Detailed Work-Plan

for the Technical Assistance on:

The Radio-Internet Climate Technology for Agricultural Resilience: Harnessing the combined potential of Radio and Internet to enhance agricultural resilience against climate change disasters in rural Kebbi State, North-western Nigeria **(RANETA)**

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LIST OF ACRONYMS

CTCN	Climate Technology Centre and Network
GHI	Green Habitat Initiative
NIE	National Implementing Entity
NiMet	Nigerian Meteorological Agency
NCCC	National Council on Climate Change
NGO	Non-Governmental Organisation
M&E	Monitoring and Evaluation
RANETA	The TA for Radio-internet System for Agricultural Resilience
SWG	Stakeholder Working Group
TA	Technical Assistance
ToC	Theory of Change
UNFCCC	United Nations Framework Convention on Climate Change

1. OVERVIEW

1.1 Introduction to the Technical Assistance

The Adaptation Fund Climate Innovation Accelerator (AFCIA) and the Climate Technology Center and Network (CTCN) have launched the Innovation Facility to provide vulnerable countries with tools and grants to accelerate innovative adaptation practices and technologies. The Nigerian Meteorological Agency (NiMet) proposed implementing the radio and internet system in rural communities to improve access to agrometeorological data. Green Habitat Initiative, a Nigerian non-profit organisation, won the bid to pilot and implement the Radio and Internet System (RANET) in Kebbi State, Nigeria, to support climate resilience in agriculture.

In Northwest Nigeria, farmers lack awareness of climate change impacts and have limited access to climate information. Smallholder farmers, who contribute significantly to Nigeria's agricultural sector, face challenges such as market failures and insecure land tenure. Kebbi State heavily relies on agriculture, particularly rice and wheat production, but government interventions like the Rice Anchor Borrowers Programme have faced challenges, including loan defaults due to flooding and climate change.

The deficiency in climate information exacerbates vulnerability to natural disasters, leading to food insecurity. Government strategies aim to integrate climate adaptation into agriculture, including enhancing climate information systems and empowering extension services. However, there remains a gap in delivering early warning systems to farmers and effectively communicating research insights.

Addressing these challenges requires disseminating climate information in farmer-friendly formats and utilising appropriate technological platforms to bridge the gap between researchers and end-users. By enhancing climate resilience at the grassroots level, Nigeria can mitigate climate change impacts on agriculture and ensure food security.

1.3 Goal and Purpose of the TA

Goal: The overall goal of the TA is to ensure the effective dissemination of agro-climatic information from NiMet to small-holder farmers in rural communities of Kebbi State.

Purpose: The TA will pilot the use of radio and the internet to disseminate agrometeorological information to smallholder farmers in Kebbi State, Nigeria.

Objective: The overall objective of this technical assistance is to build the resilience of smallholder agricultural practitioners and promote the wider use of agrometeorological services to improve data availability, climate forecasting, early warning, adaptation planning and decision-making in the agricultural sector. In the medium and long term, this TA aims to reduce climate risks in agricultural production, thereby improving food supply and livelihood security.

1.4 Geographic Scope of the TA

The geographic scope of the RANETA is primarily Kebbi State, Nigeria, where the smallholder farmers conduct their farming activities. Kebbi State is located in the northwestern part of Nigeria, sharing borders with Sokoto State to the north, Niger State to the south, Zamfara State to the east, and the Republic of Niger to the west. Kebbi State is predominantly rural, with agriculture being the main economic activity. The landscape of Kebbi State varies from the Sahelian Savannah in the north to the Sudan Savannah in the south, with the Niger River forming a significant part of its southern border. The state experiences distinct wet and dry seasons, with agriculture heavily reliant on seasonal rainfall.

However, because this TA accrues first to NiMet, whose head office is in Abuja, FCT, significant activities of the TA will be conducted in Abuja. The TA shall visit locations in Abuja and Kebbi where NiMet has installed its weather equipment.

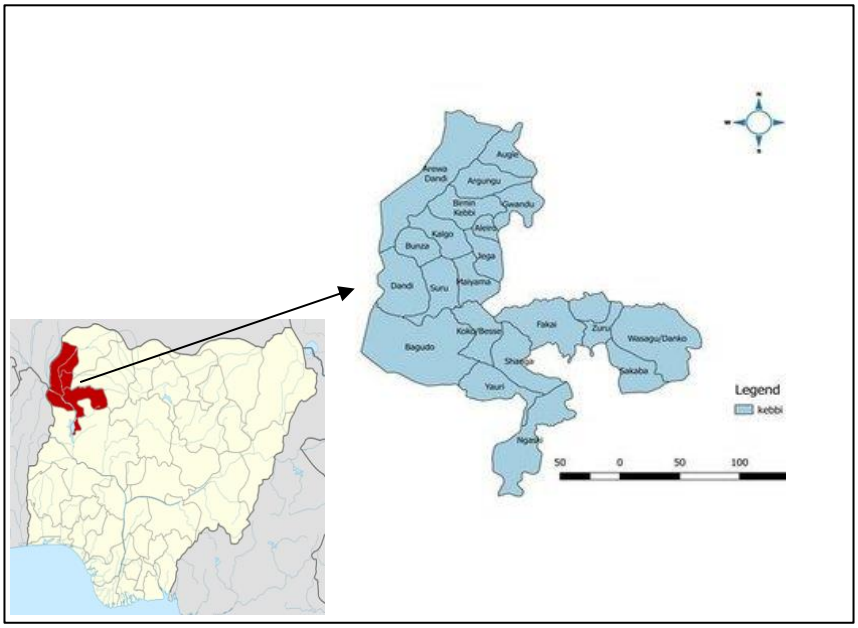


Fig.1. Political map of Kebbi state

1.5 Expected Results

The expected results of the RANETA pilot TA in Kebbi State, Nigeria, are multifaceted, aiming to bring about positive changes in various aspects of agricultural resilience, climate adaptation, and decision-making processes. Some of the anticipated outcomes include:

I. **Improved Access to Weather and Climate Information:** The TA aims to establish a reliable system for disseminating weather and climate information to smallholder farmers in rural communities in Kebbi State. By leveraging radio and internet technology, farmers and agricultural practitioners will have access to

timely and accurate forecasts, enabling them to make informed decisions related to crop management, irrigation, and other agricultural activities.

II. **Enhanced Agricultural Resilience:** By providing smallholder farmers access to weather forecasts and agrometeorological services, the TA seeks to enhance the resilience of agricultural systems in Kebbi State. Farmers will be better equipped to anticipate and respond to weather-related challenges, such as droughts, floods, and extreme temperature fluctuations, thereby reducing the risk of crop failures and production losses.

III. **Strengthened Decision-Making Processes:** Access to reliable weather and climate information will empower farmers and other stakeholders in the agricultural sector to make more informed decisions. Farmers can optimise planting schedules, crop selection, and resource allocation by understanding weather patterns and climate trends, leading to improved productivity and livelihoods.

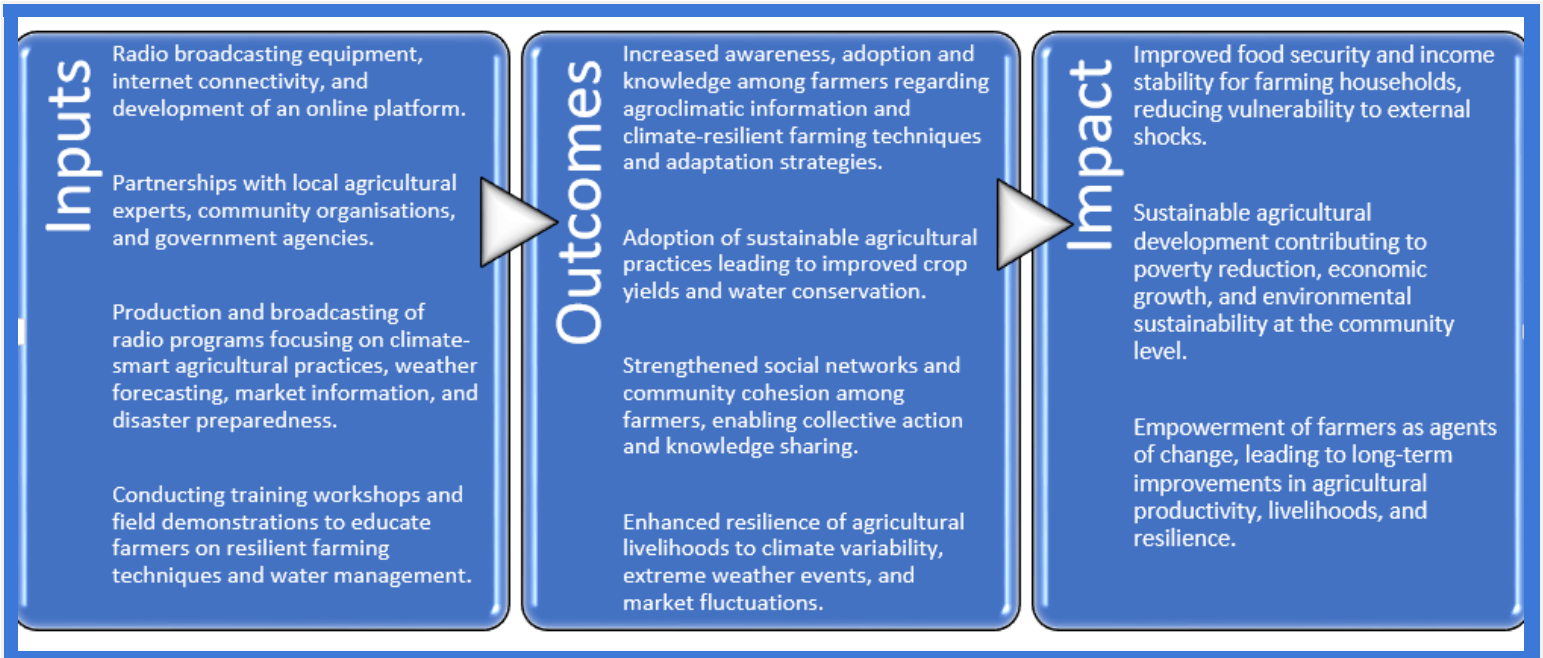
IV. **Increased Adoption of Climate-Smart Practices:** The TA aims to promote adopting climate-smart agricultural practices among farmers in Kebbi State. Through the dissemination of weather-related information and training TAs, farmers will be encouraged to implement sustainable farming techniques that mitigate the impacts of climate change while enhancing productivity and resource efficiency.

V. **Enhanced Collaboration and Capacity Building:** The TA will foster collaboration among various stakeholders, including government agencies, extension services, community organisations, and farmers' groups. Capacity-building initiatives will be conducted to train farmers and other stakeholders in using weather information and climate-smart agricultural practices, thereby strengthening local institutions and networks.

VI. **Improved Food Security and Livelihoods:** Ultimately, the TA aims to contribute to improved food security and livelihoods for rural communities in Kebbi State. By enabling farmers to adapt to changing climatic conditions and enhance agricultural productivity, the TA seeks to increase food production, reduce vulnerability to climate risks, and enhance the overall well-being of rural households.

1.6 Theory of Change

The theory of change (ToC) of the TA is that if farmers have prompt access to reliable agrometeorological information, then they will utilise it for improved agricultural practices.



The assumptions of the TA are as follows:

I. Adequate access to radio receivers and internet-enabled devices among target communities.
II. Adoption, modification, and utilisation of agroclimatic information by smallholder farmers.
III. Continuous availability of reliable agroclimatic information for smallholder farmers' utilisation.
IV. Supportive policy environment and institutional frameworks promoting agricultural resilience and technology adoption.
V. Active engagement and participation of local stakeholders, including farmers, community leaders, extension workers, and government agencies.

2. TA START-UP ACTIVITIES

During this preliminary phase of the TA, a comprehensive set of preparatory actions is being undertaken to facilitate the smooth initiation of the TA. The kick-off meeting was already held on the 4th day of March 2024, and the key stakeholders present were Climate Technology Centre and Network (CTCN), National Council on Climate Change (NCCC), Nigerian Meteorological Agency (NiMet), and Green Habitat Initiative (GHI). Other internal efforts include staff recruitment, formulation of detailed work plans, monitoring and evaluation plans, risk mitigation plans, stakeholder mapping, the establishment of office spaces in Abuja and study tour plans. Simultaneously, additional activities involve initiating introductory meetings and engaging with key stakeholders in both Abuja and Kebbi State. These engagements aim to establish collaborative partnerships, inform stakeholders about the TA objectives, and secure their early cooperation. The overarching goal is to ensure timely TA execution and its overall success through effective communication and alignment of efforts among all relevant authorities and stakeholders.

2.1 Staffing

Key positions have been planned to be employed on a full-time basis to oversee the implementation of the TA. Positions have already been advertised and interviews are currently being conducted. Detailed responsibilities for all positions are outlined in Table 1.

Table 1: Roles and Responsibilities of team members to be assigned to the TA

S/N	Expert Position	Key Roles and Responsibilities
1.	Team Leader/Project Director (PD)	The Project Director shall be responsible for the entire technical assistance, ensuring expectations of NiMet, CTCN, smallholder farmers and other critical stakeholders are met through providing direction to the project team. ● S/he ensures all project activities, both technical and financial, are in line the donor's regulations and that of the National Implementing Entity (GHI). ● S/he will provide oversight of quality assurance functions to ensure effective project implementation. ● S/he will ensure provision of all resources, staffing needs, technical capacities, etc. to the project team. ● Lead and coordinate with Project Manager to ensure alignment of TA with the expectations of the Stakeholder Working Group (SWG).
2.	Project Manager (PM)	The PM will oversee the day-to-day management of all activities and outputs of the TA, and ensure all milestones of the TA are met. Through supervision/coordination with the Team Leader, the PM will be the main point of contact to the SWG and other stakeholders. ● Manage and lead the project team in the implementation of all activities to ensure effective collaboration and achievement of all project goals. ● S/he will maintain close relationship with the stakeholder working group of the TA to be set up, ensuring stakeholders are kept updated of all the progress of TA, organising meetings, and taking note of all issues raised by the SWG. ● S/he oversee all staff appointed to support the technical assistance and shall report the progress of the work to the Project Director/Team Leader accordingly.

		• Collaborate with key stakeholders to identify opportunities for project enhancement and optimisation. • S/he will work on a full-time basis on this.
3.	Climate Technology /ICT Systems Expert	The Climate Technology Expert will work closely with the program manager and other project team members to ensure that agrometeorological services are implemented and utilised to enhance data availability, climate forecasting, early warning systems, and informed decision-making within the project design and implementation. Specifically, he/she will: • Diagnose existing ICT systems with NIMET and other stakeholders used for collecting and disseminating agrometeorological information. • Engage with both NIMET and smallholder farmers in understanding their needs in disseminating and receiving of agrometeorological information respectively. • Based on the needs of the partners, design a blueprint and lead the development of a pilot dissemination system. • Ensure all feedback provided during pilot stage are taken into consideration in the finalisation of the dissemination system. • Collaborate and support the project team in other associated activities of the TA. • Collaborate with cross-functional teams to integrate climate tech solutions into existing agricultural systems. • S/he will work on a full-time basis on this.
4.	Gender Expert	The Gender Expert will work closely with the project manager and other project team members to ensure that principles of gender equality and social inclusion are integrated into all aspects of project design and implementation. Specifically, he/ she will: • Conduct gender analysis and planning, ensuring that project activities consider and address the specific needs and challenges of different genders and marginalised groups. • Work closely with the program manager to ensure the strategic integration of gender equality and social inclusion (GESI) considerations into all project design and implementation aspects.

		● S/he will provide programmatic and technical support to the project team, government counterparts, and other stakeholders on the effective integration of GESI considerations, specifically emphasising the equity and inclusion of marginalised groups such as women, youths, and PLWDs. ● Interact with local stakeholders to collect and evaluate data related to gender dynamics, ensuring a comprehensive understanding of the social context.
5.	Monitoring, Evaluation and Learning (MEL) Expert	Under the overall guidance of the Project Manager, the MEL Expert will perform activities related to monitoring, evaluation, and learning for the project, including organising and implementing data collection and analysis for the project. ● Provide strategic oversight of the monitoring and evaluation activities, ensuring alignment with project objectives and contributing to the project's overall success. ● Design, develop, and implement monitoring and evaluation tools. ● Organise and implement data collection activities, both qualitative and quantitative, and perform detailed data analysis to derive actionable insights. ● Provide inputs derived from monitoring and evaluation activities to inform project decision-making and adaptive management, promoting evidence-based strategies.
6.	Stakeholder Engagement Officer	The stakeholder/community engagement officer will lead community engagement activities, especially in rural communities, for the implementation of the project. He/she will specifically: ● Develop and implement community outreach strategies to engage rural communities in Kebbi State. ● Collaborate with local stakeholders to raise awareness of the RANETA project and its benefits. ● Organise and facilitate workshops, training sessions, and community events.

		● Provide technical assistance and support to community members on utilising RANETA technology effectively. ● Collect feedback and data from community members to evaluate the impact and effectiveness of outreach efforts. ● Support in the identification and engagement of other relevant stakeholders of the TA.
7.	Agricultural Extension Officer	The Agricultural Extension Officer will spearhead the transformation of local agriculture, empowering farming communities, and fostering sustainable practices for enhanced productivity and rural development. More specifically, he/ she will: ● Conduct engaging training sessions and workshops to educate farmers on sustainable agricultural practices. ● Offer expert advice and practical solutions to address specific agricultural issues. ● Analyse data to identify trends and provide valuable feedback to research institutions and government agencies. ● Promote sustainable farming practices, including soil conservation, water management, and integrated pest management. ● Collaborate with local communities to understand their unique agricultural needs and challenges.

3. WORK PLAN COMPONENTS

There are 7 (seven) major components in the work plan of this TA. The different components entail different activities with deliverables expected to be met according to a schedule and submitted to CTCN. A Gantt chart of these activities is inserted in the annexe of this document at the end.

Component 1: Development of implementation planning and communication documents (March 2024)

This component lays the groundwork for effective TA implementation by developing essential planning and communication documents.

Activity 1.1. Development of a Detailed work plan.

A detailed work plan of all activities, deliveries, outputs, deadlines, and responsible persons/organisations, as well as a budget, will be developed to guide the implementation of the TA. The detailed work plan and budget are based directly on the TA's approved response plan.

Activity 1.2. Development of Monitoring and Evaluation Plan

Building upon the detailed work plan, a monitoring and evaluation plan will be developed. This plan will establish specific indicators that measure progress and success, enabling ongoing assessment of the TA's timeliness and appropriateness. By monitoring key metrics, stakeholders will be able to make informed decisions and adjust strategies as needed to meet TA goals.

Activity 1.3. Development of the CTCN Impact Description

At the onset of the technical assistance, a concise CTCN Impact Description will be crafted to articulate the intended outcomes and benefits of the TA. This description is a reference point for evaluating the TA's effectiveness upon completion. This document will be updated periodically so that the TA stakeholders can track progress and assess the TA's impact over time.

Activity 1.4. Development of a Risk Mitigation Plan

Identifying and addressing potential risks is crucial for TA success. A comprehensive risk mitigation plan will be developed to anticipate and manage risks throughout the TA’s lifecycle. This plan includes an assessment of risk probability, impact, and mitigation strategies. The plan will be regularly updated so that the TA teams can proactively address emerging risks and safeguard TA objectives.

Component 2: Creation of a steering committee, mapping of stakeholders, and conduction of an inception meeting (March - April 2024)

Activity 2.1. Kick-off call

Immediately after the signature of the contract, a kick-off meeting was held between the CTCN and GHI, the CTCN partner selected for the implementation of the TA. The meeting was held virtually on 4th March 2024 in the presence of NiMet (the TA proponent) and NCCC (the UNFCCC focal organisation for technology). During the meeting, GHI presented the components of this TA. There was an interactive discussion afterwards with all participants around understanding the TA and its deliverables.

Key Deliverables

I. Minutes of the Kick-off Call

This deliverable entails compiling detailed minutes of the kick-off call, including a list of participants disaggregated by gender. Additionally, the materials utilised during the meeting, such as presentations, documents, and any relevant resources, will be circulated. These minutes serve as a record of the discussions, decisions, and action points from the kick-off call, providing clarity and accountability for all involved stakeholders. This has already been conducted, and all documents have been circulated.

Activity 2.2. Creation of a steering committee and Mapping of stakeholders

This activity involves mapping all relevant stakeholders, including governmental institutions at national and sub-national levels, as well as NGOs, to support the implementation of technical assistance. From these stakeholders, a focused steering committee called the stakeholder working group (SWG), which will comprise up to eight (8 people) members, will be formed. The SWG will provide technical oversight and high-level guidance throughout the TA lifecycle.

Key Deliverables

I. Description of the Steering Committee and Terms of References:

This deliverable entails crafting a comprehensive description of the Steering Committee, along with detailed Terms of References (ToR) outlining the role, responsibilities, and objectives of the committee. The description provides an overview of the committee's composition, mandate, decision-making processes, and operational guidelines. The ToR serves as a guiding document for committee members, clarifying their roles and expectations, fostering effective governance, and ensuring alignment with TA goals and objectives.

II. Stakeholder Mapping Report:

This deliverable encompasses the creation of a Stakeholder Mapping Report, which includes a complete list of stakeholders involved in the TA. The report provides a detailed description of the stakeholder working group, including each member's names, positions, affiliations, genders, and roles. Additionally, it outlines the scope of engagement for each stakeholder, their level of influence or interest in the TA, and any relevant background information. This comprehensive mapping facilitates effective stakeholder engagement, ensures inclusivity and diversity in decision-making processes, and fosters collaborative partnerships to support TA success.

Activity 2.3. Conduct an inception meeting

An inception meeting will be organised with the stakeholder working group to formally introduce the team of experts and present the TA's goals, milestones, anticipated deliverables, and the roles and responsibilities of the stakeholder working group. This meeting will serve as a platform for alignment and collaboration among key stakeholders, setting the stage for effective TA implementation.

Key Deliverable(s)

I. Inception Meeting Report

This deliverable encompasses the compilation of a detailed Inception Meeting Report, documenting the proceedings, discussions, decisions, and outcomes of the meeting. The report provides a comprehensive summary of key topics covered, presentations delivered, and action points identified during the meeting. It includes an analysis of stakeholder inputs, recommendations, and next steps for TA implementation. Additionally, the report may feature annexes or appendices containing materials used during the meeting, such as presentations, handouts, or supplementary documents. These materials enhance the report's comprehensiveness and serve as valuable references for stakeholders and TA teams.

Component 3: Diagnosing of existing dissemination systems (March - June 2024)

This component entails a meticulous examination of existing dissemination systems to pave the way for developing an effective agrometeorological information system.

Activity 3.1. Diagnose the current equipment available in Nigeria to gather climate data and define their level of operationality.

This critical task involves a thorough assessment of the climate data gathering equipment currently in operation across Nigeria, with a specific focus on the ones owned and used by NiMet in Abuja and Kebbi State. The diagnosis aims to scrutinise the functionality and efficacy of NiMet's climatological/meteorological information systems. This includes an evaluation of early warning systems and the local data collection infrastructure.

Key Deliverable(s)

I. Report of the Diagnosis of Existing Climate and Weather Information Systems

This deliverable involves documenting activity 3.1 above. It is about comprehensively diagnosing existing climate and weather information systems in Nigeria. It includes identifying past initiatives relevant to this Technical Assistance. The diagnosis assesses the functionality, coverage, and effectiveness of existing systems, providing insights into areas of strength, weaknesses, opportunities, and threats. This analysis serves as a foundation for informing the development of the Technical Assistance framework and guiding future interventions in the sector.

II. Minutes of Interviews, Meetings, Consultations, Questionnaires

This deliverable entails documenting minutes of interviews, meetings, consultations, and questionnaires conducted as part of the diagnostic process. All engagements will be documented, including details such as the list of participants or persons consulted, questions asked, answers received, date of the event, duration, and mode of engagement (e.g. virtual meeting, face-to-face). These minutes provide a comprehensive record of stakeholder inputs, insights, and feedback gathered during the diagnostic phase, informing subsequent decision-making and TA planning.

Activity 3.2. Identification of needs of the future users and administrators of the system.

Drawing insights from the diagnostic findings, GHI will embark on crafting a comprehensive set of inquiries. These queries are meticulously designed to uncover the needs of prospective users and administrators of the forthcoming system. By meticulously delineating the user requirements, this phase seeks to establish the precise specifications essential for the development of the pilot agrometeorological information system.

Key Deliverables

I. Report on Needs Identified by the SWG

This deliverable entails compiling a comprehensive report on the needs identified by the SWG. The report categorises these needs into various categories, including the overall objective, specific objectives, technological needs, agricultural needs, climatological needs, and other relevant categories. By classifying the needs, the report provides a structured overview of the requirements identified by the working group, facilitating targeted planning and resource allocation for the Technical Assistance TA.

II. Report on Interviews, Meetings, Consultations, Workshops

This deliverable involves documenting the outcomes of interviews, meetings, consultations, workshops, or other activities conducted with the stakeholder working group for the definition of needs. The report provides a detailed account of the discussions, insights, and recommendations gathered during these engagements. It includes summaries of key points discussed, decisions made, and action items identified during the interactions with the working group. Additionally, the report may include feedback received from the working group on proposed solutions or strategies, contributing to the iterative refinement of TA objectives and approaches.

Activity 3.3. A half-day workshop will be held to validate the identification of the needs.

A workshop will be conducted to validate the discerned needs in collaboration with the stakeholder working group. This pivotal gathering will serve as a platform to present the findings gleaned from the diagnostic endeavours and the meticulously compiled list of identified needs. It will provide a conducive environment for stakeholders to offer their insights, ensuring the validation of the proposed specifications.

Key Deliverables

1. Meeting Report with Stakeholders

This deliverable comprises a comprehensive report documenting the proceedings of the meeting with stakeholders. The report provides a detailed account of the discussions, decisions, and outcomes of the meetings. It includes an agenda outlining the topics covered, a list of participants, summaries of presentations, discussions, and any action items identified during the meeting. Additionally, the report highlights prioritised needs identified by stakeholders, providing insights into key areas of focus for the Technical Assistance TA.

3.4. Final report detailing the needs of the agrometeorological system.

Culminating from the validation workshop, an exhaustive report delineating the requirements of the agrometeorological system will be meticulously curated. This comprehensive document will encapsulate the refined specifications derived from the collective input of stakeholders. Serving as a blueprint, it will guide the subsequent development phases led by the TA implementer, GHI, ensuring alignment with the identified needs and fostering the system's effectiveness.

Key Deliverables

I. First Draft of Specifications (List of Needs)

This deliverable involves preparing the initial draft of specifications, which comprises a comprehensive list of needs identified during the TA's development phase. The first draft is facilitated to the SWG for review and feedback. Over the course of three rounds within one month, the working group collaboratively refined and iterated upon the specifications to ensure alignment with TA objectives and stakeholder requirements. This iterative process promotes thoroughness and inclusivity in the specification development, laying a strong foundation for subsequent TA implementation.

II. Final Report on Specifications

Upon completion of the iterative review process, a final report on specifications is generated. This report consolidates the refined list of needs identified through the collaborative efforts of the SWG. It provides a comprehensive overview of the specifications, detailing the requirements, priorities, and considerations for the Technical Assistance TA. The final report serves as a guiding document for TA implementation, ensuring that the developed specifications accurately reflect stakeholder needs and TA objectives.

Component 4: Designing the architecture of the new dissemination system (July - December 2024)

This component entails a comprehensive approach to designing the architecture of the new dissemination system, encompassing several key activities.

Activity 4.1. Identification of relevant technologies.

This activity delves into the exploration of potential technologies that could facilitate the dissemination of agroclimatic data from NiMet to stakeholders. GHI will meticulously investigate the feasibility of leveraging existing systems to convert data into actionable information. Additionally, determining the most effective communication channels, such as radio, SMS, or web platforms, will be a focal point of this endeavour.

Key Deliverable

I. Detailed Report of the Proposed Agrometeorology Information System Prototype

This deliverable entails the development of a comprehensive report detailing the proposed prototype for the agrometeorology information system. The report provides a thorough overview of the system's architecture, functionalities, features, and technical specifications. It includes detailed descriptions of the system components, such as data collection mechanisms, processing algorithms, user interfaces, and communication channels. Additionally, the report outlines the system's integration with existing infrastructure and technologies, ensuring compatibility and interoperability.

Activity 4. 2. Identify the barriers, challenges, opportunities and strengths of the systems in place to implement such a technology.

GHI will embark on a thorough analysis to identify the various barriers, challenges, opportunities, and strengths associated with implementing selected technology solutions within the Nigerian and Kebbi State contexts. This comprehensive assessment will serve as the foundation for informed decision-making and the formulation of robust risk mitigation strategies.

Key Deliverables

I. List of barriers, bottlenecks, and risks to be considered while implementing the technology

This deliverable encompasses compiling a comprehensive list detailing the barriers, bottlenecks, and risks associated with implementing the proposed technology. The list serves as a foundational document for risk management and mitigation strategies throughout the TA lifecycle.

Activity 4.3. A half-day workshop will be held to present the options as well as the viability of the system.

A half-day workshop will be convened to present the findings from activities 4.1 and 4.2 to the stakeholder working group. Through collaborative discussions and engagement, stakeholders will provide invaluable input to assess the viability of different technology options and ultimately finalise the design of the dissemination system.

Key Deliverable

I. Minutes of the Technology Selection Workshop

This deliverable entails the documentation of proceedings, discussions, and decisions made during the technology selection workshop. The minutes provide a detailed record of the workshop's activities, including presentations, deliberations, and outcomes.

Activity 4.4. Design the architecture of the system.

GHI will adopt an iterative approach to draft the architecture of the system, actively engaging with key stakeholders throughout the process. Incorporating multiple feedback

loops, the aim is to ensure alignment with TA objectives and stakeholder needs, thus laying the groundwork for an effective and sustainable dissemination system.

Key Deliverable

I. Report Describing the Technology's Functionalities

This report details the final version of the technology after three reviews over one month. It outlines functionalities, data flow, utilised technologies (website, coded languages, SMS, radio), and basic interface description, ensuring alignment with TA goals and stakeholder needs.

Activity 4.5. Organise an in-person meeting to validate the prototype technology.

An in-person meeting will be organised to validate the prototype technology. This gathering will provide an opportunity to present the functionalities, configurations, and estimated costs for installation, use, and maintenance of the system. Stakeholders will actively contribute their insights, refining the system design and ensuring its suitability for real-world implementation.

Key Deliverable

II. Minutes of the Meeting to Present the Prototype

This deliverable entails documenting the proceedings, discussions, and decisions made during the meeting to present the prototype of the system. The minutes provide a detailed record of the meeting's activities, including presentations, participant lists, and preliminary decisions regarding the deployment of the system.

Component 5: Piloting the technology in Kebbi State (December 2024 - March 2025)

Activity 5.1. Plan the implementation of the pilot dissemination system.

GHI will prepare a detailed implementation plan (work plan) for the pilot deployment, which will provide in a clear, complete, and precise manner all the specificities of the pilot implementation, including but not limited to the technical, human, and financial requirements for the implementation of the pilot TA in the selected area, as well as the role and responsibilities of each entity.

Key Deliverable

I. Detailed Implementation Plan for Pilot Deployment

This comprehensive implementation plan outlines the step-by-step process for deploying the pilot TA. It includes timelines, tasks, responsibilities, and resources required to ensure a successful deployment. The plan considers factors such as technology readiness, stakeholder engagement, and risk mitigation strategies to achieve TA objectives effectively and efficiently.

Activity 5.2. Organise an online meeting to discuss the logistics and implementation of the pilot.

This meeting is organised so that GHI will review the work plan based on the relevant comments received and send back a final version of the implementation plan.

Key Deliverables

I. Minutes of the Meeting

This document records the proceedings of the meeting, including a list of participants disaggregated by gender, the meeting agenda, and the materials used. It provides a detailed account of discussions, decisions, and action items, ensuring transparency and accountability in TA management.

II. Final Implementation Plan

This comprehensive plan outlines the detailed steps, timelines, and resources required for the deployment of the technology. It includes tasks, responsibilities, and milestones, ensuring alignment with TA objectives and stakeholder needs. The plan serves as a roadmap for TA implementation, guiding activities from initiation to completion with clarity and efficiency.

Activity 5.3. Organise on-site meetings with the representatives of the Kebbi State, during which the pilot will be tested.

The objective of this activity is to adequately inform Kebbi State about the TA, the objective of the pilot, the final purpose, the advantages of piloting the technology in their state, and their responsibility to ensure the TA is approved and receives support from the selected area.

Key Deliverables

I. Workshop Minutes

This document records the proceedings of workshops, providing a list of participants disaggregated by gender, the workshop agenda, materials used, and accompanying photos. It captures discussions, decisions, and action items, ensuring transparency and inclusivity in TA activities.

II. Official Endorsement

This official endorsement from Kebbi State confirms support for the deployment of the pilot TA. It may take the form of a letter, email, or written confirmation expressing commitment and authorisation for TA implementation. This endorsement signifies stakeholder buy-in and facilitates collaboration between TA stakeholders for successful deployment.

Activity 5.4. Implement the pilot system.

The objective here is to develop and implement the system per the approved design. In this phase, the pilot system undergoes development and implementation in accordance with the approved design. Multiple iterative cycles, incorporating feedback loops with key stakeholders, are scheduled to ensure alignment with TA objectives and stakeholder needs. The operationalisation process entails the seamless transmission of climatic data from the Nigerian Meteorological Agency (NiMet) to Kebbi State. Additionally, the system transforms this data into actionable agro-meteorological insights tailored to local farmers' requirements. Emphasis is placed on timely delivery through the utilisation of the most effective communication channels, ensuring accessibility and relevance to end-users.

Key Deliverable

I. Design and Operationalization of the Digital System

This deliverable encompasses the development and implementation of the digital system. It includes the design, architecture, and functionality of the system, as well as its operationalisation process. The digital system is tailored to meet TA objectives, stakeholder needs, and technological requirements. This deliverable ensures the effective utilisation and maintenance of the system to support TA goals.

Component 6: Implementation of final prototype (March - July 2025)

Activity 6.1. Demonstration Workshop of the prototype to the stakeholder steering group and the Kebbi State.

A demonstration workshop of the prototype will be conducted for the stakeholder steering group, providing a hands-on and interactive experience of the system. Participants will have the opportunity to test the system independently and pose any inquiries. Simultaneously, a three-day workshop will be held in Kebbi State, engaging technicians, system users, civil society representatives, and other relevant stakeholders. GHI's responsibilities include fostering farmer participation, facilitating system understanding for users and administrators, promptly addressing technical issues, implementing necessary improvements, and providing additional support as needed to ensure the success of the pilot TA.

Key Deliverables

I. Demonstration Workshop Minutes

This document records the proceedings of the demonstration workshops, providing a list of participants disaggregated by gender, the workshop agenda, materials used, and accompanying photos. It captures discussions, demonstrations, and participant feedback, ensuring transparency and inclusivity in the pilot TA.

II. Administrator Manual

The Administrator Manual provides a comprehensive guide detailing step-by-step instructions for system use. It includes information on the system user interface, operating system requirements, software configuration, and procedures for updating the software. This manual assists administrators in effectively managing and maintaining the technology infrastructure.

III. Operation Manuals

These detailed, simple, and explicit manuals provide instructions for operating the technology in English and up to three other traditional languages as necessary. They offer clear guidance on system functionalities, data input/output processes, troubleshooting procedures, and best practices for end-users. These manuals ensure accessibility and usability for diverse stakeholders, facilitating effective utilisation of the technology.

Activity 6.2. Adjustments to the system and the start of the demonstration phase based on the comments received during the previous workshop.

Following feedback received during the previous workshop (Activity 6.1), adjustments will be made to the demonstration system to address identified comments and suggestions. The objective is to refine the system based on user input and prepare for the start of the demonstration phase. This involves implementing modifications, enhancements, and improvements to ensure the effectiveness and usability of the system for stakeholders. Adjustments will be carefully documented and incorporated into the system, facilitating a seamless transition to the demonstration phase.

Key Deliverable

I. Report the bugs identified, questions raised by the users, and details of the modifications made to the system during the 3-month testing period.

This report documents the bugs identified, questions raised by users, and details of modifications made to the system during the three-month testing period. It provides a comprehensive overview of issues encountered, user inquiries, and corresponding adjustments implemented to enhance system functionality and usability. The report serves as a valuable reference for tracking the evolution of the system and informing future development efforts.

Activity 6.3. Validation of the final prototype.

In this activity, the final prototype of the system will undergo validation with both the SWG and representatives from Kebbi State. The objective is to confirm that the tested system meets the predetermined requirements and effectively addresses user needs. Validation involves comprehensive testing, user feedback collection, and assessment of system performance. Upon successful validation, the final prototype will be ready for deployment and full-scale implementation.

Key Deliverable

I. Minute of the Validation of the Technology Workshop

This document provides a detailed record of the validation workshop, including a list of participants disaggregated by gender, the workshop agenda, materials utilised, and accompanying photos. It captures discussions, demonstrations, and feedback from participants regarding the tested technology. The minutes serve as a comprehensive reference for assessing the validation process and ensuring transparency in decision-making.

Activity 6.4. Workshop on Sustainable Agricultural Practices

This workshop aims to share experiences with farmers on various sustainable and climate-smart agricultural practices to mitigate the adverse effects of extreme weather events attributed to climate change. Through interactive sessions and expert-led discussions, farmers will learn about different techniques that may include resilient farming techniques, water conservation methods, soil management strategies, and crop diversification approaches. The workshop fosters knowledge-sharing and empowers farmers to adopt environmentally friendly practices for long-term agricultural sustainability.

Key Deliverable

I. Minutes/Report on Sustainable Agriculture Workshop

This document provides a comprehensive account of the sustainable agriculture workshop, including a list of participants disaggregated by gender, the workshop agenda, resources utilised, and accompanying photos. It details discussions, presentations, and activities conducted during the workshop to promote sustainable farming practices. The report highlights key insights, recommendations, and outcomes aimed at enhancing agricultural resilience to climate change and fostering sustainable development in the community.

Component 7: Disseminate information to future users, administrators, and beneficiaries of the system (July - August 2025)

Activity 7.1.: Organize a dissemination and closure workshop

This workshop will be organised to inform the stakeholders (as broadly as possible) of the existence of this tested system in Kebbi State. This dissemination workshop should reach government MDAs, civil society, academia, the private sector, and the financial sector. For this purpose, the GCF representative, the Adaptation Fund´s focal point, as well as the GEF, and any other multilateral institutions and local relevant financial institutions will be invited to participate.

In addition, a YouTube video explaining the system, its specificities, expected impact, and the possibility of scaling up to increase the resilience of the country will be developed and posted.

Key Deliverable

I. Minutes/report of the workshop with a list of participants, photos, materials used (including YouTube video), etc.

4. STAKEHOLDER ENGAGEMENT AND COMMUNITY PARTICIPATION

A comprehensive stakeholder assessment will be conducted in the first and second months of the TA and delivered in the second month. The aim will be to identify and partner with other relevant government agencies and non-governmental organisations working on especially agriculture, climate change, and weather information services, that will support to achieve the objectives of the TA. The stakeholder mapping will also include community-based groups, farmer groups, women groups and traditional institutions that will be actively engaged to ensure the sustainability of the technical assistance.

The mapping will start from the government agencies responsible for agriculture in Kebbi State (the state ministry of agriculture) and weather information in Abuja (NIMET). Through engagement with them, other stakeholders will be identified who will in turn be reached out to and also enquire about other relevant stakeholders. Key resource personnels notable in the agric sector will also be identified and consulted. The internet will also be surfed to determine other stakeholders operating in the interest areas of the TA.

Through a tailored needs assessment, a suitable community of implementation will be identified using defined criteria for the TA and the RANETA system will require the engagement of a community structure in the identified community that is responsible for ensuring the security and integrity of the RANET equipment.

Additionally, within remote neighbouring communities, where radio information transmission is a challenge, volunteer community members can spread word of mouth via quick phone calls or as part of the message delivered during other casual communal visits and other regular religious/ community engagements.

Based on the stakeholder assessment, different stakeholders will have different roles in the TA. From those to consult for similar activities of this TA, to those who have similar experiences implementing similar projects, the assessment will reveal the details of this. Other stakeholders will be necessary in order to ensure community and government buy-in, as away to enhance the success of the project implementation and the sustainability of the project activities and gains.

Some key stakeholders have already been identified and their roles outlined Some roles outlines in Table 2 below.

Table 2: Key Stakeholders and their roles in the TA.

S/N	Stakeholder	Role
1.	Nigerian Meteorological Agency (NiMet)	As the project proponent, NiMet will act as the focal point for all climate related data that will be provided on a periodic basis. The agency will provide technical support in the design of the architecture of the dissemination system of agrometeorological data to smallholder farmers.
2.	National Council on Climate Change (NCCC)	The NCCC will provide support in the alignment of the TA's activities with the national climate change policies. They shall play a leading role in facilitating relationships with other government stakeholders working on climate change.
3.	Farmer groups	The groups will serve as key stakeholders for consultations regarding rural farmer expectations and needs for RANETA. They would be engaged throughout the TA and their feedback will be collated and used in accordance to the TA's objectives.
4.	Women groups/cooperatives	They will form part of the feedback platform to ensure effective gender mainstreaming as a key aspect of the TA. The forum will also be the focal point for rallying women for technical workshops, training and other advocacy activities during the TA.
5.	Kebbi State Ministry of Budget and Economic Planning	The ministry will be the coordinating sub-national authority for planning of the implementation of RANETA and also oversee sustainability of the TA.
6.	Kebbi State Ministry of Agriculture	The ministry will act as the primary point of contact for engaging the rural farmers and farmer groups relevant for the TA.

5. GENDER MAINSTREAMING

Across the world, women depend more on, yet have less access to, natural resources and climate-related information. In many regions, women are disproportionately

responsible for securing food, water, and fuel. Agriculture is the most important employment sector for women in low- and lower-middle-income countries. During periods of drought and erratic rainfall, women, as agricultural workers, and primary procurers, work harder to secure income and resources for their families. This puts added pressure on girls, who often have to leave school to help their mothers manage the increased burden.

Climate change is a “threat multiplier”, meaning it escalates social, political, and economic tensions in fragile and conflict-affected settings. As climate change drives conflict across the world, women and girls face increased vulnerabilities to all forms of gender-based violence, including conflict-related sexual violence, human trafficking, child marriage, and other forms of violence.[1]

In addressing some of the challenges, the TA will Conduct a targeted gender assessment to understand the specific vulnerabilities, roles, and responsibilities of men and women in rural agricultural communities in Kebbi State, thereby informing the design and implementation of the RANET system.

Furthermore, the TA will promote the active participation of both men and women in the planning, decision-making, and implementation phases of RANETA. This can be achieved by establishing gender-balanced steering committees, focus groups, and consultation processes. Content and services responsive to the diverse needs and priorities of men and women farmers will be developed, which may include providing information on climate-smart agricultural practices, access to weather forecasts, market information, and financial resources tailored to the specific contexts and challenges women farmers face.

In addition, targeted capacity-building activities will be offered to enhance the skills and knowledge of both men and women farmers in climate-resilient agriculture, digital literacy, and the use of radio-internet technologies. The TA will also ensure that training sessions are accessible, culturally appropriate, and sensitive to the needs of diverse participants while addressing barriers to access and ownership of radio-internet technologies among women, such as affordability, connectivity, and cultural norms. Promote women's ownership of radios, mobile phones, and other digital devices, and make deliberate efforts to ensure that they have equal access to information and resources.

Specifically, GHI will aim for at least 40% gender inclusivity by assigning roles and responsibilities to women and women groups to ensure gender mainstreaming and representation. Capacity-building exercises for technicians to acquaint themselves with

[1] Women, U. N. (2022). Explainer: How gender inequality and climate change are interconnected. *UN Women*, *28*.

the skill to carry out minor maintenance and repair of RANET equipment will also target at least 40% gender inclusivity.

Annexe 1: Timeline of Activities

Act. No	Activity	Mar 24.	Apr 24.	May 24.	Jun 24.	Jul 24.	Aug 24.	Sept 24.	Oct 24.	Nov 24.	Dec 24.	Jan 25.	Feb 25.	Mar 25.	Apr 25.	May 25.	Jun 25.	Jul 25.	Aug 25.
	Output 1: Development of implementation planning and communication documents																		
1.1	Detailed work plan	■																	
1.2	Monitoring and evaluation plan	■																	
1.3	CTCN Impact Description	■																	
1.4	Risk mitigation plan	■																	
	Output 2: Creation of a steering committee, mapping of stakeholders and inception meeting																		
2.1	Kick off call	■	■																
2.2	Creation of a steering committee and Mapping of stakeholders		■																
2.3	Conduct an inception meeting																		
	Output 3: Diagnosing of existing dissemination systems																		
3.1	Diagnose the current equipment available in Nigeria to gather climate data and define their level of operationality.	■	■	■															
3.2	Identification of needs of the future users and administrators of the system.	■	■	■															
3.3	Half a day workshop to validate the identification of the needs.				■														
3.4	Final report detailing the needs of the agrometeorological system.																		
	Output 4: Designing the architecture of the new dissemination system																		
4.1	Identification of relevant technologies.					■	■	■											
4.2	Identify the barriers, the challenges, the opportunities and strength of the systems in place to					■	■	■											
4.3	A half-day workshop will be held to present the options as well as the viability of the system.								■										
4.4	Design the architecture of the system.									■	■								
4.5	Organize an in-person meeting to validate the prototype technology.																		
	Output 5: Piloting the technology in Kebbi State																		
5.1	Plan the implementation of the pilot dissemination system.										■	■							
5.2	Organize an online meeting to discuss the logistics and implementation of the pilot.											■							
5.3	Organize on-site meetings with the representatives of the Kebbi State in which the pilot will be tested.											■							
5.4	Implement the pilot system.												■	■					
	Output 6: Implementation of final prototype																		
6.1	Demonstration Workshop of the prototype to the restricted working group and to the Kebbi State.													■					
6.2	Adjustments to the system and the start of the demonstration phase based on the comments received during the previous workshop.														■	■	■		
6.3	Validation of the final prototype.																■		
6.4	Workshop on sustainable agricultural practices.																	■	
	Output 7: Disseminate information to future users, administrators and beneficiaries of the system																		
7.1	Organize a dissemination and closure workshop																	■	■

Annexe 2: Resources required and itemised budget

Activities and Outputs	Estimated cost (USD)
Component 1: Development of implementation planning and communication documents	
Activity 1.1: Formulation of a) Detailed work plan, ii) Monitoring and evaluation plan, iii) CTCN Impact Description, iv) Closure and Data Collection report and v) Risk mitigation plan	*11,500*
Component 2: Creation of a steering committee, mapping of stakeholders and inception meeting	
Activity 2.1 Kick-off call	*20,000*
Activity 2.2: Creation of a steering committee and Mapping of stakeholders	
Activity 2.3: Conduct an inception meeting	
Component 3: Diagnose existing equipment and define the needs and the characteristics of the optimal system to transfer adequate climate data from the NiMet to local farmers of the Kebbi State, North-western Nigeria, to increase their resilience to Climate Change and their decision-making process while managing their land.	
Activity 3.1: Diagnose the current equipment available in Nigeria to gather climate data and define their level of operationality.	*35, 000*
Activity 3.2 Identification of needs of the future users and administrators of the system	
Activity 3.3: Half a day workshop to validate the identification of the needs	
Activity 3.4: Final report detailing the needs of the agrometeorological system	
Component 4: Designing the architecture of the system	
Activity 4.1 Identification of Relevant Technologies	*30, 000*
Activity 4.2: Identify the barriers, the challenges, the opportunities and strength of the systems in place to implement such a technology	
Activity 4.3 Half a day workshop to present the options as well as the viability of the system	
Activity 4.4 Design the architecture of the system	

Activity 4.5 Organize an in-person meeting to validate the prototype technology.	
Component 5: Piloting the technology in Kebbi State	
Activity 5.1: Plan the implementation of the pilot TA	*49, 000*
Activity 5.2 Organize an online meeting to discuss the logistics and implementation of the pilot.	
Activity 5.3: .3 Organize on-site meetings with the representatives of the Kebbi State in which the pilot will be tested	
Activity 5.4: Implement the pilot system	
Component 6: Implementation of final prototype	
Activity 6.1 Demonstration Workshop (5h) of the prototype to the SWG and to the Kebbi State	*32,000*
Activity 6.2: Adjustments to the system and start of the demonstration phase based on the comments received during the previous workshop	
Activity 6.3: Validation of the final prototype	
Activity 6.4: Workshop on sustainable agricultural practices	
Component 7: Disseminate information to future users, administrators and beneficiaries of the system	
Activity 7.1 Organize a dissemination and closure workshop.	*4,730*
Estimated range of cost for the entire Response Plan	*182, 230*