



SOFF Investment phase pipeline

Cambodia

Systematic Observations
Financing Facility

**Weather
and climate
data for
resilience**





General Information

Fund	MPTF_00281: The Systematic Observations Financing Facility					
FMP Record	MPTF_00281_00052: SOFF Cambodia Investment Phase					
MPTFO Project Id						
Start Date						
End Date						
Applicants	Status	Contact Type	Name	e-mail	Position	Telephone
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Description	<p>The Department of Meteorology (DOM), under the Ministry of Water Resources and Meteorology (MOWRAM), in Cambodia already operates a considerable network of weather observation stations but transmits a small selection of the available observations globally via the WMO Information System (WIS)/Global Telecommunication System (GTS). With support from SOFF and the Met Office, UK (peer advisor), this project—Supported by IFAD—will enable DOM to meet Global Basic Observing Network (GBON) requirements. Specifically, it will ensure that Cambodia disseminates reliable weather observations from the existing and new stations to the WIS on a routine basis.</p> <p>DOM’s staffing and other limitations could mean that it will not be able to derive maximum value from the improved global Numerical Weather Prediction (NWP) model data in terms of translating this improved data into more and better products and services. Recognizing that infrastructure investments are necessary but insufficient, the project proactively addresses DOM’s institutional capacity constraints. Through additional activities related to technical expertise, workforce planning and professional development, communication strategies and dissemination mechanisms, and regional engagement, DOM will strengthen its institutional capacity and ability to operationalize GBON and derive value from improved global Numerical Weather Prediction (NWP) data, engage with the public, regional partners, private vendors, and align its internal functions to operationalize and manage the upgraded GBON network in the long term and deliver improved products.</p> <p>This project is financed by the Systemic Observations Financing Facility (SOFF), a mechanism that facilitates the collection and dissemination of critical surface-based weather and climate observations (in accordance with internationally agreed requirements). It is designed to address critical gaps in Cambodia’s surface-based weather and climate observation network, as identified in the GBON National Contribution Plan of Cambodia (November 2024)—drawing on GBON National Gap Analysis-Cambodia (September 2024) and Country Hydromet Diagnostics (July 2024). Thus, the project seeks SOFF investments in foundational weather/climate infrastructure and organizational capacity that are not covered by other past or ongoing initiatives</p> <p>Upon completion, the project will directly enhance the quality and reliability of weather and climate data shared internationally that will contribute to improved weather forecasts, enable timely and actionable early warning systems, and facilitate robust climate information services vital to the sustainable development of all sectors and stakeholders, in the long term. In the process, Cambodia will fulfil its commitments to the global and regional weather monitoring system, contributing to improved forecasts regionally and worldwide.</p> <p>In this process, it will align with (not duplicate) other GBON-relevant initiatives in Cambodia to foster synergies, such as World Bank-led CREWS (Climate Risk and Early Warning Systems) and a potential World Food Programme (WFP) project on early warnings. Through complementary activities at MOWRAM, such as the CAISAR (Climate Adaptive Irrigation and Sustainable Agriculture for Resilience) project funded by Green Climate Fund (GCF), Asian Infrastructure Development Bank (AIIB), and IFAD, DOM will feed into the dissemination of weather forecasts and information to agriculture and water sector stakeholders—leveraging its updated observation network.</p>			
Universal Markers	Gender Equality Marker	Risk		
	<ul style="list-style-type: none"> GEM1 - The Key Activity contributes to GEWE in a limited way 	<ul style="list-style-type: none"> Low Risk 		
Optional Markers	WB Income Category	<ul style="list-style-type: none"> Lower Middle Income 		
	UN LDC	<ul style="list-style-type: none"> Yes 		
	Small Island Developing States (SIDS)	<ul style="list-style-type: none"> No 		
Fund Specific Markers	SOFF Phases	SOFF Phases		
	EW4All	Early Warnings for All initial focus countries		
	Fragile and conflict-affected situation	Fragile and conflict-affected situation		
	Peer advisor	Peer advisor		
		<ul style="list-style-type: none"> Met Office [United Kingdom] 		
Geographical Scope	Geographical Scope	Name of the Region	Region(s)	Country
	<ul style="list-style-type: none"> Country 		<ul style="list-style-type: none"> Asia 	<ul style="list-style-type: none"> Cambodia

Participating Organizations and their Implementing Partners	UN Participating Organizations	Government/ Multilateral/ NGO/ Other	New Entities	Implementing Partners	
	<ul style="list-style-type: none"> IFAD - IFAD (International Fund for Agricultural Development) WMO - WMO (World Meteorological Organization) 			Department of Meteorology, Ministry of water Resources and Meteorology	
Programme and Project Cost	Participating Organization	Amount (in USD)		Comments	
	Budget Requested				
	IFAD	\$3,822,709.00		Includes the 7% IE management fee	
	WMO	\$443,275.00		Includes the 7% WMO fee	
	Total Budget Requested	\$4,265,984.00			
	Tranches				
	Tranche 1		Tranche 2		Tranche 3
	IFAD (60%)	\$2,293,625.40	IFAD (40%)	\$1,529,083.60	IFAD (0%) \$0.00
	WMO (33.33%)	\$147,743.56	WMO (33.33%)	\$147,743.56	WMO (33.34%) \$147,787.89
	Total:	\$2,441,368.96	Total:	\$1,676,827.16	Total: \$147,787.89
Other Sources (Parallel Funding)					
Total	\$4,265,984.00				
Thematic Keywords					
Programme Duration	Anticipated Start Date	01-Jan-2026			
	Duration (In months)	60			
	Anticipated End Date	01-Jan-2031			

Narratives

Title	Text
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Close the most significant data gaps

Cambodia does not currently supply GBON data to the GTS or WIS 2.0. Cambodia's (DOM) collects surface observations from three different legacy Automated Weather Station (AWS) networks which have been installed with support from different development agencies, at different times, and using different equipment which do not meet GBON standards. The capacity of the organisation to ensure ongoing maintenance and operation of these diverse networks is low, with the result that many of the AWS sites are reporting incomplete information, with some being completely silent. There is little or no routine calibration of the AWS sensors. Therefore, the challenge with regard to the surface observation network is not around establishing new stations but around upgrading and maintaining, to adequate standards, a sufficient number of AWS surface stations to satisfy the GBON requirements (Table 1), and in ensuring that the data from these stations is collected and shared to WIS 2.0 routinely.

DOM does not operate any upper-air stations. A new upper-air (UA) station will need to be installed (Table 1) at a location which is both secure and is readily accessible to suitably trained DOM staff.

Table 1 – GBON National Contribution Target

Type of Station	WMO GBON National Gap Analysis, June 2023				GBON National Contribution Target	
	Target	Reporting	Gap		To Improve	New
			To Improve	New		
	[# of stations]				[# of stations]	
Surface (AWS)	5	9	0	0	5	0
Upper air (UA)	1	0	0	1	0	1
Marine	*when applicable					

DOM operates an old and out-of-date Integrated File and Message Switching System (IFMSS) workstation which manages communications with the relevant WIS centre (the primary one being the WIS Centre in Bangkok).

Aside from the physical infrastructure, the major challenge faced by the DOM is a shortage of trained technical staff to maintain and operate its observing network and ICT facilities. This challenge is compounded by a structure whereby the great majority of the AWS locations are maintained by staff who work for the Provincial and District offices of the parent Ministry (denoted POWRAM and DOWRAM respectively) and not directly for DOM. It is therefore very difficult to ensure a consistent level of network maintenance, and staff who are trained in maintaining AWS equipment may be moved to other duties without warning. However, trained technical staff from the central DOM office do travel around the country to check on the maintenance status of the AWS network,

The most significant data-related gaps are therefore:

1. For the surface AWS network, establishment of 5 fully-compliant GBON stations, ensuring adequate maintenance, calibration and reliability of reporting.
2. For the upper-air network, installing and sustaining operations of a new station at a suitable location.
3. Provision of equipment for a calibration laboratory for meteorological instruments and sensors. Alternatively, arrangements could be establishment with either equipment manufacturers or a WMO Regional Instrument Centre, together with the provision of Field Calibration kits, to ensure sustainable calibration activities.
4. For the ICT system, upgrading the data-loggers on the older networks to ensure that data can be collected in WMO-standard formats, and upgrading the File and Message Switching System with new hardware and up-to-date software.
5. For the institution, to provide a business model and operations plan (workforce plan, strategic communications, etc.) to underpin adequate budgeting, planning, visibility, and networking.

For the staffing, to provide a structure (including, refresher training) whereby adequately trained leadership, technical and ICT staff are available to maintain and operate all aspects of the observing infrastructure and the data collection and communication system.

Target easy fixes

The SOFF National Contribution Plan has identified five suitable AWS installation that can be GBON-compliant and thus can be supported for ongoing operations under SOFF. The sensors from these stations should be replaced with calibrated sensors (with the older sensors sent away for re-calibration as necessary) and the data loggers upgraded or replaced if this is necessary, so that the data formats from these stations is provided in formats compatible with the IFMSS.

A new IFMSS will need to be installed, replacing the current out-of-date system, and configured to accept data from the various AWS stations on the network and to manage communications with the WIS centre in Japan (aligning with CREWS solution for WIS 2.0 via JMA).

In regard to an upper-air station (one UA), the only option is to build a new station and to provision it with adequate human capacity, spare parts and consumables.

Basic calibration equipment will be required, focusing especially on the calibration of sensors for air pressure, wind speed and direction, temperature, humidity and rainfall.

Training a small team of DOM staff in the calibration and maintenance of instruments and other AWS equipment will be necessary, as will the provision of financial resources to support travel and subsistence for this team to allow them to visit stations regularly.

Create leverage

The infrastructural improvements envisaged for Cambodia under the SOFF initiative are complementary to an ongoing CREWS regional project in Cambodia and Lao PDR, being delivered by a partnership of the World Bank, WMO and the UNDRR; SOFF Investment in Cambodia, has been designed to build on and leverage foundational CREWS activities and outputs. Cambodia has also made considerable progress in developing the national Early Warnings for All (EW4ALL) Roadmap; this work is being led by the World Food Programme (WFP) and engages many agencies who are active in Cambodia. WFP is also developing another project, for submission to Green Climate Fund (GCF) in late 2025 or early 2026, along the same theme. The EW4ALL initiative will help to increase the relevance of the work of the DOM, and the services provided through them, to other government Ministries and agencies and to NGOs active in the country. In particular, the improved global model data which will be available to the DOM forecasters through SOFF will assist them in improving forecast and warning services, with the complementary projects then helping to ensure the widespread application and use of these improved products. Finally, the Climate Adaptive Irrigation and Sustainable Agriculture for Resilience (CAISAR) project, implemented by MOWRAM and NCDD-S and funded by GCF, IFAD and AIIB, has allocated US\$ 500,000 in grants for six hydrometeorological, four agrometeorological and four AWS in the Tonle Sap basin (spanning Kampong Speu, Kampong Chhnang, Kandal and Pursat). While the target group and sector for CAISAR is farmers and water user groups, particularly rice cultivators, CAISAR investments will benefit from SOFF and CAISAR-funded capacity development will complement SOFF-funded trainings.

Cambodia projects involving observation component				
	GEF	CREWS	CAISAR	SOFF
Station type	RBSN > RBON - does not comply with GBON spatial requirements	RBSN > RBON - does not comply with GBON spatial requirements	Local Tonle Sap basin AWS only - does not comply with GBON spatial requirements	GBON
No. AWS stations	Up to 25	Up to 25 (phased)	4	5
No. UA stations	0	0	0	1
Ongoing O&M	No	No	No	Yes, only for GBON sites
Calibration	No	Only field calibration kits	No	Yes, only for GBON sites
Data exchange/WIS 2.0	No	Yes, establish WIS 2.0 connection	No	Additionality to CREWS - additional/contingency configuration for GBON site connectivity to WIS 2.0
Training	Yes, MOWRAM received some technical training and SOP development - not retained by DOM. No UA training	Planned technical maintenance training of MOWRAM / MONRE / PONRE / DONRE staff. No UA training. MOWRAM/DOM to receive training for ICT WIS 2.0 implementation	Technical maintenance training to local operator; no AWS training for DOM. No UA training	Yes for: procured technical system and health & safety training via third party supplier; PA advice and training via co-development of SOPs. Leadership, GESI training from third parties.
Comments	Project focussed on climate and EWS; no GTS connectivity. Some stations now not functioning - no Cambodian stations are live on WIS 2.0 currently	Project focussed on EWS. CREWS is implementing up to 25 WIS 2.0 operational stations of the RBSN/RBON stations previously automated by the GEF project	Project focussed on hydro/agrometeorology in local Tonle Sap basin region only. May be some local crossover with CREWS project where AWS coincide with RBON locations	SOFF stations selected with DOM according to GBON spatial density requirements and site quality/security - do not crossover with RBON stations. GBON WIS 2.0 solution based on initial CREWS implementation - therefore significant SOFF project risk dependency on CREWS with some additional/contingency effort to deliver key GBON data deliverable

<p>Maximize delivery capacity</p>	<p>The International Fund for Agricultural Development (IFAD) has a long history of implementing rural development projects in Cambodia, which became a member in 1992. IFAD has supported twelve investment projects for a total value of USD 940 million in collaboration with a host of co-financing partners and its own financing of USD 309 million benefitting 1,565 million households. IFAD’s ongoing presence in Cambodia also offers an opportunity to cost effectively support implementation and monitoring, for example, through combined trainings on financing and procurement standards.</p> <p>In Southeast Asia, IFAD has been working with the ASEAN Secretariat since 2008. Because the focus of this work has been on haze-free ASEAN and peatland management, it has developed a relationship with ASEAN Specialised Meteorological Center (ASMC) on monitoring and assessing forest fires and transboundary haze. Combined with the recent establishment of its Regional Office for Asia-Pacific in Bangkok, IFAD is deepening its ASEAN engagement. This will facilitate IFAD’s, and in turn DOM’s, ability to convene regional partners and countries on GBON activities.</p> <p>Through the Adaptation for Smallholder Agriculture Programme (ASAP), launched in 2012, IFAD allocated USD 316 million in 44 project grants across 41 countries, between 2012 and 2022, and benefited approximately 6.8 million farmers. These ASAP projects placed strong emphasis on enhancing climate information services (CIS) as a means of strengthening the adaptive practices of smallholder farmers. At the same time, ASAP recognized the lack of basic observation network—including inadequate spatial resolution—as a substantive gap in low- and middle-income countries, preventing provision of timely, reliable and relevant information to farming communities and rural economy stakeholders. The SOFF project is well aligned with IFAD’s latest investment in Cambodia, in collaboration with GCF and AIIB: CAISAR integrates investments in hydrometeorological and agrometeorological infrastructure as well as capacity strengthening of MOWRAM staff and farmers / water user groups on the use of climate information and early warnings for agricultural and water management.</p> <p>IFAD will serve as the SOFF Implementing Entity (IE) for this project and will be responsible for the overall management, including: (i) administrative, financial and technical oversight and supervision throughout project implementation; (ii) ensuring funds are effectively managed to deliver results and achieve objectives; and (iii) ensuring the quality of project monitoring, as well as the timeliness and quality of reporting to SOFF.</p> <p>The UK Met Office will support DOM and the IFAD-led SOFF project in accordance with Terms of Reference agreed with all SOFF operational partners and reviewed by the SOFF Secretariat. The UK Met Office is an advanced national meteorological service, operating at the forefront of advancing weather and climate prediction capabilities, and is well placed to advise and support DOM in it’s implementation of compliant GBON observations. The Cambodia Department of Meteorology (DOM), the Executing Partner, is a part of the Ministry of Water Resources and Meteorology (MOWRAM). It currently operates an extensive network of surface stations comprising automated and manual weather stations, but faces several challenges. The budget allocation for DOM is dependent on the funds available at the national government level. Currently, 80% of MOWRAM’s five-year strategic plan is funded through international development partners. Therefore, this project will enable DOM to substantially expand its network and strengthen operational capacities.</p>
<p>Sub-regional gains</p>	<p>The implementation of SOFF in Cambodia is being pursued in close collaboration with SOFF implementation in the neighbouring country of Lao PDR, where the World Bank is the Implementing Entity. The Mekong River flows from Laos into Cambodia, and both countries are impacted by seasonal flooding along the Mekong River basin and are also at risk from flash flooding episodes. Coordination meetings are regularly held between the WB representatives and the Peer Advisors for SOFF in both countries. The World Bank is also active, with WMO and UNDRR, in a CREWS-funded regional project that is focused on Cambodia and Lao PDR. Additionally, IFAD in Cambodia and WFP’s SOFF team are also in close contact on this SOFF project implementation in Cambodia.</p> <p>For information technology systems and regional data coordination, the project will engage with the Japan Meteorological Agency (JMA) in its capacity as WMO Regional WIGOS Center (RWC) in Tsukuba, ensuring alignment and continuity with the proposed CREWS model. Also, while the JMA Regional Instrument Centre (RIC) could support instrument maintenance, calibration and other services, for the purpose of this SOFF project, these services will be provided by the instrument manufacturer.</p>

<p>SOFF Beneficiary Country Capacity Assessment</p>	<p>The Department of Meteorology in Cambodia already operates a considerable network of weather observation stations and transmits a small selection of the available observations globally via the WIS/GTS.</p> <p>The main strengths of DOM are as follows;</p> <ol style="list-style-type: none"> 1. Existing operational network. 2. Functional ICT system. 3. Well-trained staff in the headquarters. 4. Moderate level of decentralization with potential for leverage – if sufficient number of adequately trained staff are located in provinces and districts. <p>The weaknesses of DOM are:</p> <ol style="list-style-type: none"> 1. Lack of a formal Act or Decree which clearly sets out its responsibilities. 2. No Quality Management System. 3. Very low staffing numbers currently centralised in Phnom Penh; most of the observation work and maintenance etc. is carried out at provincial or district level by staff who have not been trained to WMO Meteorological Technician levels. 4. Little or no instrument calibration performed. 5. No upper air observing facility. 6. Inadequate budget to maintain operations and maintenance at a suitable level. 7. Very old ICT systems, many with no back-up (e.g., DOM does not use a time-series database for post-processing and analysis and still relies on MS-EXCEL). 8. Aviation weather services are carried out by another organisation, so no income is received from this source. <p>With the support envisaged under SOFF, the DOM should be well capable of meeting the GBON requirements in terms of disseminating reliable weather observations for the selected stations to the WIS on a routine basis. However, the staffing and other limitations may mean that it will not be able to derive maximum value from the improved global NWP model data in terms of translating this improved data into more and better products and services.</p>
<p>Investment Phase Alignment with the GBON National Contribution Plan</p>	<div style="border: 1px solid black; padding: 10px;"> <p>The changes between the GBON National Contribution Plan (approved at the finalization of the Readiness Phase) and activities in the proposed Investment Phase are not substantially different. The following activities will be led by WB funded CREWS or other EW4All projects, and hence not proposed under the SOFF budget</p> <ol style="list-style-type: none"> 1. Review of legislation relevant to meteorological services in Cambodia, including consideration of optimum arrangements between DOM and aviation meteorological service provider. 2. DOM Strategic and Operational Plan. 3. Socio-economic Analysis of DOM, covering baseline and potential, highlighting the costs and benefits of GBON. </div>
<p>Execution model and implementation arrangements</p>	<p>Upon approval, the SOFF Trustee will allocate and transfer funds to IFAD, in line with legal and operational procedures. IFAD will comply with SOFF reporting requirements by providing two semi-annual updates and one annual narrative and financial report. IFAD, in coordination with the MEF, will disburse funds to designated account for DOM as approved and authorised by MEF based on the detailed implementation plan. The DOM, executes the activities as outlined in the funding request. Throughout the implementation, IFAD will inform the SOFF Steering Committee—via the SOFF Secretariat—of any significant challenges or deviations that may affect the successful delivery of the plan, for the Committee’s consideration and decision.</p> <p>IFAD as the implementing entity for the investment phase of this SOFF project, will closely work with the Executing Partner the Royal Government of Cambodia, acting through the Ministry of Economy and Finance (“MEF”), and the Department of Meteorology (“DOM”) of the Ministry of Water Resources and Meteorology (“MOWRAM”). MEF is responsible for overseeing the flow of the grant proceeds from IFAD to DOM. DOM will implement activities and establish the Project Management Unit (PMU), comprising a Project Manager, a National Procurement Expert, and a National Admin and Finance Expert (i.e., these three project-specific personnel will be hired by DOM).</p> <p>The project steering committee will comprise the Chair: Secretary of State, MOWRAM</p> <p>Members:</p> <p>H.E. Secretary of State, MEF H.E. Secretary of State, MOE Director of Department of Multilateral Cooperation, MEF</p> <p>And two CSOs.</p>

<p>Private sector involvement</p>	<p>There are hardly any private sector actors (with requisite expertise) operating in the meteorological field in Cambodia, and a fully public business model is recommended to operate and maintain and GBON network. Currently, no commercial private sector partners, outside of equipment suppliers, are involved in the operational and maintenance of national observing networks.</p> <p>Cambodia does have several private sector players collecting weather data, particularly rainfall data. But this is not shared in the public domain or with DOM (MOWRAM) on a regular basis. The country also has several players who disseminate weather information and advisories to the public through mobile apps (e.g., Chamka app that targets farmers).</p> <p>Investment phase will involve stakeholder consultations and engagement, including with the private sector, to understand possible partnerships, including on data sharing and dissemination.</p>
<p>Civil society participation</p>	<p>The project inception workshop and stakeholder engagement event will both target Civil Society Organizations (CSOs), particularly those with past or ongoing projects on early warnings and weather / climate information. CSOs will also be a key partner consulted in the development of a Communications Strategy for DOM, which intends to raise awareness of the SOFF project, DOM's role as public agency in Cambodia, and the criticality of GBON. CSOs will also be engaged in social and environmental risk management where needed, including for community engagement.</p> <p>Increasing the visibility of DOM's work and the need for long-term and continued public investments to ensure provision of timely and reliable weather forecasts and early warnings is an important component of DOM's advocacy strategy. CSOs, including those focused on gender and women's empowerment, will complement national-level efforts by reaching out to communities and strengthening awareness of meteorological services at provincial and district levels, thereby ensuring community buy-in.</p>
<p>Fiduciary systems</p>	<p>DOM will establish a PMU for the implementation of the SOFF project and will be responsible for the overall management of the project. DOM will be also responsible for financial, monitoring and evaluation, audit, procurement arrangements following IFAD policies and guidelines.</p> <p>The PMU will be led by the Project Manager (Secretary or under-secretary of State) and will include an Administrative and Finance Expert and Procurement Expert. Consulting firms and individual consultants will be recruited to support the project implementation and undertake assessments and provide training.</p> <p>The project highlights number of risks in relation to financial management, including low capacity of financial management staff at MOWRAM and DOM with risks such as lack of prior experience of DOM and MOWRAM with IFAD-funded projects; and complicated disbursement and fund flow arrangements resulting from multiple financiers.</p> <p>Therefore, A financial management due diligence assessment will be performed prior to the signing of the grant agreement between Royal Government of Cambodia (RGC) and IFAD. Based on the findings of this assessment, necessary actions and mitigation measures will be established and agreed upon.</p>

Social and environmental safeguards

Project activities are subject to national law and IFAD's Social, Environment and Climate Assessment Procedures (SECAP) 2021 [1]. IFAD's SECAP 2021 comprise key requirements for the environmental and social sustainability of projects; eight out of the nine standards are applicable to this project. These standards are aimed to be implemented in the context of IFAD financed projects during project design and implementation; and by borrowers/ recipients/partners, which are ultimately responsible for project implementation. The requirements related to each standard will be applied in line with the unique nature of the project, its specific activities, the associated social and environmental risks and impacts.

Based on the SECAP 2021 screening for social, environmental and climate risks, the project is classified as Substantial risk. Throughout project implementation, screening will be undertaken to identify and update, as necessary, potential social, environmental and climate risks and impacts associated with the proposed activities, and to identify mitigation measures.

Risk description and mitigation measures	Risk Classification
<p>Biodiversity</p> <p>1. There is some risk that the location of surface observation network may disturb local wildlife, such as nesting sites for birds. No other risks to wildlife, including migratory species, are envisioned at this stage.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Project will avoid selecting sites that are modified habitats, natural habitats or critical wildlife habitats for SOFF-funded GBON infrastructure. The project will avoid cutting trees or vegetation. • Avoid storage of potentially hazardous materials near sensitive habitats and ecosystems. 	Moderate
<p>Resource Efficiency and Pollution Prevention</p> <p>1. There is some risk that disposal of GBON equipment parts and ICT equipment, if done improperly, could pollute the local environment.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Project guidelines and training will include a waste management plan for GBON and ICT equipment, including provision and visual guidance tools for waste segregation and timely collection. It will identify recycling facilities for electronic equipment, where feasible, and ensure that facilities identified have appropriate license / permits. • During implementation, if the generation of hazardous waste is foreseen, appropriate management strategies (including, 'chain of custody' and licensing/permitting requirements at disposal site) will be put in place. 	Moderate
<p>Cultural Heritage</p> <p>1. No risks are anticipated.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Project will apply Chance Finds Procedures (SECAP 2021) in case cultural heritage is discovered unexpectedly in any of the sites selected for GBON network installation. In case sites are assessed as affecting tangible or intangible cultural heritage, alternative locations will be identified. 	Low

<p>Indigenous Peoples</p> <p>1. Communities recognized as Ethnic Minorities may not be adequately consulted or represented in project decision making and activities.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Stakeholder consultations will ensure inclusive engagement strategies, including communication in local languages / dialects. • In consultations with communities, including those recognized as Ethnic Minorities, the project will apply Free Prior Informed Consent (FPIC). 	Low
<p>Community Health and Safety</p> <p>1. The safety risks to project staff and/or local communities associated with the use of hydrogen gas for Radiosonde observations.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Procurement contracts will specify safety-relevant technical specifications and requirements. • Training will include safety storage and handling measures for all equipment, including hydrogen gas. • Housing structures for equipment will be designed to prevent accidental or unauthorized access, encroachment and theft, including through fencing. • Stakeholder consultations will explicitly discuss any safety implications for the local community and undertake FPIC. • Adequate warning signs will be displayed (in Khmer, English and local language) where potentially explosive / toxic / hazardous equipment are stored. 	Substantial
<p>Labour and Working Conditions</p> <p>1. The safety risks to project staff and/or vendors associated with the use of hydrogen gas for Radiosonde observations during operations and maintenance.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Housing structures for equipment will be designed to prevent accidental or unauthorized access, encroachment and theft, including through fencing. • Training will include safety storage and handling measures for all equipment, including hydrogen gas. • DOM employees and servicing personnel will be regularly trained on safe handling, key personal safety actions, and emergency response measures . A system of checks (e.g., SOPs, logs) will be put in place to identify risks and undertake repairs / placement, particularly for potentially explosive / toxic / hazardous equipment. • Procurement contracts will specify safety-relevant technical specifications and requirements. 	Substantial
<p>Physical and Economic Resettlement</p> <p>1. Project is not anticipated to result in temporary or permanent and full or partial physical displacement (including people without legally recognizable claims to land). Forced evictions will be prohibited.</p> <p>2. Based on the sites for new automated weather stations, land acquisition may be needed but this will be assessed during implementation, once detailed information about site locations is available.</p> <p>Mitigation measures</p> <ul style="list-style-type: none"> • Project will not involve physical displacement. • In some instances, SOFF activities may require acquisition of small areas of land, with potential impact on economic displacement. In these cases, a Livelihood Restoration Plan will be developed to ensure fair compensation to affected landowners (or land users if there is loss of economic opportunities). • Effective Grievance Redress Mechanisms will be established to address complaints and concerns related to land acquisition / economic displacement. 	Moderate

Climate risk:

1. The risk of floods and flash floods damaging equipment or preventing access to the surface network and disrupting maintenance operations.
2. Extreme heat affecting the operations of equipment, including hydrogen gas used in Radiosonde observations.
3. Severe weather disrupts or damages power supply and operations of the observation network.

Mitigation measures

- The site selection for new stations will carefully consider the risks of flooding and flash flooding.
- The housing structures for surface observation network and storage of associated parts will assess the risks of floods, flash floods and extreme heat, and put adequate measures in place (e.g., thermal control, adequate flood-proofing through elevation).
- Stations will be equipped with batteries and/or solar power generators to ensure an uninterrupted power supply.
- Project will procure and sufficiently store spare parts. Trained personnel will be available on site / locally to avoid disruptions in operations or maintenance.

Substantial

Gender and Social Inclusion:

The government of Cambodia is aware of the importance of strengthening institutional capacity to mainstream gender. For example, it has brought the Ministry of Women's Affairs into the process of climate action plans. SOFF training and capacity development initiatives, such as the development of workforce plan, will incorporate Gender and Social Inclusion (GESI) considerations and will be informed by gender analysis and consultations with CSOs. Additionally, the modernization of DOM, including recruitment, technical training and professional development, will include gender targets such as

- Women comprise at least 50% of all participants in SOFF-related trainings, consultations and workshops.
- Proportion of women in decision-making and management positions in the project and within DOM should be at least 50%.
- Workforce planning will propose at least 50% representation of women for operating and maintaining GBON stations.

[1] <https://www.ifad.org/en/social-environment-assessment-procedures>

Dispute resolution mechanism	<p>A project-level Grievance Redress Mechanism (GRM) provides project stakeholders and project affected persons / communities an avenue for reporting complaints about the project and achieving remedies efficiently and effectively.</p> <p>IFAD's Grievance Redress Mechanism allows affected complainants to have their concerns resolved in a fair and timely manner through an independent process. IFAD's GRM requires i) working proactively with the affected parties to resolve complaints; ii) ensuring that the complaints procedure is responsive and operates effectively; and iii) maintaining records of all complaints and their resolutions.</p> <p>The GRM guidelines, to be developed during this project's implementation and disclosed in the public domain (e.g., DOM website, public notice board at district or village level), will specify the process for receiving, evaluating and addressing project related concerns and complaints. It will also specify the channels through which a complaint or concern can be raised and describe the sequential steps and responsibilities of the parties involved.</p> <p>Grievances can be submitted in writing and verbally, and either directly by the affected households, or by a person delegated by the complainant. All grievances must be acknowledged in writing. Complaint resolution is free of charge to aggrieved person. However, if the complaints bring their case to court, they will bear the costs associated with their lawsuit. Any grievance concerning urgent health and safety issues shall be resolved immediately.</p> <p>The DOM and Project Manager are primarily responsible for establishing and maintaining the Project Grievance Logbook (PGL). The PGL will be established to record all concerns/ grievance that are submitted by project stakeholders during project implementation. In case there is serious complaint, IFAD should be notified of these complaints within 24 hours of complaint. SOFF Secretariat will be informed on findings from project grievance process through the annual report.</p>
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<p>Additional relevant policies and procedures</p>	<p>ANTI-CORRUPTION</p> <p>IFAD has a mandate to enable the rural poor to overcome poverty, and the prevention of corruption in its operations is inherent in this role. IFAD is committed to promoting and adhering to the highest standards of probity and accountability in the use of its funding and takes a zero-tolerance stance towards cases of fraud and corruption in its activities and operations, both within the institution and under its projects and programs.</p> <p>ANTI-MONEY LAUNDERING, COUNTERING THE FINANCING OF TERRORISM AND SANCTIONS</p> <p>IFAD is committed to promoting and adhering to the highest standards of probity and accountability in the use of its financing and will not tolerate the diversion of the resources entrusted to it by Member States, non-Member States and other sources. IFAD recognizes that combating money laundering and preventing terrorism financing are core components of the Fund’s development mandate and applies its Anti-Money Laundering and Countering the Financing of Terrorism Policy and its related Procedures, which aim to ensure that IFAD identifies, assesses and adequately mitigates financial crime/integrity risks so as to reduce the risk of IFAD’s exposure to serious reputational damage, financial loss or legal liability. IFAD shall use reasonable measures, in accordance with its policies and procedures, to ensure that the funds provided under this Agreement are not used for the purpose of any payment that would be prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations.</p> <p>UNSATISFACTORY CONDUCT/MISCONDUCT INCLUDING SEXUAL EXPLOITATION, ABUSE AND HARASSMENT</p> <p>1. IFAD will take appropriate measures to prevent unsatisfactory conduct/misconduct (harassment, sexual harassment, sexual exploitation and abuse, other forms of misconduct) in accordance with its policies and procedures. In the event that IFAD determines that there are credible allegations of prohibited unsatisfactory conduct/misconduct, IFAD will take swift and appropriate action to stop such behaviour, which may include disciplinary proceedings in accordance with IFAD’s applicable policies and procedures.</p> <p>2. IFAD will promptly report credible sexual exploitation, abuse and harassment (“SEA and SH”) allegations to the Member States through the Member States Interactive Platform, in accordance with its applicable policies and procedures. The level and nature of details provided on the allegations will take into consideration the obligation to respect confidentiality and the integrity of the investigation. In addition, information on closed investigations of unsatisfactory conduct/misconduct, including SH and SEA, will also be disclosed in the IFAD Office of Audit and Oversight’s publicly available Annual Report on the IFAD Investigation and Anticorruption Activities, in accordance with its applicable policies and procedures. The report will provide information on the nature, source and reporting channels of the misconduct, the findings of the investigation, and any action taken by IFAD. In addition to the above, IFAD will also report credible SEA allegations to the UN SEA tracker dedicated to the reporting of allegations of SEA.</p> <p>MONITORING AND EVALUATION:</p> <p>Performance Monitoring: IFAD and DOM, in consultation with the PA, will develop guidelines for tracking project progress and outcomes through regular supervision missions (monitoring visits) and project M&E (in relation to the log frame).</p>
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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	Description
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_13.1	% TARGET_13.2	% TARGET_13.3	% TARGET_13.b	% TARGET_5.5	% Total
WMO	5	40	40	10	5	100
IFAD	5	40	40	10	5	100
Total contribution by target	10	80	80	20	10	
Project contribution to SDG by target	5	40	40	10	5	100

Project Results

Outcome	Output	Description
1. GBON institutional and human capacity developed		
	1.1 National consultations, including with CSOs and other relevant stakeholders conducted	

Outcome	Output	Description			
Activities					
Title		Description	Lead Participating Organization	Participating Organization	Other Organizations
1.1.1 Project inception event		Project initiation event with all relevant Development Partners to raise awareness of the SOFF plans and to ensure coordination	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office, UK
1.1.2 Development of a Communications strategy		A communications strategy around advocacy for improved forecast, warning, and climate information services is developed and presented to government. Includes development of communication materials.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Consulting Firm
1.1.3 Stakeholder engagement event (national level)		Stakeholder engagement event(s) to highlight the benefits of SOFF and the opportunities for other government agencies, leveraging EW4ALL platform.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office UK, CSO, NGO
1.1.4 Consultation and information events (local / sub-national level)		A consultation and information event to be held with CSOs (including those focused on women's empowerment) and communities in locations of the GBON stations to brief them on the local implementation of SOFF and the importance of routine and accurate weather observations. Free Prior and Informed Consent (FPIC) will be undertaken, and project will create awareness of Grievance Redress Mechanism (GRM). Five sub-national meetings in the first year of project implementation, and another round halfway through the project to ensure stakeholder engagement and grievance redressal.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, CSO, NGO

Outcome	Output		Description		
	1.1.5 Internal project initiation and planning workshop and Routine project meetings	On the approval of the SOFF Investment Phase Funding Request, an internal planning workshop (5 days, pre or post inception) including the DOM, the Peer Advisor (UK Met Office) and the Implementing Entity. Routine Half yearly meetings with Ministry officials to update on SOFF progress and to advocate for DOM	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office UK
	1.1.6 Project board meetings	Project board meetings and steering committee meeting between DOM, MOWRAM and other government officials involved in governance and management	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	MOWRAM, DOM
	1.2 NMHS institutional capacity required to operate the GBON network developed				

Outcome	Output	Description			
Activities					
Title		Description	Lead Participating Organization	Participating Organization	Other Organizations
1.2.1 Development of a workforce plan		Develop a workforce plan for the DOM. Including the development of DOM business model linked to GBON Network sustainability / operational plan. Legal arrangements with MOWRAM are reviewed and updated to ensure formal support and ongoing provision for observing staff and recognition of their responsibilities	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Consulting Firm
1.2.2 Regional coordination and collaboration event		Regional collaboration / coordination (training and procurement) with neighbouring countries and regional projects for the management, maintenance and calibration of the GBON network. DOM to collaborate with neighbouring NMHSs on the implementation of WIS2.0 including JMA and regional countries (through ASEAN)	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	ASEAN Specialized Meteorological Centre (ASMC)
1.2.3 Maintenance, calibration and meta-data logs		Development of maintenance, calibration, and meta-data logs	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM
1.2.4 GBON Quality Management System (QMS)		Development of a DOM GBON quality management system (QMS), including data handling, processing, data archiving, and certifications / standards if any	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM
1.2.5 SOPs related to the installation, operations and maintenance of surface observations network		Develop robust Standard Operating Procedures for the safe and reliable operation of the surface observations network	WMO - WMO (World Meteorological Organization)	<ul style="list-style-type: none"> IFAD - IFAD (International Fund for Agricultural Development) 	DOM

Outcome	Output		Description		
	1.2.6 SOPs related to the installation, operations and maintenance of new upper-air stations	Develop robust Standard Operating Procedures for the safe and reliable operation of the upper-air station	WMO - WMO (World Meteorological Organization)	<ul style="list-style-type: none"> • IFAD - IFAD (International Fund for Agricultural Development) 	DOM
	1.2.7 Training related to the installation, operations and maintenance of new upper-air stations	Provide for technical training on the safe operation and basic maintenance of hydrogen use and storage	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> • WMO - WMO (World Meteorological Organization) 	DOM
	1.3 NMHS human capacity required to operate the GBON network developed				

Outcome	Output	Description		
Activities				
Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
1.3.1 Project Management Unit	Recruit a Project Management Unit to be responsible for project management, financial planning, regional coordination and communication, and advocacy with the owning Ministry (Project Manager with Meteorology background, National Procurement Expert, National Admin and Finance Expert, Interpreter and Translation Services) as well as IFAD Oversight and Technical Support and IFAD Partnership and Programme Coordinator	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM
1.3.2 Training Needs Assessment	Carry out a Training Needs Assessment and, on the basis of the Assessment, devise and deliver a training plan for senior managers, technical managers, and other staff (including gender self-assessment of DOM / MOWRAM), Develop Training materials on Training for managers on Leadership and Management, Project Management, Financial Management, Human Resource Management, etc.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Consulting Firm
1.3.3 Training modules and materials repository	Develop a repository of reusable training materials for use in both foundational and refresher training. This will include self-paced online training modules that are delivered through DOM/MOWRAM intranet or website	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Consulting Firm
1.3.4 Training events for managers	Training for managers on Leadership and Management, Project Management, Financial Planning, Human Resource Management, etc.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM

Outcome	Output		Description		
	1.3.5 Trainings, including refresher training, on technical aspects to GBON	Ongoing programme of formal and informal refresher training on the maintenance and calibration of instruments, and the upkeep of ICT systems, for existing technical staff and foundation training for all new technical staff	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Consulting Firm
	1.3.6 SECAP 2021 and GESI training	SECAP 2021 and Gender, Equality and Social Inclusion (GESI) training to ensure that ESG and GESI is mainstreamed into DoM modernization plans and working practices (based on output of 1.3.2)	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM
	1.3.7 Risk mitigation, including SECAP, for the installation, operations and maintenance of new upper-air stations	Ensure that social, environmental and sustainability considerations are incorporated into all procurement, installation and operational plans, specifically in line with IFAD SECAP 2021	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM
2. GBON infrastructure in place					
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place				

Outcome	Output	Description			
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	2.2.1 Improvement of existing land-based stations	Upgrade five existing land-based stations to GBON standard, including the development of Terms of Reference and specification for the procurement and Service Level Agreements with instrument manufacturers	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	DOM, Met Office UK
	2.2.2 Spare parts for AWS instrumentation	Provide for the purchase of a full set of spares for AWS instrumentation and for their proper storage.	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	DOM, Met Office UK
	2.2.3 State-of-the-art meteorological data collection and management systems	Review all available solutions for upgrading and replacing the ICT meteorological data collection and management systems, and support the design and specification of a state-of-the-art replacement system	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	DOM, Met Office UK
	2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place				
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	2.3.1 Installation of new upper-air stations	Establish a new Upper-Air station at Kour Srov (Phnom Penh) and the purchase of hydrogen canisters and other consumables, including year 3 practice / bursts / etc.	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	DOM, Met Office UK
3. Sustained compliance with GBON					

Outcome	Output	Description			
	<p>3.1 GBON land-based stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority</p>				
Activities					
Title		Description	Lead Participating Organization	Participating Organization	Other Organizations
3.1.1 Commissioning of land-based stations		Operational costs of Commissioning Period for 5 stations including, network management, O&M, staff travel, etc.	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office Uk
3.1.2. Licensing and support fees for ICT associated with commissioned land-based stations		Ongoing license and support fees for ICT data collection and management system	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office Uk
3.1.3 Routine calibration service for equipment		Calibration service for equipment. While CREWS will purchase field calculation checking kits, this will calibrate the equipment for GBON standards	IFAD - IFAD (International Fund for Agricultural Development)	<ul style="list-style-type: none"> WMO - WMO (World Meteorological Organization) 	DOM, Met Office Uk
3.1.4 Advisory support for land-based stations		Commissioning period PA monitoring, advice and support	WMO - WMO (World Meteorological Organization)	<ul style="list-style-type: none"> IFAD - IFAD (International Fund for Agricultural Development) 	DOM, Met Office Uk
	<p>3.2 GBON upper air stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority</p>				

Outcome	Output	Description			
	Activities				
	Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
	3.2.1 Commissioning of upper-air stations	Operational costs of Commissioning Period for upper air station including, network management, O&M, consumables, staff travel, etc.	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	Met Office UK, Vendor – competitive selection
	3.2.2. Licensing and support fees for ICT associated with commissioned upper-air stations	Ongoing license and support fees for ICT data collection and management system	IFAD - IFAD (International Fund for Agricultural Development)	• WMO - WMO (World Meteorological Organization)	Met Office UK, Vendor – competitive selection
	3.2.3 Advisory support for upper-air stations	Commissioning period PA monitoring, advice and support	WMO - WMO (World Meteorological Organization)	• IFAD - IFAD (International Fund for Agricultural Development)	Met Office UK

Signature Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Link Out / Or
No signature indicators available.												

Imported Fund Outcome / Output Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
Number of land-based stations improved		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Investment	At closure	Country	Number	0	2026	5	2030
Number of new upper-air stations installed		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Investment	At closure	Country	Number	0	2026	1	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
GBON land-based stations' commissioned		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Policy	At closure	Country	Number	0	2026	5	2030
GBON upper air stations' commissioned		Number of stations as defined in the National Contribution Plan.	Progress updates/Annual or quarterly reports	Policy	At closure	Country	Number	0	2026	1	2030

Project Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
1.1.1 Project inception event		Project initiation event with all relevant Development Partners to raise awareness of the SOFF plans and to ensure coordination	Annual or semi-annual progress updates	Beneficiaries	At closure	Country	Number	0	2025	1	2026
No components available.											
1.1.2 Development of a Communications strategy		A communications strategy around advocacy for improved forecast, warning, and climate information services is developed and presented to government . Includes development of communication materials.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2026	10	2027

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
	# of Communication materials developed	One Communication strategy and communication materials (posters, videos for social media and DOM website, Op-eds in newspapers , blog articles, etc. In Khmer but with English subtitles). Target for communication materials is disaggregated as below, but these are highly preliminary since final materials will be based on context-specific needs and recommendations: one op-ed each year; four professionally produced 60-second videos for educational storytelling (one on SOFF project; one on DOM's role in Cambodia; two showcasing GBON surface and upper-air stations); two 7-15 minutes video on evolution of weather forecasting in Cambodia and the impact of DOM on	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2026	13	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
		people and their lives; 2 posters designed for display at provincial and district offices; 1 downloadable briefing note targeting journalists who want to report on DOM/SOFF/GBON with a small library of professional photos (Creative Commons License) that can be used in the accompanying report.									
1.1.3 Stakeholder engagement event (national level)		Stakeholder engagement event(s) to highlight the benefits of SOFF and the opportunities for other government agencies, leveraging EW4ALL platform.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2026	1	2026
	% of female participation in the stakeholder workshops		Annual or semi-annual progress updates	Capacity	At closure	Country	Percentage	0	2026	30	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
1.1.4 Consultation and information events (local / sub-national level)		A consultation and information event to be held with CSOs (including those focused on women's empowerment) and communities in locations of the GBON stations to brief them on the local implementation of SOFF and the importance of routine and accurate weather observations. Free Prior and Informed Consent (FPIC) will be undertaken, and project will create awareness of Grievance Redress Mechanism (GRM). Five sub-national meetings in the first year of project implementation, and another round halfway through the project to ensure stakeholder engagement and grievance redressal.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	10	2029
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of Internal project initiation and planning workshop and Routine project meetings		On the approval of the SOFF Investment Phase Funding Request, an internal planning workshop (5 days, pre or post inception) including the DOM, the Peer Advisor (UK Met Office) and the Implementing Entity. Routine Half yearly meetings with Ministry officials to update on SOFF progress and to advocate for DOM	Annual or semi-annual progress updates	Other	At closure	Country	Number	0	2025	10	2030
	# of meeting participants per meeting			Other	At closure	Country	Number	0	2026	10	2030
1.1.6 Project board meetings		Project board meetings and steering committee meeting between DOM, MOWRAM and other government officials involved in governance and management	Annual or semi-annual progress updates	Other	At closure	Country	Number	0	2025	4	2030
	No components available.										

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of workforce plan		Develop a workforce plan for the DOM. Including the development of DOM business model linked to GBON Network sustainability / operational plan. Legal arrangements with MOWRAM are reviewed and updated to ensure formal support and ongoing provision for observing staff and recognition of their responsibilities	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2026	1	2027
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of Regional coordination and collaboration events		Regional collaboration / coordination (training and procurement) with neighbouring countries and regional projects for the management, maintenance and calibration of the GBON network. DOM to collaborate with neighbouring NMHSs on the implementation of WIS2.0 including JMA and regional countries (through ASEAN)	Annual or semi-annual progress updates	Capacity	At closure	Others	Number	0	2026	2	2030
No components available.											
# of Suitable guideline documents metadata logs for station information, calibration and maintenance developed and implemented		Development of maintenance, calibration, and metadata logs	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	1	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of QMS for GBON related data handling developed and implemented		Development of a DOM GBON quality management system (QMS), including data handling, processing, data archiving, and certifications / standards if any	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	1	2030
No components available.											
# of SOPs related to the installation, operations and maintenance of surface observations network		Develop robust Standard Operating Procedures for the safe and reliable operation of the surface observations network	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	1	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of SOPs related to the installation, operations and maintenance of new upper-air stations		Develop robust Standard Operating Procedures for the safe and reliable operation of the upper-air station	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	1	2030
No components available.											
# of training related to the installation, operations and maintenance of new upper-air stations		Provide for technical training on the safe operation and basic maintenance of hydrogen use and storage	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	4	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of staff/consultants in SOFF PMU at DOM		Recruit a Project Management Unit to be responsible for project management, financial planning, regional coordination and communication, and advocacy with the owning Ministry (Project Manager with Meteorology background, National Procurement Expert, National Admin and Finance Expert, Interpreter and Translation Services) as well as IFAD Oversight and Technical Support and IFAD Partnership and Programme Coordinator	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	4	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of Training Needs Assessment report		Carry out a Training Needs Assessment and, on the basis of the Assessment, devise and deliver a training plan for senior managers, technical managers, and other staff (including gender self-assessment of DOM / MOWRAM), Develop Training materials on Training for managers on Leadership and Management, Project Management, Financial Management, Human Resource Management, etc.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	1	2026
No components available.											
# of training packages modules (offline, online)		Develop a repository of reusable training materials for use in both foundational and refresher training. This will include self-paced online training modules that are delivered through DOM/MOWRAM intranet or website	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	8	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of Training events for managers		Training for managers on Leadership and Management, Project Management, Financial Planning, Human Resource Management, etc.	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	4	2030
	# 200 of Participants (sex-disaggregated)		Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	200	2030
# of Trainings, including refresher training, on technical aspects to GBON		Ongoing programme of formal and informal refresher training on the maintenance and calibration of instruments, and the upkeep of ICT systems, for existing technical staff and foundation training for all new technical staff	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	12	2030
	# of participants			Capacity	At closure	Country	Number	0	2026	600	2030
	% of female participation			Capacity	At closure	Country	Text	0	2026	30	2030

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of SECAP 2021 and GESI training		SECAP 2021 and Gender, Equality and Social Inclusion (GESI) training to ensure that ESG and GESI is mainstreamed into DoM modernization plans and working practices (based on output of 1.3.2)	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	2	2030
	# of participants			Capacity	At closure	Country	Number	0	2026	300	2030
	% of female participation			Capacity	At closure	Country	Percentage	0	2026	30	2030
# of Risk mitigation, including SECAP, for the installation, operations and maintenance of new upper-air stations		Ensure that social, environmental and sustainability considerations are incorporated into all procurement, installation and operational plans, specifically in line with IFAD SECAP 2021	Annual or semi-annual progress updates	Capacity	At closure	Country	Number	0	2025	4	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of spare kits procured for surface observation network		Provide for the purchase of a full set of spares for AWS instrumentation and for their proper storage.	Annual or semi-annual progress updates	Investment		Country	Number	0	2025	1	2030
No components available.											
# of kits for equipment calibration		Review all available solutions for upgrading and replacing the ICT meteorological data collection and management systems, and support the design and specification of a state-of-the-art replacement system	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2025	1	2027
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of Licensing and support fees for ICT associated with commissioned land-based stations		Ongoing license and support fees for ICT data collection and management system	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2025	1	2030
No components available.											
# of Routine calibration service for equipment		Calibration service for equipment. While CREWS will purchase field calculation checking kits, this will calibrate the equipment for GBON standards	Annual or semi-annual progress updates	Investment	At closure	Country	Number	0	2025	1	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of meetings, monitoring visits, and reports- Advisory support for g of land-based stations		Commissioning period PA monitoring, advice and support	Annual or semi-annual progress updates SOFF Compliance tool	Capacity	At closure	Country	Number	0	2025	4	2030
No components available.											
# of Licensing and support fees for ICT associated with commissioned upper-air stations		Ongoing license and support fees for ICT data collection and management system	Annual or semi-annual progress updates SOFF Compliance tool	Investment	At closure	Country	Number	0	2025	1	2030
No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year
# of meetings, monitoring visits, and reports- Advisory support for g of upper-air stations		Commissioning period PA monitoring, advice and support	Annual or semi-annual progress updates SOFF Compliance tool	Capacity	At closure	Country	Number	0	2025	4	2030
No components available.											

Risks

Event	Category	Level	Likelihood	Impact	Mitigating Measures	Risk Owner
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<p>Challenges in Cooperation, Joint coordination and misalignment of goals and processes.</p>	<ul style="list-style-type: none"> • Strategic 	<p>High</p>	<p>Possible</p>	<p>Moderate</p>	<p>During project design, IFAD, Peer Advisers and DOM have put in place a coordination mechanism to enhance communication and planning. This will be continued throughout the Investment phase. IFAD will retain dedicated resources to strengthen cooperation, joint coordination and alignment with both project stakeholders and with other development partners in the country and across the region. Finally, this SOFF project was designed, with guidance of in consultation with SOFF Secretariat, to build on some CREWS activities and outputs. This implied, for example at the time of design, that SOFF activities and budget had to be readjusted in final stage: for example, to account for the possibility that WIS 2.0 will not be available when SOFF requires. Similarly, another dependency is field calibration check equipment and associated training. During implementation, PA, IFAD and DOM will continue to coordinate with CREWS to monitor changes and discuss implications for SOFF deliverables.</p>	<p>IFAD, DOM, Peer Advisers</p>
<p>Non-compliance with fiduciary and procurement standards in some SOFF activities</p>	<ul style="list-style-type: none"> • Financial 	<p>High</p>	<p>Possible</p>	<p>Moderate</p>	<p>A financial management due diligence assessment will be performed prior to the signing of the grant agreement between RGC and IFAD. Based on the findings of this assessment, necessary actions and mitigation measures will be established and agreed upon. To enhance accountability and transparency, the project will include IFAD's templates of self-certification forms (on ethical conduct consistent with IFAD integrity policies) for bidders and contractors in the bidding document/RFP and contract documents. IFAD procurement systems will closely monitor bidding.</p>	<p>IFAD, DOM</p>

SOFF-funded investments cause environmental or social impacts	<ul style="list-style-type: none"> • Social and Environmental 	High	Possible	Moderate	<p>Social, environmental and climate risks and impacts associated to project activities have been identified and assessed as described in the Social and Environmental Safeguards section. Relevant mitigation measures, including waste management plans and procurement requirements on handling, transport and storage of explosive or hazardous materials, will be implemented to ensure adequate risk management during implementation. The risk level is assessed as "High" to correspond to SOFF risk categorization (Low, Medium, High, Very High), whereas IFAD assessed the risk as "Substantial" in accordance with its SECAP 2021 risk categories (Low, Moderate, Substantial, High).</p>	DOM, IFAD
NMHS staff depart after being trained	<ul style="list-style-type: none"> • Operational 	High	Possible	Moderate	<p>SOFF Readiness phase identified the lack of staff numbers (in addition to skills) as a significant gap. Significant staff turnover due to government processes is also of concern. A workforce management plan will be developed for DOM to inform Human Resource planning and facilitate clear identification of roles and responsibilities. Further, a training programme for management-level staff will be put in place to increase career development opportunities with DOM. Standard Operating Procedures (SOPs) and training of trainer manuals / online training sessions for mandatory trainings will further mitigate loss of institutional knowledge should unavoidable transfers occur, particularly at senior management levels, and facilitate onboarding and refresher training.</p>	DOM, MOWRAM
Operational efficiency risk, causing low implementation and delays in procurement, installation and capacity building activities, resulting in failure of the project	<ul style="list-style-type: none"> • Operational 	Medium	Unlikely	Moderate	<p>Project includes dedicated procurement and finance experts in PMU to secure stable human resources for implementation. The recruitment and request for proposal (RFP) processes will be launched early so that key project staff and service providers are contracted in a timely manner after the project effectiveness date. Project staff will be included in the IFAD-led coaching and on-the-job trainings for the CAISAR project (IFAD project procurement guidelines and manual, ICP, NOTUS, and Standard Operating Procedures on Procurement for All Externally Financed Projects/Programs in Cambodia). PMU will monitor and update regularly implementation progress of the procurement plan with both planned and actual data.</p>	DOM, IFAD

<p>After the conclusion of the Investment phase, GBON data are not collected or shared or are shared of insufficient quality</p>	<ul style="list-style-type: none"> Operational 	<p>Medium</p>	<p>Unlikely</p>	<p>Major</p>	<p>The project includes several measures that focus on robustness of data collection and sustained data sharing and archiving. A GBON Quality Management System (QMS) will be put in place. DOM's ICT systems for meteorological data collection and management will be reviewed and upgraded with a state-of-the-art replacement system. A Standard Operations Procedure, including calibration of equipment, for the reliable and safe operation of surface and upper air network will be put in place for data quality and control. Relatedly, the project will also support the development of DOM's capacity on maintenance, calibration and meta-logs. Finally, in order to contribute to global data sharing and analysis, and create additional revenue streams, DOM intends to participate in the compliance phase of SOFF. This will incentivize continued institutional strengthening beyond the investment phase.</p>	<p>DOM, MOWRAM</p>
<p>Destruction or theft of SOFF-financed equipment and infrastructure</p>	<ul style="list-style-type: none"> Operational 	<p>Medium</p>	<p>Unlikely</p>	<p>Moderate</p>	<p>There is no significant history of theft or damage to DOM equipment in Cambodia, and the stations are planned to be sited within existing stations to enhance security. Housing structures for equipment will be designed to prevent accidental or unauthorized access, encroachment and theft, including through fencing. Sites will be manned 24/7 by DOM staff.</p>	<p>DOM</p>
<p>Countries cannot make optimal use of data, including accessing or using improved forecasts products from the Global Producing Centers throughout the hydromet value chain</p>	<ul style="list-style-type: none"> Strategic 	<p>High</p>	<p>Possible</p>	<p>Moderate</p>	<p>The Readiness phase identified several national government agencies that avail DOM services and data across a range of application areas. In line with Readiness stage recommendations, this project will commence with a stakeholder engagement event to increase awareness of DOM, the critical role that GBON infrastructure plays, highlight the benefits of this SOFF project, and identify opportunities for collaboration with public and private actors. A Communication Strategy will be developed to advocate for better use of data and evidence on weather and climate and provide advocacy for DOM, particularly at the Ministerial level. Finally, the project will enhance regional collaboration, with a focus on Mekong region countries, through the Association of Southeast Asian Nations (ASEAN) Specialised Meteorological Center as well as JMA. This will take the form of data sharing for monitoring and forecasting purposes as well as shared training and peer-learning events.</p>	<p>DOM, MOWRAM</p>

Political instability and regulatory risks which will impact the successful completion of the Investment Phase	<ul style="list-style-type: none"> Political 	Medium	Unlikely	Moderate	The project has received strong support from MOWRAM, the host ministry of DOM. It is aligned with Cambodia's international commitments to improve its GBON infrastructure. It is further aligned with priority adaptation actions, specifically to improve national weather / and early warning system, as identified in Cambodia's updated Nationally Determined Contributions (NDCs) in 2020 and Cambodia Climate Change Strategic Plan (CCCSP) 2014–2023. IFAD will monitor any emerging political and regulatory changes, by closely coordinating with DOM and MOWRAM, and take necessary actions in a timely manner.	MOWRAM, DOM, IFAD
Capacity gaps in technical skills after completion of the investment phase	<ul style="list-style-type: none"> Organizational 	High	Possible	Major	The SOFF Readiness phase resulted in a comprehensive assessment of DOM's capacities, including budgetary allocation towards training. This assessment will be complemented through a Training Needs Assessment (TNA) during the implementation phase. The TNA is intended to ensure that priority capacity gaps (technical, management) are further validated in the early stages of implementation and addressed through a well-development programme. Trainers will also be identified from within DOM to conduct trainings for new recruits or engage in refresher training, with the support of Training of Trainers (ToT) manuals. To the extent feasible, online and self-paced training materials will be developed and rolled out. Throughout implementation, IFAD and the peer advisor – in consultation with DOM, will assess the adequacy of training events (topics, duration, target participants) and engage in adaptive management. Also, crucially, a Workforce Management Plan will assess the gaps in human resource capacity at DOM and enable evidence-based planning and national budgetary requests by DOM to ensure sufficient technical personnel are recruited and retained.	DOM, Peer Advisers, IFAD
Natural disasters	<ul style="list-style-type: none"> Operational 	High	Likely	Moderate	A preliminary list of potential risks and impacts to project activities is identified in environmental and social safeguards section with a list of mitigation measures. These will be updated during implementation.	DOM, IFAD

Budget by UNSDG Categories: Over all

Budget Lines	Description	IFAD (7%) *	WMO (7%) *	Total
1. Staff and other personnel		\$588,500.00	\$0.00	\$588,500.00

Budget Lines	Description	IFAD (7%) *	WMO (7%) *	Total
2. Supplies, Commodities, Materials		\$1,120,000.00	\$0.00	\$1,120,000.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation		\$6,000.00	\$0.00	\$6,000.00
4. Contractual services		\$780,000.00	\$414,276.00	\$1,194,276.00
5. Travel		\$0.00	\$0.00	\$0.00
6. Transfers and Grants to Counterparts		\$613,125.00	\$0.00	\$613,125.00
7. General Operating and other Direct Costs		\$465,000.00	\$0.00	\$465,000.00
Project Costs Sub Total		\$3,572,625.00	\$414,276.00	\$3,986,901.00
8. Indirect Support Costs		\$250,083.75	\$28,999.32	\$279,083.07
Total		\$3,822,708.75	\$443,275.32	\$4,265,984.07

Performance-based Tranches Breakdown

Tranche			Total
Tranche 1	IFAD (60%)	\$2,293,625.40	\$2,441,368.96
	WMO (33.33%)	\$147,743.56	
Tranche 2	IFAD (40%)	\$1,529,083.60	\$1,676,827.16
	WMO (33.33%)	\$147,743.56	
Tranche 3	IFAD (0%)	\$0.00	\$147,787.89
	WMO (33.34%)	\$147,787.89	
			\$4,265,984.00

Results based budget

Outcome *	Output *	Agency *	Budget (USD) *
1. GBON institutional and human capacity developed		Sub Total	\$2,338,351.00
	1.1 National consultations, including with CSOs and other relevant stakeholders conducted	IFAD (7%)	\$315,625.00
	1.1 National consultations, including with CSOs and other relevant stakeholders conducted	WMO (7%)	\$73,216.00
	1.2 NMHS institutional capacity required to operate the GBON network developed	IFAD (7%)	\$1,172,000.00
	1.2 NMHS institutional capacity required to operate the GBON network developed	WMO (7%)	\$244,670.00
	1.3 NMHS human capacity required to operate the GBON network developed	IFAD (7%)	\$490,000.00
	1.3 NMHS human capacity required to operate the GBON network developed	WMO (7%)	\$42,840.00
2. GBON infrastructure in place		Sub Total	\$1,125,674.00
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	IFAD (7%)	\$475,000.00
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	WMO (7%)	\$79,254.00
	2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place	IFAD (7%)	\$550,000.00
	2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place	WMO (7%)	\$21,420.00
3. Sustained compliance with GBON		Sub Total	\$591,420.00

	3.1 GBON land-based stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	IFAD (7%)	\$260,000.00
	3.1 GBON land-based stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	WMO (7%)	\$21,420.00
	3.2 GBON upper air stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	IFAD (7%)	\$310,000.00
Total			\$4,055,445.00

Programme Outcome Costs

Outcome	Output	Activity	Implementing Agent	Time Frame				
				2026	2027	2028	2029	2030
				1	1	1	1	1
1. GBON institutional and human capacity developed								
	1.1 National consultations, including with CSOs and other relevant stakeholders conducted							
	1.1.1 Project inception event							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.1.2 Development of a Communications strategy							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input type="checkbox"/>				
	1.1.3 Stakeholder engagement event (national level)							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.1.4 Consultation and information events (local / sub-national level)							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>				
	1.1.5 Internal project initiation and planning workshop and Routine project meetings							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.1.6 Project board meetings							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input checked="" type="checkbox"/>				
	1.2 NMHS institutional capacity required to operate the GBON network developed							
	1.2.1 Development of a workforce plan							
			IFAD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2.2 Regional coordination and collaboration event							
			IFAD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2.3 Maintenance, calibration and meta-data logs							
			IFAD	<input type="checkbox"/>				
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2.4 GBON Quality Management System (QMS)							
			IFAD	<input type="checkbox"/>				
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.2.5 SOPs related to the installation, operations and maintenance of surface observations network							
			IFAD	<input type="checkbox"/>				
			WMO	<input checked="" type="checkbox"/>				
	1.2.6 SOPs related to the installation, operations and maintenance of new upper-air stations							
			IFAD	<input type="checkbox"/>				

Outcome	Output	Activity	Implementing Agent	Time Frame				
				2026	2027	2028	2029	2030
				1	1	1	1	1
			WMO	<input checked="" type="checkbox"/>				
		1.2.7 Training related to the installation, operations and maintenance of new upper-air stations						
			IFAD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3 NMHS human capacity required to operate the GBON network developed							
	1.3.1 Project Management Unit							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input type="checkbox"/>				
	1.3.2 Training Needs Assessment							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3.3 Training modules and materials repository							
			IFAD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1.3.4 Training events for managers							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input type="checkbox"/>				
	1.3.5 Trainings, including refresher training, on technical aspects to GBON							
			IFAD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1.3.6 SECAP 2021 and GESI training							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>				
	1.3.7 Risk mitigation, including SECAP, for the installation, operations and maintenance of new upper-air stations							
			IFAD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>				
2. GBON infrastructure in place								
	2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place							
	2.2.1 Improvement of existing land-based stations							
			IFAD	<input checked="" type="checkbox"/>				
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2.2.2 Spare parts for AWS instrumentation							
			IFAD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>				
	2.2.3 State-of-the-art meteorological data collection and management systems							
			IFAD	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			WMO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	2.3 New upper-air stations and related equipment, ICT systems, data management systems and standard operating practices in place							
	2.3.1 Installation of new upper-air stations							
			IFAD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			WMO	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sustained compliance with GBON								
	3.1 GBON land-based stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority							
	3.1.1 Commissioning of land-based stations							
			IFAD	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			WMO	<input type="checkbox"/>				
	3.1.2. Licensing and support fees for ICT associated with commissioned land-based stations							

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

1. Purpose and scope

These Terms of Reference describe the provision of technical advisory services by the UK Met Office to the Cambodian Department of Meteorology to contribute to the delivery of the SOFF Investment Phase outputs as described in Section 3.

The Terms of Reference are based on the [SOFF Operational Manual](#), Section 4.4.3 on the Operational Partners and Section 4.5.2 on the Investment Phase; as well as on the [SOFF Investment Framework](#), Section 4.5 on the Peer Advisors and WMO Technical Authority.

2. Roles and responsibilities

Beneficiary country National Meteorological and Hydrological Service

- Is responsible for implementing the activities of the SOFF Investment Phase activities with the support of the Implementing Entity and the peer advisor.
- Submits the SOFF Investment Phase funding request using the standardized template provided by the SOFF Secretariat, including the Terms of References for the peer advisor's technical advisory services during the Investment Phase.
- Is responsible for collaborating with the Implementing Entity to provide all the necessary information, participate in and facilitate the national activities that the Implementing Entity and peer advisor need to conduct in order to deliver the SOFF Investment Phase outputs.
- Confirms the completion of all the Investment Phase activities and provides comments as needed on the final report prepared by the Implementing Entity.

Peer advisor

- Is accountable to the beneficiary country and the Implementing Entity.
- Is contracted via the WMO pass-through mechanism and operates on a cost-recovery basis.
- Provides technical advisory services to support beneficiary countries and Implementing Entities in the design and implementation of the SOFF Investment Phase activities.
- Contributes to the final report of the SOFF Investment Phase.

Implementing Entity

- Prepares the Investment Phase funding request in collaboration with the beneficiary country and the peer advisor, including the Terms of References for the provision of technical advisory services during the SOFF Investment Phase.
- Manages the Investment Phase activities following the terms specified in the funding request and in collaboration with relevant national partners, including civil society organizations.

- Delivers the Investment phase outputs and is responsible for their quality and timely delivery, in coordination with the country and the peer advisor.
- Provides quarterly updates to the SOFF Secretariat according to a simple standardized form and annual reports according to the United Nations Multi-Partner Trust Fund Office's reporting requirements indicated in the legal agreements.
- Informs the SOFF Secretariat of circumstances that could materially impede the implementation of the Investment phase or any considerable deviation in the conditions of the funding request to achieve its objectives.
- Submits the final report to the SOFF Secretariat including the beneficiary country's comments and the peer advisors' feedback. The final report describes the institutional arrangements to secure sustained operation and maintenance of the investments made.

WMO Technical Authority

- Provides basic on-demand technical assistance to the beneficiary country, Implementing Entity and peer advisor on GBON regulations, including on monitoring and assessing the data-sharing status of the stations using the WDQMS web tool¹
- Is responsible for the verification of data sharing of the new or rehabilitated surface and upper -air stations as per GBON regulations.
- WMO provides a verification report to the SOFF Secretariat, upon which the Investment Phase can be considered completed.
- Establishes and administers the pass-through mechanism for contracting and funding of the advisory services provided by the peer advisors.

SOFF Secretariat

- Facilitates communication, coordination and collaboration between the beneficiary country, the Implementing Entity, the peer advisor and WMO Technical Authority.
- Reviews the SOFF Investment Phase funding request, including the Terms of Reference for the provision of technical advisory services and provides feedback as needed. Then transmits the funding request to the SOFF Steering Committee for their decision.
- Compiles quarterly updates and annual reports and monitors implementation based on information received from the Implementing entity, the peer advisor and the beneficiary country. Regularly informs the Steering Committee of progress.
- Coordinates regional implementation approaches to the SOFF Investment Phase.
- Confirms receipt of the final report by the Implementing Entity and completion of the Investment Phase based on WMO verification of data sharing.
- Organizes exchange of knowledge and experiences and captures lessons learned.

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

3. Peer advisors’ activities during the SOFF Investment Phase

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

Output	Indicator <small>(Please copy the indicators from RBM section of the Investment Funding request.)</small>	Activities conducted / contributions <small>(Please list all activities that will be conducted by the peer advisor relevant to the output. Please add rows if more than one activity will be conducted.)</small>	Implementation plan				
			Y1	Y2	Y3	Y4	Y5
1.1 National consultations , including with CSOs and other relevant stakeholders conducted	1.1.1 Project initiation event with all relevant Development Partners to raise awareness of the SOFF plans and to ensure coordination.	Attend and contribute to project inception event.	X				
	1.1.2 A communications strategy around advocacy for improved forecast, warning, and climate information services is developed and presented to government. Includes development of communication materials.	Nil.					
	1.1.3 Stakeholder engagement event(s) to highlight the benefits of	Review and contribute to draft documents.	X				

Output	Indicator <small>(Please copy the indicators from RBM section of the Investment Funding request.)</small>	Activities conducted / contributions <small>(Please list all activities that will be conducted by the peer advisor relevant to the output. Please add rows if more than one activity will be conducted.)</small>	Implementation plan				
			Y1	Y2	Y3	Y4	Y5
	SOFF and the opportunities for other government agencies, leveraging EW4ALL platform.						
	1.1.4 A consultation and information event to be held with CSOs (including those focused on women's empowerment) and communities in locations of the GBON stations to brief them on the local implementation of SOFF and the importance of routine and accurate weather observations and engage in Free Prior and Informed Consent FPIC) and create awareness of Grievance Redress Mechanism (GRM). Five sub-national meetings in the first year	Nil.					

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			Y1	Y2	Y3	Y4	Y5	
	of project implementation, and another round halfway through the project to ensure stakeholder engagement and grievance redressal.							
	1.1.5 On the approval of the SOFF Investment Phase Funding Request, an internal planning workshop (5 days, pre or post inception) including the DOM, the Peer Advisor (UK Met Office) and the Implementing Entity. Routine quarterly meetings with Ministry officials to update on SOFF progress and to advocate for DOM.	Attend and contribute to project initiation event (in person).	X					
	1.1.6 Routine project board meetings between DOM, MOWRAM and	Contribute to routine project meetings	X	X	X	X	X	X

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			Y1	Y2	Y3	Y4	Y5	
	other government officials involved in governance and management.							
1.2 NMHS institutional capacity required to operate the GBON network developed	1.2.1 Develop a workforce plan for the DOM. Including the development of DOM business model linked to GBON Network sustainability / operational plan. Legal arrangements with MOWRAM are reviewed and updated to ensure formal support and ongoing provision for observing staff and recognition of their responsibilities.	Review and contribute to draft documents with technical met service inputs.		X				
	1.2.2 Regional collaboration / coordination (training and procurement) with neighbouring countries	<ul style="list-style-type: none"> Co-develop a ToR for regional coordination with other development projects with respect to training. 	X	X				

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			Y1	Y2	Y3	Y4	Y5
	and regional projects for the management, maintenance and calibration of the GBON network. DOM to collaborate with neighbouring NMHSs on the implementation of WIS2.0 including JMA and regional countries (through ASEAN).	<ul style="list-style-type: none"> Work with project stakeholders to support collaboration on implementation of relevant regional solutions for eg calibration, WIS 2.0. 					
	1.2.3 Development of maintenance, calibration, and meta-data logs.	Co-develop a specification for the development of a systematic approach to planning and logging maintenance, calibration and meta-data.		X	X		
	1.2.4 Development of a DOM GBON quality management system (QMS), including data handling, processing, data archiving, and certifications / standards if any.	Co-develop a specification for the development of a quality management system.		X	X		

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			Y1	Y2	Y3	Y4	Y5
	1.2.5 Develop robust Standard Operating Procedures for the safe and reliable operation of the surface observations network.	Co-develop SOPs for management, monitoring, maintenance and calibration of GBON surface network for DOM.	X	X	X	X	X
	1.2.6 Develop robust Standard Operating Procedures for the safe and reliable operation of the upper-air station.	Co-develop SOPs for management, monitoring, maintenance and calibration of GBON upper air station for DOM.	X	X	X	X	X
	1.2.7 Provide for technical training on the safe operation and basic maintenance of hydrogen use and storage.	Co-develop and review specification documents and ToR for technical training for upper air operations.		X			
1.3 NMHS human capacity required to operate the GBON network developed	1.3.1 Recruit a Project Management Unit to be responsible for project management, financial planning, regional coordination and communication, and advocacy with the	Nil.					

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			Y1	Y2	Y3	Y4	Y5	
	owning Ministry (Project Manager with Meteorology background, National Procurement Expert, National Admin and Finance Expert, Interpreter and Translation Services) as well as IFAD Oversight and Technical Support and IFAD Partnership and Programme Coordinator.							
	1.3.2 Carry out a Training Needs Assessment and, on the basis of the Assessment, devise and deliver a training plan for senior managers, technical managers, and other staff (including gender self-assessment of DOM / MOWRAM), Develop Training materials on Training for	Review and contribute to draft documents with technical met service inputs.	X					

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			Y1	Y2	Y3	Y4	Y5	
	managers on Leadership and Management, Project Management, Financial Management, Human Resource Management, etc.							
	1.3.3 Develop a repository of reusable training materials for use in both foundational and refresher training. This will include self-paced online training modules that are delivered through DOM/MOWRAM intranet or website.	Review content of training material for inclusion in SOPs where appropriate.		X				
	1.3.4 Training for managers on Leadership and Management, Project Management, Financial Management Planning, Human Resource Management, etc.	Nil.						

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			Y1	Y2	Y3	Y4	Y5
	1.3.5 Ongoing programme of formal and informal refresher training on the maintenance and calibration of instruments, and the upkeep of ICT systems, for existing technical staff and foundation training for all new technical staff.	<ul style="list-style-type: none"> Co-develop specification and ToR for training plans. Advise on technical expertise required and the design of technical training; offer technical advice during the project. 	X	X	X	X	
	1.3.6 SECAP 2021 and Gender, Equality and Social Inclusion (GESI) training to ensure that ESG and GESI is mainstreamed into DoM modernization plans and working practices (based on output of 1.3.2).	Nil.					
	1.3.7 Ensure that environmental and sustainability considerations are incorporated into all	Nil.					

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			Y1	Y2	Y3	Y4	Y5	
	procurement, installation and operational plans, specifically in line with IFAD Social Environmental and Climate Assessment Procedures (SECAP).							
2.1 New land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place	2.2.1 Upgrade five existing land-based stations to GBON standard, including the development of Terms of Reference and specification for the procurement and Service Level Agreements with instrument manufacturers.	Co-develop and review specification documents and ToR.	X	X				

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			Y1	Y2	Y3	Y4	Y5
	2.2.2 Provide for the purchase of a full set of spares for AWS instrumentation and for their proper storage.	Nil.					
	2.2.3 Review all available solutions for upgrading and replacing the ICT meteorological data collection and management systems and support the design and specification of a state-of-the-art replacement system.	<ul style="list-style-type: none"> • Co-develop and review specification documents and ToR. • Provide technical advice on data collection, WIS 2.0 and WIGOS compliance 	X	X	X	X	
2.3 New upper air stations and related equipment, ICT systems, data management systems and standard operating practices in place	2.3.1 Establish a new Upper-Air station at Kour Srov (Phnom Penh) including and the purchase of hydrogen facilities and other consumables costs,	Co-develop and review specification documents and ToR.		X	X		

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			Y1	Y2	Y3	Y4	Y5
	including year 3 practice / bursts / etc.						
2.4 Improved upper air stations and related equipment, ICT systems, data management systems and standard operating practices in place	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3.1 GBON land-based stations' commissioning period completed , country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	<p>3.1.1 Operational costs of Commissioning Period for 5 stations including, network management, O&M, staff travel, etc.</p> <p>3.1.2 Ongoing license and support fees for ICT data collection and management system.</p> <p>3.1.3 Calibration service for equipment. While CREWS will purchase field calculation checking kits,</p>	<p>Nil.</p> <p>Nil.</p> <p>3.1.3 Co-develop and review specification documents and ToR.</p>		X	X	X	X

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			Y1	Y2	Y3	Y4	Y5
	<p>this will calibrate the equipment for GBON standards.</p> <p>3.1.4 Commissioning period PA monitoring, advice and support.</p>	<p>3.1.4 Monitor and advise DOM on GBON compliance during the Investment Phase and Commissioning Period</p>					X
<p>3.2 GBON upper air stations' commissioning period completed, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority</p>	<p>3.2.1 Operational costs of Commissioning Period for upper air station including, network management, O&M, consumables, staff travel, etc.</p> <p>3.2.2 Ongoing license and support fees for ICT data collection and management system.</p> <p>3.2.3 Commissioning period PA monitoring, advice and support.</p>	<p>Nil.</p> <p>Nil.</p> <p>3.2.3 Monitor and advise DOM on GBON compliance during the Investment Phase and Commissioning Period.</p>					X

Signatures

Peer advisor focal point	Name Title Date
Country focal point	Name Title Date