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General Information

Fund	MPTF_00281: The Systematic Observations Financing Facility					
FMP Record	SOFF Papua New Guinea Investment Phase					
MPTFO Project Id						
Start Date	January 2027					
End Date	January 2032					
Applicants	**Status**	**Contact Type**	**Name**	**e-mail**	**Position**	**Telephone**
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Description	Papua New Guinea (PNG) is the largest Small Island Developing State (SIDS) and, excluding Australia, the largest independent country in the Pacific region by both land area and population. Its communities, spread across a geographically diverse territory, face recurrent climate shocks, including drought, riverine and flash flooding, tropical cyclones, and storm surges, that affect livelihoods, food security, and infrastructure. Reliable, high-frequency weather observations are essential to effective early warning, disaster risk reduction, and climate adaptation, yet PNG's meteorological observation network is severely under-represented within the WMO Global Basic Observing Network (GBON). As of 2026, none of PNG's 14 surface weather stations are fully GBON-compliant, relying largely on manual observations, and zero upper-air (radiosonde) stations are operational. The SOFF Investment Phase, implemented by UNDP in partnership with the PNG National Weather Service (NWS) and with technical support from the Australian Bureau of Meteorology (BoM) as Peer Advisor, will advance PNG toward full GBON compliance. The GBON National Contribution Plan (NCP) identifies a total of 12 surface AWS stations and 3 upper-air stations as PNG's requirement to reach GBON compliance of a minimum-density network. Drawing on the GBON National Gap Analysis and the NCP, this Investment Phase Funding Request (IPFR) targets the uplift and installation of 11 of the 12 NCP-identified surface AWS – the twelfth, Gurney (Milne Bay), already under procurement under the ADB-financed CADIP II – together with the establishment of a new upper-air station at Momote, Manus Province. SOFF infrastructure investments will be complemented by targeted support to national capacities to ensure reliable operations, as well as sustained maintenance, repair, and calibration of observation systems. A national field verification and calibration-traceability programme will be set in place, in addition to an operations & maintenance facility which includes network spares and supplies identified in the NCP. Institutional capacity within NWS will be strengthened through staff training, including BIP-MT training delivered at the Fiji Meteorological Service campus, improvements to ICT and network management systems, and stakeholder engagement initiatives aimed at supporting sustainable GBON operations. All 12 surface AWS and all 3 upper-air stations identified in the NCP will be covered by the SOFF Compliance Phase. By enhancing the reliability and spatial coverage of PNG's meteorological observations, the project will improve weather and climate data availability for early warning systems, disaster risk reduction, climate resilience, and socio-economic development at national, regional, and global levels.					

Universal Markers	**Gender Equality Marker**	**Risk**		
	GEM1 - The Key Activity contributes to GEWE in a limited way.	Low Risk		
Optional Markers	**WB Income Category**	Lower Middle Income		
	UN LDC	No		
	Small Island Developing States (SIDS)	Yes		
Fund Specific Markers	**SOFF Phases**	**SOFF Phases** • Investment phase		
	EW4All	**Early Warnings for All initial focus countries** • No		
	Fragile and conflict- affected situation	**Fragile and conflict-affected situation** • Yes		
	Peer advisor	**Peer advisor** • Bureau of Meteorology Australia		
Geographical Scope	**Geographical Scope**	**Name of the Region**	**Region(s)**	**Country**
	• Country	Pacific	• Oceania	• Papua New Guinea
Participating Organizations and their Implementing Partners	**UN Participating Organizations**	**Government/ Multilateral/ NGO/ Other**	**New Entities**	**Implementing Partners**
	• UNDP (United Nations Development Programme) • WMO - WMO (World Meteorological Organization)	Please write the name of the IE (if an MDB)		
Programme and Project Cost	**Participating Organization**	**Amount (in USD)**	**Comments**	
	Budget Requested			
	• IE	5,235,008.56	Includes the 7% IE fee	
	WMO	572,450	Includes the 7% WMO fee	
	Total Budget Requested	**$ 5,807,458.56**		
	Tranches			
	Tranche 1 IE (70%) $ 3,664,505.99 WMO (33.33%) $ 190,797.59 **Total: $ 3,855,303.57**	Tranche 2 IE (30%) $ 1,570,502.57 WMO (33.33%) $ 190,797.59 **Total: $ 1,761,300.15**	Tranche 3 IE (0%) $ 0.00 WMO (33.34%) $ 190,854.83 **Total: $ 190,854.83**	
	Other Sources (Parallel Funding)			
	Total	**$** 422,872,493		
Thematic Keywords				
Programme Duration	**Anticipated Start Date**	1 January 2027		
	Duration (In months)	60		
	Anticipated End Date	30 January 2032		

Narratives

Close the most significant data gaps

Weather intelligence is critical for Papua New Guinea (PNG), where climatic shocks including drought, riverine and flash flooding, severe storms, tropical cyclones, and storm surges regularly affect communities, infrastructure, food security, and livelihoods. PNG's National Weather Service (NWS), while staffed by skilled and motivated personnel, operates a severely constrained surface observation network. Of 14 surface weather stations established nationally, 8 manual stations are currently operating or partly operational, providing 0 to 6 observations daily, but none are fully equipped to deliver GBON-compliant observations. The stations provide spatial coverage of approximately 600 km, insufficient to meet the requirements for a country of PNG's size (over 460,000 km^2) and geographic complexity. 10 automatic weather stations (AWS) have been previously installed, but are not transmitting data due to extreme weather damage, maintenance and calibration challenges, vandalism, and budget shortfalls. Therefore, refurbishing these AWS requires effort equivalent to new-station installation. PNG previously operated eight radiosonde upper-air stations; all are now non-operational.

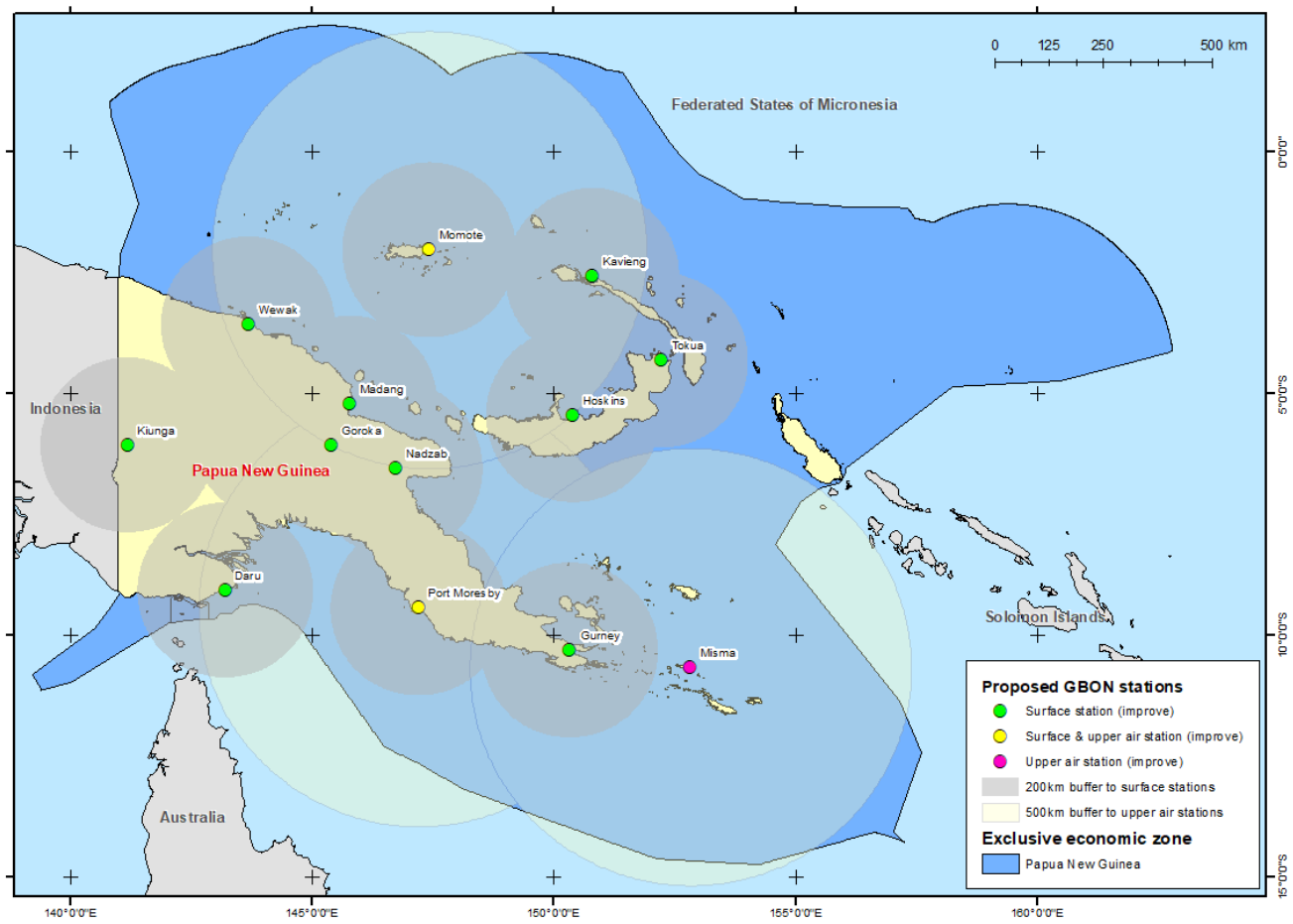


Figure 1. PNG GBON Nominated sites, with 200 km buffers at surface stations and 500 km buffers at upper air stations.

NWS is actively addressing these gaps, supported by initiatives such as the ADB-financed Civil Aviation Development Investment Program (CADIP) Phase I and II, and a 'twinning' arrangement with the Australian Bureau of Meteorology (BoM), discussed in this IPFR. CADIP airport upgrades provide NWS with dedicated offices at selected airports, security fencing, and power supply, mitigating the infrastructure and security challenges identified in the NCP, and CADIP Phase II (2025 – 2027) includes the procurement and installation of three AWS, of which one is identified as a target in the NCP[1]. The BoM twinning arrangement is funding the construction of an upper-air station in Port Moresby, building NWS staff capacity to operate radiosonde equipment. As of 2026, the OK Tedi company has agreed to finance the upgrade of the Misima airport and installation of an upper-air station. The SOFF Investment Phase is timed to coincide with these complementary initiatives to establish a minimum-density GBON-compliant observation network across PNG.

Table 1. GBON National Contribution Plan Target

Type	Baseline (results of GBON National Gap Analysis)				GBON National Contribution Target		Target for SOFF Investment Phase		Financed by complementary initiatives	
	Target	GBON Compliant	Gap		To improve	New	To improve	New	To Improve	New
			New	To Improve						
Surface	12	0	0	12	12	0	11	0	1*	0
Upper air	3	0	1	2	2	1	0	1	2**	0

**1 AWS station (Gurney, Milne Bay) will be installed by CADIP II, financed by ADB. All 12 surface stations will be targeted by the Compliance Phase*

*** The Port Moresby UA station is financed by BoM and the Misima UA station is financed by Ok Tedi Mining Limited. All 3 upper-air stations will be targeted by the Compliance Phase.*

STATION SCOPE: The NCP identifies a target of 12 surface AWS and 3 upper-air stations as PNG's GBON target to create a minimum density network (Table 1). This IPFR targets the procurement and installation of 11 of the 12 NCP-

[1] NCP Activity 3.1, p. 30: 'Secure land and provide office facilities for surface observations for 12 sites.' CADIP I and II airport upgrades and NWS office construction substantially satisfy this requirement, representing significant complementarity and cost savings for the SOFF Investment Phase.

identified surface AWS, as the 12th station (Gurney/Milne Bay) is being installed under CADIP II, together with the establishment of one new upper-air station at Momote, Manus Province. The other two upper-air stations are financed by complementary initiatives: Port Moresby under the BoM twinning arrangement, and Misima by Ok Tedi Mining Limited, which has committed to rehabilitate and upgrade Misima Island Airport to Civil Aviation Safety Authority of PNG standard, with runway works targeted for completion before the end of 2026, and to establish an upper-air station at the site. With two of the three upper-air stations now financed from outside SOFF, financing the third under this IPFR delivers PNG's complete minimum-density GBON network within a single investment period rather than deferring the upper-air component to a later phase. Momote Airport was upgraded under the CADIP programme between 2017 and February 2022, NWS office space and staff accommodation are available on site, and the station is already staffed, so the incremental cost and delivery risk of adding a radiosonde programme are substantially lower than at a greenfield site. Consistent with the NCP[2] , Momote will be a manually operated radiosonde station: NWS observers rostered on shift will prepare and release two balloon trains per day, using a hydrogen generator and a remote balloon launcher, which is a safety enclosure in which a manually prepared balloon is inflated and released from a distance rather than an automated launching system. The infrastructure under Output 2.3 therefore comprises the sounding ground station and antenna, the hydrogen generation and storage facility, the balloon preparation shed and remote launcher, fencing and exclusion zones, and power redundancy. A manual system was selected based on NCP recommendations, despite airport upgrades completed at Momote, and as it matches the system being installed by BoM at Port Moresby so that equipment, consumables, spares and training are harmonised across the three stations, and it has lower capital cost and vendor dependence than an autosonde, which would be difficult to service at an island location. All 12 surface AWS and all 3 upper-air stations identified in the NCP will be targeted by the SOFF Compliance Phase.

As identified in the NCP, the most sustainable solution for establishing a GBON-compliant network will be establishing manual observation stations, with at least two observer staff per site, which have AWS located on site. This will ensure 24/7 GBON-compliant observations, taking into account staff safety, potential power supply continuity challenges, and the security improvements being made at airports through CADIP. This approach allows resources to be concentrated on establishing a robust network with sustained maintenance, calibration, and quality assurance. Stations identified by the NCP for AWS installation are detailed in Table 2 below. The table includes SOFF-funded stations, the CADIP-funded station, and the upper-air stations funded by BoM and by Ok Tedi Mining Limited, to give a complete picture of how complementary initiatives will be leveraged to achieve the targets of the NCP.

Table 2. Status of Stations Targeted for AWS, with information on complementary initiatives

#	Station Name	Station type	NCP Target	Complementary Investment*	Target for SOFF IP
1	**Port Moresby**	S (Manual, AWS)	AWS, UA	UA development (BoM) Airport upgrade (CADIP)	AWS
2	**Daru**	S (Manual)	AWS	Airport upgrade (CADIP II)	AWS
3	**Goroka**	S (Manual)	AWS	Airport upgrade (CADIP)	AWS
4	**Gurney**	S (Manual)	AWS	Airport upgrade (CADIP II) AWS installation (CADIP II)	Supplies and maintenance included in Y5 and to be considered for Compliance Phase.
5	**Hoskins**	S (Manual)	AWS	Airport upgrade (CADIP II)	AWS
6	**Kavieng**	S (Manual, AWS)	AWS	Airport upgrade (CADIP)	AWS
7	**Kiunga**	S (Manual)	AWS	Security fencing (CADIP)	AWS, ICT equipment and furniture for NWS
8	**Madang**	S (Manual, AWS)	AWS	Airport upgrade (CADIP)	AWS
9	**Momote**	S (Manual)	AWS, UA	Airport upgrade (CADIP)	AWS
10	**Wewak**	S (Manual, AWS)	AWS	Airport upgrade (CADIP II)	AWS, ICT equipment and furniture for NWS
11	**Tokua**	S (Manual)	AWS	Airport upgrade (CADIP)	AWS
12	**Nadzab**	S (Manual, AWS)	AWS		AWS, ICT equipment and furniture for NWS
13	**Misima**	S (Manual, AWS)	UA	Airport upgrade and UA installation (OK Tedi)	Supplies and maintenance included in Y5 and to be considered for Compliance Phase.

**Note: Airports which have been upgraded under CADIP will be prioritized as "quick wins" in Y2 for establishment of staffed NWS observation stations with AWS. As CADIP II planned airport upgrades are still underway, or yet to be initiated, these stations will be established in Y3-Y4. Airports which have only received security fencing will require infrastructure for NWS staff including furniture and ICT equipment.*

In addition to infrastructure procurement and installation, there is a need to upgrade ICT and data management systems. The NCP also emphasises the importance of capacity building to support NWS in implementing and sustaining GBON standards, including support for NWS observer staff to complete BIP-MT training. The IPFR will support the training of observer staff, NWS technical staff (including on WIGOS compliance: station metadata management in OSCAR/Surface and WDQMS monitoring), and the recruitment of ICT personnel to support the implementation of the data management system, as well as improve conditions for female staff recruitment.

NWS has already implemented a WIS 2.0 "node in a box", and PNG's observations flow from 8 manual station to head office and on to the WIS/GTS and international data exchange. SOFF resources are therefore not required for WIS 2.0

[2] p. 24, Activities 3.5–3.7

	development, but will support server-side implementation to ensure consistent data flows to the GBON network (explained in the IPFR, below). Consistent with the NCP (Activities 2.1, 3.13 and the station-level requirements in Annex 1), the IP will establish a programme that clearly distinguishes field verification from calibration. Field verification will be carried out at the stations by trained NWS technical (maintenance) staff, not station observers, during scheduled maintenance visits under the operations and maintenance plan, using three sets of portable field verification equipment (procured under Output 2.2) that are held at the national maintenance facility and checked against NWS's reference standards; all GBON sensors (pressure, temperature, humidity, wind and precipitation) will be verified at least annually and after any sensor replacement, with results recorded in the station maintenance and metadata records. Calibration, which requires reference standards and controlled environmental conditions, will not be performed in PNG: all sensors will be supplied with calibration certificates issued by a laboratory accredited to ISO/IEC 17025 for the relevant calibration activities (a requirement specified in the supply contracts); sensors that fail field verification will be replaced from network spares and returned to the manufacturer or an accredited laboratory for calibration; and NWS's reference standards will be recalibrated at the WMO RA V Regional Instrument Centre (three rounds budgeted under Output 2.2) to maintain traceability. The national maintenance facility at NWS headquarters in Port Moresby (NCP Activity 3.13) is therefore a secure maintenance workshop and store, not a calibration laboratory: it will hold the field verification equipment, reference standards, network spares and maintenance and verification records, and will coordinate the annual maintenance and field verification schedule. Training of NWS technical staff in maintenance and field verification procedures will be provided by the suppliers of the AWS and field verification equipment and refreshed through the GBON training activity under Output 1.3, with the Bureau of Meteorology as Peer Advisor advising on the field verification and maintenance programme. NWS will allocate staffing and training to support this activity. The NCP also emphasises the importance of capacity building to support NWS in implementing and sustaining GBON standards, including support for NWS observer staff to complete BIP-MT training. The IPFR will support the training of observer staff, NWS technical staff, and the recruitment of ICT personnel to support network management and data quality functions, as well as improve conditions for female staff recruitment.
Target easy fixes	The NCP identifies activities required for servicing and upgrading observation infrastructure at priority sites to achieve GBON compliance. Several of the 11 SOFF-funded surface AWS sites present lower installation complexity: existing civil infrastructure is in place (or being provided under CADIP), and a data transmission pathway has been scoped for establishment. Further audits are required which incorporate changes under CADIP and site-specific challenges including power and siting. Prioritising sites which have been upgraded under CADIP in Year 2-3 allows the project to begin contributing GBON-compliant data rapidly, demonstrate delivery capacity, and refine logistics protocols before tackling more complex sites. Specifically, easy-fix activities across include: 1. Uplift and install **11 AWS facilities** to enable hourly GBON-compliant observations with higher levels of maintenance, calibration, and quality control. 2. Establish **one new upper-air station** at Momote, Manus Province, completing PNG's minimum-density complement of 3 GBON upper-air stations. 3. Train NWS observation staff to operate a minimum-density GBON-compliant observation network beyond the Investment Phase, including **BIP-MT training for 10 staff**, and targeted training to support operation of the Port Moresby upper-air station. 4. **Enhance capacity for sustained maintenance of the network** through enhanced ICT capacity and the national maintenance facility.
Create leverage	The SOFF Investment Phase (IP) in PNG will leverage and build upon existing initiatives by UNDP, development partners, and regional organisations in partnership with NWS to strengthen early warning systems, weather observations, and forecasting capabilities. The NWS has developed a progressive Strategic Plan emphasizing partnerships and restoration of weather services. Under the Medium-Term Development Plan (MTDP) 2023-2027, the Government of PNG (GoPNG) plans substantial investments in infrastructure, including capital expenditure of 40 million PGK (USD 8.9 million approx.) over four years for NWS to support infrastructure renewal, upgrades in Port Moresby, and a transition of NWS from within the Department of Transport to standalone agency status. NWS is currently undergoing restructuring to accelerate this transition and ensure staffing levels will support SOFF activities by the end of the IP. These developments align with SOFF goals and ensure SOFF investments are effectively leveraged toward GBON compliance. Complementary initiatives are summarized in Table 3 and described in further detail as necessary below. Since development of the NCP, several initiatives have deliberately sought to leverage planned SOFF investments - for example, CADIP II has purposely procured and installed AWS at airports not covered by other programmes, and the WIS 2.0 "node in a box" developed by NWS has been prepared for eventual SOFF-funded AWS system to stream data. SOFF IP is thus expected to fill remaining critical gaps in a timely manner, building on the momentum of capacity-building and infrastructure investments by development partners in NWS and the national observation system. ***Table 3. Summary of current and recent complementary initiatives to the SOFF IP*** **Project** | **Status** | **Amount (USD)** | **Complementarity to SOFF IPFR** **CADIP I & II (ADB)** | Active (Phase II 2025 – 2027) | 171.5 million | Installation under Phase II of one NCP AWS station; Upgrades of airports and NWS offices

		2.3 million dedicated to NWS support	at airports as detailed in Table 2 will increase security of staff and equipment and address power supply concerns; USD $100,000 set aside for NWS staff training – as of July 2027, the exact training is unconfirmed however assumed to align with BIP-MT standard.
Twinning arrangement (BoM)	Active	USD 3.6 million (AUD 5.1 million)	Development of UA and radar at Port Moresby will build capacity for NWS staff; Training of 3 NWS staff in forecasting (note – not BIP-MT); NWS is upgrading its current Data & Information Management System (DIMS) to include the Forecast generation (DIMFS) – thus, IT capacity is being supplemented in forecasting.
Weather Ready Pacific	Active	USD 167 million dedicated to the Pacific	One NWS officer has been trained in BIP-MT and two have completed BIP-M training under WRP. This will provide basic capacity to expand use of the GBON-compliant system under SOFF. The IPFR will also benefit from procurement frameworks being developed under WRP to ensure cost-efficient logistics. WRP will leverage the improved observations from SOFF investment as part of its broader focus on hydrometeorological services.
Ok Tedi Mining Ltd / Misima Minerals Ltd	Agreed; runway works targeted for completion before end-2026	Not disclosed	Rehabilitation and upgrade of Misima Island Airport, including the 1,200 m runway, to CASA PNG standard under a lease from the Milne Bay Provincial Government, and financing of the Misima upper-air station identified in the NCP. Removes one of PNG's three NCP upper-air stations from the SOFF financing requirement and resolves the NCP's concern that Misima implementation should await clearer airport redevelopment plans. UNDP and NWS will harmonise equipment specifications, consumables, spares, calibration and training across the three upper-air sites and formalise sharing of Misima observations to the WIS/GTS.
Climate and Oceans Support Program in the Pacific	Active	Unknown	Data rescue and IT services which will support the development of the GBON network.
Early Warning 4 ALL (Government of Japan)	Active (2025 – 2027)	55 million	IOM and UNDP are focusing on scaling up multi-hazard early warning systems and climate risk monitoring with a focus on integrating into local, provincial, and national disaster management frameworks.
No One Left Behind: Strengthening Disability-Inclusive Climate Information, Early Warning and Anticipatory Action in Papua New Guinea	Proposed	450,000	The project will demonstrate a scalable disability-inclusive climate information, multi-hazard early warning and anticipatory action model that can subsequently be replicated across Papua New Guinea. SOFF will leverage the partnerships to ensure inclusivity and engagement of persons with disabilities in community consultations, and awareness-raising activities.
Strengthening Multi-sectoral Adaptation Responses Through Climate-related information (SMART Climate) (GCF)	Proposed	24.3 million	Development of a multi-hazard warning system which will utilize GBON data submitted by AWS installed under SOFF and CADIP investments. Focuses on anticipatory action and warning dissemination protocols. Includes monitoring of river flow, flood monitoring systems, and maritime weather warnings for boat operators. SOFF investments will support and augment the planned observation network under SMART Climate with surface observations.
PNG Disaster Risk	Active	872,493	Focuses on building a unified digital risk

Management Project (DFAT)	(Jan – Dec 2026)		information management system, including legal frameworks for coordination and governance, to establish an early warning "National Risk Registry" system in PNG. UNDP has recruited a consultant to complete scoping for the digital system, which will support the development of SOFF IP will augment the disaster risk information system with surface observations.
Weather and Climate Early Warning System for Papua New Guinea	Closed (2017 – 2023)	CREWS (USD 2,5 million); BOM Australia (AUD 600,000); Environment and Climate Change Canada (USD 7.35 million)	Building capacity of NWS and strengthening cooperation with key sectoral ministries.
Drought Resilience and Early Warning in the Pacific (DREW)	Approved January 2026	5,650,000	Improving community-focused, integrated early warning systems and actions (EWSA) for drought in Pacific Islands Countries to enhance decision-making and reduce drought impacts. DREW will add value to SOFF by adding drought monitoring and early warning systems such as soil moisture, temperature, to the surface observation data collected by SOFF.
CREWS/DREW (Drought Resilience and Early Warning in the Pacific) Phase 1	Closed	Unknown	DREW drought index calculations depend on quality surface observation data; SOFF-installed AWS will expand the spatial coverage available to DREW monitoring systems

CADIP I & II: The Asian Development Bank's (ADB) USD 171 million Civil Aviation Investment Development Program has improved 22 national airports and secured funding for enhancements at four additional rural airports. These upgrades including enhanced security, infrastructure, and operational facilities that will support the deployment and protection of meteorological equipment for NWS at these airports under SOFF IP. The CADIP II includes the procurement and installation of one NCP-identified AWS at Gurney Airport.

The long-standing partnership between the Australian Bureau of Meteorology (BoM) and NWS is a significant enabler. Under the **twinning** arrangement, BoM is constructing the Port Moresby upper-air station and has installed small AWS on telecommunications towers (noting these are for public weather and emergency management needs, and are not transmitting GBON-compliant data). BoM has supplied IT hardware including 11 laptops for NWS managers and has provided forecaster technical training. As peer advisor to the SOFF Investment Phase, BoM will provide technical support on an as-needed basis, including specification review, procurement QA, and WIS 2.0 integration advice, as requested by NWS.

Weather Ready Pacific (WRP): The USD 167 million multi-donor WRP programme, coordinated by WMO and SPREP with funding from Australia, New Zealand, the United Kingdom and other partners, is the primary Pacific regional framework for hydrometeorological service strengthening.3 WRP activities in PNG are directly complementary to the SOFF Investment Phase in three respects. First, WRP is financing the installation of a weather radar in PNG, which will improve mesoscale precipitation analysis but depends on a quality-controlled surface observation network to validate radar returns, a function that SOFF-installed AWS will provide. Second, WRP operates a training pipeline for Pacific meteorologists through the WMO Regional Training Centre system: as of mid-2026, one NWS officer has completed BIP-MT qualification, two are enrolled in BIP-M programmes, and three more are in the BIP-M pipeline. SOFF training activities are sequenced to complement this pipeline. Third, WRP is developing regional procurement frameworks for GBON-compliant equipment, in which PNG NWS will participate, realising per-unit cost savings and equipment harmonisation across Pacific SOFF countries.

CREWS/DREW (Drought Resilience and Early Warning in the Pacific): The CREWS Drought Resilience and Early Warning (DREW) project is a Pacific-focused initiative addressing drought monitoring, climate resilience, and early warning for climate-related hazards. DREW engages NWS and the National Disaster Centre (NDC) to strengthen end-to-end early warning systems, including community-level dissemination and NDC coordination. The effectiveness of DREW's drought monitoring depends directly on the density and quality of surface observation data: drought indices (such as the Standardised Precipitation Index) require multi-station rainfall records with minimal gaps to be operationally reliable. In Papua New Guinea, the project will support Global Hydrological Status and Outlook System (HydroSOS) implementation by introducing 3D-PAWS technology to print automatic weather stations, expanding the observation network and strengthening AI-enabled early warning and drought monitoring capabilities. The 3D-PAWS printed automatic weather stations are not, however, GBON-compliant, and are meant to complement SOFF-funded

	investments in land surface stations. SOFF-funded AWS, once reporting continuously into WIS 2.0, will expand the spatial coverage of the observation network available to DREW's monitoring systems, materially improving the statistical confidence of drought assessments in data-sparse provinces. The SOFF and DREW implementation teams will coordinate data-sharing protocols and community engagement activities where geographic and programmatic overlap exists. **UNDP's Disaster Risk Reduction and Management portfolio** supports the National Disaster Centre in integrating risk management and disaster preparedness across PNG, including development of provincial drought risk profiles and humanitarian response coordination. GBON observations from the SOFF Investment Phase will play a pivotal role in enhancing early warning systems, performing risk analyses, and coordinating response efforts, particularly in the proposed GCF SMART Climate Project and the ongoing PNG Disaster Risk Registry Project (currently concluding in 2026– will hopefully expand to multi-year project with UNOSAT. Digital maturity assessment will inform the engagement of different entities for information management systems. National Emergency Operation Centre – will be recruiting a data analyst, a GIS officer, public relations and communications. National Emergency Management Act. Risk mitigation, response, recovery. National Emergency Management Agency will be a standalone authority, with input from technical agencies. UNDP's prior experience installing river height gauges in northeastern PNG has provided valuable insights into reliable vendors and contractors, which will streamline procurement and deployment of AWS and ICT infrastructure.
Maximize delivery capacity	Delivery of remote infrastructure projects in PNG faces well-documented constraints: road access to highland and island sites, customs clearance timelines for specialist equipment, availability of qualified technicians outside Port Moresby, and inter-agency coordination between NWS, the National Airports Corporation (NAC - which controls access to airport observation sites), and the Department of Transport. This IPFR addresses delivery risk through four structural measures. First, UNDP as Implementing Entity brings an established in-country programme presence, with extensive PNG-specific procurement experience, and MPTF financial management, reducing the time from fund release to contract award. UNDP has a proven track record supporting observation and monitoring systems in developing countries, implementing SOFF Investment Phases in the Solomon Islands, Rwanda, Ethiopia, Madagascar, Cuba, and Tanzania. In PNG, UNDP has been a trusted partner since 1964, and its procurement team regularly handles complex logistics, including construction and deployment of specialist equipment to remote locations. In terms of procurement, UNDP has established Long-Term Agreements with verified vendors who supply Automatic Weather Stations which are compliant with SOFF IP globally. These will enhance the speed of logistics. Second, BoM as peer advisor provides independent technical quality assurance on specifications and procurement documents, ensuring GBON-compliant equipment and WIS 2.0-compliant data management systems before tender release, reducing the risk of procuring non-compliant equipment. BoM is well positioned for this role through its extended history of supporting NWS, including the 2017-2022 Capacity Development Programme, the current twinning arrangement, and its role as peer advisor to the Solomon Islands SOFF Investment Phase. Third, the NWS is the mandated national authority to collect, manage, and deliver GBON-related data, established under the Civil Aviation Act post-independence in 1975. NWS will serve as the national Executing Agency, responsible for technical implementation, staff deployment, inter-agency coordination with NAC and the Department of Transport, and ongoing network operation. Fourth, a Steering Committee comprising of NWS, Department of Transport, UNDP, and BoM will meet biannually to review progress, approve annual work plans and budgets, and provide an escalation pathway for inter-agency coordination issues. A dedicated Project Management Unit including a Project Manager, Finance and Administration Associate, and a Project Engineer in the first two years (providing technical advice on the engineering and civil works for the Momote upper-air station and quality assurance during construction, as well as for any AWS site works) will oversee daily implementation and procurement, supported by the UNDP PNG procurement team and the UNDP Asia-Pacific Regional Hub's quality assurance oversight. Together, these institutional arrangements ensure that SOFF resources are deployed efficiently and that the technical quality of installed infrastructure meets GBON and WIS 2.0 standards, positioning PNG NWS to operate a sustainable GBON-compliant network beyond the Investment Phase.
Sub-regional gains	PNG occupies a strategically critical position in Pacific GBON architecture. Once operational, PNG's GBON-identified stations will fill observation voids that currently affect numerical weather prediction (NWP) model initialisation for neighbouring WMO Members including the Solomon Islands, northern Australia, and the Federated States of Micronesia. The upper-air station at Momote (Manus Province) is particularly high-value: radiosonde launches will provide atmospheric profiling data across pressure levels 850 hPa to 10 hPa that is currently absent across a roughly 800,000 km^2 corridor of the Pacific. BoM has confirmed the NWP value of these profiles for model initialisation and anticipates improvements in medium-range forecast skill for northern Australia. For Pacific Island Countries without their own NWP capacity, improved model initialisation translates directly into more accurate severe weather advisories. The NWS is engaged in regional meteorological forums, including the Pacific Meteorological Council, its Pacific Islands Communications and Infrastructure (PICI) panel, and SPREP. The proposed station layout for GBON in PNG incorporates SOFF-funded and other observational stations in neighbouring regions including Northeast Australia, Solomon Islands, and Indonesia along PNG's western border, contributing to a networked sub-regional observational

	architecture critical for NWP. The NCP was designed to accommodate future regional collaboration, including shared equipment calibration services, regional training programmes, and joint procurement and maintenance of standard equipment. During the Investment Phase, UNDP will establish cooperative frameworks with Asia-Pacific countries in the SOFF Investment Phase, including the Solomon Islands, Samoa, Timor-Leste and other SOFF supported Pacific countries, to develop shared procurement agreements and a roster of qualified consultants and contractors. Complementary investments detailed in Table 3 will be coordinated by the UNDP PMU through NWS focal points, including the CADIP II, the BoM twinning arrangement, and Weather Ready Pacific – particularly around cost effectiveness for training courses, avoiding duplication, and creating a harmonized approach to the climate data management system. UNDP-led initiatives including the GCF Smart Climate and the Disaster Risk Readiness Project will collaborate through operations at the National Emergency Operation Centre to ensure SOFF Investments support coordinated disaster management and maritime forecasting. Weather Ready Pacific's planned BIP-MT course in Fiji and its regional procurement frameworks will further support cost efficiency and quality across the Pacific SOFF network. **Regional coordination support:** In line with the Pacific Meteorological Council's endorsement of regional synergies across Pacific SOFF investments, the IPFR includes USD 100,000 under Output 1.2 for the provision of regional coordination support, added on top of the country budget. This will enable NWS and UNDP to align the PNG Investment Phase with the regional Pacific SOFF approach and other SOFF Investment Phases in the region, including joint planning and progress reviews with other Pacific SOFF beneficiary countries, harmonisation of equipment specifications, procurement, training and calibration where cost-effective, and exchange of lessons learned. The modalities of this support will be agreed with all operational partners including the SOFF Secretariat during the inception phase.
SOFF Beneficiary Country Capacity Assessment	NWS operates within the Department of Transport, from which it receives its annual budget. Current financial allocations are insufficient to fully support PNG's hydrometeorological mandate. The PNG Country Hydrometeorological Department (CHD) rated PNG at Maturity Level 2 — 'Effort ongoing to formalise mandate, introduce improved governance, management processes and address resource challenges' — reflecting a declining budgetary situation, infrastructure deterioration, and limited cost-recovery capacity[4]. Despite these challenges, NWS and the Department of Transport are working actively to address shortcomings, and partnerships with development agencies will place NWS in a stronger position to manage the GBON network. At the outset of the SOFF Investment Phase, UNDP, NWS, and the Department of Transport will establish a Memorandum of Understanding outlining plans to expand NWS's budget as necessary to support GBON compliance. This agreement will ensure that SOFF-funded developments are complemented by enhanced departmental resourcing and infrastructure improvements, sustaining the NWS's ability to fulfill its critical national and international responsibilities. **Staffing Capacity** NWS has 74 staff, a relatively low number given PNG's geographic complexity and population with meteorological demands of diverse environmental regions. The workforce is predominantly male (80%), with limited recruitment of female staff due to safety concerns in existing NWS facilities, particularly the field stations, which affect all employees but particularly deter female graduates from joining. Strengthening the infrastructure and safety of NWS facilities is crucial to creating an inclusive workplace and promoting gender equity in meteorology careers within PNG. The observations program is supported by 34 staff members, 19 of whom are based in Port Moresby, leading to limited coverage across the country – the NCP suggests the need for at least 2 staff per manned station, or a total of 24 qualified staff to operate the minimum density network. NWS actively utilizes digital platforms to support its mandate, including a dedicated website[5] that publishes regular weather forecasts and updates. The website will be updated to support WIS 2.0 and GBON compliance, including interoperability with complementary initiatives outlined in Table 2. NWS has independently implemented a "WIS 2.0 in a box" node[6] which is undergoing registration and review process by WMO and GISC Melbourne to be connected to the operational WIS2 network. This recently developed WIS 2.0 system is transmitting manual observations, and SOFF investments will finance the procurement, installation, and satellite subscription for GBON-compliant AWS systems, as well as training for staff on how to implement the Climate Data Management System suggested in the NCP (Figure 2).

[4] NCP Section 6 (Capacity Assessment), pp. 26-29: NWS rated Maturity Level 2. Key constraints: no dedicated ICT personnel; 33 observations staff (19 Port Moresby-based); 80% male workforce; budget insufficient to sustain expanded GBON network without external support. The SOFF investigation highlighted that maintenance is a significant challenge for meeting GBON requirements, although NWS is well-placed to support this activity if staffing of all observations sites with permanent employees is continued.

[5] https://www.pngmet.gov.pg

[6] https://wis2.pngmet.gov.pg/ (Link active: August 2026)

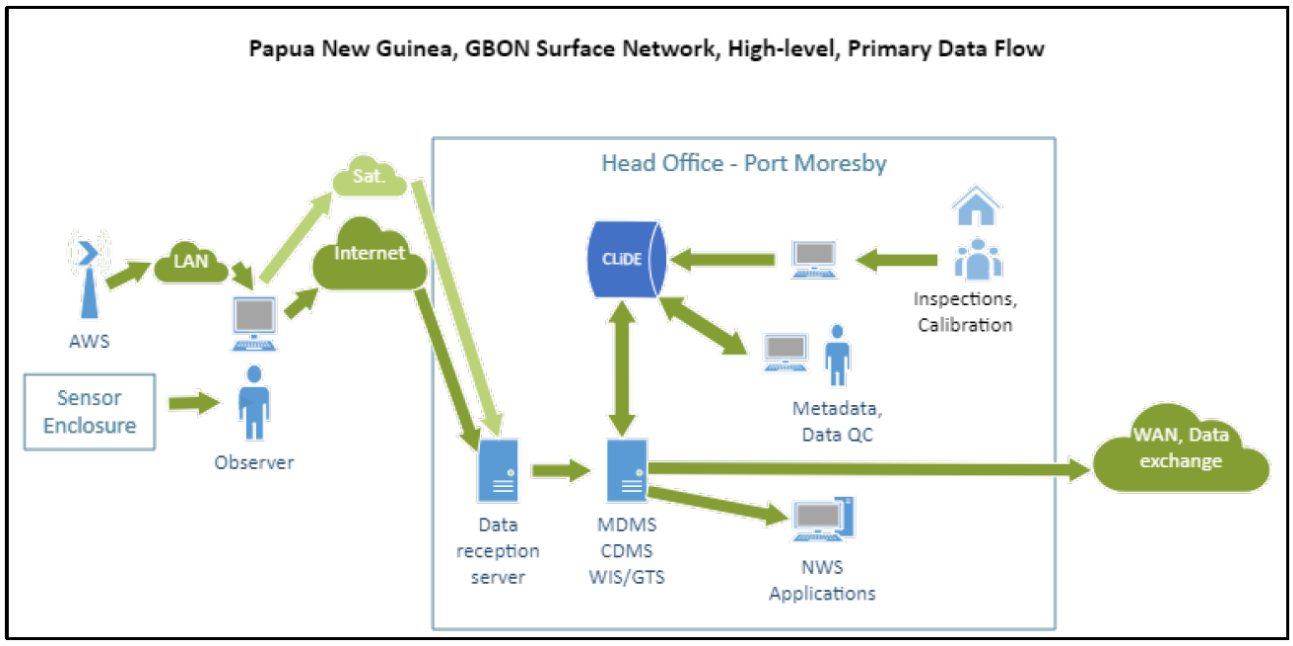


Figure 2. Envisaged high-level communications and data flow solution for end-to-end management of data, NCP p.31. As of 2026, only WIS 2.0 "in a box" has been implemented using manual observations.

Training Requirements

The NWS has a highly motivated team who can implement SOFF Investment Plan to reach GBON requirements who require additional capacity development. The NCP identified that NWS has no specific ICT personnel. Further ICT capacity building is required by NWS to maintain data and communications system including HTTP, MOTT, APIs and WIS2.0 data exchange systems as depicted in Figure 2. To sustain the GBON compliance, the following trainings are required:

- Regular training in detailed maintenance and field verification procedures for the NWS technical (maintenance) team, refreshed every 12-18 months through the GBON training activity under Output 1.3.
- Regular training in basic equipment maintenance for the NWS field observers (24 month intervals).
- Regular training for field staff in operation of upper-air equipment (12-18 month intervals).

Most meteorological staff at NWS are trained on the job. Although there is significant interest in pursuing advanced meteorological training, including the 10-month Diploma in Meteorology program in Australia, limited funding constrains participation. The World Meteorological Organization's Basic Instruction Package for Meteorological Technician (BIP-MT) training is identified as the standard qualification for observation staff considered essential to ensuring the sustainability and quality of observations aligned to SOFF. It is composed of a mixture of online and 3 months of in-person training. The NCP identified that no NWS staff had BIP-MT qualifications. Since the NCP, 1 staff member has received training through Weather Ready Pacific, with 2 more scheduled by the end of 2027 (Table 5). Currently in the Pacific, options for BIP-MT training include infrequent courses from the Fiji Meteorological Service or as a course offering through BoM Australia (exceeding the terms of the Peer Advisor support). The exact course schedule and provider will be determined during stakeholder consultations in the first year of SOFF IP with NWS and development partners conducting complementary initiatives. The estimated cost is $14,000 – 16,000 per participant. As CADIP II incorporates $100,000 USD to provide NWS staff training, this can complement the observer staff BIP-MT training required to meet a minimum operational requirement of 2 trained staff per station by the end of the IP. An alternative, as taken by SOFF Solomon Islands in Honiara, is to find an independent trainer to conduct the BIP-MT course over 6 months in Port Moresby – however, the costs per participant will likely be similar due to the longer in-person commitment and high per diem rate and cost of living in Port Moresby.

Table 5. BIP-MT training requirements

Current observer staff at NWS[7]	Required observer staff with BIP-MT training to operate 12 AWS	Current staff with BIP-MT training (WRP)	Target for SOFF IPFR	CADIP II[8] potential BIP-MT	Observer with BIP-MT training by close of IPFR
33	24	1 as of 2026, 2 planned for 2026 / 2027	10	6	19

Investment Phase Alignment with the GBON National Contribution Plan	Since the development of the NCP, progress across complementary initiatives has informed the development of this Funding Request. First, the NCP anticipated that BoM's twinning arrangement would fund two upper-air stations: Port Moresby and Momote. BoM has subsequently confirmed that budget constraints limit the twinning arrangement to Port Moresby only. In 2026, Ok Tedi Mining Limited agreed to fund the development of the upper-air station on Misima Island. Momote therefore remains the final gap in PNG's GBON-compliant upper-air network, and the SOFF IPFR includes the upper-air build at Momote, which has recently been upgraded under CADIP and already has NWS

[7] NCP page 35. There are currently 34 NWS staff supporting the observations program of which 19 are located at Port Moresby with the remainder at network stations. None of the engineering, technical or observing personnel currently have BIP-MT qualifications which are considered essential to ensuring the sustainability and quality of observations.

[8] Note: the allocation of CADIP II training to BIP-MT is unconfirmed as of July 2026

offices, leveraging the procurement experience from the Port Moresby and Misima stations. Two of the three NCP upper-air stations are thus financed outside SOFF, but all three will be operated by NWS and supported by the same national maintenance facility, consumables provisioning and standard operating procedures under this IPFR.

Second, under the ADB-funded CADIP programme, many of the airports targeted by the NCP for AWS installation have completed or have airport upgrades underway, including NWS staff offices and/or security fencing. This is beneficial in terms of cost-efficiency for required infrastructure to situate NWS staff at the airports, as access to the airports was cited as a challenge in the NCP and will need to be negotiated with the NAC. CADIP II also includes the installation of one NCP-identified AWS (Gurney/Milne Bay), which is therefore excluded from SOFF IPFR. The remaining 11 surface AWS are the direct SOFF target; the Gurney station is nonetheless included in the satellite communications, spares, maintenance and commissioning provisions of this IPFR so that all 12 NCP stations form a single network under one operations and maintenance arrangement.

Third, the NCP provided for the implementation of WIS 2.0 and associated data management systems under SOFF. NWS has since implemented a WIS 2.0 "node in a box", which is awaiting registration with WMO and GISC Melbourne for connection to the operational WIS 2.0 network, so this component is no longer required. SOFF-funded AWS are expected to be the principal data source for the node. For network security, NWS requires that AWS data be transmitted first to a cloud-hosted virtual private server (VPS) rather than directly into the NWS headquarters network, an arrangement NWS has already trialled end-to-end with two recently procured Campbell Scientific AWS; the IPFR therefore includes support for integration of the SOFF-funded AWS data streams with the VPS and node, and for cloud hosting fees during the Investment Phase, after which NWS will assume the hosting costs as part of its recurrent budget.

Figure 2 shows the data flow for the new stations and the allocation of responsibility for WMO-standard data content. Each AWS logger transmits its observations by SFTP over primary and backup communications links (cellular and satellite) to the VPS, where the data are aggregated into hourly SYNOP records in CSV format and checked against WMO requirements. From the VPS the records are ingested simultaneously into the wis2box and into the NWS Data, Information and Forecasting Management System (DIFMS) for national processing, storage and use. The wis2box is responsible for data conversion: the data-mapping plugin of its surface-based-observations/synop dataset template (csv2bufr) encodes the CSV records to BUFR template TM 3 07 080, the standard sequence for synoptic reports from fixed land stations, before publication to WIS2; the BUFR passthrough plugin is not used. Manual observations from staffed stations follow the same path. As data provider and operator of the WIS2 Node, NWS is responsible for ensuring that published observations comply with WMO standards. Compliance is enforced at three points: WMO checks configured in the loggers themselves (developed by NWS with Campbell Scientific) and applied on the VPS; validation in DIFMS; and the wis2box, which rejects incoming data that do not meet WMO standards. Once published, the WIGOS Data Quality Monitoring System (WDQMS) independently monitors the availability, timeliness and quality of PNG's observations through the WDQMS monitoring centres, and its reports are used to identify encoding or data-quality problems for correction; its Transition Monitoring module, introduced in 2025, will additionally be used to track PNG's migration from GTS to WIS2 and from TAC to BUFR over the Investment Phase.

The AWS supplier is responsible under the Supply & Support contract for ensuring the loggers deliver the required variables, units, sampling and averaging periods, timestamps and WIGOS Station Identifiers to the VPS ingestion specification, and for factory and site acceptance testing against it; NWS, through the SOFF-funded ICT professional and the national WIGOS focal point, operates the VPS, wis2box and DIFMS, maintains the dataset mappings and station list, keeps station metadata current in OSCAR/Surface (from which the wis2box draws its station list), validates publications through the wis2box monitoring dashboards, and reviews WDQMS reports monthly; and the Peer Advisor (BoM, which also hosts GISC Melbourne) will review the data mapping and the first published data from each station. The IPFR includes a short server-side integration activity in Year 3 to extend the VPS and wis2box configuration to the SOFF-funded stations, test end-to-end publication with the first commissioned stations, and set up monitoring, together with cloud hosting fees during the Investment Phase.

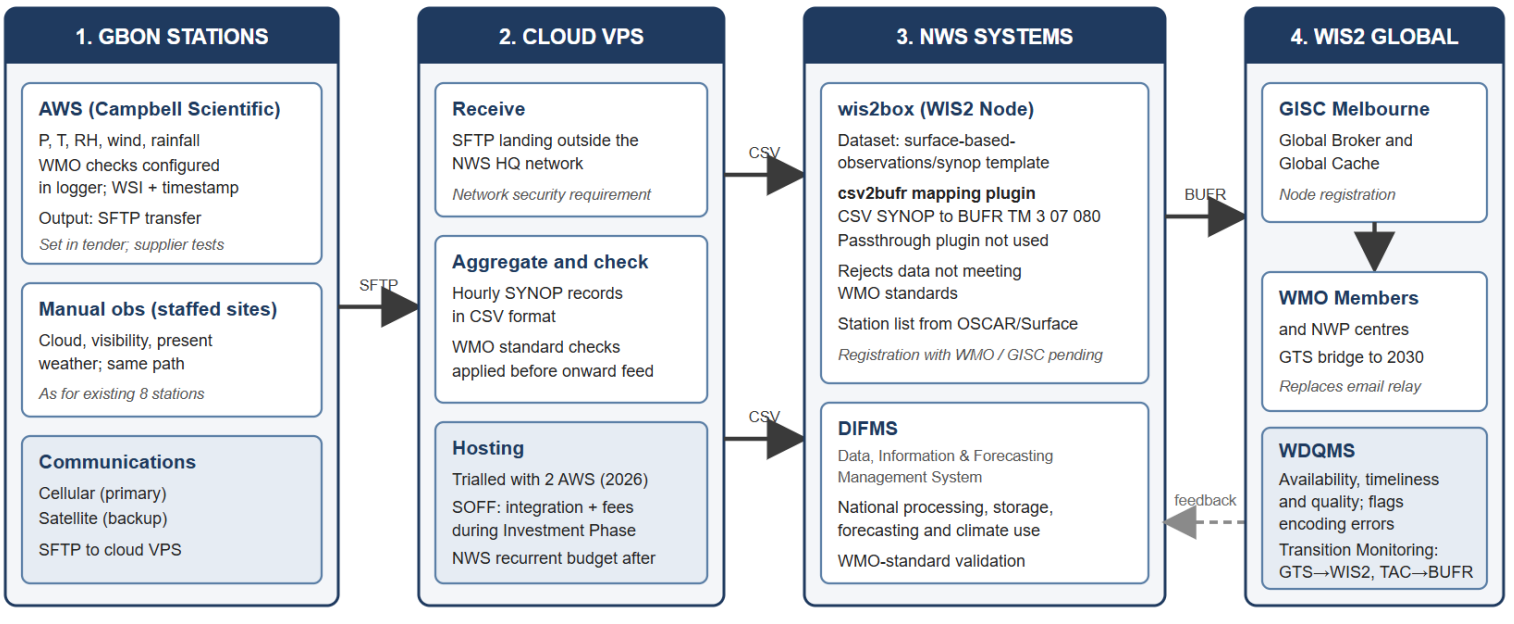


Figure 2. Anticipated WIS 2.0 data flow through NWS HQ and WIS2 Global

Execution model and implementation arrangements	UNDP will be the Implementing Entity for the Project and will be responsible for managing the implementation, financial management, evaluation, reporting and closure of the activities under the Project. UNDP will monitor and supervise the execution of the Project and ensure management in accordance with UNDP global policy and SOFF Grant Proceeds. To deliver the services required of the SOFF Investment Phase, including complex procurement of goods, contracting of civil works and service providers, and recruitment, the UNDP Direct Implementation Model (DIM)[9] will be used for the delivery of the IPFR. This will ensure that UNDP is able to overcome delays in procurement and recruitment that is often faced by government and ensure timely delivery of the Investment Phase activities[10]. UNDP will provide support to NWS to build capacity towards receiving results-based payments during the compliance phase. This will include hiring short-term ICT and strategic management consultants to support NWS in implementing new measures and systems funded by the IPFR, while allowing NWS to transition to a standalone agency under the planned arrangement with Department of Transport and adapt operations and budgetary allocations to the business plan for long-term sustainability. **Visibility:** In line with SOFF requirements, 1% of the Implementing Entity activity budget (USD 47,450.81, excluding the Peer Advisor fee and calculated before the 7% IE fee) is allocated under Output 1.2 to enhance the visibility of the country-specific SOFF investment through communication materials and specialized support, such as station signage, communication products documenting installation and commissioning milestones, and contributions to SOFF and WMO communication activities. This allocation is additional to the activity budget. The development of the UNDP project document will require a procurement plan and social and environmental safeguards assessment (discussed further below). UNDP will consult with NWS, BOM Australia, and SOFF Project Management Units implementing SOFF-funded activities in the Solomon Islands, Samoa, and Timor-Leste to develop a procurement plan which maximizes the efficient use of SOFF resources. In addition, the Weather Ready Pacific initiative will be consulted for procurement advice. At the close of the Investment Phase, UNDP will conduct an independent terminal evaluation which will inform the SOFF Secretariat, NWS, BoM, and other partners on lessons learned and suggest improvements for execution and financial management that will be applied in the Compliance Phase. At the commencement of the SOFF Investment Phase, UNDP will immediately seek agreement with the Department of Transport on how the expanded NWS budget will support the implementation and ongoing operation of the PNG GBON. This will be formalized through a Letter of Agreement (LoA) and a Memorandum of Understanding (MoU). NWS activities will be funded by budget received from the Department of Transport. NWS under the Department of Transport will serve as the national Executing Agency and will be responsible for the execution of project activities as detailed by the NCP, with support and oversight provided by UNDP. NWS will regularly engage the Department of Transport and other key ministries, alongside community beneficiaries, to ensure the activities in the IPFR are understood and taken into consideration for ongoing development planning. **Governance** A Steering Committee will be established that will have overall responsibility for providing strategic guidance and direction of the Project. The Steering Committee will include implementation partners: NWS, Department of Transport, UNDP, BOM Australia as Peer Advisor, and may also include relevant government, civil society and private sector representatives if deemed appropriate. The Steering Committee will be responsible for making consensual management decisions concerning project issues and risks and will provide guidance and advice when required and will be consulted for decisions if tolerances, such as budget or socio-economic risks including local conflict, have been exceeded. The Steering Committee will meet biannually, and the Project Manager will present the Annual Work Plan and Budget, progress updates, and recommendations for endorsement by the Board. The PMU will be supported by the experienced UNDP PNG Procurement team, ensuring minimal delays in procuring equipment and effective resource deployment to remote areas. **Peer Advisor Support** The Peer Advisor will provide the following advisory and support services to NWS and UNDP during the SOFF Investment Phase: ***On-call Advice and Technical Support*** The peer advisor will provide direct support as well as facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support to NWS and UNDP via telephone or videoconference. This could include topics such as: ○ station siting and assessment; ○ equipment and communications; ○ quality management; ○ WIS 2.0 implementation; ○ ongoing operation and maintenance budgeting; ○ WIGOS and OSCAR/Surface metadata; ○ potential equipment and service suppliers;

[9] Direct Implementation (DIM) is the modality whereby UNDP takes on the role of Implementing Partner. In DIM modality, UNDP has the technical and administrative capacity to assume the responsibility for mobilizing and applying effectively the required inputs in order to reach the expected outputs. UNDP assumes overall management responsibility and accountability for project implementation. Accordingly UNDP must follow all policies and procedures established for its own operations.

[10] UNDP will support the approach detailed in the NCP for equipment procurement, p. 27: The planned approach is for the procurement contracts for upper-air, AWS and manual weather station equipment to be "Supply & Support" contracts, in place until such time as PNG is itself able to fully support the observing network operation.

	○ capacity building and training requirements; and ○ the design and implementation of relevant SOFF Investment Phase activities. ***Scope of Peer Advisor Support*** The Peer Advisor will not undertake site works, procurement, installation of AWS or upper-air station infrastructure, or deliver training activities. The Peer Advisor's role will be limited to providing technical advice and recommendations, reviewing relevant technical documentation, facilitating access to relevant SMEs, and supporting NWS and UNDP in the design and implementation of relevant activities. Through these advisory services, the Peer Advisor will support NWS and UNDP towards achievement of the target indicators reflected in this funding proposal. Responsibility for implementation and achievement of project outputs and indicators remains with the relevant project partners in accordance with their respective roles. The Peer Advisor may support relevant SOFF regional and global coordination activities by: • providing guidance to UNDP and NWS representatives participating in SOFF forums and coordination platforms; • contributing technical expertise and Peer Advisor perspectives; • participating in relevant SOFF events, workshops and collaborative activities; and • facilitating connections with other Meteorological Services, regional organisations and relevant hydrometeorological initiatives. ***Project Meetings and National-Level Engagement*** Following commencement of the Investment Phase, the Peer Advisor will participate in relevant project coordination meetings between UNDP and NWS and, where appropriate, project steering committee meetings. At the request of UNDP or NWS, the Peer Advisor may also provide advisory and technical support to national-level stakeholder engagements, technical workshops and other relevant project activities. Participation may be remote or in person. The level and nature of participation will be determined according to project needs and agreed between the relevant project partners. ***Annual In-Country Review*** The Peer Advisor will undertake annual in-country visits to engage with UNDP and NWS, review implementation progress, discuss emerging challenges and identify potential adjustments. These visits will support the early identification of technical, operational, financial and implementation issues and help reduce risks to effective project delivery and long-term sustainability. Where appropriate, a short assessment report may be prepared following each visit, outlining key observations and recommendations. ***Budget for Peer Advisory Services*** The Peer Advisor fee covers the costs of delivering peer advisory services for PNG, including Bureau staff and technical consultations, administration and overheads, communications, participation in relevant SOFF meetings and activities, travel and transportation, and other directly related costs. Costs are indicatively allocated across Peer Advisor activities in the workplan. As support will be provided on an as-needed basis, allocations may be adjusted or reallocated between activities during the Investment Phase according to project needs, while remaining within the overall approved Peer Advisor budget.
Private sector involvement	Private sector involvement is anticipated to include the supply of equipment, consumables, and AWS construction. Although the ownership and operation model will remain publicly managed, private sector contributions will be considered for key service provisions, such as site preparation and infrastructure installation, on-site maintenance of observational equipment and sensors, technical training in calibration, maintenance, and repair of GBON equipment, and the development of systems for managing spares and supplies. At the commencement of the SOFF Investment Phase, a high-level dialogue, which will include private sector actors, will be convened to engage stakeholders, introduce the purpose of the SOFF, and perform a stakeholder mapping exercise to identify additional private sector partnerships and roles in the project. The NCP has identified Niusky Pacific Ltd, a private State Aviation Entity, as a potential partner due to its network of nine AWS across PNG. Niusky provides air traffic management and air navigation services to the aviation industry, and its infrastructure and expertise could support the refurbishment, security, and operation of AWS stations. Private sector co-financing is already contributing directly to PNG's GBON network. Ok Tedi Mining Limited has committed to rehabilitate and upgrade Misima Island Airport and to finance the construction of the Misima upper-air station, one of the three upper-air stations identified in the NCP. This is the first private financing of GBON infrastructure in PNG. NWS will operate the Misima station alongside the SOFF- and BoM-financed stations, and its commissioning is included in this Investment Phase. In the telecommunications sector, UNDP PNG already partners with Digicel PNG Ltd under the Disaster Risk Registry project to strengthen early warning dissemination throughout PNG. The SOFF Investment Phase will build on this partnership to explore secure siting of observing equipment on Digicel's tower network, data transmission arrangements for GBON stations, and the delivery of warnings derived from GBON observations to communities. This integrated approach ensures that public-private collaborations enhance the efficiency, sustainability, and reach of GBON implementation in PNG.
Civil society participation	Civil society organizations (CSOs) will play a critical role in the SOFF Investment Phase, with consultations to foster collaboration on education and employment opportunities. As suggested in the NCP, a particular focus will be on engaging women and girls in meteorological science and promoting education about early warning and meteorological measurements in schools and local communities.

	The NWS has an established partnership with the National Red Cross, which has already collaborated on a baseline study to assess disaster warning systems in communities. Building on this relationship, the National Red Cross will be actively engaged to support community outreach, reduce vandalism, enhance disaster preparedness education, and strengthen community development initiatives throughout the intervention. Additionally, NWS maintains a strong working relationship with faith-based organizations across the country, leveraging their extensive community networks to provide education about early weather warnings and to develop inclusive response and resilience strategies. These efforts ensure that community engagement is accessible to all, including persons with disabilities, while fostering trust and collaboration at the grassroots level. UNDP has an active proposal in place to improve the resilience of persons with disabilities by increasing equitable access to climate information, early warning messages and anticipatory action in the National Capital District and Central Province. The proposal, and the planned activities, will engage persons of disabilities through the Papua New Guinea Assembly of Disabled Persons (PNGADP), who maintain an active network of national and provincial CSOs. The SOFF IP will leverage this relationship to ensure community consultations incorporate the needs of persons with disabilities through CSO engagement throughout the locations identified for SOFF activities. To broaden the impact, additional CSOs will be consulted during the project to identify synergies and establish new partnerships. This will include exploring opportunities for educational outreach and promoting local employment through the project, creating pathways for communities to engage actively with meteorological services and benefit from the project's outcomes. For example, the
Fiduciary systems	Funds at the national level will be managed by UNDP. UNDP will assume full programmatic and financial accountability for funds disbursed to it by the UN Multi-Partner Trust Fund Office (MPTF). The UNDP accountability system is guided by the Accountability Framework and Oversight Policy. The Internal Control Framework Policy defines the purpose and objectives of internal control and outlines how UNDP utilizes industry best practices to design, apply and continuously enhance internal control to achieve the organizational objectives. An Anti-Fraud policy defines how UNDP mitigate and manages fraudulent and corrupt practices. The Direct Implementation Modality (discussed in Execution Model) proposed for the delivery of SOFF will allow UNDP to fully utilize its Internal Control Framework to deliver the activities and use resources efficiently and appropriately throughout the implementation period while working with NWS to transfer project management functions to the ministry to support the compliance phase of SOFF. Cost efficiency and effectiveness in project management will be achieved through adherence to the UNDP Programme and Operations Policies and Procedures (POPP). The SOFF Investment Phase will be subjected to UNDP's corporate policies and operations support will be provided by UNDP to ensure compliance with the organization's Internal Control Framework. The relevant procurement policies and guidance documents will be used to facilitate the solicitation of GBON infrastructure and services. UNDP's Civil Works, ICT and Intellectual Services Policy will be used to inform the development of solicitation documents and management of relevant contracts.
Social and environmental safeguards	The project will adhere to UNDPs Social and Environmental Standards which are applied to all projects and activities. An Environmental and Social Management Plan will be developed considering local conditions and approaches to minimize the environmental and social impacts of the construction activities. A Gender Gap Analysis and Gender Action Plan will be developed to guide the mainstreaming of gender, disability and social inclusion (GEDSI) into SOFF investments where possible. The Gender Action Plan will target: i) increased female participation in the roles associated with SOFF Investment and Compliance Phase; ii) gender and disability inclusive designs to be incorporated in SOFF funded facilities; iii) inclusion of gender targets in procurement documents; and iv) development of ongoing campaigns in schools for roles linked to NWS. All reports and publicity materials will ensure to capture GEDSI targets. Semi-annual progress reports will be shared the SOFF Secretariat, ensuring any issues are reflected in these reports, as well as informed by email if any urgent matters arise.
Dispute resolution mechanism	The SOFF Secretariat will be promptly informed in case of urgent matters, otherwise through regular reporting requirements. UNDP has standard Legal Context and Risk Management guidelines that are linked to the Standard Basic Assistance Agreement between the GoPNG and UNDP signed on 11th April 1964 which highlights the Accountability Mechanisms. In terms of project management, the project board will be responsible for addressing any concerns of the stakeholders with regard to the project implementation of the SOFF Investment Phase. The project will adhere to UNDPs Social and Environmental Standards which are applied to all projects and activities. An Environmental and Social Management Plan will be developed considering local conditions and approaches to minimize the environmental and social impacts of the construction activities. A Gender Gap Analysis and Gender Action Plan will be developed to guide the mainstreaming of gender, disability and social inclusion (GEDSI) into SOFF investments where possible. The Gender Action Plan will target: i) increased female participation in the roles associated with SOFF Investment and Compliance Phase; ii) gender and disability inclusive designs to be incorporated in SOFF funded facilities; iii) inclusion of gender targets in procurement documents; and iv) development of ongoing campaigns in schools for roles linked to NWS. All reports and publicity materials will ensure to capture GEDSI targets. Semi-annual progress reports will be shared to the SOFF Secretariat, ensuring any issues are reflected in these reports, as well as informed by email if any urgent matters arise.
Additional relevant policies and procedures	UNDP has comprehensive Procurement Policies and Construction Works policies which guide the procurement of goods and services. Government procurement policies are governed by an act of parliament and overseen by the National Procurement Commission of PNG and the NPC Board. Under the Act, PNG's procurement requirements are handled by the

	implementing agency, the Department of Finance. However, the procurement arrangements under international agreements supersedes the procurement law. This extends to procurements that involve co-funding, where the law only applies to funding portions involving GoPNG. Therefore, it is not anticipated that government procurement oversight should restrict SOFF procurement implemented by UNDP.

SDG Targets

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

SDG Indicators

Indicator Code	Description
C130b01	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate c

Contribution to SDGs

Participating Organization	% TARGET_5.5	% TARGET_13.1	% TARGET_13.2	% TARGET_13.3	% TARGET_13.b	% Total
WMO	20%	10%	30%	10%	20%	100
IE	40%	10	30	10	20%	100

Project Results / Indicators / Work Plan

Please note that there are different sections for **Project Results**, **Project Indicators** and **Work Plan** in the UN MPTF Gateway. Please refer to the Gateway Manual for guidance on how to fill out these sections.

Outcome	Output		Description																	
1. GBON institutional and human capacity developed	1.1 National Consultations conducted		National consultations including with CSOs, and other relevant stakeholders conducted																	
	Activities (add rows as needed)																			
	Title		Lead Participating Organization	Participating Organization	Other Organizations	Indicator Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Total Target Value	Target Completion Year	Annual Targets				
																	Y1	Y2	Y3	Y4	Y5
	National and provincial community engagement workshops conducted, including inception workshop		IE	Select	NWS	# stakeholder engagement workshops	Conduct stakeholder engagement workshops at the national and provincial levels to support weather/climate services, gender awareness, and community-level involvement	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	6	2032	1	1	2	1	1
	Technical Support and Advisory Services	Peer Advisor support to national consultations and stakeholder engagement	WMO	Peer Advisor	NWS IE	# stakeholder engagement workshops	The Peer Advisor may support relevant national and provincial stakeholder engagement activities, including project inception workshop, steering committee meetings and other agreed project consultation and coordination meetings. Support may include technical advice and Peer Advisor perspectives relevant to GBON implementation. Participation, including travel to selected stakeholder engagement activities.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	6	2032	1	1	2	1	1
			IE		NWS	% female participation	Female participation in workshops	Annual or semi-annual progress updates	Capacity	At closure	Country	Percentage	0	2027	40	2032	40	40	40	40	40
	Workshops and outreach		IE	WMO	NWS	# workshops completed in	Workshops and outreach events which	Annual or semi-annual	Capacity	At	Country	Number	0	2027	4	2032	0	1	1	1	1

events on Gender					target locations	highlight gender and employment opportunities in meteorology	progress updates		closure												
		IE		NWS	% female participation	Female participation in workshops	Annual or semi-annual progress updates	Capacity	At closure	Country	Percentage	0	2027	50	2032	0	50	50	50	50	
High level dialogues on benefits of the new national GBON infrastructure		IE	Select	NWS	# high level dialogues	Organise high level dialogues on benefits of the new national GBON infrastructure	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	2	2032	1				1	
Technical Support and Advisory Services		WMO	Peer Advisor	NWS, IE	# high level dialogues	Peer Advisor technical review and advisory services may support high-level dialogues Provide technical review and advice on materials prepared for high-level dialogues	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	2	2032	1				1	
Female participation in workshops		IE	Select	NWS	% female participation	Female participation in workshops		Capacity	At closure	Country	Percentage	0	2027	40	2032	40				40	

1.2 NMHS institutional capacity developed	NMHS institutional capacity required to operate the GBON network developed

Activities (add rows as needed)

Title		Lead Participating Organization	Participating Organization	Other Organizations	Indicator Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Total Target Value	Target Completion Year	Annual Targets				
																Y1	Y2	Y3	Y4	Y5
Development of NWS Strategic Plan which incorporates CHD and NCP, operational plan, and business plan		IE	WMO	NWS	# of organization reviews	New Strategic Plan including operational and business plan for NWS, designation of the national WIGOS focal point, and an Observing Systems Management Plan (including the operations and maintenance plan) covering WIGOS metadata management in OSCAR/Surface and WDQMS monitoring	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	1				
					#of business	Business plan completed to support	Annual or semi-annual	Capacity	At	Country	Number	0	2027	1	2032		1			

						plan	transition to compliance phase and long-term GBON sustainability	progress updates		closure											
		Technical Support and Advisory Services	WMO	IE	NWS	# of organization reviews and # of business plan	Peer Advisor services technical review of the NWS Strategic Plan (including the Observing Systems Management Plan covering WIGOS metadata, WDQMS monitoring and incident management) and the business plan, with recommendations for implementing quality control and quality assurance methods	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	2	2032	1	1				
	Gender Gap and Analysis Plan completed		IE	WMO	NWS	# of Gender Gap Analysis and Action Plan completed	Gender Gap Analysis completed with insights from local communities	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	1					
	Environmental and Social Integrated Assessment Completed		IE	WMO	NWS	ESIA completed	ESIA completed, with community visibility communications and workshops for dissemination	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	1					
	Regional Coordination Meetings		IE	WMO	NWS	# of regional workshops	Years in which NWS staff participate in regional coordination meetings. Covers NWS staff travel to regional meetings (e.g. Pacific Meteorological Council, RA V); distinct from the regional coordination support line below, which funds coordination support from regional organizations	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	4	2032		1	1	1	1	
	Technical Support and Advisory Services	Regional Engagement and Coordination Support	WMO	IE	NWS	# years of regional engagement and support	The Peer Advisor will support relevant SOFF regional and global coordination activities, including: providing guidance and advice to UNDP and NWS representatives	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	5	2032	1	1	1	1	1	

							participating in SOFF coordination platforms and forums; contributing technical expertise and Peer Advisor perspectives to relevant discussions; and participating, where appropriate, in SOFF forums, events, workshops and other collaborative activities that support effective SOFF implementation. May facilitate connections with other Meteorological Services, regional organisations and relevant hydro met initiatives where these may support effective implementation.														
	Coordination support from relevant regional organizations		IE	WMO	NWS	# years in which regional coordination support is provided	Provision of regional coordination support, aligning the PNG Investment Phase with the regional Pacific SOFF approach and other SOFF Investment Phases in the region (joint planning and progress reviews, harmonised procurement, training and calibration where cost-effective, and knowledge exchange), in line with the Pacific Meteorological Council resolution on regional synergies. Distinct from NWS staff travel to regional meetings (line above)	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	5	2032	1	1	1	1	1	
	Standard operating procedures for the surface and upper-air data transmission, exchange and	Development of SOPs for the surface and upper-air data transmission, exchange and management	IE	WMO	NWS, BoM, Ok Tedi Mining Ltd	GBON stations SOPs developed	Harmonised SOP set adopted by NWS for all GBON stations	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	0	1	0	0	

	management , harmonised across all GBON stations	(AWS and radiosonde data processing, transmission, quality control including data format, WIS 2.0 exchange and archiving) harmonised across all GBON stations																			
	Establishment of the Project Management Unit and IE support		IE	WMO	NWS	Project Management Unit established	PMU Established	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	1	1	1	1	1	
	Enhanced visibility of country-specific SOFF investments through communication materials and specialized support		IE	WMO	NWS	# communication products developed	Communication materials (e.g. station signage, briefs, audiovisual products and media outreach) and specialized support documenting SOFF investments and milestones in PNG; 1% of the Implementing Entity activity budget, excluding the Peer Advisor fee and before the 7% IE fee	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	5	2032	1	1	1	1	1	
	Technical Support and Advisory Services	The Peer Advisor will undertake annual in-country visits to engage directly with the IE and NWS and review progress during the Investment Phase.	WMO	Peer Advisor	IE NWS	# annual Peer Advisor reviews completed	Engage with project partners to review implementation progress collaboratively, discuss emerging challenges and consider any adjustments that may be required. The Peer Advisor will contribute an independent peer perspective, support the early identification of technical, operational, financial sustainability or implementation issues and helping to reduce risks to effective delivery and the long-	Annual or semi-annual progress updates	Capacity	Annual	Country	Number	0	2027	5	2032	1	1	1	1	1	

							term sustainability of the investment. A short assessment report may be prepared outlining key observations and, where appropriate, recommendations for adjustments to support effective implementation.															
1.3 NMHS human capacity developed						**NMHS human capacity required to operate the GBON network developed**															
Activities (add rows as needed)																						
Title		**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**					**Budget**
																Y1	**Y2**	**Y3**	**Y4**	**Y5**	
Enhanced technical and operational capacity for NWS		IE	WMO	NWS	# capacity-development deliverables completed and handed over to NWS	ICT and business strategy consultants work alongside and mentor NWS counterparts, delivering an ICT systems administration handover plan, business and financial planning tools aligned with the Strategic Plan, and on-the-job training, so that these functions are transferred to NWS staff by Y5	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	3	2032		1	1	1		
BIP-MT training (initial and refresher) for observing staff		IE	WMO	NWS	# observation staff trained	BIP-MT training provided for NWS staff on operation of GBON network	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	10	2032		4	3	3		
	Technical Support and Advisory Services	WMO	IE	NWS	# observation staff trained	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) in capacity building within its organisation for on-call consultation, advice and support via telephone or	Annual or semi-annual progress updates	Capacity	At closure	Country	number	0	2027	10	2032		4	3	3		

							videoconference. Topics could include: Advice to support NWS observing staff capacity development, drawing on relevant regional experience. guidance on BIP-MT training content, applicable certification requirements and training opportunities. Guidance on the content of NWS technical training in AWS and radiosonde operation, lifecycle maintenance and calibration.													
	Training of existing and new NWS staff in GBON network operations, ICT systems and WIGOS compliance		IE	WMO	NWS	# Trainings conducted	Training of existing and new staff at NWS to ensure required training and certification in place to support GBON operational functions including new ICT system and data assurance capacity, and WIGOS compliance (station metadata management in OSCAR/Surface, WDQMS monitoring and incident management).	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	7	2032	1	1	1	2	2	
		Technical Support and Advisory Services	WMO	IE	NWS	# Trainings conducted	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include: Provide guidance and relevant technical resources to support NWS training in	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	7	2032	1	1	1	2	2	

							OSCAR/Surface station metadata management, WDQMS monitoring and incident management.														
			IE		NWS	% female participation	Female participation in workshops	Annual or semi-annual progress updates	Capacity	At closure	Country	Percentage	0	2027	40	2032	40	40	40	40	40	
	Refresher and cross-station upper-air training for NWS technicians and observers	Refresher and cross-station training in radiosonde operations and hydrogen safety, complementing the product-specific training provided by the supplier under the equipment contract (Output 2.3)	IE	WMO	NWS, NAC, BoM	# NWS staff trained in upper-air operations	NWS technicians and observers trained and certified to operate the Momote station	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	4	2032	0	0	0	4	0	
Please write the indicator																					

Outcome	Output		Description																	
2. GBON infrastructure in place	2.1 New land-based stations in place		New land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place																	
	Activities (add rows as needed)																			
	Title		**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**					**Budget**
																	Y1	**Y2**	**Y3**	**Y4**	**Y5**	
	Installation of new land-based stations	Please list sub-activities	IE	WMO	Please write if institutions other than the IE and peer advisor are contributing.	Number of new land-based stations installed	Number of stations as defined in the National Contribution Plan		Select	Select	Select	Select	0	YYYY	#	YYYY						
	2.2 Improved land-based stations in place		Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place																	
	Activities (add rows as needed)																			

Title	Description	Lead Participating Organization	Participating Organization	Other Organizations	Indicator Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Total Target Value	Target Completion Year	Annual Targets					Budget
																Y1	Y2	Y3	Y4	Y5	
Procurement of 11 AWS and consolidated sea freight to Port Moresby	Procurement of all 11 AWS in a single lot and consolidated sea freight to Port Moresby, where they will be stored at NWS headquarters until each site is ready. Shipping all units once by sea to Port Moresby is cheaper than shipping each AWS individually from the supplier to each airport as sites become ready	IE	WMO	NWS	# AWS received at NWS headquarters in Port Moresby	Number of stations as defined in the National Contribution Plan	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	11	2032	0	5	6	0		
	Technical Support and Advisory Services	WMO	NWS	IE	# AWS procured and delivered	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include: AWS specifications Technical input to tender documentation and technical evaluation Advice on station siting, instrument exposure and observing requirements; Remote technical support during supplier installation Review of relevant site acceptance testing and results; Advice on field verification and calibration arrangements, Maintenance and calibration requirements, Preventive	Annual or semi-annual updates	Investment	At Closure	Country	Number	0	2027	11	2032	0	5	6	0		

							maintenance, Spare-parts and lifecycle planning													
	Staggered shipment of AWS from Port Moresby to sites and installation	Following site selection and agreement with NAC, staggered shipment of each AWS from Port Moresby to its airport by air or sea (sea where possible) as each site becomes ready, and installation, including IT, data and communication systems and NWS installation staff travel. Covers the domestic leg only: international freight to Port Moresby is in the procurement line above, and post-installation maintenance visits are in the travel line below. NWS staff will accompany the contractor to install and commission each AWS, building NWS skills for operation and maintenance, starting with the two units recently procured by ADB. Manufacturer warranties for AWS in PNG do not include operations and maintenance	IE	WMO	NWS	Number of land-based stations installed	Number of stations as defined in the National Contribution Plan	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	11	2032	0	2	4	5		
		Technical Support and Advisory Services	WMO	IE	NWS	# stations installed and accepted	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include Station siting and instrument exposure, Remote technical support during supplier installation Review of site acceptance testing and results.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	11	2032	0	2	4	5		
	Satellite communication subscriptions (12 stations)	Satellite communication costs (subscriptions, 12 stations)	IE	WMO	NWS	Stations providing GBON-compliant	Stations (11 SOFF-installed plus Gurney) with an active satellite communication	Annual or semi-annual progress	Investment	At closure	Country	Number	0	2027	12	2032	0	0	5	7	0	

						observations via satellite data link	subscription contributing to GBON observations	updates													
	Office furniture and ICT equipment for NWS staff at three stations	Procurement of supplies, furniture, and equipment for offices and freight	IE	WMO	NWS	Number of stations equipped	NWS staff are equipped to operate and maintain GBON-compliant infrastructure at field offices	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	3	2032		1	1	1		
	NWS staff travel for post-installation monitoring and maintenance	Travel cost for operations and maintenance. Manufacturer warranties for AWS in PNG do not include maintenance and operations, so these costs are not covered by any warranty in this budget; the visits do not duplicate supplier obligations or Output 3.1, which covers consumables and spares only	IE	WMO	NWS	Regular operations and maintenance on surface stations	Trips by NWS staff to perform operations and maintenance	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	20	2032	0	1	4	7	8	
Select	Support to the implementation of the server-side WIS 2.0	Consultant support to ensure the AWS and upper air stations feed the WIS 2.0 node in the intended method and that GBON observations are exchanged internationally alligned with WMO standards and best practices. UNDP as Implementing Entity remains responsible for resolving WIS 2.0 implementation issues and ensuring successful WIS 2.0 implementation for the SOFF-funded stations	IE	WMO	NWS	WIS 2.0 integration of AWS data verified	AWS data flows integrated with the WIS 2.0 node and international exchange confirmed through WDQMS	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	0	1	0	0	
	Establishment of national maintenance facility at NWS headquarters	Fit-out of a secure maintenance workshop and store (not a calibration laboratory) at NWS headquarters, Port Moresby (benches, racking, secure cabinets, air-conditioning/dehumidification, power and UPS) (NCP Activity 3.13)	IE	WMO	NWS	National maintenance facility established and operational	Facility established at NWS headquarters and used for preventive and corrective maintenance, storage of spares and field verification equipment, and coordination of field verification across the GBON network	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	1	0	0	0	
	Network workstations, asset-management software and metadata/record		IE	WMO	NWS	Network management workstations and software	Two network workstations, asset-management software, and a metadata/records system with CliDE	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	1	0	0	0	

	s system					installed	integration for the national maintenance facility (NCP Activity 3.12)															
		Technical Support and Advisory Services	WMO	IE	NWS	WIS 2.0 integration of AWS data verified	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include Technical review and advice on satellite and communications, VPS-to-wis2box data mapping, Initial publication of station data, OSCAR/Surface metadata management, and WDQMS monitoring and incident management.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	0	0	1	0	0	
	Field verification equipment (three sets) and reference standards		IE	WMO	NWS	Field verification equipment and reference standards procured	Three sets of portable field verification equipment (pressure, temperature/humidity, wind, precipitation), including the associated verification software, and a set of reference standards, held at the national maintenance facility and used by trained NWS technical (maintenance) staff during scheduled station maintenance visits to verify all GBON sensors at least annually and after any sensor replacement; includes supplier training of NWS technical staff in their use	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	1	0	0	0	

Recalibration of NWS reference standards at the WMO RA V Regional Instrument Centre		IE	WMO	NWS	# recalibration rounds of national reference standards completed	National reference standards recalibrated at the WMO RA V Regional Instrument Centre (including shipping), maintaining traceability to international standards	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	3	2032	0	0	1	1	1	
2.3 New upper-air stations in place			**New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place**																		
Activities (add rows as needed)																					
Title	**Description**	**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**					**Budget**
																Y1	**Y2**	**Y3**	**Y4**	**Y5**	
Environmental assessment, siting, design and construction management for the Momote upper-air station	Environmental impact assessment to support site selection, NAC access, detailed design, tendering, construction management and civil works for a manually operated radiosonde station (instrument enclosure, balloon preparation shed with a manually operated remote balloon launcher, hydrogen generation and storage shed, fencing and exclusion zones), backup energy and initial communications (NCP Activities 3.1 and 3.5 to 3.8). Costed against BoM's actual costs for the Port Moresby upper-air station (design and construction management AUD 350K; construction AUD 1.0M)	IE	WMO	NWS, NAC, BoM	Civil works for the Momote upper-air station completed	Site designed, tendered and constructed and certified ready for equipment installation	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	0	1	0	0	
Technical equipment for the Momote upper-air station	Hydrogen electrolyser, manual radiosonde sounding system with ground-check equipment, and first-year balloons and sondes, procured through UNDP Long-Term Agreements for meteorological equipment where available; the supplier will install the systems, provide product-specific training for NWS technicians and observers, and provide the manufacturer's warranty	IE	WMO	NWS, NAC, BoM	Upper-air station equipment procured and installed	Radiosonde sounding system and hydrogen generation installed at Momote	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	0	0	1	0	

		Technical Support and Advisory Services	WMO	IE	NWS, NAC, BoM	Upper-air station equipment procured and installed	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include Technical advice during supplier installation and commissioning, Review of technical and commissioning results Technical advice to support NWS following installation and commissioning.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	0	0	0	1	0	
	NWS Staff travel to accompany the installation and sounding of systems installed by contractors	NWS staff accompany the supplier during installation of the sounding and hydrogen systems and the supplier training	IE	WMO	NWS, NAC, BoM	Upper-air station installed and operational	Momote upper-air station integrated with the WIS 2.0 node and delivering radiosonde observations	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	1	2032	0	0	0	1	0	
	Technical Support and Advisory Services		WMO	IE	NWS, NAC,	Upper-air station equipment procured and installed	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include Advice on radiosonde system specifications, Site and facility design considerations; Technical requirements associated with the proposed hydrogen system. Technical input to tender documentation	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032	0	0	0	1	0	

							and technical evaluation may also be provided if requested.														
	2.4 Improved upper-air stations in place			Improved upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place																	
	Activities (add rows as needed)																				
	Title	**Description**	**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**					**Budget**
																	Y1	**Y2**	**Y3**	**Y4**	**Y5**	
		Please list sub-activities	Select	Select	Please write if institutions other than the IE and peer advisor are contributing.				Investment	At closure	Select		0	YYYY	#	YYYY						

Outcome	**Output**	**Description**
3. Sustained compliance with GBON	3.1 GBON land-based stations commissioning period completed	GBON land-based stations' commissioning period completed, country- specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority

Activities (add rows as needed)

Title	**Description**	**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**				
																Y1	**Y2**	**Y3**	**Y4**	**Y5**
Commissioning of land-based stations, including AWS and manual weather stations	Provisioning of AWS supplies and manual weather station supplies for Commissioning period	IE	WMO	NWS	GBON land-based stations' commissioned	Number of stations as defined in the National Contribution Plan (11 SOFF-installed plus Gurney)	Annual or semi-annual progress updates SOFF Compliance tool	Investment	At closure	Country	#	0	2027	12	2032	0	0	2	4	6
	Technical Support and Advisory Services	WMO	IE	NWS	GBON land-based stations' commissioned	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	12	2032	0	0	2	4	6

							Review and support commissioning during the compliance phase. Support NWS in addressing operational or data-sharing issues identified during commissioning Verification of land-based station data sharing Assistance and troubleshooting data-sharing issues and relevant operational and maintenance considerations.														
3.2 GBON upper air stations' commissioning period completed	GBON upper air stations' commissioning period completed, country- specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority																					
Activities (add rows as needed)																						
Title	**Description**	**Lead Participating Organization**	**Participating Organization**	**Other Organizations**	**Indicator Title**	**Description**	**Means of Verification**	**Category**	**Cycle**	**Scope**	**Value Type**	**Baseline Value**	**Baseline Year**	**Total Target Value**	**Target Completion Year**	**Annual Targets**						
																Y1	**Y2**	**Y3**	**Y4**	**Y5**		
GBON Commissioning of upper-air stations	Upper-air consumables after the first year of operation for the three NCP upper-air stations (Port Moresby, Misima, Momote)	IE	WMO	NWS, BoM, Ok Tedi Mining Ltd	Number of upper-air stations commissioned after the first year of operation	Radiosondes, balloons, hydrogen-generation consumables, spares and calibration items provided to each of the three NCP upper-air stations, regardless of financing source, as NWS operates all three and the country-specific standard cost for operations and maintenance must cover the whole upper-air network	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2027	3	2032	0	0	1	1	1		
		Technical Support and Advisory Services	WMO	IE	NWS, BoM, Ok Tedi Mining Ltd	Number of upper-air stations commissioned after the first year of	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	3	2032	0	0	1	1	1		

						operation	organisation for on-call consultation, advice and support via telephone or videoconference. Topics could include Technical advice on upper-air operations Assistance and troubleshooting data-sharing issues and relevant operational and maintenance considerations.														
		Technical Support and Advisory Services	WMO	IE	NWS	Number of upper-air stations commissioned after the first year of operation	The peer advisor will provide direct support and facilitate access to subject matter experts (SME) within its organisation for on-call consultation, advice and support. Topics could include Verification of upper-air data sharing, upper-air SOPs and standard costs for upper-air operations and maintenance	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2027	1	2032				1		

Risks

The Investment Phase Risk Management Framework should be based on the SOFF Risk Management Framework, incorporating relevant programmatic risks and including additional country-specific risks. Please follow the methodology established by the Multi-Partner Trust Fund Office (MPTFO) presented below.

		Impact				
		Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Likelihood	Very Likely (5)	Medium (5)	High (10)	High (15)	Very High (20)	Very High (25)
	Likely (4)	Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)
	Possible (3)	Low (3)	Medium (6)	High (9)	High (12)	High (15)
	Unlikely (2)	Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)
	Rare (1)	Low (1)	Low (2)	Medium (3)	Medium (4)	High (5)

Event	Category	Level	Likelihood	Impact	Mitigating Measures	Risk Owner
Challenges in Joint coordination and misalignment of goals and processes.	Operational	Medium	Possible	Minor	NWS is the mandated authority to collect, manage, and deliver GBON-related data. It is expected that other international and national investments in the meteorological monitoring system will be in close coordination with NWS, who will ensure alignment towards the prioritization of an operational GBON network.	NWS UNDP
Non-compliance with fiduciary and procurement standards in some SOFF activities	Financial	Low	Unlikely	Minor	Under a DIM model of implementation, UNDP will closely monitor the financial management of the project and procurement standards using established Monitoring and Evaluation procedure and financial reporting mechanism.	UNDP
SOFF-funded investments cause environmental or social impacts	Social and Environmental	High	Likely	Moderate	Sites for surface stations and upper air stations are already established, however, in some cases access may need to be re-negotiated in newly renovated airports. In Year 1, UNDP will audit all sites and support NWS in regaining access where needed. Environment Impact Assessment will be undertaken for each site to inform mitigation plans.	UNDP NWS
NMHS staff depart after being trained	Operational	Medium	Unlikely	Major	Develop training and career plan for NWS staff and invest in training multiple staff to minimize impact of loss of experienced staff	UNDP NWS
Operational efficiency risk, causing low implementation and delays in procurement, installation and capacity building activities, resulting in failure of the project	Operational	High	Likely	Moderate	Recruitment of experienced PMU and frontloading complex procurements within the first 24 months of implementation to ensure completion of GBON Infrastructure as per schedule	UNDP
After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality	Operational	Low	Unlikely	Minor	The Investment Phase will include maintenance of the equipment and take a phased approach to the completion of the GBON network, to ensure that GBON Infrastructure has been installed and internationally exchanges data. Staff training will be conducted with NWS to ensure sustainability of technical expertise to support	UNDP NWS

Event	Category	Level	Likelihood	Impact	Mitigating Measures	Risk Owner
					continued GBON observations.	
Destruction or theft of SOFF-financed equipment and infrastructure	Operational	High	Likely	Moderate	Equipment procured will be secured in staffed stations, located in airports. Civil Society Organizations and relevant local authorities will be consulted and engaged at the beginning of the project to ensure community and administrative support. Routine daily quality control and monitoring of data and equipment to be implemented.	NWS UNDP
Countries cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain	Operational	Medium	Unlikely	Moderate	At the contracting stage, UNDP will ensure reliable telecommunications facility built to WIS standards, in consultation with BOM Australia and neighbouring SOFF implementing countries.	UNDP BOM
Political instability and regulatory risks which will impact the successful completion of the Investment Phase	Political	High	Possible	Moderate	Regular updates to the Department of Transport and GoPNG will be provided by NWS and UNDP on SOFF Investment Phase to ensure sustainability through potential shifts in government regimes.	NWS UNDP
Capacity gaps in technical skills after completion of the investment phase	Operational	High	Possible	Moderate	Specialized training for new and existing NWS staff will prioritize the development of national staff to continue operations of the GBON network including calibration and data sharing.	NWS UNDP
Natural disasters	Social and Environmental	Medium	Likely	Minor	The ESIA and auditing of AWS/upper-air stations will include provisions and mitigation measures for natural hazards. Regular maintenance of the SOFF investments in infrastructure from NWS staff will ensure the continued operation of the GBON network.	NWS UNDP

Budget by UNSDG Categories: Over all

Budget Lines	Description	IE	WMO	Total
1. Staff and other personnel		$ 340,580.55	$ 0.00	$ 340,580.55
2. Supplies, Commodities, Materials		$ 1,360,000.00	$ 0.00	$ 1,360,000.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation		$ 597,000.00	$ 0.00	$ 597,000.00
4. Contractual services		$ 1,567,450.81	$ 535,000.00	$ 2,102,450.81
5. Travel		$ 867,500.00	$ 0.00	$ 867,500.00
6. Transfers and Grants to Counterparts		$ 0.00	$ 0.00	$ 0.00
7. General Operating and other Direct Costs		$ 160,000.00	$ 0.00	$ 160,000.00
Project Costs Sub Total		**$ 4,892,531.36**	**$ 535,000.00**	**$ 5,427,531.36**
8. Indirect Support Costs		$ 342,477.20	$ 37,450.00	$ 379,927.20
Total		**$ 5,235,008.56**	**$ 572,450.00**	**$ 5,807,458.56**

Performance-based Tranches Breakdown

Tranche			Total
Tranche 1	IE (70%)	$ 3,664,505.99	$ 3,855,303.57
	WMO (33.33%)	$ 190,797.59	
Tranche 2	IE (30%)	$ 1,570,502.57	$ 1,761,300.15
	WMO (33.33%)	$ 190,797.59	
Tranche 3	IE (0%)	$ 0.00	$ 190,854.83
	WMO (33.34%)	$ 190,854.83	
			$ 5,807,458.56

Results based budget

Outcome *	Output *	Agency *	Budget (USD) *
1. GBON institutional and human capacity developed		**Sub Total**	**$ 1,784,368.86**
	1.1 National Consultations conducted	IE	$ 125,000.00
		WMO	$ 59,900.00
	1.2 NMHS institutional capacity developed	IE	$ 993,031.36
		WMO	$ 137,062.50
	1.3 NMHS human capacity developed	IE	$ 402,500.00
		WMO	$ 66,875.00
2. GBON infrastructure in place		**Sub Total**	**$ 3,021,100.00**
	2.1 New land- based stations in place	IE	$ 0.00
		WMO	$ 0.00
	2.2 Improved land-based stations in place	IE	$ 1,490,000.00
		WMO	$ 133,850.00
	2.3 New upper-air stations in place	IE	$ 1,327,000.00
		WMO	$ 70,250.00
	2.4 Improved upper-air stations in place	IE	$ 0.00
		WMO	$ 0.00

Outcome *	Output *	Agency *	Budget (USD) *
3. Sustained compliance with GBON		**Sub Total**	**$ 622,062.50**
	3.1 GBON land-based stations commissioning period completed.	IE	$ 105,000.00
		WMO	$ 20,062.50
	3.2 GBON upper air stations' commissioning period completed.	IE	$ 450,000.00
		WMO	$ 47,000.00
Total (project costs, excluding indirect support costs)			**$ 5,427,531.36**