Bridging + BSc Hons; - Target the National University of Lesotho to develop tailored training and capacity development courses for a). long term training in Electronics with a strong component in Maintenance and Management of Meteorological equipment, b). GIS data gathering and mapping with a strong component in Climate and Environmental Risk Assessment. - Partner with Department of Geography and Environmental Science, at NUL to develop Meteorological Technician BIP-MT Course, whose syllabus will be developed later, mostly following the World Meteorological	During procurement and hiring processes	PMU

		country's procurement system (which has emerged during the reporting period), the actions taken include the engagement of the Office of the Permanent Secretary to hasten the process.	Organisation (WMO) guidelines. Further engage the Office of the Permanent Secretary to make the tendering process more expedite for future hiring of Project Consultants.		
Risk 5. Limited Institutional capacity to effectively tackle all project components in simultaneous (Strategic and organizational)	Outcomes 1-3	The TORs for a National Meteorological Technician have been drafted and submitted UNEP for clearance. However, the need to link deliverables to this Consultancy does not allow the consultant to perform the duties planned within the implementation timeline. However, a solution was found and a contract was issued for the National Meteorological Technician on 17th March 2022. Development of Terms of Reference for the Monitoring and Evaluation Expert to be engaged for the entire remaining period of project implementation due to the high reporting and tracking of project activities that is anticipated in the last two years of project implementation. The M&E expert will also assist in the administration of multiple consultancies that the project will be conducting during the said period.	The funds to support this as a position for 24 months have been secured by converting a consultancy position into a full PMU position The PMU reviewing the ToR and a candidate was selected. Therefore, National Meteorological Technician is already working alongside the Project Management since 17th March 2022 to support the implementation of activities of Component 1. Convert the M&E expert from a consultancy to a full-time position and source funding to cover the shortage	During procurement and hiring processes During procurement and hiring processes	Project Manager, Chief Technical Advisor and Task Manager
Risk 9. Procurement delays of synoptic stations	N/A	Agree with service provider to identify/ source chips, sensors and other required equpment providers that are not affected by the Ukraine crisis Modify configuration of AWS and other equipment to be procured to ensure it does not create bottlenecks in the procurement process. Continue configuring the HPC	Continuous communication with service provider update timelines based on their communication with their	During procurement and hiring processes	PMU/CTA/Task Manager

		using the old AWS, and then feed in the new AWS to the HPC once they become available.			
Risk 10. Governance Structure	N/A	PMU agreed with the current ministry (MOD) to approve the previous service provider selection process carried out under the previous ministry and not to start the procurement process. All new process for recruitment and procurement to utilise MOD support systems	Utilize the next 3 months to ensure that the PMU is fully operational within the new ministry and is able to access support and services including procurement, recruitment, legal and other services under the ministry.	During procurement and hiring processes	PMU/CTA
Add rows as needed to reflect additional risks					

High Risk (H): There is a probability of greater than 75% that **assumptions** may fail to hold or materialize, and/or the project may face high risks.
Significant Risk (S): There is a probability of between 51% and 75% that **assumptions** may fail to hold and/or the project may face substantial risks.
Moderate Risk (M): There is a probability of between 26% and 50% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.
Low Risk (L): There is a probability of up to 25% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.

Project Minor Amendments

Minor amendments are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5% as described in Annex 9 of the Project and Program Cycle Policy Guidelines.

Please tick each category for which a change occurred in the fiscal year of reporting and provide a description of the change that occurred in the textbox. You may attach supporting document as appropriate.

To be completed by Task Managers

5.1 Table A: Listing of all Minor Amendment

- ☐ Results framework
- ☐ Components and cost
- ☐ Institutional and implementation arrangements
- ☐ Financial management
- ☐ Implementation schedule
- ☐ Executing Entity
- ☐ Executing Entity Category
- ☐ Minor project objective change
- ☐ Safeguards
- ☐ Risk analysis

☐ Increase of GEF project financing up to 5%
☐ Co-financing
☐ Location of project activity
☐ Other

[Annex document linked to reported minor amendment]

Minor amendments	*[Provide a description of the change that occurred in the fiscal year of reporting]* *No adjustments in the reporting period*

5.2 Table B: History of project revisions and/or extensions

To be completed by Task Managers

Version	Type	Signed/Approved by UNEP	Entry into Force (last signature Date)	Agreement Expiry Date	Main changes introduced in this revision
Original legal instrument					
Amendment 1	Revision				
Extension 1	Extension				

GEO Location Information:

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate. Web mapping applications such as OpenStreetMap or GeoNames use this format. Consider using a conversion tool as needed, such as: https://coordinates-converter.com Please see the Geocoding User Guide by clicking here

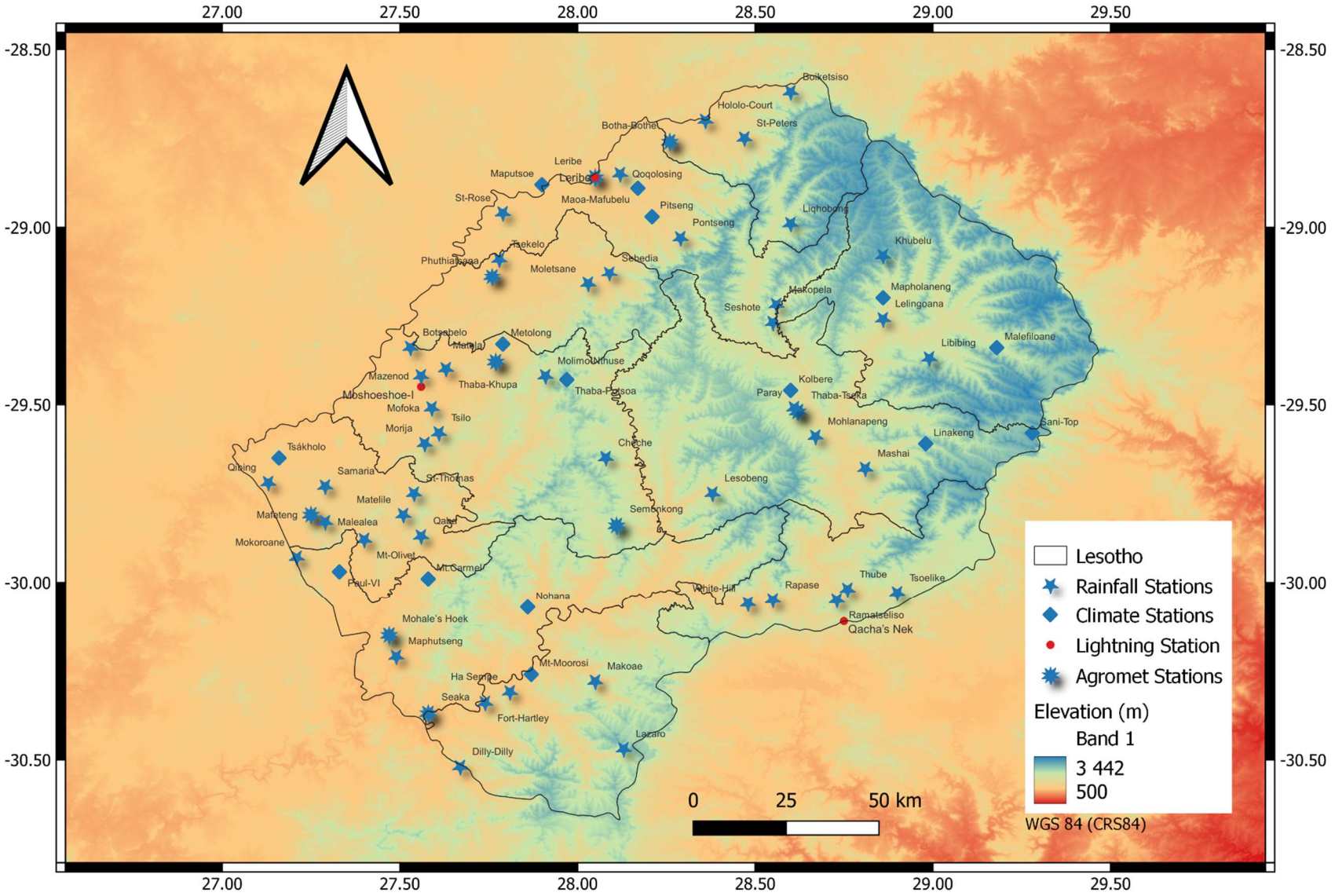
Location Name Required field	Latitude Required field	Longitude Required field	Geo Name ID Required field if the location is not an exact site	Location Description Optional text field	Activity Description Optional text field
Boiketsiso	-28.62	28.60			Rainfall station to be installed
Botha-Bothe	-28.76	28.26			Agromet station to be installed
Botsabelo	-29.34	27.53			Rainfall station to be installed
Cheche	-29.65	28.08			Rainfall station to be installed
Dilly-Dilly	-30.52	27.67			Rainfall station to be installed
Fort-Hartley	-30.34	27.74			Rainfall station to be installed

Ha Sempe	-30.31	27.81			Rainfall station to be installed
Hololo-Court	-28.70	28.36			Rainfall station to be installed
Khubelu	-29.08	28.86			Rainfall station to be installed
Kolbere	-29.46	28.60			Climate station to be installed
Lazaro	-30.47	28.13			Rainfall station to be installed
Lelingoana	-29.26	28.86			Rainfall station to be installed
Leribe	-28.86	28.05			Agromet station to be installed
Leribe	-28.86	28.05			Lightning station to be installed
Lesobeng	-29.75	28.38			Rainfall station to be installed
Libibing	-29.37	28.99			Rainfall station to be installed
Linakeng	-29.61	28.98			Climate station to be installed
Liqhobong	-28.99	28.60			Rainfall station to be installed
Mafeteng	-29.81	27.25			Agromet station to be installed
Makoae	-30.28	28.05			Rainfall station to be installed
Makopela	-29.22	28.56			Rainfall station to be installed
Malealea	-29.83	27.29			Rainfall station to be installed
Malefiloane	-29.34	29.18			Climate station to be installed
Maoa-Mafubelu	-28.89	28.17			Climate station to be installed
Mapholaneng	-29.20	28.86			Climate station to be installed
Maphutseng	-30.21	27.49			Rainfall station to be installed
Maputsoe	-28.88	27.90			Climate station to be installed
Mashai	-29.68	28.81			Rainfall station to be installed
Matela	-29.38	27.77			Agromet station to be installed
Matelile	-29.81	27.51			Rainfall station to be installed
Mazenod	-29.42	27.56			Rainfall station to be installed
Metolong	-29.33	27.79			Climate station to be installed
Mofoka	-29.51	27.59			Rainfall station to be installed
Mohale’s Hoek	-30.15	27.47			Agromet station to be installed
Mohlanapeng	-29.59	28.67			Rainfall station to be installed
Mokoroane	-29.93	27.21			Rainfall station to be installed
Moletsane	-29.16	28.03			Rainfall station to be installed
Molimo-Nthuse	-29.42	27.91			Rainfall station to be installed
Morija	-29.61	27.57			Rainfall station to be installed

Moshoeshoe-I	-29.45	27.56			Lightning station to be installed
Mt.Carmel	-29.99	27.58			Climate station to be installed
Mt-Moorosi	-30.26	27.87			Climate station to be installed
Mt-Olivet	-29.88	27.40			Rainfall station to be installed
Nohana	-30.07	27.86			Climate station to be installed
Paray	-29.51	28.61			Rainfall station to be installed
Paul-VI	-29.97	27.33			Climate station to be installed
Phuthiatsana	-29.14	27.76			Agromet station to be installed
Pitseng	-28.97	28.21			Climate station to be installed
Pontseng	-29.03	28.29			Rainfall station to be installed
Qaba	-29.87	27.56			Rainfall station to be installed
Qacha’s Nek	-30.11	28.75			Lightning station to be installed
Qacha’s Nek	-30.11	28.75			Synoptic station to be installed
Qibing	-29.72	27.13			Rainfall station to be installed
Qoqolosing	-28.85	28.12			Rainfall station to be installed
Ramatseliso	-30.05	28.73			Rainfall station to be installed
Rapase	-30.05	28.55			Rainfall station to be installed
Samaria	-29.73	27.29			Rainfall station to be installed
Sani-Top	-29.58	29.28			Climate station to be installed
Seaka	-30.37	27.58			Agromet station to be installed
Sebedia	-29.13	28.09			Rainfall station to be installed
Semonkong	-29.84	28.11			Agromet station to be installed
Seshote	-29.27	28.55			Rainfall station to be installed
St-Peters	-28.75	28.47			Rainfall station to be installed
St-Rose	-28.96	27.79			Rainfall station to be installed
St-Thomas	-29.75	27.54			Rainfall station to be installed
Thaba-Khupa	-29.40	27.63			Rainfall station to be installed
Thaba-Putsoa	-29.43	27.97			Climate station to be installed
Thaba-Tseka	-29.52	28.62			Agromet station to be installed
Thube	-30.02	28.76			Rainfall station to be installed
Tsákholo	-29.65	27.16			Climate station to be installed
Tsekelo	-29.09	27.78			Rainfall station to be installed

Tsilo	-29.58	27.61			Rainfall station to be installed
Tsoelike	-30.03	28.90			Rainfall station to be installed
White-Hill	-30.06	28.48			Rainfall station to be installed

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate. *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St-Rose
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Pitseng
Pontseng
Liqhobong
Khubelu
Tsekelo
Phuthiatsana
Sehlabeng
Moletsane
Makopela
Mapholaneng
Seshote
Lelingoana
Botsabelo
Metolong
Libibing
Malefiloane
Mazenod
Molimo Nthuse
Thaba-Khupa
Thaba-Putsoa
Kolbere
Paray
Thaba-Tseka
Moshoeshoe-I
Mofoka
Tsilo
Mohlanapeng
Linakeng
Sani-Top
Morija
Tsakholo
Mashai
Qiloing
Samaria
St-Thomas
Lesobeng
Matelile
Semonkong
Mafeteng
Malealea
Mokoroane
Mt-Olivet
Mt-Carmel
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Qacha's Nek
Mohale's Hoek
Maphutseng
Mt-Moorosi
Makoae
Ha Semphe
Seaka
Fort-Hartley
Lazaro
Dilly-Dilly
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Lesotho
Rainfall Stations
Climate Stations
Lightning Station
Agromet Stations
Elevation (m)
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500
WGS 84 (CRS84)