
SOFM Investment Funding Request

Bangladesh

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**





General Information

Fund	MPTF_00281: The Systematic Observations Financing Facility					
FMP Record	MPTF_00281_00031: SOFF Bangladesh Investment Phase					
MPTFO Project Id						
Start Date						
End Date						
Applicants	Status	Contact Type	Name	e-mail	Position	Telephone
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Description	<p>The primary aim of this project is to enhance and sustain Bangladesh's weather observation network by improving its capacity to be GBON complaint and generate and disseminate essential observational data, which is crucial for enhancing weather forecasts and climate services, multisectoral decision-making, and planning for the benefit of all.</p> <p>The project components are:</p> <p>Component 1: Enhancement of BMD'S Institutional and Human Capacity</p> <ul style="list-style-type: none"> The objective of this component is to establish the capability to operate and maintain the observing network. This includes conducting national consultations with CSOs and other relevant stakeholders, as well as developing the necessary institutional capacity to operate the GBON network and enhancing the human capacity needed to operate the GBON network. <p>Component 2: Rehabilitation and Construction of GBON-Complaint Infrastructure</p> <ul style="list-style-type: none"> This component comprises investments in the acquisition and installation of observation infrastructure and telecommunications. It encompasses the upgrading and improvement of land-based stations and related equipment, ICT systems, data management systems, and standard operating practices. Additionally, it includes the enhancement of existing upper-air stations and related equipment, ICT systems, data management systems, and standard operating practices. <p>Component 3: Bangladesh Network Compliance with GBON Requirements</p> <ul style="list-style-type: none"> This section encompasses the expenses incurred during the commissioning phase for the land-based stations and upper air stations that are part of the Global Basic Observing Network (GBON). This includes the costs associated with ensuring compliance with the country-specific standards for operations and maintenance, as well as data sharing verification by the World Meteorological Organization (WMO) Technical Authority. <p>The project is part of the Systematic Observations Financing Facility (SOFF), a mechanism that facilitates and expedites the gathering and dissemination of critical surface-based weather and climate observations, in accordance with international requirements, to enhance the quality and availability of weather forecasts, early warning systems, and climate services across all strata of society. The recipient of the project is the Bangladesh Meteorological Department (BMD), while the Islamic Development Bank (IsDB) and The Norwegian Meteorological Institute (Met Norway) and China Meteorological Administration serve as the implementing entity and co-peer advisor, respectively.</p>			
Universal Markers	Gender Equality Marker	Risk <ul style="list-style-type: none"> • GEM1 - The Key Activity contributes to GEWE in a limited way • Low Risk 		
Optional Markers	WB Income Category	<ul style="list-style-type: none"> • Lower Middle Income 		
	UN LDC	<ul style="list-style-type: none"> • Yes 		
	Small Island Developing States (SIDS)	<ul style="list-style-type: none"> • No 		
Fund Specific Markers	SOFF Phases	SOFF Phases <ul style="list-style-type: none"> • Investment Phase 		
	EW4All	Early Warnings for All initial focus countries <ul style="list-style-type: none"> • Yes 		
	Fragile and conflict-affected situation	Fragile and conflict-affected situation <ul style="list-style-type: none"> • No 		
	Peer advisor	Peer advisor <ul style="list-style-type: none"> • China Meteorological Administration (CMA) [China] • Norwegian Meteorological Institute [Norway] 		
Geographical Scope	Geographical Scope	Name of the Region	Region(s)	Country
	<ul style="list-style-type: none"> • Country 		<ul style="list-style-type: none"> • Asia 	<ul style="list-style-type: none"> • Bangladesh
Participating Organizations and their Implementing Partners	UN Participating Organizations	Government/ Multilateral/ NGO/ Other	New Entities	Implementing Partners
	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	<ul style="list-style-type: none"> • ISDB - IsDB - Islamic Development Bank 		

Programme and Project Cost	Participating Organization	Amount (in USD)	Comments
Budget Requested			
	ISDB	\$4,438,055.05	
	WMO	\$516,810.00	
Total Budget Requested		\$4,954,865.05	
Tranches			
	Tranche 1	Tranche 2	Tranche 3
	ISDB (70%) WMO (33.33%) Total:	\$3,106,638.53 \$172,252.77 Total: \$3,278,891.31	ISDB (30%) WMO (33.33%) Total: \$1,331,416.52 \$172,252.77 Total: \$1,503,669.29
			ISDB (0%) WMO (33.34%) Total: \$0.00 \$172,304.45 Total: \$172,304.45
Other Sources (Parallel Funding)			
	Total	\$4,954,865.05	
Thematic Keywords			
Programme Duration	Anticipated Start Date	01-Sep-2026	
	Duration (In months)	60	
	Anticipated End Date	01-Sep-2031	

Narratives

Title	Text

Close the most significant data gaps

Geographically, Bangladesh is a low-lying, densely populated South Asian country that features two distinctive physiographic characteristics: a broad deltaic plain prone to flooding, and a small hilly region crossed by swift rivers. Bangladesh has a subtropical monsoon climate, with significant seasonal variations in rainfall, moderately warm temperatures, and high humidity. During the readiness phase assessment, we found the following gaps in Bangladesh's context.

- The Bangladesh Meteorological Department (BMD) operates a network of over 300 observation stations, comprising 58 manual (synoptic) observatories, 61 Automatic Weather Stations (AWS), 125 agricultural AWS, 65 automatic rain gauge stations, and 6 upper air stations. Of these, five AWS had irregular observations due to insufficient manpower. All synoptic and AWS stations in the country were located in the same location. In 2023, 35 new AWS were installed under the World Bank (WB) project in Bangladesh, 13 AWS were installed approximately three to four years ago, and 12 AWS were installed in 2013 but ceased operating after three years. Despite this, BMD has taken steps to rehabilitate the 12 AWS. These stations are, however, neither GBON designated nor compliant.
- Data from Automated Weather Stations (AWS) are available in a separate system and can be used operationally for forecasting guidance at BMD. The data were not currently transmitted to the GTS. To ensure efficient data processing and transmission from observation stations to Global NWP centres in real-time through WIS 2.0, the ICT infrastructure and services at BMD must be redesigned. BMD relies on the Global Telecommunication System (GTS) for international data transmission. BMD needs to implement WIS 2.0 for seamless data transmission, which is a requirement for GBON compliance.
- All weather observation networks in Bangladesh were established and maintained using BMD. Currently, BMD does not utilise data from other organisations (third-party stations). Some agricultural institutes operate rainfall observation stations in Bangladesh; however, these stations do not follow proper observation routines.
- Currently, Bangladesh does not have any marine stations, although it has a large maritime area. The BMD requires support from the SOFF for the installation of at least one marine station, with a horizontal resolution of 500 km in the Bay of Bengal. As BMD has no ocean-going vessels and has less capacity to maintain a marine meteorological station, BMD will need help from other organisations to maintain such a station.
- The Bangladesh Meteorological Department (BMD) has an automatic weather station network that observes all the GBON variables, but the main challenge for GBON compliance is the lack of reliable ICT infrastructure capabilities, including skilled IT specialists for increased data processing and sharing through the WIS 2 box.

Summary of station list and its status

- The usage of the surface observatories at Ashuganj, Kawkhali, Saint Martin, and Dighinala has been suspended due to a scarcity of personnel.
- All 55 surface stations were non-compliant with the GBON standards. The WDQMS webtool has received surface observations from 17 BMD stations, but there are availability concerns.
- According to the Gap Analysis Report, BMD operates five manual upper air stations, with only one conducting twice-daily soundings. However, these stations struggle to meet GBON standards due to insufficient human resources for data transmission and financial limitations. Sustained compliance is uncertain, particularly as key personnel retire without guaranteed successors. The establishment of a new upper air station following the SOFF preparedness phase has further strained the qualified workforce managing BMD stations. Consequently, none of the current six upper air stations fulfil any GBON requirements. To achieve GBON standards, observed data must be accessible in the WDQMS monitoring system web interface for a minimum of 80% of the specified days and times. The present situation fails to meet these criteria, necessitating SOFF assistance to ensure the continued operation of upper air observations in Bangladesh.
- Additionally, the WDQMS web tool has not received Dhaka's upper air soundings for some time, which is why Bangladesh is not compliant with upper-air soundings (See pg. 7 of the NCP report). To address this issue, there needs to be an improvement in the real-time data exchange internationally so that complete soundings can be received for GBON compliance. This simple solution will be addressed in the GBON contribution plan.

To ensure GBON compliance, it is crucial to enhance staff capacity and capabilities at BMD. The identified gaps, including the AWS operation and maintenance, reveal where the most attention is required.

- A periodic capacity gap analysis should be performed continuously. It is essential to create an effective climate database management system that complies with WMO requirements (WIS 2.0) and aligns with the cap.
- Implementing a proactive recruitment policy is necessary to sustain the institute's capacity and capabilities, while mitigating the negative consequences of extended vacancies.

- Minimising dependence on external consultants is crucial and initiating project management training is recommended.
- Having sufficient skilled ICT professionals is necessary for the long-term sustainability of the system.

Type of station	WMO GBON Global Gap Analysis, June 2023				GBON National Contribution Target	
	Target	Reporting	Gap		To improve	New
			To improve	New		
	[# of stations]				[# of stations]	
Surface	4	0	4	0	5 ^[1]	0
Upper-air	1	4	0	0	1	0
Marine	1					

^[1]Bangladesh will require five surface stations to fulfil the 200 km horizontal resolution GBON requirement

^[1] For SIDS, for the WMO GBON Global Gap Analysis in June 2023, the EEZ area has been added to the total surface area which is the basis for the target number of stations. The standard density requirements for SIDS have been calculated with 500 km for surface stations and 1000 km for upper-air stations.

The stations to be supported under SOFF support and their location are presented on Pg. 9 of the NGA Report. Below are the WIGOS IDs: Tangail 0-20000-0-41909, Rangpur 0-20000-0-41859, Dhaka, Upper Air 0-20000-0-41923, Sylhet 0-20000-0-41891, Chattogram 0-20000-0-41978, and Barishal 0-20000-0-41950.

Target easy fixes

The quick wins that could be explored under the SOFF support to close the identified gaps and rapidly deliver GBON data sharing based on the recommendations from the readiness phase are as follows:

Infrastructure Development and Upgrade

- The rehabilitation and upgrading of five registered WIGOS Automatic Weather Stations (AWS) to SOFF and GBON qualification standards with GTS and WIS2.0 communication standards. To meet the 200 km horizontal resolution requirement, AWS stations with automatic data transmission systems need to be set up at five locations, including one upper air station and one marine station, as part of the SOFF project.
- The transmission of data needs to be carried out automatically on a central server and global data exchange via GTS/WIS 2.0. These stations must be capable of measuring all the GBON variables.
- According to the assessment of current BMD stations, the majority of the financial resources and activities needed to comply with the GBON will be allocated to upgrading existing stations and ICT infrastructure to facilitate real-time data transmission from the stations to Global NWP Centres via WIS 2.0. While the main goal is to ensure that the infrastructure upgrade geared towards GBON complaint, it has the potential of benefits to the wider observatory system in the country.

Institutional and Human Capacity Development

- Recommendations for training and recruitment within the SOFF framework, as well as addressing capacity gaps for technicians, experts, and management to maintain and operate the weather observing infrastructure, are provided in the Technical Specification for Automatic Weather Station, which is discussed in the report. BMD requires skilled IT specialists for increased data processing and management capabilities, including making the data exchange compatible with WIS 2.0.
- A well-designed data flow architecture and automation of data transmission are necessary. BMD requires sufficient funding, training, and human resources through the SOFF to ensure sustainable capacity throughout the data value chain.
- A data management software system is necessary for all observational data collection, processing, data quality, display, and archiving, including backup. Relevant personnel must understand the CDMS (CLIDATA) architecture and system at the BMD for the transmission of all observation data. It should be noted that, while the CLIDATA solution was recently procured as part of the just completed World Bank's project, BMD will not use it for database management. This is because the solution was deemed expensive to operate and maintain. In addition, maintenance of the system can only be provided by the software vendors. For this reason, an open CDMS CLIMSOFT that was proposed in Bangladesh NCP report will be considered during the investment phase.
- An increase in the skilled workforce is required in telecommunications, information technology (IT) infrastructure, meteorological metrology, and engineering. Automation of observational networks increases the need for staff for the maintenance, inspection, system and software design and update, and calibration of electronic instruments in the AWS.
- The consideration of open-source software as an alternative and/or backup for the Climate Database Management System (CDMS) at BMD is recommended.
- It is therefore crucial that BMD staff in charge of operating observation systems receive relevant training on meteorological requirements, as well as a comprehensive understanding of the new AWS instrument systems, their configuration, hardware and software, site setup, maintenance plan for the instruments, and systems adhering to Standard Operating Procedures (SOPs) for quality control of the system to minimise the number of inaccurate measurement data. During the investment phase, peer advisors organise workshops to enhance the calibration abilities of metrology personnel at BMD and promote metrology standards. We can conduct comparative work on standard BMD measurement instruments if needed.

Create leverage

The Islamic Development Bank (IsDB) significantly contributes to Bangladesh's development across sectors like agriculture, water, energy, health, education, and social protection. The IsDB has initiated projects such as the Rural and Peri-Urban Housing Finance Project, Urban Water Supply and Sanitation in the 23 Pourashavas Project, and the Citywide Inclusive Sanitation (CWIS) project. These initiatives aim to boost agricultural productivity, profitability, and sustainability, enhance market access, finance, extension services, improve water resource management, protect the environment, strengthen health systems, and support vulnerable groups including the elderly, refugees, women, and children.

The SOFF investment, complementing IsDB efforts, provides basic observational services to mitigate climate change risks, natural disasters, and conflicts threatening Bangladesh. By offering timely and accurate weather, climate, and hazard information and early warnings, SOFF enables stakeholders to adopt suitable coping strategies, diversify livelihoods, and access insurance and social safety nets. It also enhances coordination among ministries, research institutions, associations, and the private sector.

This strategic and innovative funding under the SOFF arrangement, implemented by IsDB, aligns with IsDB's mission of promoting human development, social and economic inclusion, and sustainability. SOFF complements IsDB's existing and planned operations in Bangladesh, creating synergies in agriculture, water, health, education, and social protection, thus advancing the country's development goals.

Future IsDB support in Bangladesh, based on SOFF's foundational assistance, identifies gaps and enhancements for GBON compliance. The outcomes from readiness and investment phases can leverage further IsDB financing and programs, including Reverse Linkage, Technical Cooperation, Early Warning Capacity Development, and project financing at the government's request.

In 2023, the Bangladesh Meteorological Department (BMD) enhanced its infrastructure under the Bangladesh Weather and Climate Services Regional Project of the World Bank, adding 35 AWS, three AWOS, 125 agricultural AWS, 65 Automatic Rain Gauges (ARG), seven portable hydrogen gas generators, calibration facilities, and a climate database management system (CDMS) - Clidata. To adhere to GBON standards, four AWS from this project and one upper air station were included under the SOFF financing mechanism. The investment phase aims to improve calibration facilities, address capacity gaps, and advance metrology standards.

The SAREPTA project, led by MET Norway (Norad) since 2013, supports BMD in Capacity Building for Weather and Climate Services, emphasising open-source software and free data, and enhancing IT solutions across infrastructure, networks, operating systems, software, and maintenance. This project also digitises and organises observation data, and applies meteorological, climate, and ocean models. BMD and MET Norway have published reports on Bangladesh's climate status (2016) and Changing Climate (2024), based on weather observations. This support aligns with SOFF, particularly in data analysis, visualisation, and verification.

Enhancement of Weather Radar Systems in Dhaka and Rangpur, supported by JICA, has been ongoing since 1988, with Japan aiding in the installation of meteorological radars, weather analysis and prediction systems, and skill development. JICA established all five BMD meteorological radars, with Dhaka and Rangpur completed in 2000 and 1999 respectively. Japan is now upgrading the radar systems at these locations. The project, spanning July 2016 to June 2025 with a budget of 1,955,700,000 BDT, has seen the Dhaka radar operational and the Radar Tower construction finalised.

The "Strengthening the Capacity of Weather and Climate Services" project, supported by JICA from January 2024 to June 2027 with a budget of 267,300,000 BDT, aims to enhance surface observations, RADAR maintenance and products, operational forecasting, satellite image analysis, forecast guidance, regional NWP systems, seasonal forecasting, climate change projection, meteorological information dissemination, and strategic planning.

The "Support of the GEO-KOMPSAT-2A Receiving and Analysis System in Bangladesh" project, backed by the Korean government and initially scheduled from December 2020 to December 2021, was handed over in January 2024 due to COVID-19 delays. The project cost is estimated at 220,000,000 BDT, aiming to enhance Bangladesh's resilience and adaptive capacity to climate-related hazards and natural disasters, with the Korea Meteorological Administration (KMA) as a development partner.

Maximize delivery capacity

The Islamic Development Bank (IsDB) has extensive experience in implementing development projects across four continents, including Bangladesh, for over five decades. With a decentralized structure, the Bank operates a significant country office in Dhaka, serving as a regional hub to offer effective services to clients. This in-country presence allows IsDB to engage deeply with stakeholders and institutions, ensuring adherence to donor and recipient country standards. This facilitates leveraging current engagements and expertise for the SOFF-financed project.

The IsDB has a robust climate change policy aimed at building member countries' resilience to climate impacts, supporting green economy transitions, and enhancing capacity to achieve climate goals. The Bank emphasizes community and individual resilience through reliable weather and climate data, aligning with SOFF's core objectives. Further details on the implementing entity's capacity are available in the project's Investment Phase Implementation Arrangements.

The Norwegian Meteorological Institute (MET Norway), under the Ministry of Climate and Environment, provides public meteorological services for civil and military purposes. Its goal is to help authorities, industry, institutions, and the public protect life and property, plan ahead, and protect the environment. MET Norway's longstanding collaboration with BMD on weather and climate services since 2013 underscores a strong partnership, ensuring successful SOFF implementation.

The China Meteorological Administration (CMA), established in 1949, is responsible for weather monitoring, reporting, and atmospheric research. It plays a crucial role in weather forecasting, climate monitoring, and meteorological services, significantly contributing to safeguarding lives and property. CMA addresses natural disasters and climate change challenges, central to China's efforts to build a resilient, informed society. CMA collaborates with BMD, leveraging its expertise to support BMD under the SOFF-financed project.

Sub-regional gains

BMD is a member of several regional organisations co-operating in the field of capacity building in hydrometeorology, most importantly the Regional Integrated Multi-Hazard Early Warning System (RIMES Bangladesh). Its main regional information exchange is related to early warnings of heavy rainfall, heat waves, cold waves, cyclones, and lightning. In most cases, early warnings for cyclones are provided through regional centres such as RSMC and New Delhi by the Issuing of Tropical Weather Outlook and cyclone advisories. BMD is also an important participant of the BIMSTEC Centre for Weather and Climate (BCWC) to promote and encourage cooperation between BIMSTEC member countries in identified areas of fundamental and applied scientific research in weather prediction and climate modelling, and scientific capacity building in weather and climate research. There is an exchange of knowledge sharing with meteorological organisations such as IMD, Norwegian Meteorological Institute (MET Norway), CMA, JMA, and KMA for various target-oriented training from where BMD officials increase their professional skills in their sectors.

It is recommended that BMD should be combined with CMA to enhance personnel's abilities at BMD on metrology standards. The CMA plans to facilitate training on metrology (calibration) through the SOFF Program.

It is also recommended that BMD engage with RIMES for regional collaborations for capacity building in several hydromet disciplines on storm surge, NWP, Lightning, IBF, Seasonal Forecasting, and ICT and programming languages.

It is also recommended to explore capacity development on station metadata and data quality performance provided by the Regional WIGOS Centre RA II. Currently, BMD is affiliated with RWC RA II (Japan and China). SOFF investment will ensure that the BMD has the capacity to follow up on tickets assigned from RWC, especially regarding GBON stations. Peer advisors will continue to coordinate with RWC.

Close collaboration and partnership with the established training centres of WMO in the region, which are hosted by the India Meteorological Department (IMD), China Meteorological Administration (CMA), and Korea Meteorological Administration (KMA), as well as the Japan Meteorological Agency (JMA), are also important for exploring more opportunities for training programs, knowledge exchange, and technical assistance. By proactively pursuing these strategies and maintaining open lines of communication, BMD can enhance its capacity development.

There are opportunities for regional collaboration in maintenance and calibration as well as capacity building through sub-regional network design.

- Calibration of the equipment used by BMD at specialised facilities in the region will also provide field calibration packages and associated technical training for the BMD staff. This goes beyond the role of CMA as a collaborating co-peer advisor for this project.
- Continued engagement of BMD in the Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES), which can also conduct some training.

Establishing a backup CDMS (CLIMSOFT) for BMD collaboration with MET Norway, which can provide technical assistance and capacity building on CLIMSOFT.

Bangladesh Meteorological Department

In terms of human and institutional capacities, significant capacity gaps were also identified.

- The current estimate for BMD's staffing as of March 2024 is 673 personnel. Of these, 17% are women and 83% are men. The corporate support staff comprises individuals employed in administrative roles, such as accountants, HR personnel, and secretaries.
- The current capability of BMD is insufficient to support the entire observation system, particularly given the rise in automated station networks. It is essential to improve BMD's capabilities and capacity to guarantee the continuity of GBON infrastructure.
- In order to effectively deliver meteorological services and fulfil other essential roles in national development related to GBON, BMD requires the necessary policy, guidance, resources, and training, including the reorganisation of its organisational structure to include more workers with relevant training for AWSs and UA observations.

It is essential to emphasise the need for IT personnel to manage the climate database and data flow infrastructure that is currently lacking in the department. Over the past few years, BMD has increased its automatic observation network, which utilises different electronics and infrastructure technologies than the conventional manned stations that BMD is familiar with. To maintain and calibrate such technology, training is required for those responsible for automatic weather observation. To implement an automatic weather monitoring system, it is crucial to hire or train experienced staff who understand AWS operations. BMD is in urgent need of dedicated staff to manage their AWS, including data management throughout the entire value chain to the Global NWP centres in real-time, from the statistician to the climate database managers and IT experts.

- BMD currently lacks a dedicated ICT system and operation unit to ensure compliance with GBON, which is a major drawback. The technical capabilities of BMD's field technicians are limited to manual stations only, and their maintenance and calibration abilities are inadequate for automatic weather stations. Therefore, it is crucial to develop a customised training and capacity development program with well-defined goals to ensure the long-term sustainability of GBON stations. This program should be compatible with the newly acquired AWS and the recruitment process should include the hiring of personnel who can manage the automated weather system infrastructure, including the climate database management at BMD. The recruitment process should prioritise the hiring of qualified personnel who are essential for the smooth operation of GBON stations. Additionally, it is recommended that Standard SOPs for the deployment, maintenance, calibration, and quality control of the observational network be developed and made available to ensure compliance with GBON standards.

The National Executing Entity (EE) role will be fulfilled by the Bangladesh Meteorological Department (BMD), which operates under the Ministry of Defence (MoD). In this capacity, the BMD/MoD will be responsible for the IsDB to oversee project implementation at the national level. This includes ensuring efficient and effective utilisation of resources for various activities, such as organising workshops, enhancing capacity, and managing relevant procurement processes.

BMD staff with information on education and gender - As of March 2024

	Headquarters	Regional Centres	Education (number of staff with BSc or higher)	Gender
Corporate support	50	253	12	Women: 100 Men: 203
Meteorologist/ Climatologists/ Researchers	15	40	55	Women: 11 Men: 44

Meteorological technicians	44	258	12	Women: 5 Men:297
Engineer/IT	2	9	11	Women: 1 Men:10
Hydrologists	0	0	0	Women: Men:
Hydrological technicians	0	0	0	Women: Men:
Others	1	1	0	Women: 0 Men:2
Total	112	561	90	Women : 117 Men: 556

Investment Phase Alignment with the GBON National Contribution Plan

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

Execution model and implementation arrangements

Islamic Development Bank (IsDB)

As the Implementing Entity for the Project, the Islamic Development Bank (IsDB) shall take the lead in coordinating the activities under the project. The IsDB shall work closely with the beneficiary, the Bangladesh Meteorological Department, to ensure the proper management and application of SOFF Grant Proceeds. Furthermore, the IsDB oversees annual and quarterly planning, implementation, financial management, evaluation, reporting, and project closure. IsDB shall monitor and supervise the execution of the project to ensure that Grant Proceeds are utilised in strict accordance with the terms of the current Funding Request and that procurement is carried out in compliance with relevant IsDB procurement procedures and guidelines. In this regard, the IsDB shall adhere to its economy, efficiency, fairness, and effectiveness principles throughout the procurement process. To explain, the economy shall dictate that the pricing of goods, works, consultant services and related services shall be limited to the minimum amount of resources required to obtain the agreed output level. Efficiency shall demand the appropriate management of a given amount of resources to achieve the agreed output level in a timely and cost-effective manner. Fairness requires a transparent and impartial procurement process, while effectiveness necessitates achieving specific outcomes, considering the beneficiary's development objectives.

The IsDB Regional Hub in Dhaka and Bangladesh Meteorological Department will collaborate to create a project execution strategy and plan that outlines the implementation approach. The IsDB and BMD work together to carry out project activities. The SOFF-funded project will be jointly executed between the implementing entity and the beneficiary country. At the beginning of the project, a project steering committee (SC) is formed, consisting of BMD, senior IsDB officials, and key stakeholders. The committee will include peer advisors in its advisory capacity. The SC is responsible for providing overall guidance for project execution. A project management unit (PMU) will be established at BMD's Head Office in Dhaka, and different technical task teams (TT) will be formed as required across BMD's district meteorological service centres. The IsDB Regional Hub in Dhaka will lead the IsDB's involvement in this project, and the team will comprise a project coordinator, procurement specialist, project management specialist, and financial management specialist. An expert on climate change from the Global Practice of the Bank's headquarters will support the team.

Bangladesh Meteorological Department

The National Executing Entity (EE) role will be fulfilled by the Bangladesh Meteorological Department (BMD), which operates under the Ministry of Defence (MoD). In this capacity, the BMD/MoD will be responsible for the IsDB to oversee project implementation at the national level. This includes ensuring efficient and effective utilisation of resources for various activities, such as organising workshops, enhancing capacity, and managing relevant procurement processes.

The Norwegian Meteorological Institute (MET Norway) and China Meteorological Administration (CMA)

ET Norway and CMA, in collaboration with IsDB, will provide general technical advisory services to support BMD in the implementation of the National Contribution Plan and agree on activities for the Investment Phase. The peer advisory services are detailed in Annex 4. In addition, CMA also serves as WMO's regional WIGOS Center (RWC) and Regional Instrument Center (RIC) and provide service of quality assessment, incident management, calibration of national meteorological standards and advise instrument maintenance for RA II members.

Private sector involvement

In Bangladesh, meteorological observations and data services are exclusively provided by the public sector. The Bangladesh Meteorological Department (BMD) operates on a fully public business model, offering historical and climatological data for research and commercial purposes at predetermined rates upon request.

To enhance collaboration with various stakeholders, particularly the private sector, and ensure more strategic and systematic engagement in the future, it is recommended to develop a stakeholder engagement plan as part of the Investment Phase. The plan should be managed and monitored regularly.

At present, BMD faces challenges in maintaining all of its systems owing to workforce limitations. To ensure uninterrupted services and meet Global Basic Observing Network(GBON) requirements, BMD is keen on establishing maintenance contracts with system providers Mazzak Inter-Trade for automatic weather stations (AWS). The annual maintenance contract for the five proposed surface stations is included in the submitted SOFF proposed budget.

Civil society participation

Civil society organisations (CSOs) play a vital role in transforming global agendas into national agendas in Bangladesh. BMD actively collaborates with CSOs, particularly regarding the effectiveness of early warning systems and climate-change policies. In February 2024, BMD in collaboration with MET Norway hosted a stakeholder meeting in Dhaka, Bangladesh. The gathering brought together numerous players across Bangladesh's meteorological value chain, including government ministries, UN agencies, media organisations, NGOs, CSOs, and academia. The workshop aimed to encourage future engagement with BMD, particularly regarding the sustainability of observation networks. A side event was also held during the workshop to discuss the complementarity of SOFF and the World Bank, Bangladesh Weather and Climate Services Regional Project, at BMD. As part of the SOFF funding, additional consultation platforms will be established to foster cooperative conversations and engagements with CSOs on a regular basis, further improving partnerships that support the sustainable operation of SOFF projects.

Fiduciary systems

As a multilateral development bank, the IsDB is committed to ensuring its operations are conducted with the highest integrity, transparency, accountability, and efficiency standards. To this end, the IsDB has established a comprehensive fiduciary system that covers the entire project cycle, from identification to completion and evaluation. The fiduciary system is designed to safeguard the IsDB's resources, enhance the quality and effectiveness of its interventions, and promote good governance and sound financial management among its beneficiaries.

The main objectives of the IsDB's fiduciary system are to:

- Ensure that the IsDB's funds are used for the intended purposes and in accordance with the terms and conditions of the financing agreements;
- Minimize the risks of fraud, corruption, mismanagement, and inefficiency in the implementation of the IsDB-financed projects;
- Strengthen the capacity and ownership of the beneficiaries to plan, execute, monitor, and report on the IsDB-financed projects;
- Enhance the development impact and sustainability of the IsDB-financed projects;
- Facilitate coordination and harmonisation of the IsDB's fiduciary policies and procedures with other development partners.

The IsDB's fiduciary system consists of four interrelated components:

- **Procurement:** The IsDB's procurement policies and procedures aim to ensure that the goods, works, and services required for the IsDB-financed projects are acquired in a fair, competitive, transparent, and cost-effective manner. The IsDB also supports the development of the procurement capacity and systems of its beneficiaries and encourages using country systems when they meet the IsDB's minimum requirements.
- **Financial Management:** IsDB's financial management policies and procedures aim to ensure that the IsDB-financed projects are implemented in a sound and efficient manner, with adequate internal controls, accounting, auditing, and reporting systems. The IsDB also supports the development of its beneficiaries' financial management capacity and systems and encourages using country systems when they meet the IsDB's minimum requirements.
- **Disbursement:** The IsDB's disbursement policies and procedures aim to ensure that the funds are released promptly and appropriately based on the progress and performance of the projects it finances. The IsDB also supports modern and efficient disbursement methods and systems, such as direct payments, special accounts, and electronic funds transfers.
- **Supervision and Evaluation:** The IsDB's supervision and evaluation procedures aim to ensure that the IsDB-financed projects are implemented in accordance with the agreed objectives, outputs, and outcomes and that the IsDB's funds are used for the intended purposes and in accordance with the terms and conditions of the financing agreements. The IsDB also supports using participatory and results-based approaches to supervision and evaluation and disseminating the lessons learned and best practices from the IsDB-financed projects.

For the SOFF funding, the financial management and procurement within the project will be guided by IsDB financial regulations, rules, and practices, as well as IsDB procurement guidelines and policies. For activities to be executed by BMD, the Bangladesh Government Procurement guidelines shall fully be applied upon satisfactory assessment by IsDB. There will be an agreement to be signed between BMD and IsDB on details of their responsibilities. Within this context, funding allocation mechanisms are managed in accordance with IsDB rules and procedures, including eligibility criteria, proposal evaluation processes, quality assurance and control, project monitoring and supervision.

The Procurement Strategy covers the following areas:

- Identification of the specific project needs
- Assessment of the operating context and its potential impact on the procurement
- Assessment of the implementing agency's capacity, resources, and previous experience in procuring these types of activities
- Assessment of the market's adequacy, behaviour, and capabilities to respond to the procurement.
- Justifying the proposed procurement arrangements based on market analysis, risk and operating context and the project's circumstances.

Social and environmental safeguards

The Islamic Development Bank (IsDB) supports member countries in achieving development goals sustainably. To this end, IsDB has established Environment and Social Safeguards (ESS) systems for all its financing operations to ensure projects align with principles of environmental and social responsibility, accountability, and transparency.

The ESS systems include three components: **the Environmental and Social Policy, the Environmental and Social Safeguards Standards, and the Environmental and Social Safeguards Procedures**. These components provide a framework for identifying, assessing, managing, and reporting environmental and social impacts and risks of IsDB projects, engaging with stakeholders, and ensuring compliance and accountability.

The Environmental and Social Policy (ESP) defines IsDB's vision, objectives, and principles for sustainability. It sets expectations and responsibilities for IsDB and its clients in applying the ESS systems, outlines the scope and applicability, and details the roles and functions of the Environmental and Social Safeguards Unit (ESSU) within the Climate Change and Environment Division, including mechanisms for disclosure, consultation, grievance redress, and independent review.

The Environmental and Social Safeguards Standards (ESSS) specify the environmental and social requirements and performance criteria for IsDB projects, comprising ten standards that cover various topics.

- ESS1: Environmental and Social Assessment and Management
- ESS2: Involuntary Resettlement
- ESS3: Indigenous Peoples
- ESS4: Cultural Heritage
- ESS5: Biodiversity Conservation and Sustainable Management of Natural Resources
- ESS6: Climate Change
- ESS7: Pollution Prevention and Resource Efficiency
- ESS8: Occupational Health and Safety
- ESS9: Community Health and Safety
- ESS10: Stakeholder Engagement and Information Disclosure

The ESSS aligns with international best practices, conventions, and agreements to which IsDB is a party, reflecting Shariah values and the specific needs of IsDB member countries. The Environmental and Social Safeguards Procedures (ESSP) outline the steps and actions IsDB and its clients must follow to implement the ESS systems throughout the project cycle, from screening and categorization to appraisal, implementation, supervision, and evaluation. ESSP provides tools and templates for environmental and social assessments, management plans, stakeholder consultations, information disclosure, performance monitoring, and grievance handling. ESS systems are flexible and adaptable to various project types, scales, client capacities, and regulatory frameworks, promoting the use of country systems and harmonization with development partners. These systems undergo regular review to maintain their relevance and effectiveness. The Bank applies the following requirements in the process: Screening and Categorization, Assessment and Management, Stakeholder Engagement and Response Mechanism, Access to Information, and Monitoring, Reporting and Compliance.

Islamic Development Bank (IsDB) Women's Empowerment Policy

The Islamic Development Bank's (IsDB) Women's Empowerment Policy aims to promote gender equality and empower women in its member countries, recognizing this as crucial for sustainable development and economic growth. The key objectives are to: Promote Gender Equality: Ensure women have equal opportunities in economic, social, and political spheres. Enhance Women's Economic Empowerment: Increase women's access to financial resources, employment, and entrepreneurship. Improve Access to Education and Health: Ensure women and girls access quality education and healthcare. Strengthen Legal and Institutional Frameworks: Support laws and policies that protect women's rights and promote gender equality, and Foster Social Inclusion: Encourage women's participation in all societal aspects, including decision-making processes.

<p>Dispute resolution mechanism</p>	<p>The IsDB has a Dispute Resolution Mechanism with the following objectives:</p> <ol style="list-style-type: none"> 1. Ensure a fair, transparent, and efficient process for resolving disputes involving the IsDB and its member countries, partners, or beneficiaries. 2. Promote amicable settlements through dialogue, negotiation, mediation, or conciliation. 3. Prevent disputes from escalating to costly, time-consuming, and adversarial litigation or arbitration. 4. Maintain good relations and trust between the IsDB and its stakeholders. 5. Enhance the IsDB's accountability and credibility. <p>The mechanism covers disputes related to:</p> <ol style="list-style-type: none"> 1. Interpretation or application of the IsDB's Articles of Agreement, by-laws, regulations, rules, policies, or procedures. 2. Performance or non-performance of obligations under the IsDB's financing agreements, contracts, or grants. 3. Eligibility, selection, evaluation, or supervision of the IsDB's projects, programs, or activities. 4. Procurement, delivery, or quality of goods, works, or services financed by the IsDB. 5. Environmental, social, or governance impacts or risks of the IsDB's operations. 6. Any other matter affecting the rights or interests of the IsDB or its stakeholders. <p>Guiding principles of the mechanism include:</p> <ol style="list-style-type: none"> 1. Voluntary participation: Parties must agree to submit their dispute to the mechanism and abide by the outcome. 2. Good faith: Parties must act in good faith and cooperate throughout the process. 3. Confidentiality: Information and documents exchanged during the process must remain confidential unless otherwise agreed or legally required. 4. Impartiality: The mechanism must ensure neutrality and avoid conflicts of interest or bias. 5. Flexibility: The mechanism must adapt to the specific circumstances of each dispute and allow parties to choose the most suitable resolution method. 6. Timeliness: Disputes must be resolved quickly and efficiently within the agreed or specified time limits. <p>The dispute resolution mechanism consists of the following procedures:</p> <ol style="list-style-type: none"> 1. Dialogue: Parties should initially attempt direct communication to find a mutually acceptable solution. 2. Negotiation: If dialogue fails, parties may negotiate directly or through representatives to reach an agreement. 3. Mediation: If negotiation fails, parties may request a neutral mediator, appointed by or agreed with the IsDB, to facilitate resolution. 4. Conciliation: If mediation fails, parties may seek a neutral conciliator, appointed by or agreed with the IsDB, to propose a non-binding solution. 5. Arbitration: If conciliation fails, and parties have agreed in writing, they may refer the dispute to an arbitral tribunal for a binding decision. <p>Parties may choose or combine these procedures, subject to IsDB and mutual agreement. They can terminate or withdraw from any process, except arbitration, and may seek legal advice at their expense. The IsDB's dispute resolution mechanism aims to prevent and resolve disputes, fostering dialogue, cooperation, and respect, enhancing operational efficiency, and reflecting Shari'ah principles and Islamic solidarity.</p> <p>More information is provided here: IsDB Complaints Management.</p>
<p>Additional relevant policies and procedures</p>	<p>The IsDB's projects and operations are guided by policies reflecting its vision, mission, values, and strategic objectives. These policies also ensure that the IsDB's interventions are aligned with the needs and priorities of its beneficiaries, as well as the best practices and standards of the international development community. The policies also aim to promote transparency, accountability, efficiency, effectiveness, sustainability, and inclusiveness in the IsDB's operations. Depending on the project context, the implementing entity might apply several other policies and procedures during the project implementation phase; they can be found in the IsDB Policies Compendium.</p>

SDG Targets

Target	Description
<p>Main Goals</p>	
<p>Goal 13. Take urgent action to combat climate change and its impacts2</p>	

Target	Description
TARGET_13.1	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
TARGET_13.2	13.2 Integrate climate change measures into national policies, strategies and planning
TARGET_13.3	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
TARGET_13.b	13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities

Secondary Goals

Goal 5. Achieve gender equality and empower all women and girls

TARGET_5.5	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life
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SDG Indicators

Indicator Code	Description
No data available.	

Contribution to SDGs

Participating Organization	% TARGET_13.1	% TARGET_13.2	% TARGET_13.3	% TARGET_13.b	% TARGET_5.5	% Total
ISDB	50	10	10	20	10	100
WMO	50	10	10	20	10	100
Total contribution by target	100	20	20	40	20	
Project contribution to SDG by target	50	10	10	20	10	100

Project Results

Outcome	Output	Description
1. GBON institutional and human capacity developed		
	1.1 National consultations including with CSOs, and other relevant stakeholders conducted.	<p>1.1.1. Conduct face to face meetings with selected private sector and CSOs on support on operations of and M&E for SOFF and GBON compliance of other stations at BMD</p> <p>1.1.2. Organise stakeholder engagement workshops/consultations including, where possible, civil society organisations (CSOs) focused on women's empowerment</p> <p>1.1.3. Consultative regional and national workshops</p>

Outcome	Output	Description			
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	1.1.1. Conduct face to face meetings with selected private sector and CSOs on support on operations of and M&E for SOFF and GBON compliance of other stations at BMD	Conduct face to face meetings with selected private sector and CSOs on support on operations of and M&E for SOFF and GBON compliance of other stations at BMD	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD
	1.1.2. Organise stakeholder engagement workshops/consultations including, where possible, civil society organisations (CSOs) focused on women's empowerment	Organise stakeholder engagement workshops/consultations including, where possible, civil society organisations (CSOs) focused on women's empowerment	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD
	1.1.3. Conduct Consultative regional and national workshops	Conduct Consultative regional and national workshops	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD
	1.2 NMHS institutional capacity required to operate the GBON network developed.	1.2.1. SOFF Project Management Unit for 5 Years (Personnel and Project Auditing) 1.2.2. Establishment of Steering and monitoring committee 1.2.3. Implement the Strategic Plan for BMD to be GBON Compliant including development of SOPs for observation, monitoring, data quality management, Archiving, and calibration including outlining how BMD will achieve its short and long-term goals 1.2.4. Hire 2 (Two) IT staff and 3 (Three) technicians for five years (60 Months)			

Outcome	Output	Description			
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	1.2.1. Establish a Project Management Unit.	SOFF Project Management Unit for 5 Years	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.2.2. Establishment of Steering and monitoring committee	Establishment of Steering and monitoring committee	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.2.3. Implement the Strategic Plan for BMD to be GBON Compliant including development of SOPs for observation, monitoring, data quality management, Archiving, and calibration including outlining how BMD will achieve its short and long-term goals	Implement the Strategic Plan for BMD to be GBON Compliant including development of SOPs for observation, monitoring, data quality management, Archiving, and calibration including outlining how BMD will achieve its short and long-term goals	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.2.4. Hire 2 (Two) IT staff and 3 (Three) technicians for five years (60 Months)	Hire 2 (Two) IT staff and 3 (Three) technicians for five years (60 Months)	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.3 NMHS human capacity required to operate the GBON network developed.	1.3.1. Capacity building on ICT/ Network management (targeting of?cers) related to SOFF support (At least one per year for five years) 1.3.2. Capacity building on data analysis, processing and quality control related to SOFF project on the use of Climate Data Management Systems (CLIDATA, CLIMSOFT). 1.3.3. Capacity building on data assimilation in NWP modelling. 1.3.4. Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs based on AWS value transfer and traceability, standards and business process learning on wind speed and direction, and precipitation, complete operational practices, complete sensor calibration, data processing, uncertainty assessment, complete calibration conclusions and metrological reports. This includes training on calibration. 1.3.5. Tailored trainings in Upper Air Operations & Maintenance and analysis at CMA 1.3.6. Support for procurement and financial management			

Outcome	Output	Description			
	Activities				
	Title	Description	Lead	Participating	Other
	1.3.1. Capacity building on ICT/ Network management (targeting of? cers) related to SOFF support (At least one per year for five years)	Capacity building on ICT/ Network management (targeting of? cers) related to SOFF support (At least one per year for five years)	ISDB - IsDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.3.2. Capacity building on data analysis, processing and quality control related to SOFF project on the use of Climate Data Management Systems (CLIDATA, CLIMSOFT).	Capacity building on data analysis, processing and quality control related to SOFF project on the use of Climate Data Management Systems (CLIDATA, CLIMSOFT).	ISDB - IsDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.3.3. Capacity building on data assimilation in NWP modelling.	Capacity building on data assimilation in NWP modelling.	ISDB - IsDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.3.4. Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs based on AWS value transfer and traceability, standards and business process learning on wind speed and direction,	Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs based on AWS value transfer and traceability, standards and business process learning on wind speed and direction, and precipitation, complete operational practices, complete sensor calibration, data processing, uncertainty assessment, complete calibration conclusions and metrological reports. This includes training on calibration.	ISDB - IsDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	1.3.5. Tailored trainings in Upper Air Operations & Maintenance and analysis at CMA	Tailored trainings in Upper Air Operations & Maintenance and analysis at CMA	ISDB - IsDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD

Outcome	Output	Description		
	1.3.6. Hire Consultants for Procurement and Financial Management and Conduct Training.	Hire Consultants for Procurement and Financial Management and Conduct Training.	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) <p>MET Norway, CMA, and BMD</p>
2. GBON infrastructure in place				
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	<p>2.2.1. Procure necessary AWSs spare parts for 3 yrs</p> <p>2.2.2. Rework the sites for AWS installation (fencing, security enhancement (including CCTV monitoring), base strengthening, etc)</p> <p>2.2.3. Implementation of WIS2Box data exchange systems (server, backup)</p> <p>2.2.4. Upgrade of ICT and Data Management System including AWS data into the upgraded CDMS</p> <p>2.2.5. Upgrade the Server/ Communication room (Computers, network devices, air-conditioning, power outlets, cabling, UPSs etc)</p> <p>2.2.6. Create back-up climate database management system (CLIMSOFT) - open source</p> <p>2.2.7. Mobility Infrastructure - PMU Station inspection and supervision vehicles (one vehicle) or Rental of Vehicles.</p> <p>2.2.8 Cost of Annual Calibration of BMD Equipment at CMA (Cost, Freight, and associated services)</p>		

Outcome	Output	Description			
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	2.2.1. Procure necessary AWSs spare parts for 3 years	2.2.1. Procure necessary AWSs spare parts for 3 years	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.2. Rework the sites for AWS installation (fencing, security enhancement (including CCTV monitoring), base strengthening, etc)	Rework the sites for AWS installation (fencing, security enhancement (including CCTV monitoring), base strengthening, etc)	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.3. Implementation of WIS2Box data exchange systems (server, backup)	Implementation of WIS2Box data exchange systems (server, backup)	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.4. Upgrade of ICT and Data Management System including AWS data into the upgraded CDMS	Upgrade of ICT and Data Management System including AWS data into the upgraded CDMS	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.5. Upgrade the Server/ Communication room (Computers, network devices, air-conditioning, power outlets, cabling, UPSs etc)	Upgrade the Server/ Communication room (Computers, network devices, air-conditioning, power outlets, cabling, UPSs etc)	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.6. Create back-up climate database management system (CLIMSOFT) - open source	Create back-up climate database management system (CLIMSOFT) - open source	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD
	2.2.7. Mobility Infrastructure - PMU Station inspection and supervision vehicles (one vehicle) or Rental of Vehicles.	Mobility Infrastructure - PMU Station inspection and supervision vehicles (one vehicle) or Rental of Vehicles.	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA and BMD

Outcome	Output	Description																											
	2.2.8 Cost of Annual Calibration of BMD Equipment at CMA (Cost, Freight, and associated services)	Cost of Annual Calibration of BMD Equipment at CMA (Cost, Freight, and associated services)	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) <p>MET Norway, CMA and BMD</p>																									
	2.4 Improved upper-air stations, related equipment, ICT systems, data management systems and standard operating practices in place.	<p>2.4.1. Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year</p> <p>2.4.2. Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)</p> <p>2.4.3. Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2</p>																											
<p>Activities</p> <table border="1"> <thead> <tr> <th data-bbox="714 988 1118 1147">Title</th><th data-bbox="1118 988 1275 1147">Description</th><th data-bbox="1275 988 1477 1147">Lead Participating Organization</th><th data-bbox="1477 988 1680 1147">Participating Organization</th><th data-bbox="1680 988 1911 1147">Other Organizations</th></tr> </thead> <tbody> <tr> <td data-bbox="714 1147 1118 1623">2.4.1. Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year</td><td data-bbox="1118 1147 1275 1623">Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year</td><td data-bbox="1275 1147 1477 1623">ISDB - IsDB - Islamic Development Bank</td><td data-bbox="1477 1147 1680 1623"> <ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) </td><td data-bbox="1680 1147 1911 1623">MET Norway, CMA, and BMD</td></tr> <tr> <td data-bbox="714 1623 1118 2037">2.4.2. Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)</td><td data-bbox="1118 1623 1275 2037">Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)</td><td data-bbox="1275 1623 1477 2037">ISDB - IsDB - Islamic Development Bank</td><td data-bbox="1477 1623 1680 2037"> <ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) </td><td data-bbox="1680 1623 1911 2037">MET Norway, CMA, and BMD</td></tr> <tr> <td data-bbox="714 2037 1118 2354">2.4.3. Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2</td><td data-bbox="1118 2037 1275 2354">Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2</td><td data-bbox="1275 2037 1477 2354">ISDB - IsDB - Islamic Development Bank</td><td data-bbox="1477 2037 1680 2354"> <ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) </td><td data-bbox="1680 2037 1911 2354">MET Norway, CMA, and BMD</td></tr> <tr> <td data-bbox="332 2354 714 2501">3. Sustained compliance with GBON</td><td data-bbox="714 2354 1118 2501"></td><td colspan="3" data-bbox="1118 2354 1911 2501"></td></tr> </tbody> </table>					Title	Description	Lead Participating Organization	Participating Organization	Other Organizations	2.4.1. Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year	Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	2.4.2. Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)	Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	2.4.3. Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2	Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	3. Sustained compliance with GBON				
Title	Description	Lead Participating Organization	Participating Organization	Other Organizations																									
2.4.1. Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year	Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year	ISDB - IsDB - Islamic Development Bank	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD																									
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3. Sustained compliance with GBON																													

Outcome	Output	Description			
	3.1 GBON land-based stations' commissioning period completed.	3.1.1 Annual Maintenance Contract (AMC) for 5 stations for the AWS for 5 yrs, including maintenance and quarterly preventive maintenance 3.1.2 Internet subscription for operations of AWS, U/A data communication in climate database for 5yrs 3.1.3 Hosting subscription for operations AWS communication for 5yrs 3.1.4 Conduct routine calibration of AWSs (DSA, travel, parts, materials) 3.1.5 Routine management of server systems for data access/exchange (Power, UPS, air-cons, cleaning)			
	Activities				
Title	Description	Lead Participating Organization	Participating Organization	Other Organizations	
3.1.1 Annual Maintenance Contract (AMC) for 5 stations for the AWS for 5 yrs, including maintenance and quarterly preventive maintenance	Annual Maintenance Contract (AMC) for 5 stations for the AWS for 5 yrs, including maintenance and quarterly preventive maintenance	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	
3.1.2 Internet subscription for operations of AWS, U/A data communication in climate database for 5yrs	3.1.2 Internet subscription for operations of AWS, U/A data communication in climate database for 5yrs	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	
3.1.3 Hosting subscription for operations AWS communication for 5yrs	Hosting subscription for operations AWS communication for 5yrs	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	
3.1.4 Conduct routine calibration of AWSs (DSA, travel, parts, materials)	Conduct routine calibration of AWSs (DSA, travel, parts, materials)	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	
3.1.5 Routine management of server systems for data access/exchange (Power, UPS, air-cons, cleaning)	Routine management of server systems for data access/exchange (Power, UPS, air-cons, cleaning)	ISDB - Islamic Development Bank	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MET Norway, CMA, and BMD	

Outcome	Output	Description			
	3.2 GBON upper air stations' commissioning period completed.	3.2.1. Internet subscription for data collection from UA station	3.2.2. Conduct routine servicing of UA station with spare parts for 05 (five) years	3.2.3. Exchange hourly data globally through GTS/WIS2Box	3.2.4. Annual O&M cost, labour cost per site, Procurement of Sonde, Balloon, gas generator and annual consumable cost (2 launches per day) for five years
Activities					
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	3.2.1. Internet subscription for data collection from UA station	Internet subscription for data collection from UA station	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	3.2.2. Conduct routine servicing of UA station with spare parts for 05 (five) years	Conduct routine servicing of UA station with spare parts for 05 (five) years	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	3.2.3. Exchange hourly data globally through GTS/WIS2Box	Exchange hourly data globally through GTS/WIS2Box	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD
	3.2.4. Annual O&M cost, labour cost per site, Procurement of Sonde, Balloon, gas generator (2 launches per day) for five years	Annual O&M cost, labour cost per site, Procurement of Sonde, Balloon, gas generator (2 launches per day) for five years	ISDB - Islamic Development Bank	• WMO - WMO (World Meteorological Organization)	MET Norway, CMA, and BMD

Signature Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Lin Ou / O
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No signature indicators available.

Imported Fund Outcome / Output Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Number of land-based stations improved		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Investment	At closure	Country	Number	0	2025	5	2030
Number of upper-air stations improved		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Investment	At closure	Country	Number	0	2025	1	2030
GBON land-based stations' commissioned		Number of stations as defined in the National Contribution Plan.		Policy	At closure	Country	Number	0	2025	5	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
GBON upper air stations' commissioned		Number of stations as defined in the National Contribution Plan.		Policy	At closure	Country	Number	0	2025	1	2030

Project Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Stakeholders Consultation conducted		Stakeholders Consultation with selected private sector and CSOs on support on operations of and M&E for SOFF and GBON compliance of other stations	Progress updates/Annual or quarterly reports	Other	At closure	Country	Number	0	2025	4	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Country	Percentage	0	2025	40	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Stakeholders Workshop conducted		Stakeholders Workshop including stakeholder engagement workshops/consultations including, where possible, civil society organizations (CSOs) focused on women's empowerment	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	3	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Percentage	0	2025	40	2030
Workshops conducted		Consultative national and sub national workshops	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	3	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Percentage	0	2025	40	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Training on ICT/ Network management implemented.		Training on ICT/ Network management	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	1	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030
Training on WIS 2.0 implemented		Training on WIS 2.0	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	2	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Training on data management implemented.		Training on data management	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	1	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030
Training on data assimilation in NWP modelling implemented		Training on data assimilation in NWP modelling	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	4	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Tailored training in meteorological metrology and AWS maintenance conducted.		Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs and AWS maintenance.	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	4	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030
Training in Upper Air Operations & Maintenance and analysis conducted.		Training in Upper Air Operations & Maintenance and analysis	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Number	0	2025	1	2030
	Female participation	Female participation	Progress updates/Annual or quarterly reports	Other	At closure	Others	Percentage	0	2025	40	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Project Management Unit Established		Project Management Unit Established	Progress updates/Annual or quarterly reports	Capacity	At closure	Country	Yes/No	0	2025	Yes	2030
No components available.											
Steering and Monitoring Committee Established		Steering and Monitoring Committee Established	Progress updates/Annual or quarterly reports	Other	At closure	Country	Yes/No	0	2025	Yes	2030
No components available.											

Risks

Event	Category	Level	Likelihood	Impact	Mitigating Measures	Risk Owner
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Non-compliance with fiduciary and procurement standards in some SOFF activities	<ul style="list-style-type: none"> Operational Organizational 	Medium	Unlikely	Major	<ul style="list-style-type: none"> BMD will be familiarized with IsDB procurement and financial management guidelines and policy through a start-up workshop to be held in Dhaka at BMD's or IsDB's office immediately this funding request approval is established. In addition, a dedicated procurement officer based in Dhaka will be appointed in collaboration with the IsDB to work with BMD to ensure that there is an adequate understanding of the Bank's procurement guidelines. In line with the Bank's procurement guidelines, BMD will continue to implement the Bangladesh's Public Procurement guidelines; requiring thorough documentation to augment the IsDB requirements as may be needed. 	BMD, IsDB
SOFF-funded investments cause environmental or social impacts	<ul style="list-style-type: none"> Social and Environmental 	Low	Unlikely	Minor	<ul style="list-style-type: none"> The rehabilitation of stations is confined to existing structures, thereby minimising the impact on both the natural surroundings and community social dynamics. Nevertheless, the Bank will employ its safeguard protocols to ensure complete adherence to all requirements before, during, and after the project's completion. 	BMB, IsDB
NMHS staff depart after being trained	<ul style="list-style-type: none"> Operational Organizational 	High	Likely	Major	<ul style="list-style-type: none"> To mitigate this risk, BMD has pledged to: Dedicate ample resources for training and ensure a sufficient number of individuals are educated. Provide favourable working conditions. Establish incentive systems for crucial personnel under SOFF. 	BMD
Slow implementation and delays in procurement, installation and capacity-building activities	<ul style="list-style-type: none"> Operational Organizational 	High	Possible	Major	<ul style="list-style-type: none"> Collaborate with IE, peer advisors and neighbouring SOFF countries in order to speed up the activities. To minimise this risk, this project has considered establishing a dedicated project management unit (PMU) and a project execution team, including project management and stakeholder management skills to support the execution of the project. 	BMD, IsDB
After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality.	<ul style="list-style-type: none"> Operational Organizational Regulatory 	Low	Unlikely	Major	<ul style="list-style-type: none"> BMD is committed to the SOFF GBON Project and has made all the needed arrangement to report as required by GBON under WMO SOFF supported initiative. 	BMD, MET Norway
Destruction or theft of SOFF-financed equipment and infrastructure	<ul style="list-style-type: none"> Operational Organizational 	Low	Unlikely	Major	<ul style="list-style-type: none"> Several of the installations are situated within current BMD complexes and are adequately protected. To bolster the security of these sites, consideration has been given to implementing CCTV cameras for live monitoring and recording, including at the upper air station. 	BMD

Countries cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain		Low	Unlikely	Major	<ul style="list-style-type: none"> o The majority of existing stations have been modernised by BMD, making their data readily accessible for use. 	BMD, MET Norway
Quality Management Systems certification withdrawn	<ul style="list-style-type: none"> • Operational • Organizational 	Medium	Unlikely	Moderate	<ul style="list-style-type: none"> o Internal audits will continue to be conducted on BMD to identify areas for improvement, implement necessary corrections, and provide additional training in accordance with the guidelines set forth by the International Civil Aviation Organisation (ICAO) and WMO. 	BMD
Destruction created by the climate hazards	<ul style="list-style-type: none"> • Social and Environmental • Operational 	High	Possible	Extreme	<ul style="list-style-type: none"> o Several of the installations are situated within current BMD complexes and are adequately protected from likely disaster risks. 	BMD

Budget by UNSDG Categories: Over all

Budget Lines	Description	WMO (7%) *	ISDB (7%) *	Total
1. Staff and other personnel		\$0.00	\$310,000.00	\$310,000.00
2. Supplies, Commodities, Materials		\$0.00	\$967,465.00	\$967,465.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation		\$0.00	\$1,180,000.00	\$1,180,000.00
4. Contractual services	Peer Advisor Fee add for WMO under Contractual Services	\$483,000.00	\$982,550.00	\$1,465,550.00
5. Travel		\$0.00	\$0.00	\$0.00
6. Transfers and Grants to Counterparts		\$0.00	\$5,000.00	\$5,000.00
7. General Operating and other Direct Costs		\$0.00	\$702,700.00	\$702,700.00
Project Costs Sub Total		\$483,000.00	\$4,147,715.00	\$4,630,715.00
8. Indirect Support Costs		\$33,810.00	\$290,340.05	\$324,150.05
Total		\$516,810.00	\$4,438,055.05	\$4,954,865.05

Performance-based Tranches Breakdown

Tranche			Total
Tranche 1	ISDB (70%)	\$3,106,638.54	\$3,278,891.31
	WMO (33.33%)	\$172,252.77	
Tranche 2	ISDB (30%)	\$1,331,416.52	\$1,503,669.29
	WMO (33.33%)	\$172,252.77	
Tranche 3	ISDB (0%)	\$0.00	\$172,304.45
	WMO (33.34%)	\$172,304.45	
			\$4,954,865.05

Results based budget

Outcome *	Output *	Agency *	Budget (USD) *

1. GBON institutional and human capacity developed		Sub Total	\$2,397,000.00
	1.1 National consultations including with CSOs, and other relevant stakeholders conducted.	ISDB (7%)	\$249,000.00
	1.2 NMHS institutional capacity required to operate the GBON network developed.	ISDB (7%)	\$915,000.00
	1.3 NMHS human capacity required to operate the GBON network developed.	WMO (7%)	\$483,000.00
	1.3 NMHS human capacity required to operate the GBON network developed.	ISDB (7%)	\$750,000.00
2. GBON infrastructure in place		Sub Total	\$1,248,465.00
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	ISDB (7%)	\$897,000.00
	2.4 Improved upper-air stations, related equipment, ICT systems, data management systems and standard operating practices in place.	ISDB (7%)	\$351,465.00
3. Sustained compliance with GBON		Sub Total	\$985,250.00
	3.1 GBON land-based stations' commissioning period completed.	ISDB (7%)	\$226,050.00
	3.2 GBON upper air stations' commissioning period completed.	ISDB (7%)	\$759,200.00
Total			\$4,630,715.00

Programme Outcome Costs

Outcome	Output	Activity	Implementing Agent	Time Frame				
				2026	2027	2028	2029	2030
				1	1	1	1	1
1. GBON institutional and human capacity developed								
	1.1 National consultations including with CSOs, and other relevant stakeholders conducted.							
		1.1.1. Conduct face to face meetings with selected private sector and CSOs on support on operations of and M&E for SOFF and GBON compliance of other stations at BMD		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.1.2. Organise stakeholder engagement workshops/consultations including, where possible, civil society organisations (CSOs) focused on women's empowerment						
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.1.3. Conduct Consultative regional and national workshops						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1.2 NMHS institutional capacity required to operate the GBON network developed.							
		1.2.1. Establish a Project Management Unit.						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		1.2.2. Establishment of Steering and monitoring committee						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		1.2.3. Implement the Strategic Plan for BMD to be GBON Compliant including development of SOPs for observation, monitoring, data quality management, Archiving, and calibration including outlining how BMD will achieve its short and long-term goals						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.2.4. Hire 2 (Two) IT staff and 3 (Three) technicians for five years (60 Months)						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1.3 NMHS human capacity required to operate the GBON network developed.							

Outcome	Output	Activity	Implementing Agent	Time Frame				
				2026	2027	2028	2029	2030
				1	1	1	1	1
		1.3.1. Capacity building on ICT/ Network management (targeting of?cers) related to SOFF support (At least one per year for five years)						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		1.3.2. Capacity building on data analysis, processing and quality control related to SOFF project on the use of Climate Data Management Systems (CLIDATA, CLIMSOFT).						
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.3.3. Capacity building on data assimilation in NWP modelling.						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.3.4. Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs based on AWS value transfer and traceability, standards and business process learning on wind speed and direction,						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		1.3.5. Tailored trainings in Upper Air Operations & Maintenance and analysis at CMA						
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. GBON infrastructure in place								
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place							
		2.2.1. Procure necessary AWSs spare parts for 3 years						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.2. Rework the sites for AWS installation (fencing, security enhancement (including CCTV monitoring), base strengthening, etc)						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.3. Implementation of WIS2Box data exchange systems (server, backup)						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.4. Upgrade of ICT and Data Management System including AWS data into the upgraded CDMS						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.5. Upgrade the Server/ Communication room (Computers, network devices, air-conditioning, power outlets, cabling, UPSs etc)						
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.6. Create back-up climate database management system (CLIMSOFT) - open source						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		2.2.7. Mobility Infrastructure - PMU Station inspection and supervision vehicles (one vehicle) or Rental of Vehicles.						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		2.2.8 Cost of Annual Calibration of BMD Equipment at CMA (Cost, Freight, and associated services)						
			WMO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			ISDB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Outcome	Output	Activity	Implementing Agent	Time Frame								
				2026	2027	2028	2029	2030				
				1	1	1	1	1	1			
2.4 Improved upper-air stations, related equipment, ICT systems, data management systems and standard operating practices in place.												
2.4.1. Procure upper air station accessories (balloons, gas, radiosondes), including rehabilitation of the hydrogen generator plant at BMD for one year												
			WMO	<input type="checkbox"/>								
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
2.4.2. Procure security enhancing measures at the site (fencing, security enhancement, base strengthening, etc)												
			WMO	<input type="checkbox"/>								
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
2.4.3. Integrate Upper air data into the upgraded CDMS for automatic data transfer through WIS 2												
			WMO	<input type="checkbox"/>								
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
3. Sustained compliance with GBON												
3.1 GBON land-based stations' commissioning period completed.												
3.1.1 Annual Maintenance Contract (AMC) for 5 stations for the AWS for 5 yrs, including maintenance and quarterly preventive maintenance												
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
			ISDB	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
3.1.2 Internet subscription for operations of AWS, U/A data communication in climate database for 5yrs												
			WMO	<input type="checkbox"/>								
			ISDB	<input checked="" type="checkbox"/>								
3.1.3 Hosting subscription for operations AWS communication for 5yrs												
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
			ISDB	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
3.1.4 Conduct routine calibration of AWSs (DSA, travel, parts, materials)												
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
			ISDB	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
3.1.5 Routine management of server systems for data access/exchange (Power, UPS, air-cons, cleaning)												
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
			ISDB	<input checked="" type="checkbox"/>	<input type="checkbox"/>							
3.2 GBON upper air stations' commissioning period completed.												
3.2.1. Internet subscription for data collection from UA station												
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3.2.2. Conduct routine servicing of UA station with spare parts for 05 (five) years												
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3.2.3. Exchange hourly data globally through GTS/WIS2Box												
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3.2.4. Annual O&M cost, labour cost per site, Procurement of Sonde, Balloon, gas generator (2 launches per day) for five years												
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
			ISDB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Annex: 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 the Norwegian Meteorological Institute (MET Norway) in collaboration with the China Meteorological Administration (CMA) to the Bangladesh Meteorological Department (BMD) 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.
- It 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 tool¹
- 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.

¹ The WDQMS web tool monitors the availability and quality of observational data based on near-real-time information from the four participating global Numerical Weather Prediction centres: the German Weather Service (DWD), the European Centre for Medium range Weather Forecasts (ECMWF), the Japan Meteorological Agency (JMA) and the United States National Centers for Environmental Prediction (NCEP). These are four of the ten World Meteorological Centres, designated by WMO to provide global numerical weather prediction products for all WMO Members.

3. Peer advisors' activities during the SOFF Investment Phase

The peer advisor will contribute to the delivery of the SOFF Investment Phase outputs as described in the *RBM* section of the SOFF UNMPTF Gateway through the following activities:

Output	Indicator (Please copy the indicators from RBM section of the Investment Funding request.)	Activities conducted / contributions (Please list all activities that will be conducted by the peer advisor relevant to the output. Please add rows if more than one activity will be conducted.)	Implementation plan				
			Y1	Y2	Y3	Y4	Y5
1.1 National consultations, including with CSOs and other relevant stakeholders conducted	Stakeholders Consultation conducted	Participate and contribute to stakeholder engagement workshops in support of building synergies for sustained observation infrastructure at BMD	X	X	X	X	
	Stakeholders workshops conducted	Participate and contribute at the project inception and consultative workshops at the national level including promoting of gender equality workshops to advocate for gender equality in the SOFF activities in Bangladesh	X		X	X	
	Workshops conducted	Facilitate regional exchange with other peer advisors from the Southeast Asia region including WMO regional centres	X			X	X
1.2 NMHS institutional capacity required to operate the GBON network developed	SOP developed	Support to ensure Standard Operating Procedures for surface and upper air observations practices are in place, including data quality control and quality assurance mechanisms. <ul style="list-style-type: none"> • Capacity building through benchmarking of good practices at Met Norway and CMA. • Periodic review and assessment of the SOPs throughout the investment period 		X	X	X	
	BMD Staff reinforced	Support in the recruitment process of the IT and Technical Staff	X	X	X	X	X

Indicator	Activities conducted / contributions	Implementation plan				
	<p>Continued support in competence development in line with the Institutional Support and Capacity Building for Weather and Climate Services <u>SAREPTA</u>² project between BMD and MET Norway.</p> <p>Co-develop a long-term strategy for ongoing capacity development by co-creating a roadmap for future capacity needs and priorities and co-creating solutions for resource optimization and sustainability</p>					
	<p>Station GBON-complaint metadata strategy developed</p>	<p>Provide advice on understanding GBON metadata definitions and requirements</p> <p>Provide advice on station-level metadata databases.</p> <p>Provide guidance on the process for metadata collection, ingestion, analysis, monitoring, and reporting.</p> <p>Co-develop a station GBON-complaint metadata strategy.</p>	X	X	X	X
<p>1.3 NMHS human capacity required to operate the GBON network developed</p>	<p>Training on ICT/ Network management implemented</p>	<p>On-demand advisories on AWS data integration, climate database management systems, data archiving and post-processing, ICT requirements and data management.</p> <ul style="list-style-type: none"> • Experience sharing and SOP development on IT infrastructure for effective GBON and SOFF implementation. • Provide technical training in data communications techniques (WIS 2.0 training) • Training on WIGOS metadata and data quality monitoring system 	X	X	X	X

² <https://bistand.met.no/en/bangladesh>

	Indicator	Activities conducted / contributions	Implementation plan				
			X	X	X	X	X
	Training on AWS maintenance implemented	Support in the development of Standard Operating Procedures (SOPs) for operating and maintenance of stations					
	Training on WIS 2.0 implemented	Provide technical guidance on the most effective and sustainable way to publish BMD's core data to WIS 2.0 node and WIS Global Services. The solution will be aligned with the peer advisors' capabilities to support BMD throughout the investment and compliance phase. The solution will also be developed to cover radiosonde	X	X	X	X	X
	Training on data management implemented	Facilitate capacity development to ensure that the NCP report's recommendation for a functional data management system is implemented at BMD during the investment phase, including proper documentation (data discovery), data delivery and publication services (in accordance with WIS 2.0), and data archiving. Enhance BMD's technical capacity particularly related to data management, data ingestion, QA/QC functions, storage and the flow of data through training workshops and webinars. Facilitate training on the CLIMSOFT database management software	X	X	X	X	
	Training on data assimilation in NWP modelling implemented	Capitalize peer advisor's expertise on WIS2 Node using the wis2box, which publishes SYNOP, CMA-NWP, and satellite data to support BMD.				X	

	Indicator	Activities conducted / contributions	Implementation plan				
	Tailored training in meteorological metrology conducted.	<p>provide technical advisories and capacity building on calibration of meteorological equipment Including organizing the following training activities for BMD: -</p> <ul style="list-style-type: none"> • Tailored training in meteorological metrology, theory training on routine elements of meteorology, and guidance on metrology programs based on AWS value transfer and traceability. • Standards and business process learning on wind speed and direction, and precipitation: Using CMA's wind tunnel, and precipitation standards and other equipment. complete operational practices, complete sensor calibration, data processing, uncertainty assessment, complete calibration conclusions and metrological reports. • Calibration and business process learning (temperature, humidity, barometric pressure parameters): operate with BMD's existing calibration system, complete sensor calibration, data processing, uncertainty assessment, complete calibration conclusions and metrology reports. Provide suggestions for BMD metrology business quality system construction, business quality assurance program establishment, and overall business operation. • Consultative workshops (or seminar), for: metrology quality system construction, quality assurance program establishment, and overall calibration system operation. 	X	X	X	X	X

	Indicator	Activities conducted / contributions	Implementation plan				
	Training in Upper Air Operations & Maintenance and analysis conducted.	<p>Provide tailored training in Upper air O & M and analysis.</p> <ul style="list-style-type: none"> Training activities will be organised to ensure BMD has a site technicians who will perform preventive and emergency maintenance for the radiosonde operations to meet the requirements of safety and quality 	X	X	X	X	
2.1 New land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	# of new stations installed as per the GBON National Contribution Plan	-					
2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	# of stations improved as per the GBON National Contribution Plan	<ul style="list-style-type: none"> Provide general technical advisory services to support any AWS tender process and IT hardware tender process Benchmark good practices at MET Norway and CMA. Provide technical guidance on the most effective and sustainable way to publish BMD's data through WIS 2.0. Advice and support on sub-regional dialogues and co-ordinations to facilitate best practices for procurement, network maintenance plans and human capacity development (resource optimization). 	X	X	X	X	

Indicator	Activities conducted / contributions	Implementation plan
	<ul style="list-style-type: none"> provide general technical advisory services to support BMD in the implementation of the National Contribution Plan and agree on activities for the Investment Phase. In addition, CMA will provide services on calibration (see output 1.3 of the funding request) CMA will provide services of the technical guidance on data quality control, and technical support for data products in collaboration with Met Norway. 	
2.3 New upper air stations and related equipment, ICT systems, data management systems and standard operating practices in place	# of new stations installed as per the GBON National Contribution Plan	

	Indicator	Activities conducted / contributions	Implementation plan				
2.4 Improved upper air stations and related equipment, ICT systems, data management systems and standard operating practices in place	# of stations improved as per the GBON National Contribution Plan	<ul style="list-style-type: none"> Provide technical support on radio sounding tender process, procurement and installation Support on the development of SOPs for O&M of Upper air station Provide technical advice on manpower requirements for periodic and preventive maintenance of the upper air stations to ensure sustainability throughout the investment and compliance phase. Support in the development of automatic data transfer solutions for files from radiosondes, following the open radar files approach used by the peer advisors 	X	X	X	X	
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	# of stations commissioned as per the GBON National Contribution Plan	<ul style="list-style-type: none"> On demand technical support for GBON compliance Ensure stations are functioning optimally, available spare parts, regular station inspection and maintenance Ensure continuous data transmission for GBON compliance the five surface Contribution to final reporting 		X	X	X	
3.2 GBON upper air stations' commissioning period completed, country-specific standard cost for	# of stations commissioned as per the GBON National Contribution Plan	<ul style="list-style-type: none"> On demand technical support for GBON compliance Ensure the radiosonde operations meet the requirements of safety and quality Ensure continuous data transmission for GBON compliance at the upper air station. Contribution to final reporting 		X	X	X	

	Indicator	Activities conducted / contributions	Implementation plan					
operations and maintenance established, and data sharing verified by WMO Technical Authority								

Signatures

Peer advisor focal point	 Name: Teferi Dejene Demissie Title: Manager, Capacity Building Projects for Weather & Climate Services Date: 14 January 2025
Country focal point	 Name: Md. Abdul Matin Title: Senior Communication Engineer Date: 13 January 2025