



SOFF Investment Phase Funding Request

Version 2.0

12 September 2023

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**



SOFF Investment Phase Funding Request

The funding request should be prepared by the SOFF beneficiary country in collaboration with the SOFF implementing entity and supported by the SOFF peer advisor. The funding request reflects and is based on the National Contribution Plan. In case of questions on how to complete this template, please contact the SOFF Secretariat at: soffsecretariat@wmo.int.

The SOFF Investment Funding Request template includes the following sections:

1. **Basic Information**
2. **Programming Criteria**
3. **Readiness and Country Context**
4. **Investment Phase Outputs and Budget**
5. **Investment Phase Implementation Arrangements**
6. **Investment Phase Monitoring, Reporting, and Verification**
7. **Investment Phase Risk Management Framework**

The **GBON Gap Analysis**, the **GBON National Contribution Plan** and **Country Hydromet Diagnostic** are included in **Annex 1, 2, 3**.

The **Terms of References** of the advisory services provided by the **SOFF peer advisor** are provided in **Annex 4**.

1. Basic Information

SOFF Beneficiary Country and Focal Point	<p><i>Mozambique - Instituto Nacional de Meteorologia (INAM)</i></p> <p>Adérito Celso Félix Aramuge, Director-Geral & Permanente Representative of Mozambique with World Meteorological Organization – WMO</p> <p>aderito_a@inam.gov.mz</p>			
Country classification	<input checked="" type="checkbox"/> LDC	<input type="checkbox"/> SIDS	<input checked="" type="checkbox"/> FCS	<input checked="" type="checkbox"/> ODA-recipient
SOFF Implementing Entity and Focal Point	<p><i>World Food Programme, Mozambique Country Office</i></p> <p>WFP Country Director and Representative:</p> <p>Antonella D'Aprile</p> <p>Technical focal points:</p> <p>Benvindo Nhanchua</p> <p>Benvindo.nhanchua@wfp.org</p> <p>Lena Schubmann</p> <p>Lena.schubmann@wfp.org</p>			
SOFF Peer Advisor and Focal Point	<p>Francis Mosetlho</p> <p><i>South African Weather Service</i></p>			
Total Budget (USD)	<p>Total budget of this funding request: USD 7,865,565</p> <p>Total for Peer Advisor: USD 385,646</p> <p>Total for Implementing Entity: USD 7,479,919</p> <p>First tranche: 5,235,943 USD (corresponding to 70%)</p> <p>Second tranche: USD 2,243,976 (corresponding to 30%)</p>			
Delivery timeframe	01.01.2024 - 31.12.2028			
Date of Steering Committee Approval	Planned for October 30 th 2023			

Signatures



Ishaam Abader

CEO

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2. SOFF Programming Criteria (2 pages)

Alignment with the SOFF Programming Criteria

This section should be based on the SOFF Readiness Phase outputs, i.e. the National GBON Gap Analysis and GBON National Contribution Plan, and the Country Hydromet Diagnostic where available.

Close the most significant data gaps

The GBON surface and upper-air observing network design is based on the WIGOS network design principles and envisage to provide, as best as feasible, a horizontally well distributed network across Mozambique that meet GBON compliance requirements.

Type of station	Baseline (Results of the GBON National Gap Analysis)				GBON National Contribution Target	
	Target (# of stations)	GBON-compliant stations (#)	Gap		To improve	New
			New	To improve		
Surface	21	0	0	21	15	6
Upper-air	4	0	4	0	0	4

The global gap analysis developed and provided by WMO to the Institute of National Meteorological Service estimated the need for 20 GBON surface land stations and 4 upper air stations to close the observations gap over Mozambique and deliver standard density horizontal resolution requirement for GBON compliant observations network to meet the Numerical Weather/ Prediction models in delivering weather related products to aid decision making and for standard density. The results from the GBON national gap analysis conducted in May 2023 indicated the need 21 for surface land stations to be included in the national GBON network and accepted by WMO Secretariat as agreed in the attached copy of the GBON National Contribution Plan submitted in October 2023. The additional station will close the gap in the south-eastern part of Zambezia province.

Target easy fixes	<p>15 of the existing 21 surface observation stations assigned as GBON station meet all WMO sensor specification and datalogger specifications. Out of those, 2 are to be upgraded to meet data logger requirement, 13 communication/data transmission to be fixed and 6 new stations to be installed. These 15 AWS can be programmed to transmit data on an hourly basis to be fully GBON compliant within a shorter duration. Furthermore, the bulletins can be configured to allow for transmission on hourly observations for these 15 stations within a month or two of the initialisations of the programme.</p> <p>The remaining 6 surface observation stations, 1. Tete (convert for manual to AWS), 2. Beira (Wind mast, Temperature stand, solar panel, battery, lightning protection, junction box needs replacements), 3. Lichinga is an Airport Weather Observation station which has a locked program and cannot be configured, 4. Mapulangune is a compact AWS (All-in-one station – does not meet GBON requirements, 5. Nampula is an old AWS installed in 2017 and does not meet GBON requirements, (See table 12), 6. Pembe was installed in 2015 and its conditions are not good) needs more effort to get them GBON compliant as well as the 4 upper air observations stations.</p> <p>ICT infrastructure and services design as well as solutions on data transmission from an observing station to the Meteorological Data Management System must be configured to send data to one or more Meteorological Data Management Systems via a suitable data transfer protocol: MQTT (Message Queue Telemetry Transport) or SFTP (Secure Shell File Transfer Protocol). The system must be configured to collect data from the station and convert automatically to generate Binary Universal Form for the Representation of meteorological data (BUFR) reports for WMO international data exchange through WMO Information System version 2.0 (WIS 2.0) or Global Telecommunications System. Data should be converted to BUFR without any need to be loaded on a database.</p>
Create leverage	<p>Since 2020, WFP has been collaborating with INAM for improved early warning, forecast-based finance and anticipatory action capacities. The SOFF initiative will complement previous and ongoing activities, providing a crucial base of quality climate observation data for better informed decision-making at all levels.</p> <p>In progress on anticipatory action (AA) system building achieved has accelerated national momentum for anticipatory action and allowed for the mobilization of further resources for a multi-hazard expansion of the AA mechanism. WFP-supported government system building for drought AA have led to the establishment of a government-led National Technical Working Group (TWG) on drought early warning and action, the development of six district-level Anticipatory Action Plans (AAP), which are conjoined under one government-led national umbrella AAP and a complimentary WFP national umbrella AAP. In June 2022, the Government of Mozambique adopted the new National Plan for Financial Protection against Disaster Risk, dedicating domestic funds to the AA financing window. With support of WFP Mozambique, national institutions have progressed in deepening the integration between anticipatory actions, disaster response and shock-responsive social protection, including by linking drought triggers with the scale-up of</p>

the cash-based social protection programmes (i.e., post-emergency Direct Social Support Programme - PASD-PE) as part of the activation of drought AAPs.

Significant progress has been achieved in strengthening the capacities of key governmental stakeholders, such as the National Disaster Risk Management Institute (INGD), the National Meteorological Institute (INAM) and the Ministry of Agriculture and Rural Development (MADER) to enhance seasonal and sub-seasonal forecasting and direct delivery of AA. INAM through the support of WFP, has been nationally recognized as scientific leaders of the drought AA trigger TWG sub-working group. Improvements can be broadly categorized into (1) drought seasonal monitoring, and (2) drought seasonal-to-sub-seasonal forecasts. Concerning INAM's climate monitoring system, milestones include (i) seamless access by INAM to satellite-based inputs and indicators suitable for early warning work, (ii) development of high-quality gridded variables (rainfall and air temperature) based on the blending of national station data and satellite variables, (iii) regular publishing of monthly seasonal monitoring bulletins by INAM at national and province level. (iv) deployment and use of the PRISM platform for the display of INAM's monitoring products, real time assessment of the rainfall season and identification of areas of concern, (v) extensive recovery of old station data into a modern database system and building of a nationally owned long-term database of gridded key meteorological variables (rainfall, air temperature and others relevant for water balance approaches). This will be used in the skill improvement of the forecasting approach and refinement of the AA triggers and become the basis to enable INAM to become a provider of value-added climate risk information.

Improvement in the access to AWS data can extend the range of variables available for drought monitoring activities, enabling the integration of potential evapotranspiration data in the existing systems, essential for water balance calculations and production of more advanced drought monitoring information.

Building upon this work, mainly focused on drought, government led TWG on AA related to floods and cyclones are initiating preliminary work. WFP is leveraging the workflows and data streams from this TWG to help set up better Early Warning Systems (EWS), improving the country's Emergency Preparedness and Response (EPR) to floods and cyclones. The observational data collected from the new and rehabilitated Automatic Weather Stations (AWS) implemented through SOFF will aid WFP to improve already existing joint climate products with INAM. Through SOFF, WFP aims to continue assisting INAM on improving its data management, analysis and climate service products.

Among others, this will be further leveraged by future initiatives currently being planned and designed by INAM and WFP, including a 5-year NORAD-funded programme for improved climate forecasting, early warning and anticipatory actions starting in 2023 and a regional ECHO-funded initiative to further strengthen stakeholder coordination and harmonization of climate forecasting methodologies launched in July 2023.

Maximize delivery capacity	<p>INAM has presence in all areas of Mozambique where this SOFF initiative will be implemented, through its national, provincial, district and local representations. INAM long-standing experience in data collection, management of weather stations and meteorological network operation across Mozambique.</p> <p>As part of the Pilot Programme for Climate Resilience (PPCR), NDF and World Bank supported INAM and DNGRH to improve their forecasting capacities for hydrometeorological hazards. This included the installation of automatic weather stations. These AWS were considered for the elaboration of the National Contribution Plan. Some of these AWS are currently not in use because of pending maintenance and a lack of spare parts. Through this SOFF funding, the AWS installed under the PPCR will be rehabilitated to ensure that they are fully functional.</p> <p>WFP has been supporting INAM to improve its capacity to generate, analyse and disseminate climate information since 2020.</p> <p>WFP Mozambique has specialized technical teams for vulnerability assessment and monitoring, disaster risk finance and climate change adaptation that will support the SOFF initiative. Furthermore, WFP Mozambique has a competent supply chain team to support procurement activities required under this SOFF investment phase.</p> <p>Furthermore, WFP has significant operational capacity in Mozambique, with a country office based in Maputo and 8 sub-offices based in strategic locations across Mozambique.</p>
Sub-regional gains	<p>WFP is creating a regional technical working group on early warning and anticipatory action, focussed specifically on developing better forecasts and triggers. Data coming from SOFF GBON infrastructure will be considered in this working group to ensure that optimal use with maximum impact is achieved from SOFF investments.</p> <p>Mozambique shares the border with five countries, namely, South Africa, Zimbabwe, Malawi, Eswatini, Tanzania and Zambia. The said countries have been identified as potential sub-regional collaborators for implementation of GBON, especially in closing weather observation gaps along the borders. There are several regional organizations / bodies of relevance for implementation of GBON within the sub-region such as the Southern African Development Community (SADC) Secretariat through its Sub-sectoral Committee on Meteorology (SCOM) and Climate Services Centre (CSC); the Meteorological Association for Southern Africa (MASA), African Ministerial Community on Meteorology (AMCOMET), Regional WIGOS Centers (RWCs) for Southern and East Africa for data availability and quality, Regional Telecommunication Hub (RTH) -Pretoria for data transmission through the Global Telecommunication System and part of the Global Information System Centre (GISC), Regional Instrument Centre (RIC) for maintenance and calibration of observation systems, Regional Training Centers (RTC) for capacity development of Meteorological personnel, just to mention a few.</p>

3. Readiness and Country context (1 page)

SOFF Beneficiary Country Capacity Assessment

The National Institute of Meteorology, abbreviated to INAM, is a public institution of a scientific and technical nature, endowed with legal personality and autonomy to direct meteorological activity at national level, ensuring the inspection and supervision of the operation of the national network of meteorological, agrometeorological, climate and air quality monitoring stations, in collaboration with other State and private entities that operate similar observation network. INAM hereby leverage on this mandate to perform its national functions.

Critical component to the success of the GBON implementation is Information and Communication Technology (ICT) capability to support data communication from the remote AWS to the Global Telecommunications System (GTS). There is therefore a need for an ICT infrastructure and services design as well as the solutions on data transmission from an observing station nationally, on real-time bases through data management system and to the GTS. The designed system has the capability to transmitted in Binary Universal Form for the Representation (BUFR) format from the source (AWS) to the GTS.

INAM has been managing the current observations infrastructure to ensure data availability for national and international exchange with limited resources. The country has been impacted negatively by natural forces that rendered accessibility of the surface observation networks difficult. GBON places stringent requirement of data availability and quality which cannot be met with the current resources. It is highly recommended that during this process, capacity to move from point a to point be enhanced in ensuring compliance to GBON requirement is met. Furthermore, the country is vast and the timeline for restoration of stations is short. The technical capability is currently at the Head Quarters which is also limited considering the distance that should be covered to maintain/ repair the observation infrastructure. Calibration of the test instrument test chambers requires to be exported resulting in extended period without requisite systems to validated correctness of the field test equipment. Capacity to be able to operate optimally when one chamber is out for calibration need to be enhanced. Personnel responsible for maintenance of the ICT networks as well as observations infrastructure requires upskilling to meet the ever-growing technological enhancement being used for data collections and dissemination. Upper air sounding has not been performed in the country for an extended period. Personnel trained previously to perform this role need refresher training on preparation and deployment of balloons and their payloads. Encoding and transmission upper-air observations using prescribed codes and methods is also required to enhance quality control capacity of the NMHS.

INAM has capacity to receive and manage compliance funding through a dedicated account.

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Investment Phase Alignment with the GBON National Contribution Plan

Please attach the National GBON Gap Analysis and GBON National Contribution Plan as Annex 1.

The investment phase proposal includes all activities and recommendations from the National Contribution Plan. Some additional activities were considered under Output 1 to further strengthen INAM's capacity to manage and operate infrastructure components and integrate them into existing INAM initiatives for improved seasonal monitoring and forecasting, leveraging WFP's ongoing activities with INAM in Mozambique. Furthermore, leveraging the capacity of CSOs in Mozambique, consultation workshops in each province were added to the budget and workplan.

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4. Investment Phase Outputs and Budget

The GBON National Contribution Plan provides detailed information on the Investment Phase Outputs (please see Annex 1).

Based on the recommendations and technical specifications provided in the National GBON Gap Analysis and GBON National Contribution Plan, and complemented by the Country Hydromet Diagnostic, please provide the required budget amount for the delivery of the Investment Phase Outputs.

Output 1. GBON institutional and human capacity developed	Main activities	Budget (USD)
1.1 National consultations including with CSOs, and other relevant stakeholders conducted	Conduct consultation workshops in each of the 11 provinces of Mozambique to leverage CSO participation and capacity, at least 1 awareness campaign on the use of weather observation infrastructure being rolled out through SOFF funding per province as well as the benefits of data collected on the local and national scale in mitigation of impact of weather on the economic activities of the country. Furthermore, the use of data for early warning projects.	159,831
1.2 NMHS institutional capacity required to operate the GBON network developed	Organize stakeholder engagement workshops/consultations including, where possible, civil society organizations (CSOs) focused on women's empowerment Capacity strengthening for INAM to operate and GBON network, including some key aspects for institutional infrastructure (vehicles in key areas) as well as specialized staff capacity development. Deliver capacity building activities on gender-sensitive topics in the context of SOFF operations. Promote gender equality by establishing minimum thresholds for female participation in SOFF-related activities.	273,997

<p>1.3 NMHS human capacity required to operate the GBON network developed</p>	<p>Training and Capacity development for staff (Human Resources) 8 technicians be trained for upper air Sounding 4 be trained for upper air system technicians be trained, Maintenance technicians and technologists, Data staff, IT Staff support and OHS Requirements.</p> <p>Conduct a gender assessment as part of the human capacity assessment (including areas as gender discrimination, harassment, gender balance etc.) and provide recommendations accordingly.</p>	<p>888,523</p>
Output 2. GBON infrastructure in place	Main activities	Budget (USD)
<p>2.1 New land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place</p>	<p>1. Replacement of AWS Station at Beira installed in 2017,</p> <p>2. Installation of new AWS AWOS at Lichinga at the current cannot be configured for hourly data dissemination,</p> <p>3. Installation of new AWS to Replace all-in-one AWS at Mapulanguene.</p> <p>4. Replacement of AWS in Nampula installed in 2017</p> <p>5. Replacement of AWS at Pemba installed in 2015</p> <p>6. Installation of new AWS at Tete to convert of Manual/ Climate Station to AWS.</p> <p>Data transfer cost and routine maintenance cost for 3 years included and development of SOP.</p>	<p>122,376</p>
<p>2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place</p>	<p>This includes all ICT related cost, including WJS 2.0 servers. Rehabilitation of existing stations which includes upgrading of communication systems and programming for data transmission in accordance with GBON requirements Development of SOP</p>	<p>266,259</p>

2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place	Building of a new upper air launching base station/balloon room building-at Tete which includes power supply and backup systems, Computer, and communications peripherals as well as Hydrogen storage tank and consumable which can only be realised on year 3 for all 4 sites. Development of upper air SOP.	2,379,625
2.4 Improved upper-air stations, related equipment, ICT systems, data management systems and standard operating practices in place	Rehabilitation of upper air launching/balloon room base stations at Beira, Maputo and Nampula and Development of Upper Air SOP	225,116
Outcome: Sustained compliance with GBON	Main activities	Budget (USD)
3.1 GBON land-based stations' commissioning period completed , country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	Routine maintenance and verification of the observation network in accordance with the maintenance plan for 21 GBON stations for 5-year period.	884,005
3.2 GBON upper air stations' commissioning period completed , country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	Cost for upper air consumable such as radiosonde, backup helium gas in bottles and diesel for back generators.	1,823,666
Total for all Outputs		7,023,398
Implementing Entity Fee¹		456,521
SOFF peer advisory services	Physical assessment of work performed for installation and rehabilitation of observation networks, Developing of SOP for upper air and GBON allocated AWS, Monitoring performance of the GBON allocated surface and upper air network, address tickets for GBON compliance of the network.	385,646
Total funding request		7,865,565

¹ The implementation fee cannot exceed 7% of the total Investment Phase funding request.

Budget breakdown by UNDG category ² (Excluding SOFF peer advisory services) ³		USD
Staff and personnel costs		923,515
Supplies, Commodities and Materials		3,434,790
Equipment, Vehicles, Furniture and Depreciation		418,590
Contractual Services Expenses		880,550
Travel		470,923
Transfers and Grants		360,525
General Operating Costs		534,505

² This budget does not include the Implementing entity fee.

³ The total budget (excluding the budget for the SOFF peer advisory services) is expected to be disaggregated by UNDG category. It includes direct and indirect costs of the Implementing Entity and beneficiary countries to establish a fully operational observation network, collecting and internationally exchanging data according to GBON requirements. Eligible expenditures are any type of expenditure required to implement the GBON National Contribution Plan, including the requirements of the beneficiary country to manage and administer the day-to-day activities of the Investment Phase. It also includes the budget required for the operation and maintenance of the observing network.

5. Investment Phase Implementation Arrangements

Execution model and implementation arrangements	<p>WFP as Implementing Entity will manage and execute the implementation of the Investment Phase in collaboration with the beneficiary country, Mozambique, following the process described in the SOFF Operational Manual and in line with the SOFF Terms of Reference, and the UNMPTF legal agreements.</p> <p>A regular coordination mechanism between INAM, WFP and SAWS will be set up for technical coordination. Additionally, an annual planning exercise will be conducted to closely plan all activities for the upcoming year, analyse any bottlenecks or delays in implementation and agree on any corrective measures on the implementation plan if necessary.</p> <p>The flow of funds from WFP to INAM will be defined in a legally binding Memorandum of Understanding between INAM and WFP, leveraging an existing MoU between WFP and INAM with similar activities. This MoU will include detailed information on financing tranches, claims, reporting, monitoring etc.</p> <p>Procurement of assets will be mostly managed by the Implementing Entity, given WFP's strong procurement team in Mozambique, experience in procurement of specialized good and services, importing and other necessary aspects. At the beginning of the project, a joint procurement plan will be agreed between INAM, WFP and SAWS to analyse exact moments of procurement for all assets, technical considerations, potential need for storage, lead times, etc. INAM with support from the peer advisor will be responsible for the specification of technical requirements of goods and services to be procured, including drafting and revision of terms or references, proposals etc. The implementing entity will be responsible for process management, ensuring transparent and competitive processes as per WFP's supply chain and procurement guidelines.</p> <p>In INAM, all activities will be overseen by INAM headquarters in Maputo. INAM will ensure adequate information flows and coordination between central and local level representations from INAM. INAM will ensure adequate data flow to the Regional WIGOS Centre (RWC).</p>
Private sector involvement	<p>When appropriate, agreements with private sector entities will be established in order to consider and access their data, INAM will make it available if and/or when necessary. INAM's current agreements with private sector entities will be analysed and leveraged for this initiative if relevant.</p>

	<p>As per the NCP, private sector entities such as Cahora Bassa, Institutions of Higher learning, Açucareira de Mafambisse and Açucareira de Marromeu Sugar factories owns weather observations stations and INAM have existing memorandum of understanding (MoU). Under this project INAM is to review to allow for inclusion of additional stations into the national observation network. There is a need to develop program of action aligned to the existing MoU's, which could include sharing of resources for upgrading and maintenance of stations to be GBON compliant.</p> <p>As part of this project, INAM will prioritize the development of the National WIGOS implementation plan where all stakeholders owning and operating weather observations infrastructure can be mobilized to contribute to the rollout of the weather infrastructure that will address data needs for all weather sensitive industries in the country.</p> <p>In Mozambique, the State has full control of the hydromet services, including the generation of observations. In this model, single components of the observing system can be outsourced to commercial entities, according to ongoing revisions mentioned above.</p>
Civil society participation	<p>The rollout of the GBON network is spread across the provinces of Mozambique. INAM will be conducting national awareness campaigns to sensitise the communities of the significant role which data collected from the weather observation infrastructure is playing toward climate resilience and food security. During the workshops to be conducted, the specific roles of CSOs in different provinces of Mozambique will be defined.</p> <p>Communities will be adequately informed and involved in the initiative by INAM in close coordination with CSOs. This will aim to translate into better understanding of the initiative at local level, and consequently to a reduction of vandalism of the observation network and improve on data availability.</p>
Fiduciary systems	<p>WFP will develop a legally binding Letter of Agreement with the Instituto Nacional de Meteorologia (INAM) outlining the responsibilities of the two parties, including reporting, monitoring, evaluation, audit, payments, purpose, term, amendments and termination for the duration of the SOFF financing. This will be based on the existing agreement between INAM and WFP which was signed in 2020, to be amended to include the implementation period, activities and budget under the SOFF initiative.</p>

Social and environmental safeguards	<p>Since 2021, the WFP Environmental and Social Safeguards Framework (ESSF) applies to all WFP activities and the standards will be included in agreements with Cooperating Partners. The WFP Environmental and Social Safeguards Framework is based on existing 'do no harm' provisions mandated by WFP's Environmental Policy, Climate Change Policy, Policy on Disaster Risk Reduction and Management, Humanitarian Protection Policy; Statement of Humanitarian Principles; Guidance Note on Prevention of Child Labour; Policy on Building Resilience for Food Security and Nutrition; Gender Policy; Policy on HIV and AIDS and relevant international agreements and treaties. The WFP Safeguards Framework is fully aligned with the Model Approach to Environmental and Social Standards in UN Programming.</p> <p>Regarding the cross-cutting issues of human rights, women's rights and gender equality, climate/environment, the following applies:</p> <ul style="list-style-type: none"> • Climate and environment: The project design adheres to core environmental standards outlined in the WFP ESSF (2021), preventing potential environmental harm and ensure sustainability. The Environmental and Social Risk Screening Tool is employed to categorize risks, allowing for informed decision-making to mitigate low, medium, or high risks. Additionally, the Environmental Management System guides daily operations to ensure environmental sustainability is prioritized over the project's timespan. • Women's rights, gender equality, local and indigenous communities: Upholding accountability, inclusion, and non-discrimination principles, the project prioritizes the empowerment and participation of marginalized and vulnerable groups. In line with the UN Declaration on the Rights of Indigenous Peoples, Local and Indigenous Communities rights are respected. The project design is committed to gender equality and women's empowerment, aligning with WFP's Gender Policy (2022) based on transformative approaches. WFP will ensure that women and girls, in addition to men and boys, participate meaningfully throughout the full project life cycle. Activities will respond to beneficiaries' gender-differentiated needs and interests, paying attention to power differences that may increase risks of GBV that are identified by an initial gender and protection analysis. Further, WFP is fully committed to beneficiaries' protection from sexual exploitation and abuse (PSEA), as demonstrated by the newly updated WFP Executive Director's Circular (OED2023/011) and WFP's upcoming role as an IASC Champion for PSEA in 2024.
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	<p>Gender and inclusion gap assessments will be conducted to address diverse needs based on various factors.</p> <ul style="list-style-type: none"> • Under this initiative, INAM will develop a gender equity and equality plan to address existing gaps in women's inclusion and empowerment when it comes to GBON infrastructure management, contributing to an overall improved gender balance within INAM.
<p>Dispute resolution mechanism</p>	<p>WFP is first and foremost accountable to the people it serves; accountability, participation and empowerment through meaningful and consistent engagement are the key principles for mainstreaming protection. This means ensuring that affected populations, their families and diverse community organizations representing young people, older people, indigenous peoples, people living with HIV/AIDS and persons with disabilities participate in the decisions that affect their lives, receive the information they need to make decisions and have access to safe and responsive mechanisms for providing feedback. It also means working to ensure that affected populations have safe and dignified access to assistance in proportion to their needs, priorities and preferences. Investing in engagement with affected populations through adapted and accessible materials in clear terms and appropriate languages will facilitate acceptance of WFP's presence and sustained and unhindered humanitarian access, enabling affected populations to obtain WFP services and providing a level of protection for WFP staff and assets. This two-way communication with affected populations will be supported by the development of a system-wide community engagement strategy. This includes ensuring that activities designed at the field level with affected populations are validated by those same affected populations. Mechanisms for providing positive and negative feedback must also be set up to ensure that programmes and operations respond to needs as they evolve.</p> <p>Ensuring effective community feedback mechanisms (CFMs) is one of three pillars of the WFP Community Engagement for AAP Strategy.</p> <p>WFP's CFMs are governed by six assurance standards, which govern the following areas:</p> <ol style="list-style-type: none"> 1) Reach and accessibility of CFM channels 2) Minimum data collection 3) Case handling procedures 4) Information management systems 5) Feedback analysis, reporting and tracking 6) Quality assurance procedures

	<p>The dispute resolution mechanism between WFP and INAM is defined in detail in the current MoU already signed by both parties.</p>
<p>Additional relevant policies and procedures</p>	<p>WFP is a Green Climate Fund and Adaptation Fund accredited entity, a Climate Risks & Early Warning Steering Committee member, a member of the Risk-Informed Early Action Partnership Secretariat, and a lead partner in the EW4ALL initiative.</p> <p>WFP has corporate supply chain and procurement policies and guidelines that will also apply to relevant activities under these initiatives.</p>

6. Investment Phase Monitoring and Reporting

The implementing entity, with the support of the peer advisor, is expected to monitor the implementation of the Investment Phase following an output-based approach. The Investment Phase outputs as well as respective indicators and targets are presented below. *Please indicate the implementation targets and adjust the table as needed to reflect the implementation timeline. Years can be added.*

Output 1. GBON institutional and human capacity developed	Indicator	Target Y1	Target Y2	Target Y3	Target Y4	Target Y5
1.1 National consultations including with CSOs, and other relevant stakeholders conducted		5 consultation workshops with CSOs conducted				
		At least 50% of participants are women.	6 consultation workshops with CSOs conducted.			
	As defined in the National Contribution Plan	Stakeholders' engagement activities that involve CSOs focused on women' empowerment recommended in the National Contribution Plan	At least 50% of participants are women.			

1.2 NMHS institutional capacity required to operate the GBON network developed	30% of capacity strengthening activities successfully implemented.	30% of capacity strengthening activities successfully implemented	20% of capacity strengthening activities successfully implemented	10% of capacity strengthening activities successfully implemented	10% of capacity strengthening activities successfully implemented
	50% Training and Capacity development for staff (Human Resources) 8 technicians be trained for upper air Sounding 4 be trained for upper air system technicians be trained, Maintenance technicians and technologists, Data staff, IT Staff support and OHS Requirements completed.	80% Training and Capacity development for staff (Human Resources) 8 technicians be trained for upper air Sounding 4 be trained for upper air system technicians be trained, Maintenance technicians and technologists, Data staff, IT Staff support and OHS Requirements completed.	100% Training and Capacity development for staff (Human Resources) 8 technicians be trained for upper air Sounding 4 be trained for upper air system technicians be trained, Maintenance technicians and technologists, Data staff, IT Staff support and OHS Requirements completed.		
1.3 NMHS human capacity required to operate the GBON network developed	At least 50% of participants in training and capacity building	At least 50% of participants in training and capacity building	At least 50% of participants in training and capacity building		

		activities are women.	activities are women.	activities are women.		
		Women represent at least 50 % of decision-making and project management positions where applicable.	Women represent at least 50 % of decision-making and project management positions where applicable.	Women represent at least 50 % of decision-making and project management positions where applicable.		
		Women represent at least 50 % of staff for operating and maintaining GBON stations.	Women represent at least 50 % of staff for operating and maintaining GBON stations.	Women represent at least 50 % of staff for operating and maintaining GBON stations.		
Output 2. GBON infrastructure in place	Indicator	Target Y1	Target Y2	Target Y3	Target Y4	Target Y5
2.1 New land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	3 of the 6 new GBON compliant AWS rolled out and transmitting et by December 2024 as well as upgrade of the ICT systems and data management systems. Drafting of SOP for AWS and ICT systems	The remaining 3 of the 6 new GBON compliant AWS rolled out and transmitting by December 2025 as well as upgrade of the ICT systems and data management systems. Drafting of SOP for AWS and ICT systems	Physical assessment and Monitoring of AWS and ICT system performance and implementation of the SOP.	Monitoring of AWS and ICT system performance and implementation of the SOP.	Monitoring of AWS and ICT system performance and implementation of the SOP.

2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place		7 of the 15 existing AWS upgraded to meet GBON Requirements by December 2024. Drafting of SOP for AWS and ICT systems.	8 of the 15 remaining AWS upgraded to meet GBON Requirements by December 2025 completed. Drafting of SOP for AWS and ICT systems	Physical assessment and Monitoring of AWS and ICT system performance and implementation of the SOP.	Monitoring of AWS and ICT system performance and implementation of the SOP.
	# stations as per the GBON National Contribution Plan				
2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place		Site survey and EIA for Tete conducted by September 2024 as well as upgrade of the ICT systems and data management systems. Drafting of SOP for upper air systems.	Construction of the upper air building at Tete initiated by December 2025 as well as upgrade of the completed by December 2026	Upper Building for Tete and Installation of the upper air system peripherals	Physical assessment of Upper Building for Tete and Installation of the upper air system
	# stations as per the GBON National Contribution Plan				
2.4 Improved upper-air stations, related equipment, ICT air systems management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	Site survey and EIA for Nampula, Beira and Maputo conducted by	Procurement and installation of Upper Air equipment and	Physical assessment of Upper Building at	Monitoring of upper air system performance and

		September 2024 as well as upgrade of the ICT systems and data management systems. Drafting of SOP for upper air systems. Repairs of Maputo, Nampula and Beira Upper air building by December 2024.	peripherals for at Maputo, Nampula Beira and by July 2025. Site survey and EIA Installation of the upper air system	Maputo, Nampula Beira and	implementation of the SOP.	implementation of the SOP.
Outcome: Sustained compliance with GBON	Indicator	Target Y1	Target Y2	Target Y3	Target Y4	Target Y5
3.1 GBON land-based stations' commissioning period ⁴ completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	# stations as per the GBON National Contribution Plan	Procurement of maintenance and test equipment as well as spare for AWS and calibration of the test chamber. 50% data availability attained	Procurement of spare for AWS and calibration of the test equipment. 75% data availability attained	Procurement of spare for AWS and calibration of the test equipment. 80% data availability attained	Procurement of spare for AWS and calibration of the test equipment. 80% data availability attained	Procurement of spare for AWS and calibration of the test equipment. 80% data availability attained
3.2 GBON upper air stations' commissioning period completed, country-specific standard cost for	# stations as per the GBON National Contribution Plan	N/A	Procurement and installation of Upper Air	Procurement and installation of Upper Air	Sustain 80% and above data	Sustain 80% and above data

⁴ The commissioning period is the last year of the Investment Phase. The beneficiary country, supported by the Implementing Entity, must demonstrate the sustained operation of all the SOFF-supported stations according to the GBON compliance.

operations and maintenance established,
and data sharing verified by WMO
Technical Authority

equipment and peripherals for at Maputo,	equipment and peripherals for at Tete completed.	availability attained
Nampula Beira completed. 50% data availability attained	2025. 80% data availability attained	

The implementing entity is expected to report on progress as described below.

- **Quarterly updates** to the SOFF Secretariat: A simple standardized form providing a progress update against the Investment Phase Outputs' indicators (and Outcome, where applicable⁵) and flagging major issues that are delaying implementation, if any.
- **Annual narrative and financial reports** according to the UNMPTF reporting requirements indicated in the legal agreements. The annual narrative report reports on progress on the delivery of the Investment Phase Outputs, measured by the Investment Phase Indicators. It includes also a review of the Investment Phase risks and an update on environmental and social safeguards, including gender.
- **Final narrative and financial reports** according to the UNMPTF reporting requirements indicated in the legal agreements. The final narrative report confirms the completion of all the activities and report on the number of stations that have completed the commissioning period (outcome). The WMO technical authority verifies GBON compliance of the indicated stations and provides a verification report to the SOFF Secretariat. Upon WMO verification, the Investment Phase can be considered completed. The Final Report should describe the Investment Phase results achieved and lessons learned; and it should also specify the long-term institutional arrangements to secure sustained GBON compliance with SOFF Compliance Phase support.

⁵ The quarterly reports should also include, when applicable, progress achieved in terms of new or rehabilitated stations that have become operational and are already sharing the data into the WIS 2.0 system as confirmed through the WIGOS Data Quality Monitoring System (WDQMS) web tool.



7. Investment Phase Risk Management Framework

The Investment Phase Risk Management Framework should be based on the [SOFF Risk Management Framework](#), incorporating relevant programmatic risks and including additional country-specific risks. Please follow the [methodology established by the Multi-Partner Trust Fund Office \(MPTFO\)](#) presented below.

		Impact				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Likelihood	Very Likely (5)	Medium (5)	High (10)	High (15)	Very High (20)	Very High (25)
	Likely (4)	Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)
	Possible (3)	Low (3)	Medium (6)	High (9)	High (12)	High (15)
	Unlikely (2)	Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)
	Rare (1)	Low (1)	Low (2)	Medium (3)	Medium (4)	High (5)

Please complete the following table.

Risk	Risk level	Likelihood	Impact	Risk Mitigation Measures
Non-compliance with fiduciary and procurement standards in some SOFF activities	Medium	Rare	Moderate	WFP has strict corporate guidelines for procurement as well as fiduciary arrangements that are enforced at all levels.
SOFF-funded investments cause environmental or social impacts	Low	Rare	Insignificant	WFP has a corporate environmental and social safeguards screening tool that will be applied to all relevant activities. Through



				<i>this tool, specific risk related to specific assets and activities are identified and mitigation measures planned.</i>
NMHS staff depart after being trained	<i>High</i>	<i>Possible</i>	<i>Major</i>	<i>WFP, INAM and SAWS will collaborate closely to ensure that institutional capacity is built to ensure that even in case of departure of key staff members, institutional knowledge is not lost. This will include tailored training and capacity building methodologies and material.</i>
Slow implementation and delays in procurement, installation and capacity building activities	<i>High</i>	<i>Possible</i>	<i>Moderate</i>	<i>WFP, INAM and SAWS will establish a detailed workplan considering all relevant activities in order to ensure compliance with agreed timelines. In case there are any delays in specific activities, WFP, SAWS and INAM will closely coordinate to take preventive action</i>



				<i>to ensure that this does not affect any other activities.</i>
After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality	<i>Medium</i>	<i>Unlikely</i>	<i>Major</i>	<i>Corrective action will be taken in case during the implementation of this investment phase, new or different needs occur that may prevent the GBON data collection after the conclusion of the investment phase. Additionally, INAM and WFP will take preventive action to avoid that data is not collected or shared through comprehensive investment in human capacity to conduct these tasks.</i>
Destruction or theft of SOFF-financed equipment and infrastructure	<i>High</i>	<i>Unlikely</i>	<i>Extreme</i>	<i>INAM will ensure adequate conditions for procured infrastructure, to ensure that it is safe from theft and destruction in case of major climate events.</i> <i>INAM and WFP will ensure adequate</i>



				CSO involvement, including community sensitization that will aim to maximize local understanding and ownership of the initiative.
Mozambique cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain	<i>Medium</i>	<i>Unlikely</i>	<i>Major</i>	<i>Capacity building activities supported by WFP for INAM complementary to the SOFF investment phase activities will have a specific focus on supporting INAM to make optimal use of data, aligned with national policy frameworks for early warning, forecast-based finance and anticipatory action.</i>



Annex 1: National Gap Analysis

The National Gap Analysis of Mozambique is available [here](#).



Annex 2: National Contribution Plan

The National Contribution Plan of Mozambique is available [here](#).



Annex 3: Country Hydromet Diagnostics



Annex 4: Terms of Reference for the provision of technical advisory services during the SOFF Investment Phase

1. Purpose and scope

These Terms of Reference describe the provision of technical advisory services by South African Weather Service (SAWS) to Mozambique to contribute to the delivery of the SOFF Investment Phase outputs as described in Section 3.

The Terms of Reference are based on the [SOFF Operational Manual](#), Section 4.4.3 on the Operational Partners and Section 4.5.2 on the Investment Phase; as well as on the [SOFF Investment Framework](#), Section 4.5 on the Peer Advisors and WMO Technical Authority.

2. Roles and responsibilities

Beneficiary country National Meteorological and Hydrological Service

- Is responsible for implementing the activities of the SOFF Investment Phase activities with the support of the Implementing Entity and the peer advisor.
- Submits the SOFF Investment Phase funding request using the standardized template provided by the SOFF Secretariat, including the Terms of References for the peer advisor's technical advisory services during the Investment Phase.
- Is responsible for collaborating with the Implementing Entity to provide all the necessary information, participate in and facilitate the national activities that the Implementing Entity and peer advisor need to conduct in order to deliver the SOFF Investment Phase outputs.
- Confirms the completion of all the Investment Phase activities and provides comments as needed on the final report prepared by the Implementing Entity.

Peer advisor

- Is accountable to the beneficiary country and the Implementing Entity.
- Is contracted via the WMO pass-through mechanism and operates on a cost-recovery basis.
- Provides technical advisory services to support beneficiary countries and Implementing Entities in the design and implementation of the SOFF Investment Phase activities.
- Contributes to the final report of the SOFF Investment Phase.

Implementing Entity

- Prepares the Investment Phase funding request in collaboration with the beneficiary country and the peer advisor, including the Terms of References for the provision of technical advisory services during the SOFF Investment Phase.
- Manages the Investment Phase activities following the terms specified in the funding request and in collaboration with relevant national partners, including civil society organizations.



- Delivers the Investment phase outputs and is responsible for their quality and timely delivery, in coordination with the country and the peer advisor.
- Provides quarterly updates to the SOFF Secretariat according to a simple standardized form and annual reports according to the United Nations Multi-Partner Trust Fund Office's reporting requirements indicated in the legal agreements.
- Informs the SOFF Secretariat of circumstances that could materially impede the implementation of the Investment phase or any considerable deviation in the conditions of the funding request to achieve its objectives.
- Submits the final report to the SOFF Secretariat including the beneficiary country's comments and the peer advisors' feedback. The final report describes the institutional arrangements to secure sustained operation and maintenance of the investments made.

WMO Technical Authority

- Provides basic on-demand technical assistance to the beneficiary country, Implementing Entity and peer advisor on GBON regulations, including on monitoring and assessing the data-sharing status of the stations using the WDQMS web tool⁶
- Is responsible for the verification of data sharing of the new or rehabilitated surface and upper -air stations as per GBON regulations.
- WMO provides a verification report to the SOFF Secretariat, upon which the Investment Phase can be considered completed.
- Establishes and administers the pass-through mechanism for contracting and funding of the advisory services provided by the peer advisors.

SOFF Secretariat

- Facilitates communication, coordination and collaboration between the beneficiary country, the Implementing Entity, the peer advisor and WMO Technical Authority.
- Reviews the SOFF Investment Phase funding request, including the Terms of Reference for the provision of technical advisory services and provides feedback as needed. Then transmits the funding request to the SOFF Steering Committee for their decision.
- Compiles quarterly updates and annual reports and monitors implementation based on information received from the Implementing entity, the peer advisor and the beneficiary country. Regularly informs the Steering Committee of progress.
- Coordinates regional implementation approaches to the SOFF Investment Phase.
- Confirms receipt of the final report by the Implementing Entity and completion of the Investment Phase based on WMO verification of data sharing.
- Organizes exchange of knowledge and experiences and captures lessons learned.

⁶ The WDQMS web tool monitors the availability and quality of observational data based on near -real-time information from the four participating global Numerical Weather Prediction centres: the German Weather Service (DWD), the European Centre for Medium range Weather Forecasts (ECMWF), the Japan Meteorological Agency (JMA) and the United States National Centers for Environmental Prediction (NCEP). These are four of the ten World Meteorological Centres, designated by WMO to provide global numerical weather prediction products for all WMO Members.



3. Peer advisors' activities during the SOFF Investment Phase

The peer advisor will support the implementation of the SOFF Investment Phase through the following activities:

- SAWS will perform physical assessment of work performed during installation of new AWS instrumentation and during rehabilitation of existing AWS network.
- Furthermore, assessment of the work performed during rehabilitation and construction of the required balloon rooms for installation of upper observation equipment.
- Monitoring of procurement of ICT infrastructure required for upgrading the current data collection and transmission capability of INAM through implementation of WIS 2.0 and to improve redundancy to minimise data loss.
- Monitoring of procurement of upper systems and supporting equipment to ensure sustainability of the program.
- Support INAM during upgrading of software required for collecting and processing of the data from remote AWS network to meet the GBON availability and quality requirements.
- Support INAM with updating and or configuration of OSCAR Metadata requirements.
- Assist INAM with development of Standard Operation Procedures for performance of upper air and operation and maintenance of the GBON allocated AWS.
- Monitoring performance of the GBON allocated surface and upper air network, address tickets for GBON compliance of the network during the investment implementation phase.
- Support INAM in the development of the National WIGOS implementation plan taking into consideration the regional collaboration requirement in addressing data gap along the borders.
- Review the plan to accommodate continuously and advise INAM where adjustment is required.

In case of other required tasks that may arise during the project implementation, which are beyond the scope of the peer support activity, SAWS may support, but costs should be covered through the budget managed by the IE.