SOFF Investment Phase Funding Request

Version 2.0

12 September 2023

Systematic Observations Financing Facility

Weather and climate data for resilience

SOFF Investment Phase Funding Request

The 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	Cabo Verde - Institute National of Meteorology and Geophysics (INMG) Domingos Veiga Mendes President of the Institute National of Meteorology and Geophysics Permanent Representative of Cabo Verde at WMO Email: domingos.v.mendes@inmg.gov.cv			
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	Royal Netherlands Meteorological Institute (Koninklijk Nederlands Meteorologisch Instituut – KNMI) Rubert Konijn, KNMI Strategic business manager Climate Email: rubert.konijn@knmi.nl			
Total Budget (USD)	Total: **3,848,318** Tranches (excluding peer advisory services): First tranche: **2,726,654 (80%)** Second tranche: **681,664 (20%)**			
Delivery timeframe	60 months (5 years)			
Date of Steering Committee Approval				

Signatures

15.02.2024

Mr. Domingos Veiga Mendes, President of the Institute National of Meteorology and Geophysics, Permanent Representative of Cabo Verde at WMO

15.02.2024

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

Mr. Rubert Konijn, Strategic Business Manager Climate
16.02.2024

2. SOFF Programming Criteria (2 pages)

Alignment with the SOFF Programming Criteria

Close the most significant data gaps

According to the WMO GBON Global Gap Analysis, Cabo Verde requires four surface stations and one upper-air station to meet the GBON Standard Density requirements. Cabo Verde has quite a large observations network, but only three aeronautical AWS (AWOS) are registered as GBON stations. The overall network includes 41 AWS, 2 manual stations, precipitation gauge network, air quality monitoring network etc. (full details are available in Annex 3. Country Hydromet Diagnostic). Data from most AWS systems are not shared with the GTS, but stored on a national data server, therefore, these stations are not considered as GBON. Three AWOS that are registered as GBON stations operate on a 24/7 basis and issue SYNOP reports (every 3 or 6 hours). They are owned by the Agency of Air Navigation & Safety (ASA) and use Aeronautical Fixed Telecommunication Network (AFTN) for data transmission. Due to the network settings and ownership conditions, hourly data submission requirement cannot be fulfilled for these stations. Therefore, it is recommended to upgrade three other AWS to meet GBON requirements, and later phase out the current AWOS which are only partially GBON-compliant. This will also help ensure full ownership of the GBON network by Institute National of Meteorology and Geophysics (INMG) which is the national hydrometeorological service in Cabo Verde.

	There is also a need to install an additional (fourth) station in South-Western part of the archipelago (Brava Island) to meet the spatial resolution of GBON. The INMG Head Office at Sal Island has an upper air sounding station which has been in operation since 1960s until 2018. It is currently out of operation due to equipment age issues and lack of funding for observations. This station should be refurbished with the new equipment (e.g. hydrogen generator, etc.) to meet the GBON requirements.

GBON requirements	Target # of stations	GBON Compliant stations #	Stations gap		GBON National Contribution Target	
			New	Improve	New	Improve
Surface AWS	4	0	1	3	1	3
Upper-Air UAS	1	0	0	1	0	1

Table 1: National Gap Analysis – Cabo Verde (June 2023)

Target easy fixes	Opportunities for easy fixes are as follows: • Installation of WIS 2.0 communication node and linking it to WMO data communication system; • Rehabilitation of the existing 3 AWS to ensure hourly data transmission and linking them to the WIS 2.0 system; • Refurbishing the existing Upper Air Sounding facility and resuming observations twice a day to meet the GBON requirement.
Create leverage	SOFF investments will complement previous international cooperation projects held in Cabo Verde. For example, the AWS network had been enhanced with the funding support of the European Union (EU) through REFLOR-CV project (with FAO as an implementing entity). The maritime (and harbour) AWS observation network (MARINENET) has been enhanced with funding support from Spain (WMO regional cooperation). INMG also works with the KNMI (Netherlands) and Centro de Previsão do Tempo e Estudos Climáticos - CPTEC (Brazil) on capacity building in

	weather prediction and seasonal forecast) modelling, using e.g., the Eta Numerical Weather Prediction (NWP) model from CPTEC. Cabo Verde is also a part of an ongoing Climate Risk and Early Warning Systems Initiative (CREWS) project for West Africa which strengthens regional entities to engage with national hydrometeorological agencies in the region to improve risk information and early warning services at national level. However, amounting to 3.5 million USD for the whole region, the CREWS project has quite a limited scope. Therefore, there is substantial opportunity for SOFF to build upon this initiative to enhance country capacity for early warning services through closing significant gaps identified in the GBON Gap Analysis, National Contribution Plan and CHD, as well as further supporting regional collaboration. Through this, SOFF project will complement CREWS investments operationalizing the Framework for collaboration for enhancing systematic observation adopted by the 6th SOFF Steering Committee and signed by the secretariats of 5 funds[1] at COP28. 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 Cabo Verde based on the needs identified through the Country Hydromet Diagnostics.
Maximize delivery capacity	As part of the UN system, UNEP is represented and strongly engaged in the Cabo Verde UN Country Team through its Africa Regional Office and Sub Fegional Office for West Africa located in Abidjan focusing on climate change, digital connectivity, blue economy, sustainable food systems and other priorities. UNEP also has significant experience in implementing projects on strengthening climate adaptation, climate resilience, climate information services and early warning systems in various countries in West Africa, including Gambia, Sao Tome and Principe, and others. 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-

[1] Adaptation Fund, Climate Investment Funds, Climate Risk and Early Warning Systems Initiative, Global Environment Facility and Green Climate Fund

	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.
Sub-regional gains	Cabo Verde has currently no immediate direct cooperation in joint meteorological observations with national hydrometeorological services of neighbouring countries. In 2013-2018, Cabo Verde was a part of a regional WMO cooperation project (MARINMET), funded by Agencia Estatal de Meteorología - AEMET (Spain), related to marine observations. For INMG this collaboration has resulted practically in 3 marine harbour AWS including tidal and wave observations. This project was suspended due to the SARS-CoV19 pandemic. INMG is also taking part in an Economic Community of Western African States (ECOWAS) region project "Intra ACP-ClimSA" where it performs diagnostic on meteorological observations and data collection in the Permanent Interstates Committee for Drought Control in the Sahel (CILLS) and ECOWAS region countries. In addition, INMG is cooperating with General Directorate of Meteorology – DGM (Morocco) in manually transferring AWS data to the WIS2.0 system via a small WIS2.0-DGM Morocco web interface and protocol. On November 16-17, a workshop on SOFF Regional Implementation in Atlantic Small Island Developing States (SIDS) took place in Cabo Verde to discuss regional approach for SOFF implementation in three Atlantic SIDS: Cabo Verde, Guinea-Bissau and São Tomé and Príncipe. Some of the outcomes included: - Decision to include co-development and shared trainings in funding requests. A strong emphasis was made on the need to facilitate capacity-building sessions in Portuguese language tailored for Portuguese-speaking countries.

	- Decision to explore opportunities for peer support in calibration among the three Atlantic SIDS. - Suggestion to replicate Cabo Verdean model for civil society engagement in other countries. - Suggestion to explore regional collaboration in procurement. The following opportunities for regional cooperation will be pursued within SOFF project: - When required, instruments will be sent for inspection and calibration to the DGM (Morocco) which is the WMO Regional Instrument Centre, or IPMA (Portugal). In line with the outcomes of the SOFF workshop, the project will also explore opportunities for collaboration in calibration among three Atlantic SIDS. - For increasing staff mobility, engagement and fostering regional collaboration, the project will support participation of INMG in regional events and partner study visits (e.g. Morocco, Senegal, Guinea-Bissau, São Tomé & Princípe). Through these, INMG could also engage in experience sharing with other countries, e.g. on CSO engagement. - In line with the outcomes of the SOFF workshop, the project will facilitate shared training courses and programs for Atlantic SIDS (in Portuguese), which can take place e.g. on Sal Island in Cabo Verde. These trainings could be, for example, co-developed by Netherlands Meteorological Institute (Koninklijk Nederlands Meteorologisch Instituut – KNMI) with INMG and delivered to all three countries. - The peer advisors supporting the three countries will collaborate for the preparation of tender documents based on WMO specifications. Countries will explore mutual procurement opportunities among Implementing entities or utilize tender results from other UN agencies, if possible. Joint procurement will most likely not be feasible. Moving forward, it is also recommended to re-initiate collaborative maritime observation projects with neighbouring countries since it is seen as a high priority by INMG.

3. Readiness and Country context (1 page)

SOFF Beneficiary Country Capacity Assessment

INMG – the main national authority in meteorology – has a long history in operating meteorological instruments and making weather observations. It operates and maintains a network of 41 AWS (including 3 non fully compliant GBON stations) and 2 manual stations. It also operated an upper air sounding station until 2018. A detailed protocol for observations, especially for the aviation sector is available and used by the observers. However, there are no formal SOPs for GBON stations and/or a national WIGOS governance mechanism in place. INMG uses a manual WIS2.0 web-application to manually submit data from GBON station to DGM – Morocco every 3 hours, however hourly data transmission to WIS2.0 is not available yet.

INMG is equipped with a total of 74 staff members, including 36 women and 38 men. Women participation in the work processes in Cabo Verde is very high, including senior management and decision role positions. The current chief administrator council of INMG includes 1 man and two women. Some of the staff (meteorologists, oceanographer, agrometeorologists and geophysics staff) have received training abroad, while meteorological technicians are trained locally. Currently, there is no formal training policy and no specific institutional arrangements for capacity development. There is a need for comprehensive capacity building programmes, including BIP-MT training for meteorological technicians, trainings on data management and WIS2.0 for ICT staff, training of trainers, etc. There is also a need to recruit and train a meteorologist and two meteorological technicians to operate the upper air sounding station when refurbished. Furthermore, it is recommended to hire two additional project management staff to manage SOFF project implementation from the INMG side.

The current national legislation and regulations on meteorological observations in Cabo Verde are adequate for GBON implementation. INMG is the main national authority in meteorology authorised to conduct meteorological observations. For the provision of aeronautical meteorological services, it collaborates closely with the Agency of Air Navigation & Safety (ASA). INMG does not rely on international donor aid for the main annual operations budget. The aviation and aeronautical services cover 74.4% of the annual budget, while direct government funding is 8.8%. At the same time, significant station equipment and instrument deployments are funded through national and international cooperation projects related to different sectors (security, agriculture, maritime, environment and others). INMG is legally allowed to contract external services from private sector and other entities to support the observation process chain. There are also no special legal requirements (or customs constraints) related to importing meteorological instruments and related equipment. However, the current budget does not easily support development of other operational activities, including e.g., weather and climate research and the expansion of the other functional observation networks, related to maritime, agrometeorology, climate and other e.g., MHEWS purposes. This can be enhanced if INMG can develop new strategies with (e.g., public-

private partnerships), government authorities and international partners supporting the full weather and climate observation chain, including capacity development. There is also no formal data sharing policy in place for sharing other station data generated by the service. Data are provided upon request to inquiring users (at a minor cost for the private and commercial sector and free of charge to government services and higher education institutions).

INMG has a significant experience in executing international collaborative projects, including MIA-VITA - Mitigate and assess risk from volcanic impact on terrain and human activities (2008-2012); GMOS – Global Mercury Observing System (2010-2015); TSHAPS - Towards Seismic Hazard Assessment in Portuguese Speaking African Countries (2022-2024) and others. The financial management of all projects is carried out through a government digital platform named SIGOF (Sistema Integrado de Gestão Orçamental e Financeira) which has been praised as a giant leap forward towards modernizing and simplifying the state's financial management capacity. Once INMG has signed an agreement with the Implementing Entity (UNEP), a special account for the project will be set up on SIGOF. This account will be managed by INMG. Therefore, no obstacles which would prevent INMG from receiving funds are foreseen.

Overall, INMG has a solid technical, management, and administrative capacity for investment phase execution. At the same time, there is substantial opportunity for SOFF to support the INMG team in addressing the challenges mentioned above.

Investment Phase Alignment with the GBON National Contribution Plan

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

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).

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

Output 1. GBON institutional and human capacity developed	Main activities	Budget (USD)
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	• Face to face inception workshop followed by stakeholder engagement workshop on CSO inclusion in weather and climate • Consultations with CSOs and mobilization of CSO inclusion in weather and climate observations using Triple Sensor approach	**305,875**
1.2 **NMHS institutional capacity** required to operate the GBON network developed	• Organization of stakeholder and private sector engagement workshops where potential partners from public and private sector will be invited to discuss and elaborate on business models • Participation in regional activities related to SOFF and GBON, including SOFF Atlantic SIDS workshops	**364,000**
1.3 **NMHS human capacity** required to operate the GBON network developed	• Recruiting additional (3) staff for operating and maintaining the renovated upper-air station • Meteo Technician Station O&M Training programme, Upper Air station training programme, Observer WMO BIP-MT trainings, ToT competence training (from WMO-RTC) • ICT & Data Communication trainings (Python, WIS2Box) • Trainings on CDMS (Geospatial and relational Databases, ClimSoft v.4 Data Rescue and climate data analysis) • Workshops and staff study visits for QMS trainings • Capacity development for senior management related to GBON implementation	**1,428,629**

Output 2. GBON infrastructure in place	Main activities	Budget (USD)
2.1 **New land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Installation of a new AWS, including site preparation, station installation, instruments and equipment • Review of current practices and recommendations for improved ICT infrastructure • Computer hardware procurement and upgrade of software	**139,740**
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	• Upgrade of the three AWS, including data loggers, sensors, communication and transportation • Procurement of field calibration and laboratory calibration equipment, as well as related toolsets	**147,100**
2.3 **New upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	-	-
2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	• Upgrade of an upper-air station, including rehabilitation works, hydrogen generator and storage, shipping and transportation, ground-based monitoring system	**395,250**
Outcome: Sustained compliance with GBON	**Main activities**	**Budget (USD)**
3.1 **GBON land-based stations' commissioning period completed**, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	• Procurement of sensors and spare parts for equipment maintenance • Local technical assistance services, local expenditures and communication costs	**92,500**
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	• Procurement of consumables (radiosondes and balloons) • Back up helium cylinder • Small operational costs	**312,250**
Total for all Outputs		**3,185,344**

Implementing Entity Fee[2]		**222,974**
SOFF peer advisory services	Please see p.35	**440,000**
Total funding request		**3,848,318**

Budget breakdown by UNDG category (Excluding SOFF peer advisory services)[3]	**USD**
Staff and personnel costs	**843,500**
Supplies, Commodities and Materials	**0**
Equipment, Vehicles, Furniture and Depreciation	**0**
Contractual Services Expenses	**0**
Travel	**225,000**
Transfers and Grants	**2,116,844**
General Operating Costs	**222,974**

[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 Cabo Verde will contribute to effectiveness, coordination, and sustainability of outcomes. The Institute National of Meteorology and Geophysics (INMG) will serve as the national Executing Entity (EE). The INMG 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 INMG 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,

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

	financial management, personnel administration and reporting, as well as arbitration and liability terms. Upon further consultations with INMG, UNEP in its executing role could engage relevant Technical Partner agencies to conduct activities such as trainings. These might include Portuguese Institute for Sea and Atmosphere (Instituto Português do Mar e da Atmosfera – IPMA) and other internationally recognised professional agencies with many years' experience of partnership in Africa.
Private sector involvement	INMG remains the prime national authority in meteorology. At this stage, no private sector operators were identified which provide meteorological observations and data services in the country. However, INMG is allowed to contract external services from private sector and other entities to support the observation process chain (e.g., for station maintenance or another work process). Furthermore, several private entities e.g., water supply & sanitation and the tourism / hotel sector show interest in collaborative weather observations. While due to the limited number of required GBON AWS, INMG does not immediately have a need to outsource operation and maintenance of GBON stations to other agencies, it is now actively exploring partnerships with private companies and other government agencies. There is room for further enhancing and widening partnerships nationally and internationally to ensure GBON compliance throughout the value chain of observation. As a part of new strategy development (2023-26), INMG is investigating multiple options for private sector engagement including outsourcing meteorological station maintenance and management on a service contract or using a public-private partner contract model or similar. The maintenance of the GBON station network could also be part of this outsourcing process. SOFF could help broaden opportunities for further private sector engagement through supporting organization of business development and private sector engagement workshops in Praia and Mindelo, as well as supporting participation and exchange in various regional events.
Civil society participation	The project will prioritize engagement of a wide range of stakeholders in GBON through multiple activities. As recommended in the National Contribution Plan, two stakeholder engagement workshops will be

	organized to explore opportunities for wider engagement of private sector and CSOs in GBON. Furthermore, to deepen CSO engagement INMG recommends and proposes using a Triple Sensor approach. It would engage communities in climate information and GBON through enabling them to gather weather and climate data using low-cost sensors and comparing the data with the official network, NWP model and satellite data. For more detail on the proposed project, please refer to the National Contribution Plan. While the entire initiative goes well beyond the scope of SOFF, the current SOFF-funded project could support its planning, strategy development, as well as extensive stakeholder consultations and workshops with CSO engagement. Gender considerations will be strongly prioritized in all stakeholder engagement activities. 50% female participation in all the workshops will be targeted. These measures will support equal participation of male and female in climate information services in Cabo Verde and will help INMG maintain its current almost 50/50 gender balance in staffing.
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. INMG as the national EE follows the Government of Cabo Verde's financial and procurement rules. Similarly, Technical Partners and the Peer Advisors supporting execution in Cabo Verde 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: • 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.

[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

	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.

[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

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; • 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	Number of workshops and related activities	**1**	**2**	**1**		
	% female participants in workshops	**50**	**50**	**50**		
1.2 **NMHS institutional capacity** required to operate the GBON network developed	Number of workshops		**1**	**1**		
	% female participants in workshops		**50**	**50**		
1.3 **NMHS human capacity** required to operate the GBON network developed	Number of trainings	**2**	**2**	**2**	**2**	**2**
	Number of staff employed through the project	**3**	**3**	**3**	**3**	**3**
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		**1**			
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		**3**			
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					
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			**1**		
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					**4**
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. Cabo Verde is vulnerable to various natural hazards, which could pose a risk of equipment destruction, especially in case of a new station expected to be located on a remote island (Brava). The project will support Standard Operating Procedures (SOPs) for equipment, including early action protocols in case of climate-related hazards. Mitigation measures will be taken as a part of site preparation. Regular special attention will be provided to the most vulnerable station,
Countries cannot make optimal use of data, including	Medium	Unlikely	Moderate	To mitigate the risk, it is proposed that the

accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain				Investment Phase includes extensive and comprehensive training for the NCHM staff from the peer advisor and technical partners, including on observations, data management, data processing and impact-based forecasting. 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

The National Gap Analysis of Cabo Verde is available **here**

Annex 2: National Contribution Plan

The National Contribution of Cabo Verde is available **here**

Annex 3: Country Hydromet Diagnostics

The Country Hydromet Diagnostics of Cabo Verde is available **here**.

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 KNMI to Cabo Verde 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

Peer advisor (KNMI) will engage in the following activities during the SOFF Investment Phase:

- Technical support in AWS tender process
- Technical support in radiosounding tender process
- Technical support in IT hardware tender process
- Benchmark portfolio and project management and coordination in KNMI
- Support in developing competence building, AWS and radiosounding processes:
    - o Benchmark good practices
    - o Support in preparing process and lifecycle plan for observations
    - o Support in preparing roadmap for competence building process that fits in Cabo Verde SIDS context
    - o Support in preparing/enhancing SOPs
    - o Support in preparing roadmap for implementing QC/QA methods
- Training on AWS and radiosounding lifecycle maintenance and calibration
- Advice in radiosounding and AWS data transfer and processing
- Advice in implementing data management system
- Contribution to final reporting