SOFF Investment Phase Funding Request

Version 2.0

February 2024

Systematic Observations Financing Facility

Weather and climate data for resilience

SOFF Investment Phase Funding Request

The SOFF Investment Funding Request template includes the following sections:

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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	Bhutan National Centre for Hydrology and Meteorology (NCHM) Royal Government of Bhutan Post Box: 207, Thimphu, Bhutan Focal Person: Mr. Karma Dupchu email: kdupchu@nchm.gov.bt			
Country classification	☐ LDC	☐ SIDS	☐ FCS	☒ ODA-recipient
SOFF Implementing Entity and Focal Point	United Nations Environment Programme (UNEP) Mr. Jochem Zoetelief, Head, Climate Early Warning and Capacity Building Unit, Early Warning and Assessment Division Email: jochem.zoetelief@un.org			
SOFF Peer Advisor and Focal Point	Finnish Meteorological Institute, Finland Harri Pietarila, Director of Expert Services Email: harri.pietarila@fmi.fi			
Total Budget (USD)	Total: **4,598,124** Tranches (excluding peer advisory services): First tranche: **3,382,500 (80%)** Second tranche: **845,624 (20%)**			
Delivery timeframe	60 months (5 years)			
Date of Steering Committee Approval				

Signatures

Mr. Karma Dupchu, Director, National Centre for Hydrology and Meteorology (NCHM), Royal Government of Bhutan

22.02.2024

Mr. Jochem Zoetelief, Head, Climate Early Warning and Capacity Building Unit, Early Warning and Assessment Division, United Nations Environment Programme (UNEP)

Mr. Harri Pietarila, Director of Expert Services, Finnish Meteorological Institute, Finland

2. SOFF Programming Criteria (2 pages)

Alignment with the SOFF Programming Criteria	
Close the most significant data gaps	Though Bhutan's National Centre for Hydrology and Meteorology (NCHM) operates many AWS and manual stations, currently there is only one GBON-eligible station registered in WIGOS (ID: 0-20000-0-44517). However, it only sends 20 reports per day instead of 24 and only reports to GTS (not to WIS). For these reasons, the station is not GBON-compliant. Technologically Tsampa station differs from most other Bhutanese AWS, has its own data collection system and is separate from the rest of the network. Furthermore, due to high altitude location this station is difficult to maintain. It is only accessible several times per year and has challenges with data communications. Due to these factors, instead of upgrading Tsampa as the main GBON station, it is recommended to allocate another station to GBON, namely, Tsirang Damphu in Central Bhutan. It is an existing station which has an old AWS and a manual station. Since currently only manual station is operational, it should be upgraded to an AWS. This station should be technologically compatible with the rest of the network.

	<table><tr><th rowspan="3">Type of station</th><th colspan="4">Baseline (Results of the GBON National Gap Analysis)</th><th colspan="2">GBON National Contribution Target</th></tr><tr><th rowspan="2">Target (# of stations)[1]</th><th rowspan="2">GBON-compliant stations (#)</th><th colspan="2">Gap</th><th rowspan="2">To improve</th><th rowspan="2">New</th></tr><tr><th>New</th><th>To improve</th></tr><tr><td>Surface</td><td>1</td><td>0</td><td></td><td>1</td><td>1</td><td></td></tr><tr><td>Upper-air</td><td>1</td><td>0</td><td>1</td><td></td><td></td><td>1</td></tr></table> *Table 1. GBON National Contribution Target*
Target easy fixes	One of the easy fixes would be to upgrade the data management system and set up WIS2.0 interface. Since most stations in Bhutan send data to data collection and management system (CDMS), implementing the dataflow for one station would also enable transmission of data from other AWS to WIS2.0 (depending on data quality, reliability of dataflow and station location). This would allow to increase the number of internationally reported observations from Bhutan with small effort. Another easy fix to enable more stations to share data with GBON would be to provide spare parts and support for maintenance of additional 5 AWS which are supported by the JICA Technical Cooperation Project (TCP) Phase II to be connected to GTS and to send SYNOP messages. Though WIS2.0 component is not supported by JICA and these stations will only initially report to GTS, there is a plan to connect them to WIS2.0, which would enable Bhutan to allocate them as GBON stations and meet GBON high density requirements. Targeting GBON high density is particularly recommended due to complicated mountainous topography of Bhutan. Furthermore, upgrading existing calibration facilities for some of the sensors, particularly for solar radiation sensors which provide valuable information from mountainous areas, can be also considered an easy fix.
Create leverage	The project will complement some of the previous and ongoing projects in Bhutan. For example, it will support the upgrade of the calibration lab which previously set up with support of the Government of Japan. In addition, through supporting maintenance of additional five AWS that are supported by JICA to send SYNOP messages, the project will help retain the results of JICA Technical Cooperation Project (TCP) Phase II. The project will also contribute to sustaining the results of the GCF-funded initiative Bhutan for Life through providing data necessary to forecast weather-related events such as landslides and floods and mitigate their adverse impacts on Bhutan's ecosystems. As an accredited entity to the Green Climate Fund (GCF), the implementing entity UN Environment Programme (UNEP) could work in the future to

	raise GCF funding to further strengthen hydrometeorological and early warning capacity in Bhutan based on the needs identified through Country Hydromet Diagnostics.
Maximize delivery capacity	UNEP has strong expertise and experience in supporting observation and monitoring systems in developing countries, particularly in small island developing states (SIDS). It is currently working on implementing a GCF-funded 5-year project "Enhancing Early Warning Systems to build greater resilience to hydro-meteorological hazards in Timor-Leste" and a GCF-funded 5-year program "Enhancing Climate Information and Knowledge Services for resilience in 5 island countries of the Pacific Ocean" where strengthening observational capacity of the NHMSs is one of the key components. UNEP is an implementing partner under the Early Warnings for All Initiative (EW4All) and a member of a technical working group under Pillars 1 (Risk Knowledge) and 2 (Observations & Forecasting). Launched by the UN Secretary-General in November 2022 at the COP27, the EW4All Initiative calls for the whole world to be covered by early warning systems by the end of 2027. The SOFF investment funding will represent a major contribution as part of the EW4All overall support to developing countries. Finally, as part of the UN system, UNEP is represented in the UN Country Team through its Asia-Pacific Regional Office.
Sub-regional gains	NCHM is a member of several regional organizations cooperating in the hydrometeorology field, such as International Centre for Integrated Mountain Development (ICIMOD), South Asian Hydrometeorological Forum (SAHF) and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). Bhutan is also a collaborating member of Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES). Many of these organizations focus on research, general co-operation and data exchange. Though promoting data access and data exchange, SOFF project would also support the work of these organizations. Improved international data exchange would also support development of regional models and decision support systems, as well issuance of forecasts and warnings. Since all rivers from Bhutan flow to India, improved data sharing could be particularly important for providing early warnings to downstream Indian states (Assam, West Bengal). There are also opportunities for technical collaboration between neighbouring countries. For example, both Bhutan and Nepal are using Microstep stations. Though procurement of the equipment will be

	implemented nationally, there are potential synergies in network operation, training, and maintenance. Same would apply to soundings if both countries happen to purchase upper air stations from the same supplier. Furthermore, since SOFF will facilitate installation of the first sounding system in Bhutan, sharing experience and expertise with the peer organizations in the region will be important, and Nepal would also be the closest country for benchmarking. Finally, there could be opportunities for collaboration in equipment calibration. NCHM has set up small calibration laboratory with support of the Japanese government which is recommended to be upgraded and improved with SOFF support. When the lab is upgraded with SOFF support and fully operational it could potentially provide calibration services to the neighbouring countries.

3. Readiness and Country context (1 page)

SOFF Beneficiary Country Capacity Assessment
The National Centre for Hydrology and Meteorology of Bhutan (NCHM) is an autonomous government agency with the mandate to conduct weather and climate observations and to provide information and services related to meteorology, hydrology, and cryosphere, including hydrometeorological early warning services. NCHM has a strong track record in implementing internationally funded hydrometeorological projects, as well as strong partnerships with national and international organizations to ensure sustainable and impactful results from projects. In Bhutan there are currently no hydrometeorological observation networks relevant to GBON outside of NCHM. Meteorological observations operated earlier by other governmental agencies (e.g., Department of Agriculture, Department of Civil Aviation) have been transferred to the NCHM to avoid duplication of the work, utilize resources effectively, harmonize observation networks and improve the quality of the measurements. There are no known constraints in the national legislation regarding GBON implementation. NCHM has a full mandate to make required decisions in the field of hydrometeorology. In 2019, NCHM developed "Guidelines on the Exchange and Dissemination of Hydrometeorological Data and Information" which provide the technical and conceptual framework for data exchange and interoperability. The "Hydro-met Policy of the Kingdom of Bhutan (2023)" also includes the decision to promote data sharing and exchange, as well as provisions to implement cost recovery mechanisms. In line with that, NCHM plans to study and implement costs recovery measures from the selected sectors. In the context of the SOFF project, it is recommended to support NCHM in further revising and updating its data sharing guidelines and management policies to ensure their compatibility with GBON.

NCHM maintains geographically dense network containing both manual and automatic surface weather observation stations (though, as mentioned above, only one station is GBON-eligible). Main challenges within the observation network are maintenance resources, including calibration facilities, spare parts as well as costs for travel and logistics.

Formerly there has been co-operation with India Meteorological Department (IMD) on calibration of manual equipment and aviation equipment. However, challenges encountered in transportation of equipment and customs procedures revealed that this is not a sustainable solution.

Bhutan has its own calibration laboratory installed with support of the Japanese government; however, it has not been operational due to lack of resources. This lab is quite small and is not able to calibrate all the relevant GBON parameters. Furthermore, it is located in a small space at the current NCHM headquarters (in a building of a Ministry Campus), which is planned to be relocated soon. Since it appears to be the most feasible and cost-effective option for instrument calibration, it is proposed to upgrade the lab with SOFF funding to enable calibration of all GBON-relevant parameters and to relocate it to the new NCHM headquarters. Construction of the headquarters is about to begin soon, and the building which should accommodate the calibration lab is expected to be completed by 2025.

Although spatial GBON requirements are fulfilled with one AWS, mountainous topography of Bhutan requires a much denser network. In this context, it is recommended to support Bhutan in achieving high density resolution of the GBON network. For this end, in addition to procurement of 1 AWS and 1 upper air sounding station as per GBON standard density requirements, it is proposed that SOFF supports maintenance of 5 existing AWS that are be connected to GTS and to send SYNOP messages with JICA assistance. They could also be connected to WIS2.0 and made fully GBON compliant.

To strengthen human capacity there is a need for SOFF financial support in recruiting additional staff (2 sounding operators and 2 ICT experts), as well as carrying out extensive training and capacity building programmes, including on meteorology, observations, soundings, data management, WIS2.0, networking and system administration, etc. There is also a need to recruit additional staff and allocate funding for project management and oversight.

Overall, NCHM has a solid technical, management, and administrative capacity for investment phase execution, however, significant gaps remain. Therefore, there is substantial opportunity for SOFF to support the NCHM team in achieving GBON compliance.

Investment Phase Alignment with the GBON National Contribution Plan

No differences between the proposed Investment Phase targets and the requirements of the GBON National Contribution Plan have been identified.

4. Investment Phase Outputs and Budget

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

Output 1. GBON institutional and human capacity developed	Main activities	Budget (USD)
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	• Inception workshops followed by subsequent stakeholder engagement workshops for CSO inclusion in GBON • Public seminar on the benefits of GBON and project results • Gender workshops for strengthening gender equality	**119,000**
1.2 **NMHS institutional capacity** required to operate the GBON network developed	• Revision and update of data sharing guidelines and management policies • Strengthening stakeholder collaboration on dissemination of weather and climate information • Recruitment of a project manager and professional services for project management	**265,000**
1.3 **NMHS human capacity** required to operate the GBON network developed	• Recruitment of 2 sounding operators and 2 IT administrators / programmers • Basic, intermediate and advanced operational meteorology training course • Instrumentation operation and maintenance workshop to observers; operations and maintenance trainings for AWS and upper air sounding stations; development of competency framework and guidelines for observers • GBON-related trainings on data management system, data collection and delivery, data assimilation, operations and maintenance, system integration, networking and security, WIS2.0 and Linux system administration, QMS and ISO certification, product generation for SmartMet., etc. • Technical study tours, including to India and Nepal on upper air observations	**813,600**

Output 2. GBON infrastructure in place	Main activities	Budget (USD)[1]
2.1 **New land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	N/A	**N/A**
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Upgrade of 1 AWS, including procurement of instruments and sensors, site fencing and, construction of a storage space for spare parts • WIS server, CDMS and AWOS server upgrade, NHMS network upgrade, backup for servers • Upgrade of the calibration lab to enable calibration of all parameters relevant to GBON • Procurement of the equipment for calibration of GBON parameters • Collaboration with RICs on calibration, which could include trainings on calibration, annual or semi-annual recalibration of the calibration equipment at RICs based on the needs, etc.	**865,775**
2.3 **New upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Installation of 1 new upper air sounding station, including construction of a hydrogen generation shed and a storage space for spare parts	**932,800**
2.4 **Improved upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	N/A	**N/A**
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	• Stations maintenance at least 4 times a year, including travel expenses and vehicle fuel; electricity and water supply; Internet; spare parts	**461,943**

[1] Costs for procurement of the equipment include a 10% import tax.

maintenance established, and data sharing verified by WMO Technical Authority		
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	• Stations maintenance at least 4 times a year, including travel expenses and vehicle fuel; electricity and water supply; Internet; consumables	**493,400**
Total for all Outputs		**3,951,518**
Implementing Entity Fee[2]		**276,606**
SOFF peer advisory services		**370,000**
Total funding request		**4,598,124**

Budget breakdown by UNDG category (Excluding SOFF peer advisory services)[3]	**USD**
Staff and personnel costs	**240,000**
Supplies, Commodities and Materials	**0**
Equipment, Vehicles, Furniture and Depreciation	**0**
Contractual Services Expenses	**0**
Travel	**136,000**
Transfers and Grants	**3,575,518**
General Operating Costs	**276,606**

[2] The implementation fee cannot exceed 7% of the total Investment Phase funding request.

[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	UNEP will be the Implementing Entity for the Project and will be responsible for the implementation, financial management, evaluation, reporting and closure of the activities under the Project. UNEP will monitor and supervise the execution of the Project and ensure the proper management and application of SOFF Grant Proceeds. UNEP will ensure that the Grant Proceeds are utilised in accordance with the terms of the current Funding Request and that procurement is carried out according to relevant UN principles: a. Best Value for Money; b. Fairness, integrity, and transparency; c. Effective international competition; d. The interest of the UN.[4] UNEP will deploy a hybrid executing model comprising a National Executing Entity and, at the request of the SOFF Beneficiary Country focal point, limited Executing Entity functions by UNEP itself. Through its Global Support Services Agreement with UNOPs, UNEP is able to operate at the country level without necessarily having a national office. The Agreement covers the provision of HR and procurement services. UNEP will execute the Project in line with its programme manual and standard business procedures. As a part of its executing functions, UNEP will contract Technical Partner organizations to undertake relevant activities as appropriate. The engagement of Technical Partners with a proven track record in supporting Bhutan will contribute to effectiveness, coordination, and sustainability of outcomes. The National Centre for Hydrology and Meteorology (NCHM) will serve as the national Executing Entity (EE). The NCHM will be accountable to UNEP as IE for Project execution at the national level and for the effective and efficient use of resources. UNEP will enter into an appropriate agreement (Project Cooperation Agreement) with the NCHM for the execution of the Project. The Project Cooperation Agreement (PCA) will establish clear roles and responsibilities for the delivery of the proposed activities, and the schedule and conditions for instalments, the determination of the prevailing fiduciary standards and the terms and conditions for arbitrations and termination of contract. The PCA will include specific obligations for the national EE on Project execution, financial management, personnel administration and reporting, as well as arbitration and liability terms. Upon further consultations with NCHM, UNEP in its executing role will engage relevant Technical Partner agencies to conduct activities such as trainings. These might include Regional

[4] https://www.un.org/Depts/ptd/sites/www.un.org.Depts.ptd/files/files/attachment/page/pdf/pm.pdf

	Integrated Institute for Multi-Hazard Early Warning Systems (RIMES) and other internationally recognised professional agencies with many years' experience of partnership in Asia and the Pacific.
Private sector involvement	As there are very few, if any, feasible private partners operating in the hydrometeorological field in Bhutan, the only valid option is the **fully public model**. At the moment, there is only limited engagement of private sector in the areas of supply of instruments and development of systems. However, as per the recently approved "Hydro-Met Policy of the Kingdom of Bhutan (2023)", NCHM is also eyeing the possibility for cost-recovery and commercial operations. Investment phase will organize stakeholder engagement workshops which, among other participants, will involve private sector to help evaluate possible partnerships, including for cost recovery, infrastructure maintenance and operations, etc.
Civil society participation	Engaging CSOs during and after the SOFF investment phase will bring mutual benefit and grounds for sustainable operation of the GBON network. The following actions are recommended to ensure that CSO's are regularly consulted during the entire length of the project cycle: • Conduct stakeholder engagement workshops to ensure involvement and collaboration of key stakeholders and CSOs with the NCHM and the SOFF project team from the very beginning of the project, as well as to ensure that they are consulted on operations and maintenance. • Organise awareness-raising activities for the community and a public seminar on benefits, co-production, and ownership of the new national GBON infrastructure, which will i.a. help to prevent vandalism. • Strengthen stakeholder collaboration in dissemination of weather and climate information. Furthermore, actions will be taken to ensure gender balance and strengthen gender opportunities: • Ensure that 50% of the NCMH staff and stakeholders participating in consultations with civil society organizations are women. • Organize targeted gender workshops, i.e. to encourage and support female network of experts and provide training to target female users in accessing and using weather and climate information and products.

Fiduciary systems	The financial management and procurement within the Project will be guided by the UN financial regulations, rules and practices, as well as UNEP's Project manual. The financial rules of UNEP, which follow International Public Sector Accounting Standards (IPSAS), are promulgated pursuant to the Financial Regulations and Rules of the UN. Within this context, funding allocation mechanisms are managed in accordance with the UN rules and procedures, including eligibility criteria, proposal evaluation processes, quality assurance and control, project monitoring and supervision. UNEP is audited annually by the UN Board of Auditors. UN financial regulations and rules require the segregation of duties, and safeguards to ensure compliance with UN financial rules and regulations. Through its Global Support Services Agreement with UNOPs, UNEP is able to operate at the country level without necessarily having a national office. This Agreement covers the provision of HR and procurement services. Generally, UNEP's modality for project implementation results in funds being transferred in tranches to the Executing Entities (EEs) and Technical Partners (TPs) once they have satisfied the conditions that are defined under the legal instrument (Project Cooperation Agreement(s): PCAs to be signed between UNEP and the EEs/TPs. The PCAs will include specific obligations on financial management, reporting and procurement, and will require periodic reporting from the EEs/TPs. NCHM as the national EE follows the Government of Bhutan's financial and procurement rules. Similarly, Technical Partners and the Peer Advisors supporting execution in Bhutan are subject to financial and procurement policies of their governments/Member States.
Social and environmental safeguards	Project activities are subject to national and international law, as well as UNEP's Environmental and Social Safeguard Principles and Standards in accordance with the UNEP Environmental and Social Sustainability Framework (ESSF). The UNEP Environmental and Social Sustainability Framework (ESSF)[5] was approved in February 2020 and has an overall aim to strengthen the sustainability and accountability of UNEP programmes and projects. The framework identifies UNEP's commitment to sustainable development and environmental and social standards that are designed to promote human well-being and the protection of the environment. The framework identifies the following purposes:

[5] UNEP Environmental and Social Sustainability Framework (2020); Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/32022/ESSFEN.pdf?sequence=1&isAllowed=y

	• To enhance outcomes by systematically integrating environmental, social and economic dimensions in the UNEP-funded programmes and projects. • To strengthen alignment of UNEP's work with the SDGs and other UN entities and partners in addressing the environmental and social sustainability of development efforts. • To set standards of sustainability for UNEP's operations thereby confirming UNEP's accountability to its member States, and other funders. • To enable UNEP to work in a safer and smarter manner, thereby minimizing potential risks and harm to intended beneficiaries while enhancing UNEP's capabilities and credibility. The framework is structured around guiding principles, safeguard standards and related operational modalities. The guiding principles of the framework are derived from the 2030 Agenda for Sustainable Development and include the following: Leave No One Behind, Human Rights and Gender Equality and Women's Empowerment, Sustainability and Resilience and Accountability. The safeguard standards of the framework include the following: • Safeguard Standard 1: Biodiversity, Ecosystems and Sustainable Natural Resource Management • Safeguard Standard 2: Climate Change and Disaster Risks • Safeguard Standard 3: Pollution Prevention and Resource Efficiency • Safeguard Standard 4: Community Health, Safety and Security • Safeguard Standard 5: Cultural Heritage • Safeguard Standard 6: Displacement and Involuntary Resettlement • Safeguard Standard 7: Indigenous Peoples • Safeguard Standard 8: Labour and Working Conditions The following sections set out the overarching approach UNEP will take to operationalize this Framework: a) screening, assessment, management and monitoring of environmental and social risks; and b) steps for ensuring meaningful stakeholder engagement and accountability. To screen projects, UNEP utilizes the Safeguard Risk Identification Form (SRIF). The form is used to identify any potential environmental and social risks and impacts associated with the proposed activities, and to identify

	opportunities to support other positive changes to the environment and society. UNEP's Gender Equality and Environment policy recognizes the role of gender equality as a 'driver of sustainable environmental development.'[6] As the lead organization to coordinate environmental matters within the United Nations System, UNEP has the responsibility to drive the achievement of the System's gender equality mandate in its environmental assessments and analyses, norms, guidelines and methods, for use by stakeholders looking for guidance on how to effectively manage the environment for their sustainable development and economic growth. To that end, UNEP has sought to formalize and bolster agency-wide gender mainstreaming efforts and has the expertise and personnel to support the analytical underpinning of project-level gender mainstreaming during implementation.
Dispute resolution mechanism	As a part of the UNEP's ESS Framework, stakeholders who may be adversely affected by the project can communicate their concerns about the environmental and social performance of the project to UNEP. The Grievance Redress Mechanism has been designed to the extent possible according to the effectiveness criteria for non-judicial grievance mechanisms outlined in the UN Guiding Principles on Business and Human Rights. UNEP's Stakeholder Response Mechanism (SRM) is established through the Independent Office for Stakeholder Safeguard-related Response (IOSSR). The IOSSR serves two functions: 1. Compliance Review: processes for responding to claims by Stakeholders alleging that UNEP activities are not in compliance with the ESS Framework; 2. Grievance Redress: provides access to dispute resolution mechanisms used to address project-related disputes that relate to UNEP's activities. The IOSSR is responsible for the SRM, and thus carries out the following responsibilities: • Receives and screens complaints for eligibility;

[6] UN Environment (2015). "Gender Equality and the Environment: Policy and Strategy". https://wedocs.unep.org/bitstream/handle/20.500.11822/7655/Gender_equality_and_the_environment_Policy_and_strategy-2015Gender_equality_and_the_environment_policy_and_strategy.pdf.pdf?sequence=3&isAllowed=y

	• Maintains a roster of accredited independent experts related to compliance review and dispute resolution; • Develops the appropriate TOR for facilitating the compliance review or dispute resolution; • Manages and oversees all experts engaged in compliance review and dispute resolution; • Maintains the IOSSR website that provides the public with access to all relevant documents related to compliance review and dispute resolution; • Issues reports to the UNEP Executive Director with findings and recommendations for compliance reviews, and outcomes for dispute resolution processes; • Monitors the implementation of decisions related to compliance review and grievance redress; • Reports on the IOSSR operations and provides advice based on lessons learned; • Conducts outreach to Stakeholders regarding the IOSSR; • Seeks to minimise risks of retaliation to complainants. Complaints can be filed to the Stakeholder Response Mechanism through the online project concern form, email or mail to the following address: Independent Office for Stakeholder Safeguard-related Response (IOSSR) & Director of Corporate Service Division United Nations Environment Programme Nairobi, Kenya Email: unenvironment-IOSSR@un.org Details are available in the UNEP's SRM Operating Procedures.
Additional relevant policies and procedures	As part of the Secretariat, UNEP follows UN policies, rules and regulations.

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.

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	# workshops per year	**1**	**1**	**1**	**1**	**2**
	% female engagement in workshops	**50**	**50**	**50**	**50**	**50**
	# targeted gender workshops		**1**	**1**		
1.2 **NMHS institutional capacity** required to operate the GBON network developed	number of activities for strengthening institutional capacity		**1**	**1**		
1.3 **NMHS human capacity** required to operate the GBON network developed	number of trainings	**2**	**2**	**2**	**2**	**2**
	# recruited staff	**4**	**4**	**4**	**4**	**4**
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	-	-	-	-	-
2.2 **Improved 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		**1**			
2.3 **New upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan			**1**		
2.4 **Improved upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	-	-	-	-	-
Outcome: Sustained compliance with GBON	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**	**Target Y4**	**Target Y5**

3.1 **GBON land-based stations'** commissioning period[7] 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					**6**
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	# stations as per the GBON National Contribution Plan					**1**

[7] 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.

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 applicable[8]) 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.

[8] 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	Major	UNEP will undertake an assessment of the financial management capacity of the national Executing Entity (EE) to identify risk elements and to prepare appropriate mitigation measures, including ongoing capacity development support by UNEP.

				UNEP will also closely monitor the financial management of the Project using the established Monitoring and Evaluation procedure and financial reporting mechanism, including an annual audit; and establish internal controls for the Project and project fund management. The Project Cooperation Agreements (PCAs) between UNEP and the national EE and Technical Partners will include warranties and caveats by the EE to inter alia ensure compliance with the Anti-Fraud and Anti-Corruption Framework of the United Nations Secretariat.
SOFF-funded investments cause environmental or social impacts	Medium	Unlikely	Moderate	The potential impacts are likely to be very limited in terms of magnitude and easily avoided by proactive planning. Many of the project activities are

				related to capacity building and training, which are inherently low-impact activities. While the activities related to infrastructure development and installation of new observation equipment will require low-level monitoring, management of environmental and social risks will be a matter of following industry best practice. As a mitigation measure, it is recommended that all contractors involved are made aware of their environmental and social responsibilities, and that professional oversight is engaged where necessary in order to ensure that those responsibilities are upheld.
NMHS staff depart after being trained	High	Possible	Major	To mitigate the risk of the staff departing, the

				Investment Phase will work on providing additional incentives for the staff including regular opportunities for regional trainings and workshops. It is recommended that the Compliance phase includes budget to cover salaries for the new staff, as well as to cover participation in some of the trainings and workshops which would contribute to the staff wellbeing.
Slow implementation and delays in procurement, installation and capacity building activities	Low	Unlikely	Minor	Seamless collaboration between the Implementing Entity, peer advisor, beneficiary country and technical partners will help to ensure that the project activities are executed without any delays.
After the conclusion of the Investment	Medium	Rare	Moderate	The Investment Phase will include

phase, GBON data are not collected or shared or are shared of insufficient quality				budget operations and maintenance of the equipment to ensure that GBON Infrastructure has been installed and internationally exchanges data. This will also help in smooth transition to the compliance phase. After this the country will receive SOFF support in the compliance phase which will help to ensure that all the equipment is properly functioning and sharing data. In addition, trainings held during the Investment Phase will help to ensure that the beneficiary country has the capacity to manage quality of the data.
Destruction or theft of SOFF-financed equipment and infrastructure	Medium	Unlikely	Moderate	The Investment Phase will ensure that all the observation sites will be fenced and guarded to minimize the risk

				of theft. Communities will be engaged through awareness-raising activities, i.a. to prevent vandalism. Bhutan is vulnerable to various natural related hazards, which could pose a risk of equipment destruction. However, both AWS and UA station will be located in Tsirang region of Bhutan, which according to the UNDP study is among those less affected by extreme events, which minimizes the risk of damage. SOPs developed as a part of the investment phase will help reduce the risk even further.
Countries cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing	Medium	Unlikely	Moderate	To mitigate the risk, it is proposed that the Investment Phase includes extensive and comprehensive

Centers throughout the hydromet value chain				training for the NCHM staff from the peer advisor and technical partners, including on observations, data management, processing, assimilation, aviation meteorology, etc. This will help to ensure that the country has enough capacity to make the optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain.

Annex 1: National Gap Analysis

Annex 2: National Contribution Plan

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 Finnish Meteorological Institute (FMI) to Bhutan 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 tool[9]
- 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.

[9] 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 Pre diction (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

During the investment phase, the peer advisor (FMI) will provide the following services:

- Technical support in radiosounding tender
- Technical support in IT hardware tender
- Benchmark portfolio and project management and coordination
- 1 gender workshop for Meteo staff
- Training on AWS and radiosounding lifecycle maintenance and calibration
- Support in radiosounding and AWS data transfer and processing
- Support in integrating data management system to WIS
- Final reporting