Systematic Observations Financing Facility

Investment Phase:
Annual Narrative Report

RWANDA

Year 1

Systematic Observations
Financing Facility

Weather and climate data for resilience

General Information

Country	Rwanda
Implementing Entity	United Nations Development Programme
Agreement effectiveness date	01 January 2024
Duration	48
Anticipated end date	01 January 2028
Reporting period	**From:** 03 April 2024 — **To:** 31 December 2024
Approved amount	**TOTAL**: USD3,535,377.37 UNDP: USD3,107,377.37 WMO/FMI: USD428,000.00
Disbursed amount	USD2,330,533.03
Signature of Implementing Entity	Nana Teiba Chinbuah UNDP Deputy Resident Representative (OIC)

Summary

INTRODUCTION

The United Nations Development Programme (UNDP), in partnership with the World Meteorological Organization (WMO) and the Rwanda Meteorology Agency (METEO Rwanda), have secured a four-year (Jan 2024 to Jan 2028) funding agreement of USD 3.5 million from the Systematic Observations Financing Facility (SOFF). This initiative aims to strengthen Rwanda's meteorological services, enhance the country's resilience to weather and climate-related risks, and contribute to global efforts in climate data exchange.

The SOFF project focuses on closing the critical gap in basic weather and climate observations, while supporting Rwanda's active participation in the Global Basic Observing Network (GBON), a key initiative of the WMO that facilitates the international exchange of high-quality meteorological data.

To achieve these goals, the project is structured around two main outputs:

Output 1: GBON Institutional and Human Capacity Development
This component includes national consultations with civil society organizations (CSOs) and relevant stakeholders, development of institutional frameworks, and strengthening of the human resource capacity within the National Meteorological and Hydrological Services (NMHS) to effectively manage and operate the GBON network.

Output 2: GBON Infrastructure Implementation
This involves the establishment of new land-based meteorological stations and the upgrade of existing ones, incorporating modern equipment, ICT systems, robust data management tools, and standardized operating procedures to ensure data quality and system sustainability.

The Rwanda Meteorology Agency will lead the implementation of the project, with UNDP serving as the Implementing Entity. The WMO will provide technical guidance and oversight to ensure compliance with global standards and best practices.

During the reporting period, significant strides have been made in advancing the implementation of the Rwanda SOFF (Systematic Observations Financing Facility) project:

ACHIEVED RESULTS PER OUTPUTS

Output 1.1. National consultations, including with CSOs and other relevant stakeholders conducted

Significant progress was made in fostering inclusive stakeholder engagement under this output. Key achievements include:

DS IU

DS MU

The SOFF project gained significant visibility and stakeholder engagement through strategic outreach.

SOFF Project was formally launched during the 2024 World Environment Day celebrations, a high-profile event that served as a strategic platform for engagement. As a result, awareness of the project's objectives and relevance significantly increased among around 150 key stakeholders. The event also catalyzed initial partnerships with government institutions, environmental organizations, and disaster risk management agencies, laying the groundwork for coordinated action and future collaboration.

Local ownership and alignment strengthened through targeted engagement with local authorities.

Consultations with local authorities enhanced grassroots-level understanding and support for the SOFF project. These dialogues led to improved alignment between project objectives and local development priorities, while fostering a sense of ownership among 50 local leaders. As a result, local authorities expressed commitment to facilitating implementation and integrating project activities into ongoing community initiatives.

Enhanced multi-stakeholder collaboration for improved weather and climate services.

The stakeholder consultation workshop brought together key actors including 60 participants from civil society organizations (CSOs), academia, public institutions involved in weather observation, data collection and dissemination to foster collaboration on weather observations, data sharing, and the co-development of actionable weather, climate, and water products. As a result, stakeholders agreed on initial mechanisms for data exchange and identified priority areas for joint action. This collaborative foundation supports enhanced societal resilience, more effective risk management, and progress toward sustainable development goals.

2.2 Improved land-based stations and related equipment, ICT systems, data management systems and standard operating practices in place

In a bid to enhancing Rwanda's national weather observation infrastructure. Three strategically important land-based weather stations critical components of the national monitoring network have been identified for upgrades. This selection marks a key step toward improving the accuracy and reliability of real-time, ground-level meteorological data.

Additionally, contracts for the supply and upgrade of weather station equipment, ICT systems, and data management tools have been finalized. With procurement now underway and implementation progressing on schedule, these efforts are expected to contribute directly to enhancing Rwanda's weather observation capabilities and strengthening operational efficiency in the coming phases of the project.

DS IU

DS MU

2.3 New upper air stations and related equipment, ICT systems, data management systems and standard operating practices in place

Initial steps under this output have laid important groundwork for establishing Rwanda's first upper-atmosphere observation capacity. A strategic site for the installation of a new upper-air observation station was successfully identified in Huye District, Southern Province, through close collaboration among UNDP, Meteo Rwanda, the Rwanda Civil Aviation Authority, the Rwanda Information Society Authority, and other key stakeholders.

Furthermore, the contract for the supply and installation of upper-air station equipment has been signed, and procurement is currently underway. These processes represent a critical milestone toward establishing a fully functional upper-air observation system. Once completed, this system will significantly enhance the accuracy of weather forecasts, strengthen early warning capabilities, and support Rwanda's integration into the Global Basic Observing Network (GBON), in line with international standards.

CHALLENGES AND LESSONS LEARNT

During the reporting period, the project encountered a range of implementation challenges, primarily in the areas of technical design, procurement, stakeholder engagement, and coordination. Despite these obstacles, valuable lessons were learned that will inform future phases of the project.

Key Challenges

Technical Complexity and Capacity Constraints:

The development of standard specifications for the supply and installation of the upper-air station, as well as the upgrade of three land-based stations, proved to be time-intensive. It required extensive collaboration among experts across multiple technical fields to ensure alignment with international standards and operational needs. The project management involved experts from METEO Rwanda and the project Peer Advisor in the development of specifications.

Supplier Identification and market limitations:

Identifying qualified suppliers was particularly challenging due to the limited availability of providers offering automated observation technologies. Many vendors still focus on manual systems, which do not meet the technical requirements as per the project scope.

Complex market survey process:

Conducting a comprehensive market survey was both critical and complex. It required in-

depth knowledge of available technologies, technical specifications, and pricing models to ensure accurate cost estimations and value for money in procurement decisions.

Stakeholder engagement and coordination:

Mapping and engaging relevant stakeholders including government institutions, civil society organizations (CSOs), and sector-specific actors was time and reource-intensive. In addition to identifying key participants, sustained follow-up was required to secure their active involvement in project activities and ensure inclusive participation.

Procurement process challenges:

The procurement process remained one of the most intricate aspects of project implementation. From drafting detailed technical specifications to ensuring transparency and competitiveness during supplier selection, the process demanded meticulous planning and coordination. A pre-bidding meeting helped attract and inform potential bidders but highlighted the need for continued market outreach and supplier development.

Lessons Learned

- **Early technical scoping is essential:**
  Investing more time in the early stages to define clear and standardized technical specifications helps streamline procurement and reduce delays during implementation.
- **Market development may be needed:**
  For specialized equipment, local and regional markets may lack the necessary capacity. Proactive supplier engagement and awareness-raising about technical standards can help expand the pool of qualified vendors.
- **Stakeholder mapping requires dedicated effort:**
  Early and strategic stakeholder mapping followed by consistent communication ensures broader ownership and smoother collaboration throughout the project lifecycle.
- **Procurement Planning Must Be Proactive and Inclusive:**
  A well-structured procurement plan that integrates technical, financial, and market insights is crucial. Incorporating pre-bid meetings and early market consultations improves transparency and ensures supplier readiness.

DS

DS

Progress of implementation

Output	Indicator	Target					Actual					Status	Milestones achieved	Challenges and risks
		Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5			
1. GBON institutional and human capacity developed														
1.1 **National consultations**, including with CSOs and other relevant stakeholders conducted	# of consultation workshops	1			1		1					On-track	1 stakeholders consultation workshop was conducted	
	% female participants in the workshops	50			50		60					On-track	60% of participants attended the consultation workshop	
	# of high-level dialogues organised	1			1							On-track	Project was launched during WED celebration	
1.2 **NMHS institutional capacity** required to operate the GBON network developed	# of updated processes				1							Select an item	To be implemented by WMO/Peer Advisor	
	# of people trained	3										Select an item	To be implemented by WMO/Peer Advisor	
	# gender assessment conducted	1										Select an item	To be implemented by WMO/Peer Advisor	
	# gender workshop organized			1								Select an item	To be implemented by WMO/Peer Advisor	
1.3 **NMHS human capacity** required to operate the GBON network developed	# of developed observation process				1							Select an item	To be implemented by WMO/Peer Advisor	
	# of documents (SOPs or roadmaps) updated or developed				1							Select an item	To be implemented by WMO/Peer Advisor	
	# of Meteo Rwanda staff members participated in the training on operation and maintenance of upper-air space		4	4								Select an item	To be implemented by WMO/Peer Advisor	
	% of female Meteo Rwanda staff participants in the training		50	50								Select an item	To be implemented by WMO/Peer Advisor	
	# of IT technician trained			4								Not yet started		
	# of forecasters trained			12								Not yet started		

Output	Indicator	Target					Actual					Status	Milestones achieved	Challenges and risks
		Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5			
	# data analysts trained			9								Not yet started		
	# of staff trained on maintenance and calibration of land surface stations			4								Not yet started		
	% of female participants in the training			50								Not yet started		
2. GBON infrastructure in place														
2.1 **New land-based stations** and related equipment, ICT systems, data management systems and standard operating practices in place	# of new stations installed as per the GBON National Contribution Plan	N/A										Select an item	Not planned in the project	
2.2 **Improved land-based stations** and related equipment, ICT systems, data management systems and standard operating practices in place	# of stations improved as per the GBON National Contribution Plan		3									On-track	Three land-based stations were identified, the contract for supply and upgrade was signed and the tender is under implementation	
	# standard operating practices updated				1							Select an item	To be implemented by WMO/Peer Advisor	
2.3 **New upper air stations** and related equipment, ICT systems, data management systems and standard operating practices in place	# of new stations installed as per the GBON National Contribution Plan		1									On-track	Site for installation was identified, the contract for supply and installation was signed and the tender is under implementation	
	# standard operating practices updated				1							Select an item	To be implemented by WMO/Peer Advisor	
2.4 **Improved upper air stations** and related equipment, ICT systems, data management systems and standard operating practices in place	# of stations improved as per the GBON National Contribution Plan	N/A										Select an item	Not planned in the project	
3. Sustained compliance with GBON														

Output	Indicator	Target					Actual					Status	Milestones achieved	Challenges and risks
		Y1	Y2	Y3	Y4	Y5	Y1	Y2	Y3	Y4	Y5			
3.1 **GBON land-based stations' commissioning period completed**, country-specific standard cost for operations and maintenance established, and data sharing verified by WMO Technical Authority	# of stations commissioned as per the GBON National Contribution Plan	N/A										Select an item	Not planned in the project	
	# land-based stations maintained, calibrated and transmitting data to GTS			3	3							Not yet started		
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	# of stations commissioned as per the GBON National Contribution Plan				1							Not yet started		

DS

DS

Gender

Please indicate how the Gender Policy of your organization (Implementing Entity) was applied to SOFF Operations.

The Gender Equality Strategy of UNDP (2022-2025) emphasizes the promotion of gender equality and the empowerment of women, ensuring that both men and women have equal access to opportunities and resources. In line with this policy, several measures have been taken to integrate gender considerations into the implementation of the SOFF project:

1. During the stakeholder consultation workshop, efforts were made to ensure gender balance in the participation of stakeholders. The workshop successfully gathered 60% female participants, compared to 40% male participants. This demonstrates the commitment to engaging women in critical discussions about weather observations, data exchange, and the development of actionable climate and weather products, which are key for societal resilience, sustainable development, and risk management.
2. In line with UNDP's commitment to gender equality in leadership roles and decision-making processes, UNDP has appointed two female staff members to play central roles in the project. One is responsible for overseeing the implementation of the SOFF project, ensuring effective project delivery while considering gender equity throughout the process. The other is focused on assisting with the management of the project budget, contributing to transparent financial management.
3. Also**,** **i**n line with the UNDP's gender equality principles, METEO Rwanda is planning to ensure that gender equality is considered in the recruitment process for the SOFF project. The recruitment is structured to provide equal opportunities for both men and women at all levels, aiming to promote gender parity and inclusive participation in meteorological and climate-related roles.

Social and environmental safeguards

Please indicate how environmental and social safeguards standards are observed in the execution of activities.

The implementation of the SOFF project has been guided by UNDP's Social and Environmental Standards (SES), which ensure that all project activities are designed and executed in a manner that prevents, mitigates, or manages potential adverse environmental and social impacts. This commitment reflects UNDP's broader policy framework for sustainable development, safeguarding both ecosystems and the rights and well-being of local communities.

Several precautions and measures have been put in place to observe environmental and social safeguard standards throughout the project cycle, from the design phase to implementation. Key actions include:

DS

DS

1. **Environmental Compliance in Procurement:** During the design phase, the specifications for the supply and installation of all meteorological equipment were carefully crafted to include environmental and social safeguards. To ensure that suppliers align with these standards, all bidders were required to provide a certification of environmental compliance and submit their organizational policy for environmental protection. This requirement ensures that the project partners are committed to sustainable and responsible practices.
2. **Use of biodegradable balloons for Upper-Air Station:** A key environmental consideration in the implementation of the upper-air station was the selection of biodegradable balloons. The use of biodegradable balloons will be mandatory to prevent environmental pollution that may arise from non-degradable remnants after balloon launches. This measure significantly reduces the risk of plastic pollution and supports the project's commitment to environmental sustainability.
3. **Mitigation measures for gas use:** To minimize the environmental impact of the upper-air station's operations, careful consideration was given to the type of gas that will be used in the station. Mitigation measures have been planned to ensure that the gas chosen will not have harmful effects on the environment.
4. **Site selection and environmental screening:** The selection of the project sites for the upper-air station and land-based weather stations was conducted with environmental and social safeguards in mind. A comprehensive screening process was undertaken to assess potential risks to local communities, biodiversity, water resources, land use, and other environmental factors. This screening ensures that the project's activities will not cause any significant negative impact on the surrounding environment or local communities, such as harm to biodiversity, pollution, or disaster risk.
5. **Ongoing monitoring and mitigation:** Throughout the implementation phase, the project continues to monitor environmental and social risks. Any potential negative impacts are addressed through mitigation measures, and ongoing assessments are conducted to ensure compliance with environmental safeguards.

Civil society and private sector participation

Please indicate any engagements to date with civil society and private sector during Investment Phase implementation.

During the Investment Phase of the SOFF project, significant efforts are being made to engage both civil society and the private sector in the planning and implementation process. These engagements have been vital to ensuring collaboration, fostering ownership, and ensuring the project's success. Key engagements include:

1. Private sector engagement: Private sector companies in the aviation and airspace industries are integral to the project's planning and decision-making processes. Notably, Rwanda Civil Aviation Authority and the Rwanda Space Agency have been actively involved in the site selection and the on-going implementation of the SOFF project. Their expertise and collaboration ensured that the project aligns with

national aviation and space regulations, and that meteorological data can be integrated into broader airspace and aviation operations.

2. Civil society organizations (CSOs) were actively engaged during the first stakeholder consultation workshop. This workshop focused on discussing the collaborative efforts needed in weather observations, data exchange, and the development of actionable weather, climate, and water products. The workshop served as a platform for CSOs to voice their opinions, provide valuable input, and explore opportunities for ongoing collaboration with the project team. It also facilitated a shared understanding of the project's potential impacts and benefits, ensuring that CSOs play an active role in promoting community engagement and broader societal benefits.

Complementary financing and leverage

Please indicate any complementarity with ongoing and future projects/programmes with other climate funds.

The Systematic Observations Financing Facility (SOFF) project in Rwanda is strategically aligned with several ongoing and forthcoming initiatives aimed at enhancing climate resilience and early warning systems (EWS). A notable example is the Volcanoes Community Resilience Project (VCRP), a comprehensive initiative estimated at USD 300 million, which targets funding from partners such as the World Bank (WB), European Investment Bank (EIB), Nordic Development Fund (NDF), and Green Climate Fund (GCF). The VCRP involves institutions such as the Rwanda Environment Management Authority (REMA), Rwanda Water Resources Board, Rwanda Development Board, Rwanda Forestry Authority, Ministry of Emergency Management, Rwanda Meteorology Agency (Meteo Rwanda), and Rwanda Housing Authority. The project's objectives include strengthening climate resilience, reducing flood risks, and improving the management of natural resources and tourism assets in the Volcanoes Region through investments in flood risk reduction, ecological restoration, and livelihood improvements.

Complementing this, the Strengthening Early Warning Systems for Anticipatory Action (SEWAA) project, which has recently expanded to both Uganda and Rwanda, leverages machine learning and artificial intelligence to improve forecasting accuracy. Launched by the IGAD Climate Prediction and Applications Centre (ICPAC) in collaboration with various partners, SEWAA enables proactive disaster response and contributes to climate resilience.

Additionally, the Climate Risk and Early Warning Systems (CREWS) East Africa project, a $7 million initiative, was officially launched in Kigali, Rwanda. This project aims to enhance climate risk information and early warning systems, thereby improving disaster preparedness and climate resilience in the region.

DS DS

FINKERAT Project started in February 2022, the Peer Advisor has been carrying out a four-year long regional capacity development project FINKERAT funded by the Ministry for foreign affairs of Finland. The beneficiaries include METEO Rwanda, Rwanda Environment Management Authority, Kenya Meteorological Department and Tanzania Meteorological Authority. The FINKERAT project aims at facilitating beneficiary countries to adapt to climate change and mitigate its impacts through developing the capacity of beneficiary institutes in the fields of meteorological and air quality services including facilitating the use of new data sources (e.g. upper air sounding) in an integrated forecaster tool. In addition to developments at the national level, the project aims at improving regional collaboration in the fields of capacity development and exchanging information on the weather forecast and early warning.

The SOFF project is further complemented by UNDP's commitment to enhancing national multi-hazard EWS through the deployment of cutting-edge tools and technologies, as outlined in the new Country Programme Strategy for 2025-2029. This strategy aligns with global efforts to improve disaster preparedness and response, with a particular focus on climate change impacts and extreme weather events.

As part of this commitment, UNDP will continue supporting Rwanda in strengthening its EWS infrastructure by providing both technical and financial resources for the integration of advanced technologies. These include artificial intelligence (AI), machine learning, and remote sensing tools aimed at improving the accuracy and timeliness of weather forecasts and disaster alerts. By deploying these tools, UNDP seeks to enhance Rwanda's capacity to anticipate and mitigate a range of hazards, including floods, droughts, landslides, and other climate-related disasters.

Implementation of grievance redress mechanism

If applicable, please provide description of any issues or complaints received, along with the current status of their resolution.

To date, no issues or complaints have been received regarding the project. However, the project team has proactively begun implementing an initial Grievance Redress Mechanism (GRM) in preparation for the upcoming installation and upgrade of weather stations. This will ensure that any potential concerns are addressed promptly as the project progresses.

To ensure stakeholders can raise concerns and provide feedback throughout the SOFF project, some key components of Grievance Redress Mechanism (GRM) has been established while others are in process. Key components include:

1. Stakeholders can submit grievances via email at info@meteorwanda.gov.rw.
2. A dedicated toll-free hotline is being negotiated for stakeholders to report grievances or provide feedback. The hotline number will be shared during

DS

DS

community meetings and displayed on posters, balloons, and signage at project sites.

3. During all stakeholder engagement sessions, concerns, questions, and feedback are formally recorded via written forms. These records are documented and used to improve project responsiveness.
4. Complaint/suggestion boxes will be placed at stations and the Huye District offices, allowing community members to submit feedback confidentially.
5. A GRM Committee, including representatives from Meteo Rwanda, UNDP, local districts, CSOs, and other key stakeholders, will review complex or sensitive issues raised during local stakeholder consultations or shared through other channels

Success stories

Please share any success stories and links to news and publications relevant to Investment Phase implementation.

Rwanda achieved a significant milestone by becoming the first country to sign contracts for the supply and installation of an upper-air station and the upgrade of land-based weather stations. This success is a direct result of the strong collaboration between the implementing entity of the SOFF Project (UNDP) and the METEO Rwanda, as well as the Peer Advisor. The effective teamwork facilitated the successful design of the tender specifications and the comprehensive market assessment, ensuring that the project was tailored to meet both WMO standards and local needs. Furthermore, the high standards of the procurement process, led by UNDP, played a crucial role in ensuring transparency, efficiency, and the selection of qualified vendors. The timely signing of these contracts has set a strong foundation for the subsequent phases of the project. A webinar was organized for all SOFF funded countries in which Rwanda shared its experience.

DS

DS