SOFF Investment Phase Funding Request

Version 2.0

12 September 2023

Systematic Observations Financing Facility

Weather and climate data for resilience

SOFF Investment Phase Funding Request

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

The SOFF Investment Funding Request template includes the following sections:

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

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

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

1. Basic Information

SOFF Beneficiary Country and Focal Point	BELIZE National Meteorological Service of Belize Mr. Ronald Gordon  Chief Meteorologist National Meteorological Service *chief@nms.gov.bz*			
Country classification	☐ LDC	☒ SIDS	☐ FCS	☒ ODA-recipient
SOFF Implementing Entity and Focal Point	Inter-American Development Bank *Gerard Alleng*  *Climate Change Senior Specialist* *E-mail: gerarda@iadb.org*			
SOFF Peer Advisor and Focal Point	Met Office, UK. *Tim Donovan*  *Senior International Development Manager* *E-mail: tim.donovan@metoffice.gov.uk*			
Total Budget (USD)	Total: USD 860,694 Tranches (excluding peer advisory costs): First Tranche: USD 483,426 (60 %) Second Tranche USD 322,284 (40 %)			

Delivery timeframe	*Start February 2024 for 3-year duration.*
Date of Steering Committee Approval	27 November 2023
Signatures	

2. SOFF Programming Criteria (2 pages)

Alignment with the SOFF Programming Criteria

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

Close the most significant data gaps

The initial GBON analysis undertaken by WMO (June 2023) indicated that the country of Belize (land area 22,000km^2, total area 56,000km^2) has a requirement for 1 surface and 1 upper air observation station to meet GBON standard requirements. The National Gap Analysis identified that in order to provide complete coverage of the GBON network in Belize, and with consideration to the lack of observations to the south and west of Belize neighboring Guatemala, an additional surface observation site in the south of Belize (Punta Gorda) should be improved to GBON standard. The results of the National Gap Analysis, as approved by WMO TA, are shown in the table below.

GBON requirements	Target (# of stations)	GBON Compliant stations (#)	Stations gap	
			New	Improved
Surface stations • **Horizontal resolution**: 200km • **Variables**: SLP, T, H, W, SD • Observation cycle: 1h	2	0	0	2
Upper-air stations • **Horizontal resolution**: 500km • **Vertical** resolution: 100m, up to 30 hpa **Variables**: T, H, W • **Reporting cycle**: twice a day	1	1	0	0

At present the surface and upper air observations from Philip Goldston International Airport (0-20000-0-78583) are exchanged internationally. This station reports hourly manual observations during working hours (16 observations per day), plus two radiosonde launches per day.

	The surface observations report all GBON parameters excluding snow-depth, which is not applicable, however the station does not currently meet the GBON requirement for hourly observations 24 hours per day. As such this station will be upgraded along with the associated IT infrastructure to enable 24hr observing cycle to be shared internationally via WIS2.0. The upper air observations are currently supported by the US National Weather Service through the Caribbean Hurricane Upper Air System and are compliant with the requirements of GBON. *There are currently no marine observations collected in Belize and the introduction of marine observations around the coast has been discussed by Belize NMS and the Ministry of Blue Economy and Civil Aviation in relation to forecasting of algae blooms due to their impact on tourism and fishing. If the scope of SOFF expands in the future, marine observations should be considered for funding support.*
Target easy fixes	Given the extent of the existing observation network in Belize, the nomination of an additional GBON site at an established observation site (Punta Gorda airstrip) in the south of the country will enable Belize to meet the GBON spatial requirements across the whole of the country as presented in the National Gap Analysis and approved by WMO TA. The proposed location, Punta Gorda airstrip in the south of Belize, currently has a manual observation site and an AWS with reliable power and communications as well as access for maintenance. It represents a relatively low-cost development to improve the resolution of the network in the region and provides Belize NMS the opportunity to sustain the network without imposing further financial and logistic burden. NMS Belize has been developing a Climate Data Management System (CDMS) known as 'SurfaceCDMS' and over the past 3 years the NMS Belize has been working with the WMO on the OpenCDMS project and an expert from NMS Belize is a member of the WMO Task Team on Climate Data Model (TT-CDM) which was formed in 2022. Given the existing functionality of the software and the integration of WIS2.0 through the collaboration with OpenCDMS SOFF investment to complete the development and implement the system represents an easy fix for the rapid delivery of GBON data sharing.
Create leverage	NMS Belize are involved in three international projects related to the observation network in Belize: the World Bank funded Energy Resilience for Climate Adaptation (ERCAP) project due to complete in September 2023, the International Fund for Agricultural Development (IFAD) Rural Resilience Belize project and the World Bank Climate Resilient and Sustainable Agriculture (CRESAP) project. Through these projects the installation of 35 additional observing stations including soil temperature

	and moisture sensors have been installed in the western region of Belize to support agricultural development and hydroelectric power generation with FORTIS Belize. As such, there is little direct support available of relevance to the GBON surface observation network though improvements to IT infrastructure at NMS Belize undertaken as part of these projects will complement the development required to support data storage and transmission for GBON. Similarly, IT infrastructure required for the implementation of GBON and funded through SOFF including an upgraded data ingestion server and on onsite Network Attached Storage (NAS) will complement the agriculture and energy development projects in which NMS Belize are already involved.
Maximize delivery capacity	The Implementing Entity is the Inter-American Development Bank (IDB), an international financial institution headquartered in Washington, D.C. and serves as the largest source of development financing for Latin America and the Caribbean. The IDB supports economic development, social development and regional integration in the Latin American and Caribbean (LAC) region through the provision of loans, grants and knowledge creation. The IDB provides these resources to its twenty-six (26) borrowing member countries in LAC, supporting development in a sustainable, climate-friendly way. The IDB has an active portfolio in Belize with a country strategy engagement that focuses on three priority areas: fiscal sustainability and management; private sector productivity and sustainable growth, with a focus on MSMEs; and; human capital. Dialogue areas will focus on migration and citizen security. There are also cross-cutting issues relating to gender and diversity, institutional capacity and rule of law, digital transformation, and climate change and disaster risk management are streamlined into each of the priority areas. Within the Belize portfolio, the IDB has loans and grants programs in various sectors that are aligned with the purpose of the SOFF, including (i) Improvements to increase income and sustainable livelihoods in the agricultural and tourism sectors; (ii) a Climate Vulnerability and Risk Reduction Program, through the implementation of climate resilient measures in tourism and improvements of the governance of disaster risk management; and (iii) Water and Sanitation Program for Rural Areas. In the ongoing programming with the Government of Belize, the IDB will actively seek to leverage additional resources for hydrometeorology development in the country,

Sub-regional gains	The regional support for upper air observations provided by the US National Weather Service through the Caribbean Hurricane Upper Air System will provide continued support across the region for the maintenance and operation of upper air observations as well as funding repairs and consumables. Training on upper air observations can be provided on a regional basis. The SurfaceCDMS implementation of data management and sharing systems can be utilised regionally among the WIS2Box pilot scheme participants in the region and collaboration will continue to enable the implementation of WIS2.0. The Implementing Entity (IDB) for the program is also implementing SOFF in a number of countries in Latin America and the Caribbean and there will be opportunities to collaborate and share experiences across other SOFF beneficiary countries. Belize is part of the SOFF Caribbean regional programme, which aims to facilitate regional coordination in order to explore and design unified solutions for acquiring observations, data management systems, instruments calibration, procurement, operation and maintenance.

3. Readiness and Country context (1 page)

SOFF Beneficiary Country Capacity Assessment

This section should summarize existing Beneficiary Country capacity to execute the GBON National Contribution Plan.

The NMS will be the executing entity for this project, but the NMS only has some limited experience in this area as it has worked with other implementing partners to implement projects on a similar scale. These include the Energy Resilience for Adaptation Project (ERCAP), the Climate Resilient and Sustainable Agricultural Project (CRESAP) and the Resilient Rural Belize (RRB) Programme. Although, the NMS was not the primary executing/implementing entity in either of these projects, personnel within the department worked closely with the main executing entities to ensure that deliverables were met.

It is therefore recommended that a project management unit comprising of at least two individuals, one of which will be a project manager, is hired as part of the project to assist with the NMS in executing this project.

The department also has a Project executing unit within its parent Ministry that will assist with the implementation of the SOFF Investment phase activities. Assistance will also be obtained from the Ministry of Economic Development, Climate Financing Unit.

However, to further build capacity and ensure sustainability, it is proposed that a project management unit be funded through SOFF for the first three years of implementation. These persons will then be eventually hired to work permanently in the department through funding from the NMS annual budget. The NMS has committed to include this in its future budget since this position is already being planned for as part of the department's restructuring plan.
Investment Phase Alignment with the GBON National Contribution Plan *Please attach the National GBON Gap Analysis and GBON National Contribution Plan as Annex 1.*
There is no divergence between the targets stated in the GBON National Contribution Plan and the proposed Investment Phase targets.

4. Investment Phase Outputs and Budget

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

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

Output 1. GBON institutional and human capacity developed	**Main activities**	**Budget (USD)**
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	• Conduct routine (6-monthly) meetings with line ministry to present the evidence of the value and benefit of the NMS to the nation, including the importance of GBON. • Conduct a consultation with the public and private sector in Belize regarding the needs and opportunities for marine observations and support to the Blue Economy. • Conduct a gender Equality and Social Inclusion training, gender assessment and outreach campaigns to women, girls, youth and indigenous groups. • Organize annual workshops with CSOs and community leaders in the Punta Gorda area to sensitize and promote the GBON designated weather station in that area.	$25,000
1.2 **NMHS institutional capacity** required to operate the GBON network developed	Refresh the National Meteorological Service of Belize (NMSB) strategic plan and develop an operational plan. Establish standard operating procedures, and operational documentation associated with maintenance, quality management and operation of the GBON in Belize.	$20,000

	NMS Belize to establish a project execution team, including project management and stakeholder management skills to support the execution of the project.	$120,000
1.3 **NMHS human capacity** required to operate the GBON network developed	Training and development for the following competencies for the senior leadership team at the National Meteorological Service of Belize: leadership, financial management, project management, and human resource management.	$100,000
	Training and development in networking and system administration, and information technology. Training and development in calibration and maintenance of observation systems and instruments and site safety training for maintenance staff.	$255,000
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	None required.	0
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	Physical infrastructure, enclosure, sensors and communications equipment for two proposed GBON stations (Belize city and Punta Gorda) plus spare equipment for repairs and resilience.	$63,000
	Upgraded data ingestion server, uninterruptable power supply, additional data storage drives and IT equipment for project execution team.	$60,000
	Development of Surface CDMS, the Climate Data Management System currently under development by NMSB (cost for 1 year of development).	$65,000
2.3 **New upper-air** stations and related equipment, ICT systems, data management systems and standard operating practices in place	None required	0

2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	Refresh the MOU between NMS Belize and the US NWS as part of the Caribbean Hurricane Upper Air System (CHUAS) initiative is updated to ensure that there is sustainable support provided is sufficient to maintain the upper air station to GBON standard in the long term.	0
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	Running costs for 3 years for 2 GBON surface stations. This includes, spares and repairs, consumables, vehicle and fuel costs, and NMS staff time.	$30,000
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	Running costs for 3 years for 1 GBON upper air station. This includes NMS staff time. All other costs are covered by the US NWS.	$15,000
Total for all Outputs		$753,000
Implementing Entity Fee[1]		$52,710
SOFF peer advisory services	See Annex 4 Section 3.	$54,984
Total funding request		**$860,694**

Budget breakdown by UNDG category (Excluding SOFF peer advisory services)[2]	**USD**
Staff and personnel costs	$212,000
Supplies, Commodities and Materials	$6,000
Equipment, Vehicles, Furniture and Depreciation	$130,500

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

[2] 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.

Contractual Services Expenses	$288,460
Travel	$25,750
Transfers and Grants	$120,000
General Operating Costs	$23,000

5. Investment Phase Implementation Arrangements

Execution model and implementation arrangements	The program will be client-executed and a project execution unit will be established within the NMS as the designated executing entity (EE). The EE will be responsible for (i) the project's technical, administrative, and operational management; (ii) the procurement of works, goods, and services; (iii) the preparation of disbursement requests; (iv) the preparation and update of annual work plans and the procurement plan, among others; (v) the submission of project management reports —the Annual Operation Plan, Semi-Annual Reports, and final evaluation reports; (vi) the monitoring, supervision, and inspection of works and service contracts. The EE will use the IDB's procurement and financial policies during execution. A summary of the procurement policies of the IDB in relation to the procurement of Works and Goods are as follows: 1. **Scope.** The policies for the **Procurement of Works and Goods Financed by the IDB** apply to all operations, financed wholly or partly by the Bank or by funds administered by the Bank and executed by a Borrower or Beneficiary. These policies regulate procurement processes of works, goods, and related services (different from consulting services). References to "goods" and "works" in these Policies include related services such as transportation, insurance, installation, commissioning, training, and initial maintenance. The term "goods" includes commodities, raw materials, machinery, equipment, and industrial plants. Provisions of these Policies also apply to services that are bid and contracted on the basis of performance of measurable physical output, such as drilling, mapping, and similar operations. 2. **Basic Responsibilities.** The responsibility for project implementation, and therefore for the award and administration of the contract under the project, rests with the Borrower. In some cases, the Borrower acts only as an intermediary, and the project is carried out by another agency or entity. The Bank oversees the procurement process to ensure that its rules and procedures are followed. 3. **Basic Guidelines.** The basic guidelines of the procurement policies relate (i) the general principles of eligibility, advance contracting and retroactive financing, joint ventures, Bank Review, mis-procurement, Fraud and Corruption, and the requirement of a procurement plan; (ii) the process of international competitive bidding, including related and relevant aspects; (iii) other selection

	methods, such as limited international bidding, national competitive bidding, shopping, direct contracting, force account, and community participation in procurement, among other methods, and specific recommendations for good practices. A summary of the procurement policies of the IDB in relation to the selection and contracting of Consultants financed are as follows: 1. **Scope.** The Policies for the Selection and Contracting of Consultants Financed by the IDB) apply to all operations, financed wholly or partly by the Bank or by funds administered by the Bank and executed by a borrower or beneficiary. For the purpose of these policies, the term consultants includes a wide variety of private and public entities, including consulting firms, engineering firms, construction managers, management firms, procurement agents, inspection agents, specialized agencies and other multinational organizations, investment and commercial banks, universities, research institutions, government agencies, nongovernmental organizations (NGOs), and individuals consultants. These policies regulate the processes of selection and contracting of consulting services of an intellectual and advisory nature. These Policies do not apply to other types of services in which the physical aspects of the activity predominate (for example, construction of works, manufacture of goods, operation and maintenance of facilities or plant, surveys, exploratory drilling, aerial photography, satellite imagery, and services contracted on the basis of performance of measurable physical output). For these last types of services, the Policies for the procurement of Goods and Works are applied. 2. **Basic Responsibilities.** The Borrower is responsible for preparing and implementing the project, and therefore for selecting the consultant, and for the award and subsequent administration of the contract. The Bank oversees the procurement process to ensure that its rules and procedures are followed. 3. **Basic Guidelines**. The basic guidelines of the procurement policies for the selection of consultants describes (i) issues related to the general principles, conflict of interest, unfair competitive advantage, eligibility, advance contracting and retroactive financing, associations between consultants, review, assistance and monitoring on the part of the Bank, mis-procurement, prohibited practices, and the requirement of a procurement plan; (ii) the selection process based on quality and cost, as well as aspects to be aware of during such process; (iii) other methods of

	selection, such as quality-based selection, least-cost selection, selection based on the consultants' qualifications, and single-source selection, among other methods and specific recommendations for good practices; (iv) types of contracts and important provisions related to them; (v) aspects related to the selection of individual consultants. In terms of fiduciary requirements, the executing entity will be required to establish a separate bank account for the flow of funds from the IDB, the Implementing Entity. The execution arrangements will be established through a technical cooperation agreement between the IDB and the Government of Belize.
Private sector involvement	NMS Belize collaborate and share data and services with a wide range of organisations including national government departments, industrial and agricultural organisations within Belize and international meteorological organisations. NMS Belize also collaborate with the private sector, in particular undertaking a project in collaboration with FORTIS Belize for meteorological monitoring in the Macal River catchment area / watershed. FORTIS Belize operates three hydroelectric facilities on the Macal River in western Belize – the Mollejon, Chalillo, and Vaca dams. However, given the geographic location of the FORTIS operations in Belize there is little opportunity for direct collaboration with respect to the operation or maintenance of the GBON network. Overall limited private sector involvement is expected as it relates to the GBON stations. However, the NMS works closely with several private organizations in maintaining its network of automatic stations. These include the Belize Sugar Industries and the aforementioned arrangements with FORTIS Belize (a hydro-electric generating company). Spill over benefits from this collaboration will ensure that NMS is able to maintain both proposed GBON stations. There is the potential for some collaboration with the local airlines and airports authorities as it relates to data from at least the GBON station at the International Airport. An MOU similar to those developed with FORTIS Belize can be established for data sharing and collaboration. Additionally, even though the two GBON stations will not be located directly in any area of specific interest to most private sector organizations, the NMS at times receives request for data from the entire network. Therefore, agreements can be made with such individuals or companies to straighten partnerships and collaboration.

Civil society participation	*Please indicate the anticipated role of civil society organizations, including relevant stakeholder engagement processes.* The NMS currently has limited engagement with CSOs but effort will be made to engage them during the implementation phase. One CSO (Friend for Conservation and Development – FCD) has worked with department in the past as it relates to site inspection for weather station in the remote areas of western Belize. As it relates to the two GBON station, the one at the airport requires little to no CSO involvement. The proposed station in Punta Gorda will require cooperation with CSOs in that area and an event will be held to engage with this sector to mitigate against the risk of theft and vandalism. The event should follow the gender guidelines in section 4.4 of the national contribution plan.
Fiduciary systems	The financial management and oversight of the project including reporting requirements, will follow IDB policies and procedures. The financial management of the project will be governed by the IDB's **Financial Management Guidelines** for all operations financed by the IDB, which aims to ensure "that the proceeds of any loan made, guaranteed, or participated in by the Bank are used only for the purposes for which the loan was granted, with due attention to considerations of economy and efficiency". There are ten financial management guidelines that the executing entity must agree to in the execution of projects and generally relate to (i) financial planning and cash flow needs; (ii) records and reports on the use of project resources; (iii) effective internal controls; (iv) statement of accounts audited by independent entities and (v) comprehensive supervision by the Bank. The ten guidelines are: 1. Requirement 1. Eligibility of expenditures 2. Requirement 2. Disbursement management 3. Requirement 3. Rendering of accounts 4. Requirement 4. Project financial supervision 5. Requirement 5. Project financial reporting system 6. Requirement 6. Internal control 7. Requirement 7. Independent external auditors 8. Requirement 8. External financial audit of the project 9. Requirement 9. Prohibited practices

	10. Requirement 10. Transparency The procurement of goods, works and services, and the selection of consultants will be carried out in accordance with IDB policies and guidelines related to: (i) **Procurement of Goods and Works financed by the IDB;** (ii) **Policies for the Selection and Contracting of Consultants** financed by the Inter-American Development Bank. The procurement of projects is guided by core procurement principles which are: • Value for money • Economy – refers to buying inputs of the appropriate quality at the right price • Efficiency • Equality • Transparency • Integrity
Social and environmental safeguards	The project will be governed by IDB's **Environmental and Social Policy Framework**, which is a consolidated framework covering environment, involuntary resettlement, and indigenous peoples. All projects will be prepared in accordance with the ESPS requirements. All projects undergo environmental and social due diligence at appraisal to help the IDB decide if the project should be financed and, if so, the way in which environmental and social risks and impacts should be addressed in its planning, implementation and operation. The appraisal process also identifies opportunities for additional environmental or social benefits. IDB seeks that projects are designed, implemented, and monitored in compliance with its policies, applicable regulatory requirements and international best practices. The SP sets out principles, rules, procedures and guidelines for conducting environmental and social due diligence of the potential projects. These procedures and guidelines also describe the process for developing measures to avoid and mitigate potential adverse impacts as well as opportunities to improve the environmental and social outcomes of the projects. IDB is committed to the principles of transparency, accountability and stakeholder engagement, and promoting adoption and implementation of these principles by its clients. Proportionate to the nature and scale and environmental and social risks and impacts of the project, IDB requires its clients to disclose sufficient information about the risks and impacts arising from projects, engage with stakeholders in a meaningful, effective, inclusive and culturally appropriate manner and take into consideration the feedback provided through such engagement.

	The Bank will undertake a gender assessment as part of its Institutional Capacity Assessment of the executing entity to manage the project. The IAC examines six areas of project execution (i) project management; (ii) technical quality management; (iii) human resources management; (iv) procurement management; (v) financial management; and (vi) environmental and social impact management. The gender assessment will be done within the context of the environmental and social impact management module.
Dispute resolution mechanism	In accordance with the environmental and social standards of the IDB, there are **three channels** by which an entity can file a complaint related to an -IDB financed project that may cause environmental or social damage,: 1. At the local level, file a complaint though the executing entity 2. With the IDB group, through its IDB Complaints form **Independent Mechanism,** through an accountability office independent from project teams which facilitates dispute resolution processes to resolve the concerns raised.
Additional relevant policies and procedures	None

6. Investment Phase Monitoring and Reporting

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

Output 1. GBON institutional and human capacity developed	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	# of Gender, Equality and Social Inclusion (GESI) training and gender assessment completed by the NMS Belize senior management team	1		
	# of workshop for CSO and relevant government ministries to co-develop NMS products to be GESI compliant		1	
	# of consultation with Ministry for Blue Economy and private sector stakeholders regarding marine observations			1
	% of female participants to the three activities above	50%	50%	50%
	Incorporation of GESI consideration in the NMS Strategic and Operational plans.	X		
	Compliance with gender assessment guidelines.		X	
1.2 **NMHS institutional capacity** required to operate the GBON network developed	Terms of reference, including key performance indicators for the recruitment of project officers.	X		
	Recruitment of project officers	X		

	# of project officers	2		
	Review of the project officers KPIs and update as required.		X	X
1.3 **NMHS human capacity** required to operate the GBON network developed	Identification and commission leadership and management training opportunities.	X		
	# of senior electronics technician completing networks and system administration training.		1	
	# of trainings for NMS Belize senior management team.		1	
	% of electronic technicians completed training in calibration, maintenance of observation systems and instruments and site safety.		50%	100%
	% of female participants		50%	50%
Output 2. GBON infrastructure in place	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**
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	N/A	N/A	N/A
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	2		
	Development and delivery of SurfaceCDMS data globally via WIS2.		X	
	Establishment of national capability to monitor the observation data		X	

	quality and completeness.			
	Adoption of SOP for operations and maintenance of GBON surface stations in NMS QMS.			X
	Upgraded IT infrastructure equipment procured, installed and operationally available	X		
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	N/A	N/A	N/A
2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	# stations as per the GBON National Contribution Plan	N/A	N/A	N/A
	Establishment of national capability to monitor the observation data quality and completeness. SOP for operations and maintenance of GBON surface stations adopted in NMS QMS.		X	
Outcome: Sustained compliance with GBON	**Indicator**	**Target Y1**	**Target Y2**	**Target Y3**
3.1 **GBON land-based stations'** commissioning period[3] 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			2

[3] 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.

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

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[4]) 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.

[4] 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	Low	Rare	Minor	To ensure compliance and risk of mis-procurement, the executing entity will be trained in the procurement and fiduciary policies and regulations of the IDB.
SOFF-funded investments cause environmental or social impacts	Low	Rare	Minor	Follow environmental recommendations in the National Contribution Plan. Specify in the

				procurement process the use of reusable instruments, where possible. Consideration of the environmental and sustainability impacts of maintenance (including associated travel) should be made as part of the SOP for maintenance and calibration. Consideration of the use of biodegradable materials for upper air observations should be made where possible as well as the environmental impact of shipping methods and materials. Ensure procurement specification is correct. Consultation with CSO as required.
NMHS staff depart after being trained	Medium	Unlikely	Major	Raise awareness of importance of NMS with government and funding support. Maintain strong leadership at NMS. Ensure that back up staff are

				provided with adequate technical trainings.
Slow implementation and delays in procurement, installation and capacity building activities	Medium	Unlikely	Moderate	Regular project reporting and meetings. Follow IE procurement guidelines. The IDB will utilize regular administrative and supervision missions to ensure timelines for implementation are maintained. The IDB will also undertake an Institutional Capacity Assessment of the Executing entity, which is a diagnosis of the strengths and weaknesses of the organization to e to manage the project. Specific capacity training activities will be undertaken on the basis of the assessment.
After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality	Medium	Unlikely	Major	The NMS already has clear procedures for data sharing with stakeholders. This will be updated to include collection and sharing of GBON data.

				Implement, follow and regularly update the operational procedures. Ensure that sharing of GBON data is part of regular operational procedures in the department and included in operational manuals.
Destruction or theft of SOFF-financed equipment and infrastructure	High	Possible	Moderate	SOP in place, including high-impact weather plans for deployment of spares. The GBON station at the Airport is in a secure location where there is minimal risk of theft or vandalism. For the proposed GBON station in Punta Gorda, the NMS will engage local CSO's as well as community leaders to raise awareness of the importance of the station and to get commitments from them to assist in securing it from theft and vandalism.

Countries cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain	Medium	Unlikely	Major	Ensure that there is adequate internet connection to access readily available forecast products from the Global Producing Centres. Leverage support from regional institutions such as CIMH that provide regional NWP products. Provide adequate training for weather forecaster on utilization of improved forecast from the Global Producing Centres.

Annex 1: National Gap Analysis

The National Gap Analysis of Belize is available here

Annex 2: National Contribution Plan

The National Contribution Plan of Belize is available here.

Annex 3: Country Hydromet Diagnostics

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

1. Purpose and scope

These Terms of Reference describe the provision of technical advisory services by Met Office, UK to National Meteorological Service of Belize 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[5]
- 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.

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

3. Peer advisors' activities during the SOFF Investment Phase

The Met Office, UK, as Peer Advisor to the National Meteorological Service (NMS) of Belize have co-developed the GBON National Contribution Plan – Annex 2. The plan outlines the activities necessary for the NMS to achieve GBON compliance. Delivery of this plan will be led by the Implementing Entity, the Inter-American Development Bank (IDB), with support from an Executing Entity, potentially the NMS, with ad-hoc support from the Peer Advisor. The Peer Advisor support will provide technical advice and review of procurement terms of reference documents, technical advice on bid appraisal, technical advice for the review of project implementation plans, technical advice for capacity development plans and other relevant issues as outlined below.

Activity	PA activity
1.1 **National consultations** including with CSOs, and other relevant stakeholders conducted	Support NMS with approach to national consultations and review outcomes.
1.2 **NMHS institutional capacity** required to operate the GBON network developed	Advise and review strategic plan, SOP & operational documentation development, and establishment of the project management unit.
1.3 **NMHS human capacity** required to operate the GBON network developed	Advise and review on the terms of reference for the NMS staff training and development requirements.
2.2 **Improved land-based** stations and related equipment, ICT systems, data management systems and standard operating practices in place	Advise and review terms of reference for procurement, including technical specification. Advise and review bid appraisal process.
2.4 **Improved upper-air** stations, related equipment, ICT systems, data management systems and standard operating practices in place	Advise and review MOU between NMS Belize and the US NWS.
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	Advise and review observations commissioning process.
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	Advise and review observations commissioning process.