

# Sixth Steering Committee

## 27 November 2023

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# SOFF Investment Phase

## Funding Requests

Decision 6.3

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Systematic Observations  
Financing Facility

**Weather  
and climate  
data for  
resilience**



## Decision 6.3: Approval of SOFF Investment funding requests

The Steering Committee

**Acknowledges** the Advisory Board recommendation to the sixth Steering Committee to approve the decisions related to Operations, including 6.3.

**Approves** the Investment Phase funding requests for a total budget of USD 30'543'829. The funding decisions for Belize and South Sudan are subject to African Development Bank and Inter-American Development Bank signing the Framework Agreement with UNMPTF Office by 15 February 2024.

**Urges** Beneficiary Countries, Implementing Entities and Peer Advisors to complete the Investment phase within the timeframes indicated in the respective funding requests.

**Encourages** the SOFF Advisory Board Members to identify country-level synergies and complementarities and inform the SOFF Secretariat accordingly.



### Requests

- The UNMPTF Office to disburse the following amounts to the recipient organizations
  - United Nations Development Programme: USD 3'107'377
  - United Nations Environment Programme: USD 15'019'178
  - World Food Programme: USD 7'479'919
  - African Development Bank: USD 2'168'056 – subject to signing of the Framework Agreement with UNMPTF
  - Inter-American Development Bank: USD 805'710 - subject to signing of the Framework Agreement with UNMPTF
  - World Meteorological Organization: USD 1'963'589
- WMO to issue Assignment Agreements with the peer advisors that include the Terms of Reference as stated in the annex of each funding request.

This document provides an overview of the first six SOFF Investment phase funding requests. It presents the overall approach to the SOFF Investment Phase, the budgets, the implementation arrangements and summarizes the GBON gaps expected to be closed in the six countries. The SOFF principle of flexibility is highlighted in the document to account for the diverse country situations and needs. Finally, an overview of risks and the mitigation measures identified are summarised.

# SOFF Investment funding requests

## Project Document

<p><b>Project Title:</b> SOFF Investment funding requests</p>	<p><b>Recipient Organizations:</b> United Nations Development Programme, United Nations Environment Programme, World Food Programme, African Development Bank, Inter-American Development Bank, World Meteorological Organization</p>
<p><b>Project Contact:</b> Markus Replik SOFF Secretariat 7bis Avenue de la Paix Case postale 2300 Nations, 1211 Genève Telephone: +41797901882 E-mail: mrepnik@wmo.int</p>	<p><b>Project Location:</b> WMO Secretariat Geneva 7bis Avenue de la Paix Case postale 2300 Nations, 1211 Genève</p>
<p><b>Project Description:</b> Funding requests for the implementation of the SOFF Investment phase. The SOFF Investment phase supports the development of GBON institutional and human capacity, GBON infrastructure, and the achievement of sustained GBON compliance.</p>	<p><b>Total Project Cost for 27 November 2023 –</b> USD 30'543'829</p>
	<p><b>Project Start Date:</b> 1 December 2023 <b>Proposed Project End Date:</b> 31 December 2028 <b>Project Duration:</b> 61 months</p>
<p><b>For the Recipient Organizations:</b>  Petteri Taalas Secretary-General, World Meteorological Organization Signature: </p> <p>Date: 13.12.2023</p>	<p><b>Chair of the SOFF Steering Committee:</b>  Jørgensen Aage Co-Chair of the SOFF Steering Committee Signature: </p> <p>Date: 12.01.2024</p>

# SOFF Investment phase funding requests

## 1. Overview

This document presents an overview of the first group of countries that submitted an Investment Phase Funding Request for consideration of the Sixth SOFF Steering Committee.

All the countries in this list were programmed in November 2022 ([Decision 3.4](#)) and the Readiness Funding Requests were approved March 2023 ([Decision 4.3](#)).

Four of these six countries, namely Kiribati, Maldives, Mozambique, and South Sudan are part of the Early Warning for All Initiative initial group of countries.

**Table 1.** List of SOFF Investment Phase Funding Requests for Sixth SOFF Steering Committee's consideration

No.	Country	Implementing Entity	Peer advisor	Duration (years)	Peer advisor funding	IE funding USD
<a href="#">IPFR 01</a>	Kiribati	UNEP	Australia	5	262'500	10'582'652
<a href="#">IPFR 02</a>	Maldives	UNEP	Finland - Indonesia	5	440'000	4'436'526
<a href="#">IPFR 03</a>	Mozambique	WFP	South Africa	5	385'646	7'479'919
<a href="#">IPFR 04</a>	Rwanda	UNDP	Finland	4	400'000	3'107'377
<a href="#">IPFR 05</a>	South Sudan	AfDB	Austria	4	292'000	2'168'056
<a href="#">IPFR 06</a>	Belize	IADB	United Kingdom	3	54'984	805'710
<b>Subtotal<sup>1</sup></b>					<b>1'835'130</b>	<b>28'580'240</b>
<b>WMO indirect support costs (7%)<sup>2</sup></b>					<b>128'459</b>	
<b>TOTAL USD</b>						<b>30'543'829</b>

<sup>1</sup> The subtotal includes the Implementing Entity fee corresponding to up to 7% of each funding request total budget.

<sup>2</sup> WMO indirect support costs correspond to the 7% of the peer advisory services of all the funding requests.

## 2. Budget

The total funding requested by the six countries for the implementation of SOFF Investment phase corresponds to USD 30'543'829. The budget<sup>3</sup> ranges between USD 860'694 and USD 10'845'152.

Belize requested the lowest amount as the GBON gap in the country is minimal, requiring SOFF support mostly to upgrade two surface stations and to ensure the sustainability of the existing upper air station. On the other hand, Kiribati has the highest budget as the country comprises of numerous islands with expansive marine exclusive economic zone (EEZ). Such geographical complexity leads to elevated costs associated with travel, logistical arrangements, and overall expenditures.

In the case of South Sudan, the proposed budget only includes the expenses for the first implementation stage (See Section 4). After successful completion of stage 1, a second funding request will be submitted for the final implementation stage.

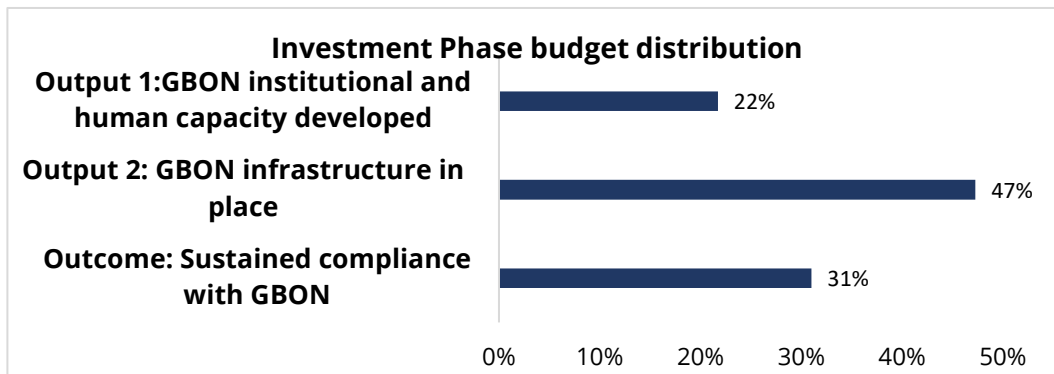
The budget for each country will be disbursed in two tranches based on implementing entities' procedures and arrangements with the beneficiary country. It must be noted that the peer advisor's fee is paid separately through the WMO pass-through mechanism<sup>4</sup>, hence it is not included within these tranches, but is accounted for in the total budget.

The six funding requests show a distribution of budget across the outputs as shown in Figure 1. While funding for the installation and re-habilitation or upgrade of surface land and upper air stations (output 2) constitute the biggest portion of the investment, the funding requests also allocate reasonable and realistic budget to develop the capacity required to ensure sustained operation and maintenance of observing network in compliance with GBON (outcome). This shows the importance of allocating financial resources to focus on the sustainability of the newly installed or upgraded GBON stations and on maintaining long-term availability and quality of observations internationally shared.

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<sup>3</sup> These amounts include the SOFF peer advisor fee, but do not include WMO indirect costs corresponding to 7% of the peer advisory services.

<sup>4</sup> WMO administers a pass-through mechanism for contracting, funding and receiving reimbursement of unspent funds related to technical assistance provided by the SOFF peer advisors. WMO establishes standardized contractual arrangements, issues contracts, and makes payments to peer advisors based on Steering Committee decisions and upon request from the SOFF Secretariat and per WMO administrative rules and procedures.



**Figure 1:** Investment Phase budget distribution across outputs in the six funding requests

### 3. An Output-based approach

The implementation of the Investment Phase follows the provisions indicated in the Operational Manual ([Decision 2.2](#)) and the SOFF Investment Phase Framework adopted by the fifth Steering Committee ([Decision 5.8](#)).

The Framework is structured around an output-based approach and reflects the nature of SOFF investments which are guided by the standard requirements of the Global Basic Observing Network (GBON).

This approach responds also to the need of increasing ease of access to finance by facilitating the preparation of the funding request and allowing for flexible implementation, in recognition of the multi-faceted challenges of operating in very diverse country contexts, including Fragile and Conflict-Afflicted States.

#### 3.1. SOFF Investment Phase outputs

During the Investment Phase, SOFF funding is used to procure, install and operate the observation infrastructure, telecommunications, and other equipment needed for GBON stations, as well as strengthen the human and institutional capacity needed to operate, maintain, and share GBON observations.

The activities are structured around two standard outputs: 1) GBON human and institutional capacity in place; 2) GBON infrastructure in place; and aim at achieving one outcome: Sustained GBON compliance. See table 2.

These outputs build on the outputs delivered during the Readiness Phase namely the GBON National Gap Analysis, the GBON National Contribution Plan and the Country Hydromet Diagnostics (CHD).

The GBON National Gap Analysis defines the gap between the national GBON target according to the mandatory GBON requirements, using the WMO Global GBON Gap Analysis June 2023 (INF 6.2) as reference, and the existing national surface and upper-air network. It serves as the basis for identifying the number of observing stations that need

to be installed or rehabilitated to become compliant with the mandatory requirements of the GBON regulations.

Following the completion of GBON National Gap Analysis, the GBON National Contribution Plan is developed to identify the observing infrastructure, human and capacity needed to achieve GBON compliance, including the sustained operations and maintenance of the national observing network. The Plan is designed to respond to the specific country's circumstances and geographical characteristics and reflects a progressive but realistic ambition toward full GBON compliance.

The WMO Technical Authority conducts a technical screening of the National Gap Analysis and the National Contribution Plan and confirms these are consistent with GBON regulations. The National Gap Analysis and National Contribution Plan are the basis of Investment Funding Request and are annexed to it.

In parallel, the country performs the CHD, a comprehensive assessment of the whole meteorological value chain. The results of the CHD provide an overview of the additional support and capacity building that the country needs to make effective use of SOFF results and provide the basis for tailored hydromet investments.

The CHD provides also critical information to get an understanding about the National Hydro-Meteorological Service technical, management, and administrative capacity for Investment Phase execution.

The CHD is a non-mandatory output of the SOFF Readiness Phase, however recognizing the important of this tool, all the countries have decided to undertake it. The CHD report is annexed to the funding request. Two countries that have submitted an investment phase funding request are still finalizing the CHD but are at advanced stages and expect to complete it before the Steering Committee meeting on the 27<sup>th</sup> of November.

### **3.2. SOFF Investment phase outcome**

The outcome of the investment phase is the achievement of sustained GBON compliance. Upon completion of the investment phase activities, the beneficiary country is expected to have developed the capacity to generate and internationally exchange GBON observations sustainably. This is demonstrated during the Commissioning Period, which is the last year of the Investment Phase.

Individual stations are expected to start sharing data before the last year of the Investment Phase. However, it is during the commissioning period<sup>5</sup> that the beneficiary country is expected to fully operate and maintain the network striving to achieve the

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<sup>5</sup> A GBON station commissioning is the process in which GBON data is reliably shared via the WMO Information System 2.0 (WIS 2.0) according to GBON compliance criteria. WIS2 is the framework for WMO data sharing for all WMO domains and disciplines. WMO has developed the open-source software "WIS2 in a box" (<https://docs.wis2box.wis.wmo.int>) to support LDCs and SIDS in implementing WIS 2.0.



sustained operation of all the SOFF-supported stations according to the GBON compliance criteria.

In cases of force majeure or unforeseen difficulties preventing the country from achieving GBON compliance of the supported stations, the commissioning period may be extended, or additional investment funding may be requested for consideration of the Steering Committee.

After the completion of the commissioning period, the country is expected to enter the Compliance phase and receives result-based financing as a contribution to the operation and maintenance costs.

The table below presents how the outputs and outcome are structured in the Investment Phase Funding Request.

**Table 2:** SOFF Investment Phase outputs

<b>Output 1. GBON institutional and human capacity developed</b>
1.1 <b>National consultations</b> including with CSOs, and other relevant stakeholders conducted
1.2 <b>NMHS institutional capacity</b> required to operate the GBON network developed
1.3 <b>NMHS human capacity</b> required to operate the GBON network developed
<b>Output 2. GBON infrastructure in place</b>
2.1 <b>New land-based</b> stations and related equipment, ICT systems, data management systems and standard operating practices in place
2.2 <b>Improved land-based</b> stations and related equipment, ICT systems, data management systems and standard operating practices in place
2.3 <b>New upper-air</b> stations and related equipment, ICT systems, data management systems and standard operating practices in place
2.4 <b>Improved upper-air</b> stations, related equipment, ICT systems, data management systems and standard operating practices in place
<b>Outcome: Sustained compliance with GBON</b>
3.1 <b>GBON land-based stations'</b> commissioning period completed country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority
3.2 <b>GBON upper air stations'</b> commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority



## 4. Closing the GBON Gaps

SOFF operations aim to close the most significant GBON gaps, focusing on the Least Developed Countries (LDCs) and Small Island Developing States (SIDS).

Driven by the goal of maximizing the critical input from observations to the Numerical Weather Prediction (NWP) models, highest priority are the areas from which few or no observations are currently available.

According to the WMO Global GBON Gap Analysis 2023, **the six countries currently have nearly no station reporting in compliance with GBON** (See Table 3 under 'Reporting') and **represent 9.3% of the GBON Gap for Surface stations and 9.5% of the GBON Gap for Upper air stations in LDCs and SIDS.**

As stated in [Decision 5.7](#), WMO conducted a GBON Global Gap Analysis based on June 2023 baseline (See INF 6.2), which indicates the target number of GBON stations, the number of reporting stations, and gap for both surface land and upper air observations in the countries. This provides a reference for the peer advisors and beneficiary countries to develop the GBON National Gap Analysis.

In certain cases, the numbers for the GBON gap indicated in the WMO Global Gap Analysis and those included in the GBON National Gap Analysis developed by the countries can differ based on the results of the detailed assessment at the country level and also based on specific national circumstances.

The principle of flexibility for determining the number of stations to be supported by SOFF was applied in the following three circumstances:

- 1. Specific topography of the country:** countries with complex topography such as highly mountainous terrain, multiple microclimates, small islands with isolated and hard to reach areas;
- 2. Regional observation coverage:** significantly under-observed regional areas, in particular conflict-afflicted areas, where reaching optimal coverage is not expected to be achieved in the short term;
- 3. Sustainability of previous investments in observations:** where previous projects/programmes from other partners invested in the observing network but do not cover the costs for continued operations and maintenance.

In such cases, it is proposed to the Steering Committee to allow countries to receive SOFF support for a higher number of stations than the GBON standard density target indicated in the WMO Global GBON Baseline (June 2023). Table 3 provides an overview of the national investment targets in the six countries for surface and upper air stations and shows how they compare to the WMO Global GBON Analysis.

**Table 3.** Overview of the WMO GBON Global Gap Analysis (June 2023) in the six countries and National Investment Targets indicated in the funding request to fill the GBON gap.

Country	WMO GBON Global Gap Analysis						National Investment Targets <sup>6</sup>			
	Surface stations			Upper air stations			Surface stations		Upper air stations	
	Reporting	Gap New	Gap Improve	Reporting	Gap New	Gap Improve	Gap New	Gap Improve	Gap New	Gap Improve
Kiribati	0	6	8	0	2	2	9 <sup>7</sup>	5	2	1
Maldives	0	0	4	0	0	1	1	4	0	1
Mozambique	0	0	20	0	4	0	6 <sup>8</sup>	15	4	0
Rwanda	0	0	1	0	1	0	0	3	1	0
South Sudan	0	14	2	0	3	0	9	1	0	0
Belize	0	0	1	1	0	0	0	2	0	0

Below is an overview of the major reasons for divergence between the Global GBON Gap Analysis and the National targets indicated in the funding request.

- Kiribati:** The estimated GBON target for SIDS include the Exclusive Economic Zone (EEZ) area, which is added to the total surface area. Therefore, the standard density requirements for SIDS are 500 km for surface stations and 1000 km for upper-air stations. The country is seeking an exemption from the GBON requirement for a fourth upper air station, associated with the vast EEZ in the southern Line Islands. This request is grounded in the impracticality of establishing such a station in this extremely remote, uninhabited marine zone.
- Maldives:** The GBON National Gap Analysis recommends financing 5 surface land stations in Maldives, although the target according to the WMO GBON Global Gap Analysis is 4 as per standard density requirements. This is due to the 300 km

<sup>6</sup> The National Investment Target is based on the GBON National Contribution Plan and indicates the number of stations that are going to be installed and/or improved to fill the gap toward GBON Compliance.

<sup>7</sup> Nine existing staffed stations will be upgraded to co-locate staffed and automatic weather stations which will enable the existing stations to provide 24 hours observations.

<sup>8</sup> While the Global GBON Gap analysis indicates the need to improve 21 Surface land stations and install 4 new upper-air stations to meet the GBON standard density requirements, based on the in-country assessment it is proposed that 6 new automatic weather stations replace the existing ones as these are either very old or cannot be efficiently improved to meet GBON requirements.

interval between two stations (Hanimaadhoo and Male) and considering the scarcity of the observing stations in the Indian Ocean.

- **Mozambique:** The Global GBON gap analysis indicated the need to upgrade 20 surface stations. However, technical assessments conducted on site during the development of the National Contribution Plan indicated the need to replace six existing outdated stations that cannot be efficiently rehabilitated to meet GBON temporal resolution. Moreover, an additional station will be affiliated to GBON to close the gap in the south-eastern part of the country.
- **Rwanda:** The WMO global GBON gap analysis indicated the need to improve 1 surface station, however the country is located in a severely under-observed and conflict-afflicted regional area. In addition, the topography of the country is highly inhomogeneous with several microclimates representing small spatial scales. For these reasons, it is proposed that Rwanda receives SOFF support to achieve GBON high-density target, corresponding to 3 surface stations rather than one as per GBON standard-density requirements.
- **South Sudan:** To ensure successful and efficient implementation of the National Contribution Plan, it is recommended that the SOFF Investment phase in South Sudan is carried out in two stages, each with a corresponding funding request. The submitted funding request only reflects targets from the first implementation stage. The overall GBON target for upper air stations stated in the NCP is 3, but for stage one it is recommended to start with only a feasibility study for one upper air station.
- **Belize:** The WMO GBON Global Gap Analysis identified the need for 1 surface land and 1 upper stations in Belize to cover horizontal resolution for GBON. Due the absence of GBON nominated stations in neighbouring Guatemala, 2 existing surface land stations was recommended to be improved in order to meeting the lower threshold of spatial resolution for the GBON network in Belize and in the wider region.

## 5. Implementation arrangements

The Implementing Entity manages the implementation of the Investment Phase in collaboration with the beneficiary country following the process described in the SOFF Operational Manual and in line with the United Nations Multi-Partner Trust Fund's legal agreements.

### 5.1. Execution models

A key element of the Investment Phase Funding Request is the definition of the execution model, i.e., the definition of roles and responsibilities of the beneficiary country, the Implementing Entity and any additional Executing Partner(s) as well as the corresponding definition of project governance processes and procedures, including instruments to

manage the disbursement and flow of funds. Recognizing the diverse profile and needs of SOFF beneficiary countries, the choice of execution model is flexible and dependent on country demand and context. The table below provides a brief overview of the proposed execution models. The full description is provided in Section 5 of each funding request.

**Table 4:** Overview of the execution models

Country	Execution Model
<b>Kiribati &amp; Maldives</b>	<p><b>Hybrid</b></p> <p>UNEP will deploy a hybrid executing model comprising a National Executing Entity and, at the request of the SOFF Beneficiary Country, limited Executing Entity functions by UNEP itself. UNEP will be responsible for the implementation, financial management, evaluation, reporting and closure of the activities under the Project. The Maldives Meteorological Service and the Kiribati Meteorological Service will serve as the national Executing Entities (EE). They will be accountable to UNEP for Project execution and for the effective and efficient use of resources. UNEP will enter into an appropriate agreement (Project Cooperation Agreement) with the NMHSs.</p>
<b>Mozambique</b>	<p><b>Implementing Entity-Executed</b></p> <p>WFP will execute the project in collaboration with the beneficiary country. A regular coordination mechanism between the country, WFP and the peer advisor will be set up for technical coordination. The flow of funds from WFP to the country will be defined in a legally binding Memorandum of Understanding (MOU), leveraging an existing MoU related to similar activities. 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 the NMHS, WFP and the peer advisor. The implementing entity will be responsible for process management, ensuring transparent and competitive processes as per WFP’s supply chain and procurement guidelines.</p>
<b>Rwanda</b>	<p><b>Hybrid</b></p> <p>UNDP will apply the National Implementing Modality (NIM). Under the NIM framework, both UNDP and Meteo Rwanda will work together in the execution of the project activities. UNDP will be responsible for overall coordination of project implementation including the establishment of a project steering committee. UNDP will also perform the financial oversight, handling the project budget, overseeing fund allocations and make transfers to Meteo Rwanda. Meteo Rwanda will ensure that all planned activities are executed as scheduled to achieve the project's objectives. Meteo Rwanda will also oversee the operation, maintenance, and calibration of land-based and upper-air stations, as well as handle data collection, analysis, and reporting to ensure</p>

	<p>compliance with GBON standards. UNDP will work with Meteo Rwanda and Peer Advisor to prepare all specifications and/or Terms of Reference for all tender. Procurement will be managed by UNDP.</p>
<b>South Sudan</b>	<p><b>Implementing Entity-Executed</b></p> <p>The AfDB In partnership with SSMS will execute this project and manage other partnerships in the execution, with fiduciary responsibility to the AfDB. Because of the NMHS limited capacity to execute this project, AfDB and partners will focus on building the NMHS capacity so that they can gradually take over the implementation of the activities over time. It is to be noted that within this investment phase (stage 1) the capacity will be enhanced to provide the conditions necessary for sustained operations of the stations as well as higher execution capacity for the expected second investment phase (stage 2).</p>
<b>Belize</b>	<p><b>Client-Executed</b></p> <p>The project will be client-executed and a project execution unit will be established within the NMHS as the designated EE. The EE will be responsible for (i) the project's technical, administrative, and operational management; (ii) the procurement of works, goods, and services; (iii) the preparation of disbursement requests; (iv) the preparation and update of annual work plans and the procurement plan, among others; (v) the submission of project management reports —the Annual Operation Plan, Semi-Annual Reports, and final evaluation reports; (vi) the monitoring, supervision, and inspection of works and service contracts. The EE will follow the IDB's procurement and financial policies during execution.</p>

## 5.2. Public-private partnerships

While most of the National Hydro-Meteorological Services (NMHS) follow a fully public business model, some countries have stations that are owned by private partners and intend to explore opportunities for a private-public partnership. In Rwanda and Mozambique, the Government has full control over the establishment of stations, generation and dissemination of observations, weather forecasts, and warnings, however private sector organizations also generate their own observations with the authorization of the NMHS. As part of the investment phase activities, Rwanda will explore opportunities to establish a long-term public-private partnership model for observations network. Mozambique, in the framework of an existing memorandum of understanding with active private sector entities, will investigate options for sharing resources for upgrading and maintenance of stations to be GBON compliant. Belize will also consider a potential collaboration with the local airlines and airports authorities as it relates to data from the GBON station at the International Airport.

The remaining countries don't have private sector operators providing meteorological observations. However, in Kiribati there is an opportunity for a substantial private sector

role in supporting the NHMS by including ongoing maintenance, calibration and training support in the procurement contracts for weather stations and ICT equipment. This would require developing a procurement plan as a part of the Investment Phase that allows for procurement of equipment to include private sector ongoing support for the life of the equipment including supply of spare parts during both Investment and Compliance phases. In the Maldives, while formal agreements for service delivery with the private sector are not yet in place, the NMHS has established important agreements, particularly in the field of civil aviation. However, formal arrangements regarding the operation and maintenance of networks are yet to be realized. This absence of a legal framework leaves room for potential future developments in this regard. In South Sudan, during the first stage of the investment phase, no private sector involvement is foreseen, however recognizing the potential role of the private sector for future sustainability, private sector partners will be invited to join stakeholder engagement workshops.

### 5.3. Regional implementation

SOFF promotes regional and sub-regional approaches to GBON implementation and encourages countries to look into opportunities to create economies of scale and optimize the design of the observing networks. Regional benefits in the implementation of the investment phase will also be pursued in collaboration with regional organizations.

**Table 4:** Overview of regional implementation

Country	Regional Implementation
<p><b>Kiribati</b></p>	<p><b>Kiribati is part of the SOFF Pacific regional programme.</b> A SOFF Regional workshop is expected to take place in the first quarter of 2024, in coordination with existing regional entities such as WMO RA V committee, Pacific Meteorological Council (PMC) and its committees, Secretariat of the Pacific Regional Environmental Programme and Pacific Community.</p> <p>Economies of scale can be created through working in partnership with the other Pacific SOFF-supported countries and under the guidance of existing Pacific regional architecture such as the PMC. The proposed station layout, especially for upper air will contribute to a broader multi country observing network, with other SOFF beneficiary countries in the region, namely Tuvalu, Nauru, Fiji and Samoa.</p> <p>Collaboration with Regional WIGOS Centre (RWC) Fiji will be explored to assist with stations metadata and data performance to become GBON compliant.</p>
<p><b>Maldives</b></p>	<p><b>Maldives is a member of several regional organizations co-operating in the field of hydrometeorology,</b> including the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES).</p>

	<p>Maldives is currently covered by RWC Regional Association II (Beijing and Tokyo). RWC assists Maldives and other countries in RA II with their stations metadata and data performance</p> <p>Close collaboration and partnership with the established training centers of WMO in the region, which are hosted by the India Meteorological Department, China Meteorological Administration, and Korea Meteorological Administration, as well as the Agency for Meteorology, Climatology, and Geophysics of the Republic of Indonesia, is also important to explore more opportunities for training programs, knowledge exchange, and technical assistance.</p> <p>As the Maldives is quite isolated, optimization of the observing network through sub-regional network design is not recommended. However, there are opportunities for regional collaboration in maintenance and calibration, as well as capacity building.</p>
<p><b>Mozambique</b></p>	<p><b>Several regional organizations/bodies are expected to support GBON implementation in Mozambique</b>, namely Southern African Development Community secretariat through its Sub-sectoral Committee on Meteorology and Climate Services Centre, the Meteorological Association for Southern Africa and African Ministerial Community on Meteorology.</p> <p>Mozambique will also coordinate with neighboring countries namely, South Africa, Zimbabwe, Eswatini, Malawi, Tanzania and Zambia for closing the weather observation gaps along the border. Malawi, Tanzania and Zambia are currently receiving SOFF support.</p> <p>Relevant WMO regional centers will play critical role in assisting the country, for example Regional WIGOS Centre (RWC) Southern Africa will support with the stations metadata and data performance. Currently, Mozambique is one the countries affiliated with RWC Southern Africa.</p>
<p><b>Rwanda</b></p>	<p><b>Rwanda will coordinate with other East African SOFF beneficiary countries and the implementing entities active in the region</b> to ensure optimal network design and will share experience and expertise (including benchmarking operation and maintenance practices) with the other countries.</p> <p>Four areas of collaboration in the East-African SOFF-supported countries have been identified: 1) subregional distribution of GBON compliant observation stations, 2) radio sounding, 3) calibration laboratory, and 4) international observational data distribution. The existence of GBON compliant stations in the East-African region is small, and thus, currently there is a lack of sufficient spatial distribution for observations in the region.</p> <p>Collaboration to build human capacity in the field of meteorological sensor calibration is foreseen as critically important for the national meteorological services in the East-African region.</p>



<p><b>South Sudan</b></p>	<p><b>South Sudan is one of target countries of the Climate Risk and Early Warning Systems (CREWS) East Africa.</b> The project started in early 2023 with a duration of four years and the activities are complementary to SOFF operations.</p> <p>South Sudan is currently covered by Regional WIGOS Center (RWC) East African Countries (Kenya and Tanzania). The RWCs will assist countries with stations metadata and data performance to become GBON compliant.</p> <p>South Sudan will also initiate with Ethiopia, Kenya and Uganda weather services and neighboring countries supported by SOFF regarding the deployment of stations funded by SOFF in bordering areas to optimize network operations.</p> <p>South Sudan is a member state of the Intergovernmental Authority on Development (IGAD) in Eastern Africa and its Climate Prediction and Applications Centre (ICPAC). ICPAC will support the country in observational data access and management and provide regional trainings.</p>
<p><b>Belize</b></p>	<p><b>Belize is part of the SOFF Caribbean regional programme</b></p> <p>This aims to facilitate regional coordination in order to explore and design unified solutions for acquiring observations, data management systems, instruments calibration, procurement, operation and maintenance. Regional collaboration with other SOFF-supported countries will be facilitated by the implementing entity, IDB, which is currently supporting other countries in the region.</p> <p>The US National Weather Service is providing regional support for upper air observations through the Caribbean Hurricane Upper Air System, this includes support for operations and maintenance of the upper air stations as well as training.</p>

## 6. Complementary financing

SOFF strives to ensure that countries receive support beyond SOFF. The SOFF Implementing Entities are expected to integrate or align SOFF funding with broader projects and programs in the beneficiary country and to look for opportunities to mobilize additional investments in the other parts of the hydro-meteorological value chain, drawing on their own resources or from the multilateral climate and environment funds.

The SOFF Secretariat has developed a collaboration framework with the Secretariats of the Multilateral Climate Funds represented in the SOFF governance structure for effective collaboration on systematic observations and the use of observational data for informed climate decision making (Decision 6.4).

The table below provides a brief overview of the complementary ongoing and upcoming projects/programmes indicated in the Investment Phase Funding Requests.

**Table 5.** Overview of ongoing and upcoming projects indicated in the Investment Phase Funding Requests

Country	Complementary investments	Partners
<b>Kiribati</b>	SOFF support contributes to a component of the Weather Ready Pacific Program and delivers elements of its overall roadmap.  Potential additional funding from Green Climate Fund (GCF) to strengthen the hydrometeorological value chain and early warning capacity in Kiribati could be accessed with the support of UNEP, based on the CHD results.	United Nations Environment Programme, Green Climate Fund, Kiribati Meteorological Service (KMS)
<b>Maldives</b>	UNEP is supporting the development of a GCF project proposal “Toward Risk-Aware and Climate-resilient communities”. As initial SOFF support covers surface-based and upper air observations, this proposed project could focus on equipment investments to marine meteorological stations.	United Nations Environment Programme, Green Climate Fund, Maldives Meteorological Service (MMS)
<b>Mozambique</b>	Previous and on-going cooperation between WFP and Mozambique to strengthen meteorological infrastructure and services is expected to continue. This includes initiatives such as a 5-year NORAD funded program for improved climate forecasting, early warning and anticipatory actions starting in 2023 and a regional ECHO-funded initiative to further	World Food Programme, Norwegian Agency for Development Cooperation (NORAD), Nordic Development Fund (NDF), European Civil Protection and Humanitarian Operations

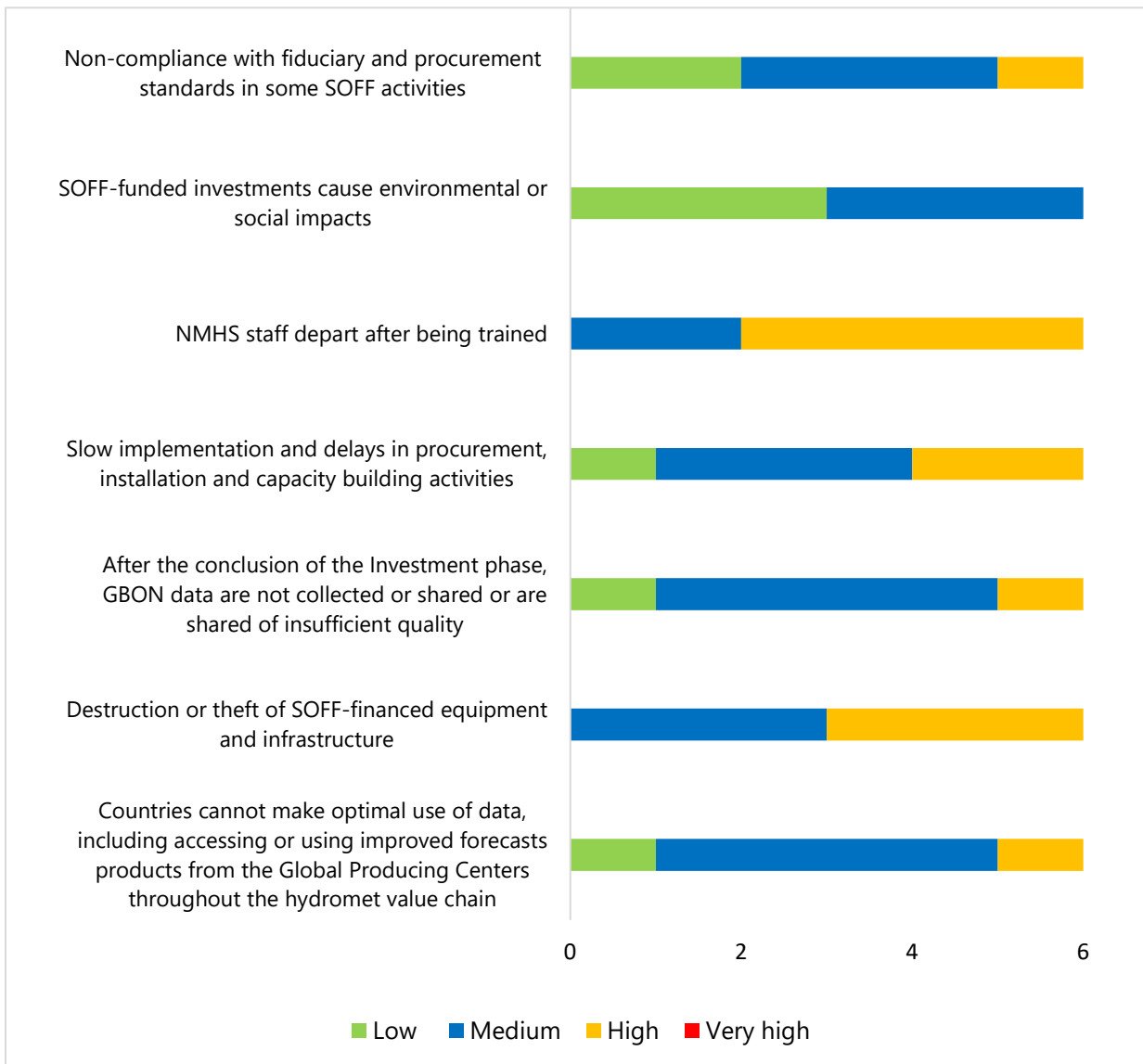
	<p>strengthen stakeholder coordination on climate forecasting launched in July 2023.</p> <p>As part of the Pilot Programme for Climate Resilience (PPCR), NDF and World Bank supported INAM and DNGRH to improve their forecasting capabilities for hydrometeorological hazards. This included the installation of automatic weather stations that were considered for the elaboration of the National Contribution Plan. Some of these are currently not operating because of lack of resources of maintenance. Through SOFF, these stations will be rehabilitated to ensure that they are fully functional.</p> <p>Anticipatory actions led by WFP started in 2023 and a regional ECHO-funded initiative to further strengthen stakeholder coordination on climate forecasting methodologies is starting in July 2023.</p>	<p>(ECHO), Institute National de Meteorologia (INAM)</p>
<p><b>Rwanda</b></p>	<p>FINEKERAT project for automatic weather stations operation, maintenance and calibration supported by the Finish Meteorological Institute.</p> <p>Volcano Community Resilience Project for the installation of a new radar in northern Rwanda.</p> <p>UNDP, Meteo Rwanda and Ministry in charge of Emergency Management (MINEMA) – project for strengthening National capacity for disaster risk management (DRM). SOFF operations will build on DRM project achievements which supports operational costs and maintenance services of surface weather stations and data rescue activities until 2024).</p> <p>CREWS East-Africa: the project is foreseen to support capacity building on data dissemination through WIS 2.0 and remaining capacity gaps concerning OSCAR database.</p>	<p>United Nations Development Programme (UNDP), Finish Meteorological Institute (FMI), Ministry of Foreign Affairs of Finland, World Bank, Ministry in charge of Emergency Management (MINEMA), World Meteorological Organization (WMO), United Nations Office for Disaster Risk Reduction (UNDRR), Climate Risk and Early Warning Systems (CREWS)</p>
<p><b>South Sudan</b></p>	<p>AfDB project – BREFONS: installation and operation of 5 stations included in the National Contribution Plan to be covered by the project up until 2027 after which SOFF will support its operations and maintenance.</p>	<p>African Development Bank (AfDB), Programme to Build Resilience for Food and Nutrition Security (BREFONS), Climate Risk and Early</p>

	CREWS East-Africa will support capacity building on data dissemination through WIS 2.0 and related trainings.	Warning Systems (CREWS)
<b>Belize</b>	<p>The activities of the following projects:</p> <ol style="list-style-type: none"> <li>1. World Bank funded Energy Resilience for Climate Adaptation (ERCAP) project (ending in September 2023),</li> <li>2. International Fund for Agricultural Development (IFAD) Rural Resilience Belize project,</li> <li>3. World Bank Climate Resilient and Sustainable Agriculture (CRESAP) project</li> </ol> <p>are expected to complement the resources required to support data storage and transmission for GBON. Similarly, IT infrastructure required for the implementation of GBON and funded through SOFF including an upgraded data ingestion server and on site Network Attached Storage will complement the agriculture and energy development projects in which NMS Belize are already involved.</p>	World Bank, International Fund for Agricultural Development (IFAD), Climate Resilient and Sustainable Agriculture Project (CRESAP)

## 7. Risks

The Implementing Entities are responsible for assessing Investment Phase risks and indicate them in the funding request. Based on the Risk Management Framework section of the funding requests (Section 7), an overview of the distribution of risks in the countries and corresponding risk level is provided below.

Figure 2 shows that overall, most of the risks were rated as medium-high, reflecting a portfolio including three Fragile Country Afflicted States (FCSs).



**Figure 2.** Distribution of risks in the Investment Phase Funding Requests

The Implementing Entities have extensive experience managing the implementation of similar project and programmes in the countries they are supporting. All of them have protocols in place to mitigate risks such as non-compliance with fiduciary and procurement standards; environmental and social impacts; delays in implementation and procurement. Building on the close collaboration with the beneficiary country and the peer advisor developed during the Readiness phase will also be fundamental to ensure successful implementation.

Some risks are mitigated by the specific design of the Investment Phase activities. To address the risk of NMHS staff trained departing, the funding requests include incentives such as providing adequate salaries and high-quality trainings and better working conditions. Moreover, efforts will be made to raise government awareness about the

importance of National Meteorological Services and strengthen institutional capacity to develop institutional knowledge in case of the departure of key staffs.

The risk of GBON data not being collected or shared of insufficient quality is addressed by the very nature of SOFF investments. The Investment Phase covers the costs of operations and maintenance of the stations and provides technical assistance through the peer advisors to ensure the country has developed the capacity to generate and share the data in line with GBON compliance criteria. If by the end of the Investment phase data are not shared in compliance with GBON criteria, the peer advisors also supports the country in troubleshooting problems with stations that are not meeting the GBON requirements and provides recommendations to the NMHS for remediation.

The risk of destruction and theft of the SOFF-financed equipment will be addressed by the installation of fencing and guarding observation sites, developing Standard Operating Protocols, and early action protocols for extreme weather events. The role of the civil society organizations will be particularly important to support the NMHS in raising awareness of the stations at the community level and avoid theft and vandalism.

Finally, to address the risk of countries not being able to make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain, in addition to the trainings provided by the peer advisors and the regional institutions, SOFF is developing a partnership with the Global Producing Centers. The European Centre for Medium-Range Weather Forecasts (ECMWF) is planning to give free and unrestricted access to improved forecast data and graphical products to SOFF beneficiary countries and to deliver training programmes to make use of ECMWF forecast products and infrastructure, such as the European Weather Cloud.

The SOFF Secretariat will closely monitor SOFF implementation in South Sudan, where political tension among political groups within the Government has been present since its independence. The extension of international sanctions to 2024 and the expected eruption of violence around the elections in December 2024 are likely to have impact on the activities and risk mitigation measures have been considered to prevent these from jeopardizing the successful completion of the Investment Phase. The Implementing Entity has a risk management protocol for such cases which will be applied in coordination with other partners working South Sudan.