

## Monitoring & Evaluation (M&E) Plan and Impact Statement Template

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### Objective of the M&E Plan and Impact Statement:

- The M&E Plan and Impact Statement must be designed based on the Technical Assistance Response Plan and must enable the Implementer to complete the Closure Report at the end of the assistance.

### Process for filling in the template:

- The Implementer must identify relevant quantitative and qualitative indicators as specified in the Closure Report. A sub-set of indicators to monitor and assess must be chosen among these.
  - The Implementer may also identify other specific, measurable, achievable, relevant, and time-bound indicators suitable to monitor Activities, Outputs and anticipated Outcomes from the technical assistance and add to the M&E Plan and Impact Statement.
  - During implementation of the TA or FTA, the Implementer must collect all relevant data as described in the Monitoring & Evaluation Plan. Aggregated data on selected indicators as well as an updated version of the Impact Statement will be presented in the Closure Report at the end of the assistance.
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<b>Basic Information</b>	
Title of response plan	Strengthening the National Disaster Management Agency's (NDMA) capacity in application of UAV and remote sensing technology for vulnerability assessments and response planning to enhance national food security and climate resilience
Technical assistance reference number	2020000001
Country/ countries	<b>Eswatini</b>
NDE focal point and organisation	Mr. Bafana Simelane  Instrument Engineer  Department of Meteorology, Ministry of Tourism and Environmental Affairs  bafanasim@gmail.com  P.O. Box 2652, Mbabane, Eswatini
Sector(s) addressed	<b>Agriculture and Disasters</b>

Technologies supported	
Implementation period and total duration	<b>February 2021 – January 2022 (12 Months)</b>
Total budget for implementation	<b>USD 154,614</b>
Designer of the response plan	<b>Shanar Tabrizi</b>
Implementer of response plan	<b>Regional Centre for Mapping of Resources for Development (RCMRD)</b>

(A) Outputs and Activities as described in the Response Plan	(B) Indicator	(C) Expected results	(D) Method and frequency for data collection	(F) Comments
<b>Output 1: Development of implementation planning and communication documents</b>				
Activity 1.1 Prepare and finalize mandatory implementation planning and communication documents	Implementation workplan and Impact statement form	Workplan and Impact Statement form	Data collected once during the implementation of the TA	
<b>Output 2: Structured stakeholder engagement</b>				
Activity 2.1 Identification and outreach to key stakeholders for engagement	Report on identification and engagement with key stakeholders	12-15 stakeholders (agencies) identified	Data collected once during the implementation of the TA	List of key stakeholders provided
Activity 2.2 Development of agenda, material and content for a structured stakeholder meeting virtually	Materials and content for the virtual meeting  Minutes for the virtual meeting	Material and content for the virtual meeting	Data collected once during the implementation of the TA	
Activity 2.3 Facilitation of 0.5-day meeting	Minutes of 0.5-day meeting	One virtual meeting inception stakeholder meeting conducted	Data collected once during the implementation of the TA	All participants are able to attend the meeting virtually
<b>Output 3: Framework and methodology for vulnerability assessments</b>				
Activity 3.1 Flight mission for testing of identified parameters	Report on Flight mission for testing of identified parameters	One Flight mission for testing of identified parameters conducted	Data collected once during the implementation of the TA	Favourable weather conditions for flight mission testing
Activity 3.2 Development of technical specifications	Report on Technical specifications	One report on Technical specifications	Data collected once during the implementation of the TA	
Activity 3.3	Report on Framework	Report on	Data collected once	

Development of a framework for vulnerability assessments using UAV and remote sensing technologies in agriculture	for vulnerability assessments using UAV and remote sensing technologies in agriculture	Framework for vulnerability assessments using UAV and remote sensing technologies in agriculture	during the implementation of the TA	
<b>Output 4: Training on UAV and remote sensing technologies</b>				
Activity 4.1 Identification of training participants and development of training materials	List of training participants identified  Training materials and aids developed	Number of participants to be trained; Training manual	Data collected once during the implementation of the TA	
Activity 4.2 Facilitation of a 5-day training on UAV and remote sensing technologies	Training report	Atleast 15 participants trained	Data collected once during the implementation of the TA	UAV Image processing software is largely commercial which would make it impossible to install copies of the software on participants' computers. However, open-source software will be explored
<b>Output 5: Collection of pilot baseline data and development of case study</b>				
Activity 5.1 Piloting of technologies for collection of a baseline dataset	Report on Baseline dataset collection	Number of baseline dataset collected	Data collected once during the implementation of the TA	
Activity 5.2 Development of a case study	Case study report	One case study report	Data collected once during the implementation of the TA	
<b>Output 6: Support for identifying financing opportunities to create enabling environment to upscale deployment and use of UAV and remote sensing technologies</b>				
Activity 6.1 Development of GCF readiness proposal	GCF readiness proposal	One GCF readiness proposal	Data collected once during the implementation of the TA	

*Note: The information in the table below will be used by the CTCN for public communication of the achieved and expected results of the Technical Assistance through the CTCN website [www.ctc-n.org](http://www.ctc-n.org) and other communication channels. See for example: [https://www.ctc-n.org/sites/www.ctc-n.org/files/benin\\_a\\_ag\\_forestry.final\\_.pdf](https://www.ctc-n.org/sites/www.ctc-n.org/files/benin_a_ag_forestry.final_.pdf)*

<b>Impact Statement</b>	
Challenge	<p><i>The Kingdom of Eswatini relies on pre-planting and postharvest assessments and oftentimes the annual National Agricultural Survey which aims to provide information on cropped area through questionnaires and field surveys is not consistently conducted due to resource and technology constraints. As a result, the country lacks continuous crop growth monitoring and assessment tools and technologies for quick and early detection of undesirable threats and occurrence of risks and hazards to food security. With Unmanned Aerial Vehicles (UAV) technology and satellite-based earth observation technologies, it is expected that such assessments can be done with minimal human resources and during any phase of crop growth to deliver timely interventions.</i></p>
CTCN assistance	<p><i>Provision of funding and overall project coordination</i></p>
Anticipated impact	<p><i>UAV's provide regular field overviews and crop assessment for faster response such as precise planning of pests and disease treatments, and yield better outcomes compared to conventional methods of assessment.</i></p> <p><i>This TA is anticipated to build the capacity of the Kingdom of Eswatini to use modern technologies such as remote sensing and UAV for better analysis of agricultural vulnerabilities.</i></p> <p><i>The development of a GCF ready proposal will facilitate access to large-scale climate funding that will in turn accelerate wide-spread application of modern technologies of vulnerability assessment in the agricultural sector in the country</i></p> <p><i>Overall, this Technical Assistance will contribute to the country's resilience to climate change in the agriculture sector through the provision of evidence-based data and information that can inform interventions that mitigate risks to crops (e.g., through early warning of droughts), strategic preparedness (through provision of crop yield outlooks through the growing season) as well as responses to mitigate crop pest invasions (e.g., through high resolution pest mapping using drones/UAVs). This TA targets to benefit between 200,000-400,000 people in the pilot regions.</i></p>
Anticipated co-benefits from the TA	<p><i><u>Instruction:</u> Please indicate expected co-benefits as described in the response plan and in the relevant deliverables</i></p> <p><i>NDMA staff capacity enhanced on use of UAV and Remote Sensing technology for DRR and Vulnerability assessments including agricultural data collection, analysis and interpretation for crop monitoring, yield predictions and integration of information derived from this case study into early warning alerts</i></p> <p><i>This TA will harness the power of drone technology with machine learning to generate detailed, up-to-date information on potential and existing agricultural land conditions and the development of Eswatini baseline datasets for vulnerability assessments indicators using high resolution imagery.</i></p> <p><i>Concept note to be submitted to the Green Climate Fund or other funding institutions for upscaling to national level on use of UAV and remote sensing</i></p>

	<p><i>technology for early warning systems, Disaster Risk Reduction and Climate Change Adaptation.</i></p>
<p>Gender aspects of the TA</p>	<p><i>The services of a gender expert will be utilized to carry out a gender analysis of the technical assistance during implementation, with a particular focus on women’s climate vulnerabilities and their role as active agents and farmers in strengthening climate resilience through their contribution to disaster risk reduction, vulnerability assessments and crop monitoring.</i></p> <p><i>The activities will support provision of data and knowledge to better understand women farmers, their strengths and climate vulnerabilities in the agriculture sector.</i></p> <p><i>The project will build capacity of NDMA staff to undertake crop monitoring and assessments, which will help support both male and female farmers.</i></p> <p><i>The expected outcome includes enhanced early warning, which will support farmers with increased crop yields and reduced losses, ultimately promoting food security to the benefit of both men, women and children in farming households.</i></p>
<p>Anticipated contribution to NDC</p>	<p><i>Enhanced capacity of national stakeholders, including the National Disaster Management Agency, on the application of UAV technology and remotely sensed imagery for crop monitoring and provision of timely early warning data to farmers.</i></p> <p><i>Availability of baseline dataset based on pilot application of UAV and remote sensing in the agricultural sector.</i></p> <p><i>Improved readiness to seek GCF funding for up-scaling of technologies</i></p>
<p>The narrative story</p>	<p><i>The landlocked Kingdom of Eswatini is increasingly vulnerable to the impacts of climate change due to an upward trend in mean annual temperature across the country, as well as extreme weather events such as droughts, bush fires, storms and floods becoming more severe and frequent. As a result of these recurrent shocks, the country’s food security and water resources are under threat. Eswatini also faces numerous interlinked challenges such as invasive plants and diseases, HIV/AIDS and poverty which erode the population’s ability to recover and remain resilient towards climate change effects. The agricultural sector is a critical component of the economy and contributes approximately 9.5% of the country’s GDP. In 2015/16 the country declared a national state of emergency due to drought, and experienced losses amounting to approximately 7% of GDP, and about 18% of the government’s expenditure.</i></p> <p><i>As projections expect continued uncertain rainfall patterns and warmer climate, it is imperative that farming and agricultural communities adapt their practices to climate change and extreme weather events to decrease the vulnerability of rural livelihoods, where women head 48% of the households. As an example, maize production dropped by 67% in the 2015/16 El Niño-induced droughts, and it is predicted that the Highveld region will be unsuitable for growing maize by the year 2050. According to the 2019 Annual Vulnerability Assessment and Analysis Report, a recent 15% decline in cereal production coupled with increased food prices and unemployment has resulted in a 66% increase in food insecurity among the population.</i></p>

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<p>Contribution to SDGs</p>	<p><i>This response plan will positively contribute to the following SDGs;</i></p> <p><i>SDG 2-The Technical Assistance will contribute to achieving food security through strengthened vulnerability assessments and response planning in the agricultural sector.</i></p> <p><i>SDG 8-Improved vulnerability assessment and early detection of undesirable threats and occurrence of risks and hazards to food security will contribute positively to a sustainable economic growth and sustainable livelihoods in the agricultural sector</i></p> <p><i>SDG13-The Technical Assistance will strengthen resilience and adaptive capacity to climate-related hazards and risks in the agricultural sector through national policies and strategies. As well as raise the capacity of national stakeholders to effectively plan for food security, including the perspectives of women and affected communities</i></p>