Project Concept Note - Technical Assistance Response Plan

Country	**Nigeria**
Request ID#	**2024000015**
Title	Piloting a small-scale hydroponics system in Kaduna State.
NDE	Department of Climate Change, Federal Ministry of Environment. Name of NDE focal point: Mr. Chukwuemeka Okebugwu Email: chuksokebugwu@yahoo.com Address: Plot 444, Aguiyi Ironsi Way, Maitama Abuja.
Proponent	Région of Kaduna State Kubau Local Government Area Community of Kubau Email address: musasalebanki@gmail.com Focal Point: Musa Sale

Summary of the CTCN technical assistance

In the Northern part of Nigeria, particularly in states like Kaduna State, which is generally arid, the impacts of drought and desertification have been disproportionately pronounced, affecting communities predominantly reliant on rain-fed agriculture. These environmental crises have triggered inter-communal conflicts between traditional farmers and nomadic communities engaged in livestock herding as land and water resources become increasingly scarce[1][2]. These have heightened violence perpetrated by armed groups, including the extremist organization Boko Haram, bandits, and herdsmen.

Evidencing the severity of the food security crisis due to these two factors, a recent report from the United Nations Food and Agriculture Organization has signified that an alarming 25.3 million Nigerians stand on the precipice of acute food insecurity. Consequently, the Federal Government felt compelled to declare a state of emergency concerning the nation's food security on July 14, 2023[3][4].

In response to the complex and urgent challenges facing Kaduna State, the technical assistance will pilot a small-scale hydroponics system as a strategic solution to address the convergence of issues stemming from climate change, insecurity, and food security in the region. Hydroponics is expected to reduce reliance on unpredictable weather patterns, especially erratic rainfall due to climate change, and can be operated within controlled environments, shielding farmers from the vagaries of violent conflicts and insecurity that have disrupted traditional farming practices. Their scalability and adaptability enable community-level deployment, providing an immediate and tangible response to food security concerns.

Agreement:

[1] https://sci-hub.se/downloads/2021-06-30/e7/oruma2021.pdf
[2] https://saudijournals.com/media/articles/SJEF_64_118-125.p
[3] https://guardian.ng/opinion/as-northern-farmers-abandon-food-production/
[4] https://www.fao.org/giews/reports/crop-prospects/en/

(If possible, please use electronic signatures in Microsoft Word file format)

National Designated Entity to the UNFCCC Technology Mechanism	**Proponent** (signature of the Proponent)
Name:	Name:
Title:	Title:
Date:	Date:
Signature:	Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rajiv Garg
Title: CTCN Director (a.i)
Date:
Signature:

1. Background and context:

Climate change poses significant challenges to agricultural systems worldwide, impacting food security, livelihoods, and community well-being. Security issues have constrained a large population of Kaduna State indigenes from going to their farmlands. The loss of their only economic activity has further pushed them down the poverty trenches. This project aims to introduce indigenous hydroponics farming systems to these vulnerable populations in response to these challenges.

The project will be implemented over 12 months in Kubau, an agrarian community in Kaduna State, North-west Nigeria. The community relies heavily on traditional farming practices, which are increasingly vulnerable to the impacts of climate change, including irregular rainfall, temperature extremes, and soil erosion.

The project will be implemented with a phased approach to training, system setup, and ongoing support in partnership with local agricultural experts, agricultural associations, and government agencies. Key target outcomes of the project include

I. Improved Food Security.
II. Enhanced Community Resilience.
III. Economic Empowerment, and
IV. Knowledge Transfer and Sustainability.

2. Problem statement:

In the Northern part of Nigeria, particularly places like Kaduna State, which is generally arid, drought and desertification have been disproportionately pronounced, particularly affecting communities predominantly reliant on rain-fed agriculture. These environmental crises have triggered inter-communal conflicts between traditional farmers and nomadic communities engaged in livestock herding as land and water resources become increasingly scarce[5][6]. These have heightened violence perpetrated by armed groups, including the extremist organization Boko Haram, bandits, and herdsmen. Kaduna State is one of the identified conflict-affected areas and high-risk areas (CAHRA) under EU regulation 2017/821.

Evidencing the severity of the food security crisis as a result of these two factors, a recent report emanating from the Food and Agriculture Organization of the United Nations has signified that an alarming 25.3 million Nigerians stand on the precipice of acute food insecurity. Consequently, the federal government felt compelled to declare a state of emergency concerning the nation's food security on July 14, 2023[7][8].

In response to the complex and urgent challenges facing Kaduna State, the technical assistance will pilot a small-scale hydroponics system as a strategic solution to address the convergence of issues stemming from climate change, insecurity, and food security in the region. Hydroponics is expected to reduce reliance on unpredictable weather patterns, especially erratic rainfall due to climate change, and can be operated within controlled environments, shielding farmers from the vagaries of violent conflicts and insecurity that have disrupted traditional farming practices. Their

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scalability and adaptability enable community-level deployment, providing an immediate and tangible response to food security concerns.

3. Logical Framework for the CTCN Technical Assistance:

Objective: Piloting a small-scale solar-powered hydroponics system as a strategic solution to address the convergence of issues stemming from climate change, insecurity, and food security in the region.

- **Outcomes:**

The specific objectives of this technical assistance are as follows:

- Established Hydroponics Systems: The project will introduce functional and sustainably powered hydroponics systems strategically in the target community, which will be used as a demonstration and training centre for selected beneficiaries.
- Secured livelihood and conflict reduction: This project will provide farmers with better capacity for secured means of livelihood, which could keep them away from kidnapping target points and reduce the risk of conflicts in the area.
- Agricultural and technical expertise for farmers: Through training and capacity-building initiatives, community members will acquire the knowledge and skills necessary to construct, operate, and maintain hydroponics systems, contributing to reduced reliance on extension services.
- Localised Adaptation Solutions: The project will yield customised adaptation solutions tailored to the community's specific needs and challenges.
- Improved Food Security: The adoption of hydroponics systems is expected to increase crop yields, which will enhance food security within the project areas.
- Climate-Resilient Agricultural Practices: By integrating hydroponics into traditional farming practices, the project will foster climate-resilient agricultural methods that can withstand the impacts of climate change.

Activities	Months											
	1	2	3	4	5	6	7	8	9	10	11	12
Component 1: Mandatory output: All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance.												
Activity 1.1: A detailed implementation plan for all activities, deliverables, outputs, deadlines, and responsible persons/organizations, including a gender study and an itemized budget for implementing the Response Plan. The detailed implementation plan and budget must be based directly on this Response Plan. **Activity 1.2**: Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators should be developed to evaluate the timeliness and appropriateness of implementation (a template will be provided). The indicators selected in the monitoring and evaluation plan should be aligned with the technical assistance closure report template. This will enable											

the implementer to complete the technical assistance closure report at the end of the CTCN technical assistance (please refer to Activity iv and Section 14 of the Response Plan). **Activity 1.3**: Impact statement of the CTCN technical assistance prepared at the start of the CTCN technical assistance and updated at the end of the CTCN technical assistance (a template will be provided). **Activity 1.4:** a Result Tracker from the European Commission that will be filled in at the start of the project (baseline), at mid-term, and at closure. **Activity 1.5:** a gender assessment that will include at least the following components: i) Gender Disparities Analysis (evaluate the status of gender disparities in the project's context, including socio-economic, cultural, and institutional factors. Identify areas where inequalities exist, etc) ii) Data Collection (collect and analyse gender-disaggregated data to understand the specific needs and preferences of different genders). iii) Gender-Responsive Design (assess the project's design to ensure that it considers the different roles, responsibilities, and interests of various genders. Consider how the project can empower marginalized genders and promote gender equality.) iv) Gender and Innovation ecosystem (assess how the technology could foster women as entrepreneurs) iv) Gender Budgeting (budget allocation to target gender mainstreaming activities. Also ensure that gender-specific needs are adequately funded). v) Capacity Building vi)Monitoring and Evaluation (shall include regular gender-sensitive assessments to track progress and adjust as necessary. **Activity 1.6**: A technical assistance closure report will be completed at the end of the CTCN technical assistance (a template will be provided).												
Component 1 Deliverables:												
i) Implementation plan	X											
ii) Monitoring and evaluation plan	X											
iii) Impact statement (initial version)	X											

iv) Adaptation Fund Result Tracker (initial version)	X											
Component 2: Baseline assessment and Gender Analysis												
Activity 2.1. Conduct baseline assessment This activity will first conduct a desk review using available records/information from relevant institutions and then assess the baseline condition of the target community to examine traditional farming practices, average yield per person/household, seeds cultivated, availability of water resources, market opportunities for farm produce, socio-economic and demographic characteristics of the community, gender constraints in agricultural practices, etc. A survey instrument (questionnaire) will be developed with relevant queries to extract responses to the issues outlined above. The developed instrument will then be deployed into the kobo-toolbox. Enumerators will administer the instrument to a representative sample population across the target community via one-to-one, bilateral interviews.											
Activity 2.2 Gender Analysis and Action Plan The baseline survey instrument will include questions on gender assessment. Hence, from the baseline assessment, a gender analysis will be deduced to determine the baseline conditions as regards the gender assessment of the project. For the purpose of the gender assessment, a focus group discussion, as well as a one-on-one interview, will be conducted with relevant groups and individuals, respectively. Findings from the gender assessment will be used to develop and integrate the gender action plan into the project implementation plan.												
Activity 2.3 Risk Analysis and Mitigation Plan For every activity/project, risks are inherent. This desktop activity will develop a risk analysis and mitigation plan that will be continuously used and updated during the project implementation.												
Deliverables:												
2.1 Detailed baseline assessment report.		X										
2.2 Baseline gender assessment report and Gender Action plan.		X										
2.3 Risk Analysis and Mitigation Plan		X										

Component 3: Stakeholder mapping, Stakeholder engagement and the establishment of stakeholder working group (SWG)												
Activity 3.1 Map Stakeholders The activity will identify relevant stakeholders among government institutions at national, state, and community levels, professionals of the agriculture sectors, experts in water management and agriculture, representatives of the community, of the farmers, as well as women and youth, NGOs acting in the region, relevant universities specialized in hydroponics, climate resilient agriculture, climate technologies, private sector relevant to the implementation of the project. The Project Proponent and the NDE will support the identification of main stakeholders. The final groups of relevant stakeholders will be presented in a report in which each actor will be linked to its sector of expertise, person of contact, and contact details.												
Activity 3.2 Establish a stakeholder working group Of the stakeholders identified in Activity 1.2, a restrictive working group or steering committee (up to 8 persons) will be created. The stakeholder working group shall maintain gender inclusivity and adequately represent vulnerable groups. It will provide a technical overview and high-level guidance at each stage of technical assistance development. The members of the restrictive working group should have the capacity to make sound decisions on some key aspects of the technical assistance. The composition of the stakeholder working group will be summarised in a list, disaggregated by gender. The NDE and the Project Proponent will be key members of this committee.												
Activity 3.3 Conduct an inception meeting Once the stakeholder working group is created, an inception meeting will be held in the presence of the stakeholder working group and the team leader. It is expected that this meeting will be held in person in Nigeria. The objective of this inception meeting is to introduce the team of experts, the goals, milestones, anticipated deliverables, and the role and responsibilities of the stakeholder working group. The results of the inception meeting will be summarised in a report.												
Activity 3.4: Conflict Analysis Report A conflict analysis of the community the TA will be implemented will be conducted. Since the region is a conflict-prone area, there is a need to investigate any possible causes of conflict, set up early warning structures, identify peace vanguards, and develop any response plan according to this. The report will be continuously visited and updated, together with the risk mitigation plan.												
Deliverables:												

3.1 List of mapped project stakeholders disaggregated by type of roles (Primary and Secondary)		X										
3.2 List of Stakeholder working group disaggregated by gender		X										
3.3 Minutes of the inception meeting including a list of participants disaggregated by gender and resource used for the presentation.		X										
3.4 Conflict Analysis Report			X									
Component 4: Architectural design of hydroponic system												
Activity 4.1 Study tour This activity will entail a study tour of existing hydroponics farming centres within Nigeria and sub-Saharan Africa to broaden the scope of the understanding of the project implementation towards an effective and sustainable hydroponics system. The study tour will also enable improved understanding in developing the scaling-up report of the hydroponics, an output of the final component of the TA. The study tour will also inform the risk assessment and mitigation action plan that will further guide the project implementation.												
Activity 4.2: Benchmark possible technologies and prioritize the most suitable to the context in Kaduna state. There are three common types of hydroponic systems depending on the way water is supplied to the culture: nutrient film technique systems, deep-water culture systems, and aeroponic systems. The IP, in collaboration with relevant stakeholders, will analyze which type of hydroponics farming system should be used and detail the reason for such choice and the consequences (opportunities and limits) of using the technology.												
Activity 4.3: Architectural & Engineering design of the hydroponics system A detailed **s**cheme of a hydroponic system and centre (to be used for training) and a small-scale hydroponic system (for household use the trainees are expected to build) will be designed and will include at least 1. Growing trays; 2. Irrigation system; 3. Water pump; 4. Automated control unit; 5. Drainage system; 6. Nutrient solution tank; 7. Temperature and humidity sensor;												

8. Tray holding rails. The design will also take into cognizance the locally available materials in the target communities to accommodate sustainable replication of the design.												
Activity 4.4: Demonstration and adoption of A&E design Upon completion of the A&E design for the hydroponics system, a one-day stakeholder workshop will be facilitated to demonstrate the design to the stakeholders and beneficiary community members. This is for the contextual review of all stakeholders and the adoption of the design for implementation.												
Activity 4.5: Estimate the cost of setting up the hydroponics system Once the architecture of the system is defined, the estimated cost of piloting the system will be outlined, and also the cost estimate of setting up the same system with locally available materials will be estimated.												
Deliverables												
4.1 Detailed reports on findings from the study tour, including recommendations and strategy for adoption of studied technologies.				X								
4.2 Report on choice of hydroponic technology system.			X									
4.3 Architectural & Engineering design of selected hydroponics system				X								
4.4 Report on demonstration workshop, participants attendance records.				X								
4.5 Cost analysis of the selected hydroponics system				X								
Component 5: Hydroponics system set-up and demonstration												
Activity 5.1: Identification and grouping of community/household participants and community trainers. The community trainers will be a smaller group of beneficiaries (numbering about 10), who possess some form of technical and crafts skills and with a trade or authority. They will be used as the pilot demonstration sessions and should be relied upon as part of the sustainability structures of the TA. The TA, will focus on these trainers, with support from the hydroponics experts, to train community members in the hydroponics operation and maintenance. They should be empowered to support other members who are interested in setting up their hydroponics system. The community/household participants are the larger groups to be trained who may wish to install the hydroponics systems. This activity will identify eligible community members to be trained according to set criteria that include but are not limited to gender, age, occupation, educational level, etc. The identified participants will then be grouped into different training cohorts. The gender analysis will inform this selection as well.												

Discussions with selected participants will be held in order for them to understand the full expectations of their participation and also for the TA to understand and respond to any comments and concerns the participants may have. Each participant will then be assigned a unique ID to aid in monitoring and evaluation processes. The project will target 50% participation of women and 40% of youths.												
Activity 5.2: Development of training resources This activity will entail the development of a graphic training manual that will outline the process of the hydroponics system assembly, operation, and maintenance, as well as the hydroponics farming technique of crop/plant varieties.												
Activity 5.3: MAA signing between IP and project proponent Before the commencement of the construction of the hydroponics system, a mutual accountability agreement (MAA) will be signed by the IP and project proponent. The agreement will outline the roles and responsibilities of respective parties regarding the sustainability, maintenance, and security components of the hydroponics system during and beyond the project implementation.												
Activity 5.4: Assembly and piloting of the small-scale solar hydroponics system This activity will conduct a step-by-step assembly of the hydroponics system as a demonstration workshop during the ToT in Activity 5.5 The stepwise process of constructing and assembling the system will consider: 1. Assembly of the metal structure of the system; 2. Installation of the lighting and solar system; 3. Assembly of the rails; 4. Installation of the irrigation system; 5. Installation of the drainage system; 6. Mounting the growing trays; 7. Mounting the tank with the pump; 8. Installation of temperature and humidity sensors.												
Activity 5.5: Training of Trainers (ToT) on hydroponics system GHI will train identified trainers (who could be artisans in the region with formal skills of construction/fabrication, staff of the local and state government) on the hydroponics system assembly and the hydroponics farming technique. The trainers will then step down the training to community members similarly. This ToT will include a demonstration workshop for all stakeholders outlined in Component 1.												
Deliverables:						X						

5.1 List of participants (trainees) disaggregated by gender.						X						
5.2 Training manuals/resources						X						
5.3 Countersigned Mutual Accountability Agreement (MAA)						X						
5.4 ToT report, participants attendance records						X						
5.5 Construction/set-up of hydroponics system at project location						X						
Component 6: Community training on hydroponics												
Activity 6.1: Training on hydroponics system The identified participants in the community will be trained on the use of hydroponics systems according to their cohorts, with each cohort undergoing comprehensive training in hydroponics farming, including practical sessions for a period of at least 1-month. We envisage about three cohorts comprising 40 participants each. During the training, each cohort will set up a hydroponics system using locally available materials.												
Activity 6.2: Sensitization workshop on conflict prevention and peaceful co-existence This activity will conduct sensitization workshops for each cohort of the training participants to enlighten them on climate change's impact on their socio-economic well-being and ways to prevent climate change-related conflicts in society. The conflict analysis report will inform this activity.												
Deliverables:												
6.1 Report on hands-on training on hydroponics system to the beneficiary community, attendance records.											X	
6.2 Report of the workshop on conflict prevention and peaceful co-existence, attendance records.											X	
6.3 Adaptation Fund Tracker (mid-term)							X					
Component 7: Project sustainability strategy and close-up												
Activity 7.1: Definition of a roadmap of how this hydroponics could be /should be scaled up, replicated and adapted for other locations/communities. A strategic document outlining procedures through which the hydroponics farming technique can be scaled up, replicated and adapted across Nigeria will be developed and disseminated to all relevant stakeholders.												
Activity 7.2: Demonstration workshop to all relevant stakeholders This activity will facilitate a workshop to demonstrate the hydroponics farming technique as a part of the solutions to physical and food insecurity and present the roadmap of scaling to all relevant stakeholders across the country, including business entities, entrepreneurs, government agencies, etc.												

Activity 7.3: End-of-project assessment An end-line assessment will be conducted using the same methodology as in the baseline assessment, and the findings of the assessment will be used to outline recommendations and next steps in the final project report.												
Activity 7.4: Impact statement (Final version) Impact statement of the CTCN technical assistance prepared at the start of the CTCN technical assistance and updated at the end of the CTCN technical assistance (a template will be provided).												
Activity 7.5: Technical assistance closure report A technical assistance closure report will be completed at the end of the CTCN technical assistance (a template will be provided).												
Deliverables:												
7.1: Roadmap of scaling the hydroponics farming beyond the pilot location											X	
7.2: Endline assessment report												X
7.3: Impact statement (Final version)												X
7.4: Adaptation fund tracker (closure)												X
7.5: Technical assistance closure report												X

4. Resources required and itemized budget:

The maximum budget for this Technical Assistance is **€179 618. 00**

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Activities and Products	Human Resources	Travels	Meetings and Events	Equipment and materials	Estimated costs	
					Minimum	Maximum
Mandatory Output: All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance. ● Implementation plan ● Monitoring and evaluation plan ● Impact statement (initial and final version) ● Adaptation Fund Result Tracker at start, midterm, and closure ● Gender assessment ● Technical assistance closure report	*IE: 0* *NE: 4*	*NA*	*NA*	*NA*	€6 316,50	€7 018,33

Output 2: Baseline assessment and Gender Analysis	*IE: 0* *NE: 2*	*Local travel and DSA*	*Meeting room*	*Digital devices*	€15 356,40	€17 062,67
Output 3: Stakeholder mapping, Stakeholder engagement and the establishment of stakeholder working group (SWG)	*IE: 0* *NE: 3*	*Local travel and DSA*	*Meeting room*	*NA*	€14 723,25	€16 359,17
Output 4: Architectural design of hydroponic system	*IE: 0* *NE: 6*	*Local travel and DSA*	*Meeting room and workshop supply*	*Design equipment*	€18 796,44	€20 884,93
Outcome 5: Hydroponics system set-up and training	*IE: 0* *NE: 13*	*Local travel and DSA*	*Meeting room and workshop supply*	*Hydroponics system components*	€36 541,20	€40 601,33
Outcome 6: Community training on Hydroponics	*IE: 0* *NE: 13*				€39 471,15	€43 856,83
Outcome 7: Project sustainability strategy and close-up	*IE: 0* *NE: 7*	*Local travel and DSA*	*Meeting room and workshop supply*	*NA*	€15 755,70	€17 506,33
Medium range of the Technical Assistance in USD					**184 800,13 USD**	

5. Profile and experience of experts:

Experts required	Brief description of required profile
Project Director/Team Lead	● The program director will direct the overall implementation of the project according to the agreement signed by the IP and the donor. ● Advanced degree in a relevant field, such as development studies, public administration, or non-profit management. ● Minimum of 5 years of experience working in the NGO sector, and including as a team lead. ● Proven track record of successfully directing complex projects from conception to completion. ● Strong analytical and problem-solving skills. ● Excellent communication and interpersonal skills, with the ability to build relationships with diverse stakeholders. ● Demonstrated ability to work independently and as part of a team. ● Proficiency in project management methodologies and tools.
Project Manager (X1)	● The program manager will oversee the overall implementation of the project plans, including scope, timelines, budgets, and resource allocation. ● Bachelor's degree in a relevant field, such as development studies, public administration, or non-profit management. ● Minimum of 3 years of experience working as a Program Manager in the NGO sector. ● Proven track record of successfully managing complex projects from conception to completion. ● Strong analytical and problem-solving skills. ● Excellent communication and interpersonal skills, with the ability to build relationships with diverse stakeholders. ● Demonstrated ability to work independently and as part of a team. ● Proficiency in project management methodologies and tools.

Technical expert: Hydroponics system specialists (x1)	• The specialist will provide technical assistance in designing, implementing, and managing hydroponic systems, including training of target beneficiaries. • Masters/Bachelor's degree in Agriculture or a related discipline. • Should possess a minimum of 5 years of experience in a hydroponics project of repute. • Proficiency with computers. • Strong research, decision-making, critical thinking, and problem-solving skills. • Awareness of industry trends, technology, and developments.
Technical expert: Agricultural Engineer (x1)	• The Agric Engineer will provide technical support in the design and construction of the hydroponics system. • A Bachelor's degree or HND in Agricultural engineering with a minimum of 5 years of practical experience in the agricultural engineering field. • Experiences in the installation, use, and repair of agricultural equipment, especially greenhouse installation/fabrication • Possess excellent coordination and organizational abilities
Agricultural extension officers (x2)	• The extension officers will provide technical support in knowledge and skill transfer to the local beneficiaries of the project. • Bachelor's in Agriculture Extension, Agronomy, or Horticulture or a related degree/discipline. • At least 4 years of work experience in related fields. • Familiarity with Agriculture and, specifically, Extension issues in Northern Nigeria is highly desirable • Familiarity with project management approaches, tools, and phases of the project lifecycle. • Excellent communication Skills • Proficiency in Hausa Language is an asset.
Gender specialist (x1)	• Bachelor's degree in gender studies, women's studies, sociology, international development, or a related field required. • Minimum five years of experience encompassing international development, evaluation and research, and program management required.

	• Experience working as a Gender Specialist or in a similar role, with a strong understanding of gender equality and women's rights issues, including in-depth knowledge of gender analysis methodologies, gender mainstreaming, and gender-responsive programming. • Experience working with international development organizations. • Experience heading task teams to deliver client deliverables, including research, assessments, and training. • Experience working on assignments related to diversity, equity, and inclusion is preferred. • Familiarity with international frameworks and conventions related to gender equality, such as the Sustainable Development Goals (SDGs) and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). • Strong interpersonal and communication skills to effectively engage with diverse stakeholders and facilitate discussions on sensitive gender topics. • Proficiency in project management, including the ability to plan, coordinate, and monitor gender-focused initiatives.
Monitoring and Evaluation expert (x1)	• A minimum of a Master's Degree in International Relations, Statistics, Economics, Finance, Social Sciences, or Public Administration. • A minimum of five years of directly applicable experience in providing management advisory services and hands-on experience in the design of monitoring and evaluation tools at the systemic level in development contexts. • Knowledge of and experience in planning. • Proven experience with statistical applications and data analysis; familiarity with both qualitative and quantitative information analysis tools. • Excellent interpersonal, consensus-building, and negotiating skills essential. • Strong knowledge and understanding of monitoring and evaluation concepts, with the ability to explain them with clarity.
Conflict management and mitigation specialist (x1)	• The expert will facilitate a sensitization workshop and conflict prevention and mitigation strategies as they relate to climate change impact. • At least 10 years of experience in conflict management and peacebuilding activities.

	● Experience in conflict management and mitigation practices, support to peace processes, reconciliation, security sector reform, demobilization and reintegration, psycho-social counseling, youth, gender, and other conflict-related work. ● Have excellent verbal and written communication skills in English.
Program Assistant (x1)	● The program assistant will provide primary support in the overall implementation of the project. ● Minimum of Bachelor's degree with a minimum of 2 years relevant work experience in a similar role. ● Excellent organizational, administrative, and effective time management skills. ● Demonstrated ability to organize, prioritize, schedule, plan, and coordinate work and other activities internally and externally. ● Strong attention to detail and to maintaining high-quality standards. ● Ability to produce high-quality work under pressure.
Project Finance and Admin Officer.	● The finance and admin officer will be responsible for providing financial and administrative support for the project needs. ● Minimum of Bachelor's degree with a minimum of 2 years relevant work experience in a similar role. ● Knowledge of Quickbooks accounting software is desirable. ● Excellent organizational, administrative, and effective time management skills. ● Demonstrated ability to organize, prioritize, schedule, plan, and coordinate work and other activities internally and externally. ● Strong attention to detail and to maintaining high-quality standards. ● Ability to produce high-quality work under pressure.

6. Intended contribution to impact over time:

The implementation of small-scale hydroponics systems as an agricultural technology concept is expected to have a notable impact on security, addressing various risk dimensions related to climate change and food security through the following:

I. Climate Stressor Mitigation: Hydroponics systems offer a climate-resilient approach to agriculture by reducing reliance on erratic rainfall patterns and soil quality. By providing controlled environments for crop cultivation, these systems can withstand climate stressors such as extreme weather events, changing rainfall patterns, and temperature increases. This resilience can contribute to the stability of food production and reduce the risk of food shortages triggered by climate shocks.

II. Reduced Exposure to Climate Vulnerabilities and Armed Violence: By allowing agriculture to take place within controlled environments, hydroponics systems can reduce exposure to climate vulnerabilities. This is particularly important in the Northern part of Nigeria, the major food-producing region where traditional farming practices are increasingly challenged by climate-induced risks and violent conflicts. The ability to farm year-round without being dependent on external factors like weather conditions can enhance food security by minimizing exposure to adverse climate events.

III. Enhanced Coping Capacity: Hydroponics systems empower communities with the ability to manage and overcome adverse conditions. Through training and capacity-building, communities can develop the knowledge and skills required to construct, operate, and maintain these systems effectively. This increased coping capacity enables communities to adapt to changing climate conditions and secure their food supply, reducing their vulnerability to food insecurity.

IV. Diversification of Livelihoods: The adoption of hydroponics can provide an additional source of income and livelihood diversification for communities. This diversification can reduce dependence on single livelihoods that are vulnerable to climate stressors and, in turn, enhance economic security.

V. Resource Efficiency: Hydroponics systems are resource-efficient, using less water and space compared to traditional farming. This can help conserve natural resources, reduce ecosystem degradation, and promote environmental security.

7. Relevance to NDCs and other national priorities:

I. The small-scale Hydroponics technology directly aligns with the Nigerian Government's commitment to invest in Climate Smart Agricultural practices and technologies to enhance sustainable food production and food security as outlined in the updated NDC Document.

II. According to the National Climate Change Policy For Nigeria chapter 6, page 42, "Nigeria recognizes that technology and innovation are central for addressing environmental problems. Modern technologies can help address the climate crisis in many new ways. The main policy direction is to move the country's economic base from a natural resources economy to a knowledge-based growth pathway that is low-carbon, gender-responsive, and socially inclusive using available and innovative technologies". The small-scale Hydroponics technology directly aligns with this commitment.

III. One of Nigeria's sectoral strategies mentioned in the National Science, Technology, and Innovation Policy (NSTIP) 2022 is to encourage modern technologies in agriculture, including organic agriculture, smart farming systems, e-agriculture, hydroponics, vertical farming, urban agriculture, digital agriculture, drones and artificial intelligence in agriculture.

8. Linkages to relevant parallel ongoing activities:

The Nigerian government has enacted and implemented various policies to tackle climate change and food insecurity, with the National Adaptation Plan at the forefront of these policies[9]. The revised National Determined Contributions (NDC) Document of Nigeria demonstrates the government's dedication to allocating resources towards the adoption of climate-resilient agricultural methods and advanced technologies aimed at improving both sustainable food production and food security[10]. However, there's a lack of practical information on its implementation at the community level.

In 2021, the World Bank launched a $700 million project focusing on improving landscape management for food security in northern Nigeria[11]. Security challenges, including armed conflicts and terrorism, have, however, raised uncertainties about the project's success.

Furthermore, in July 2023, the government declared a "State of Emergency" on food security and introduced a comprehensive intervention plan. The plan includes immediate distribution of fertilizers and grains, promoting irrigation, establishing a National Commodity Board, enhancing farm security, strengthening the role of the Central Bank in funding agriculture, activating additional farmland, deploying funding, improving transportation and storage, boosting revenue from food exports, streamlining trade facilitation, creating employment opportunities, and ensuring food affordability[12]. Concerns have been raised about the government's capacity to deliver on these commitments in a timely manner.

9. Anticipated follow-up activities after this technical assistance are completed:

Monitoring and Evaluation:
- Evaluate the performance of the crops and make necessary adjustments to optimize yields and resource usage.

Troubleshooting and Support:
- Establish a mechanism for ongoing technical support to address any challenges or issues that may arise after the initial implementation.
- Create a helpline or support system for project participants to seek assistance with troubleshooting.

Community Engagement:
- Foster community engagement by organizing workshops, seminars, or field visits to share success stories and lessons learned.
- Encourage the exchange of knowledge and experiences among project participants and neighboring communities.

Market Linkages:
- Explore opportunities to connect hydroponic farmers with markets for their produce.
- Provide guidance on marketing strategies and help establish relationships with buyers.

Scaling and Replication:

[9] Federal Ministry of Environment (2020). Nigeria's National Adaptation Plan Framework. https://napglobalnetwork.org/wp-content/uploads/2020/06/napgn-en-2020-Nigeria-National-Adaptation-Plan-Framework.pdf

[10] https://unfccc.int/sites/default/files/NDC/2022-06/NDC_File%20Amended%20_11222.pdf

[11] World Bank. (2021). Development Projects: Agro-Climatic Resilience in Semi-Arid Landscapes (ACReSAL) - P175237. World Bank. https://projects.worldbank.org/en/projects-operations/project-detail/P175237

[12] State Of Emergency Declaration On Food Security: A Policy Brief (August 2023). Accessed at https://reliefweb.int/report/nigeria/state-emergency-declaration-food-security-policy-brief-august-2023#:~:text=In%20part%20against%20this%20background,security%20situation%20in%20the%20country.

- Explore opportunities to scale the hydroponics project to other locations or communities.
- Develop guidelines and manuals that facilitate the replication of the project in different contexts.

Feedback and Continuous Improvement:

- Collect feedback from project participants and stakeholders to identify areas for improvement.
- Use feedback to make continuous adjustments to the project implementation and support mechanisms.

10. Gender and co-benefits:

Embedded into the design of the activities:	I. **Climate Resilience:** Hydroponics systems, being less reliant on rainfall and soil quality, are inherently climate-resilient. This can help communities better adapt to changing weather patterns and reduce the vulnerability of agriculture to climate-related risks. II. **Resource Efficiency:** Hydroponics systems use significantly less water and space compared to traditional farming. This promotes efficient resource utilization, which is beneficial in regions facing water scarcity and land degradation. III. **Improved Nutrition:** The ability to control nutrient levels in hydroponics systems can lead to the production of nutrient-rich crops, potentially improving the nutritional intake of communities and addressing malnutrition issues. IV. **Community Engagement:** The project can foster community engagement and cooperation through shared responsibility for managing hydroponics systems. This can strengthen social bonds and collective efforts in addressing food security challenges. V. **Economic Growth:** The increased agricultural productivity and surplus produce generated by hydroponics can stimulate economic growth at the community level, generating income and employment opportunities. VI. **Environmental Sustainability:** By reducing the need for pesticides and herbicides and minimizing soil erosion, hydroponics systems contribute to more environmentally sustainable agricultural practices.
Gender and co-benefits of the activities:	I. **Empowerment of Women:** Hydroponics systems can provide women, who often play a significant role in agriculture in many Nigerian communities, with opportunities for active participation and leadership in farming. The technology's controlled environment and reduced physical labor can help overcome traditional gender barriers, allowing women to engage more effectively in agricultural activities. II. **Income Generation:** Increased agricultural productivity resulting from hydroponics can lead to greater economic opportunities for women, especially when they are actively involved in managing these systems. The surplus produce can be sold in local markets, contributing to household income and financial autonomy for women. III. **Food Security:** Enhanced crop yields and diversification through hydroponics can lead to improved food security within households. This is particularly crucial for women, who often bear the responsibility of ensuring family nutrition.

	IV. **Reduced Drudgery:** Hydroponics systems typically require less physical labor and are less strenuous than traditional farming methods. This can reduce the physical burden on women, allowing them more time for other productive activities or personal well-being. V. **Skills Development:** The training and capacity-building component of the project can provide women with valuable skills and knowledge in hydroponics technology, increasing their expertise and confidence in agriculture-related activities.

11. Main in-country stakeholders in the implementation of the technical assistance activities:

National Stakeholder	Function in the implementation of the technical assistance
National Designated Entity (Directorate General of Climate Change, Ministry of Environment and Cooperatives)	Member of the stakeholder working group, supervise the implementation of the TA, ensure quality checks of the deliverables and implementation of the mission.
Project proponent	
Federal Ministry of Agriculture (Agricultural and Rural Management Training Institute)	Provide technical expertise and training resources for hydroponics system setup and management.
Local Government Area Council	Helps identify suitable project locations, liaise with community leaders, and support project activities within their jurisdiction.
Traditional Institutions	Community Mobilization and Cultural Legitimacy
The Ministry of Defence (The Joint Security Task Force)	Collaborates with project organizers to ensure the safety of project participants and installations, especially in regions with security challenges.
Farmers' Associations	Mobilise and engage local farmers in the adoption of hydroponics systems
Women's Groups	Mobilise and empower women in the targeted local communities to actively participate in hydroponics system setup and management.
Youth Associations	Mobilise youth participation

12. SDG Contributions:

Goal:	Sustainable Development Goal	Direct contribution from CTCN TA
1	End poverty in all its forms everywhere	

2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	The CTCN TA will have a direct benefit in promoting sustainable agricultural practices by introducing the hydroponics farming technique that will enhance the mitigation of climate impact on arable farmlands threatening agricultural yields in especially Northern Nigeria.
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	
	7.1 - By 2030, ensure universal access to affordable, reliable, and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	7.3 - By 2030, double the global rate of improvement in energy efficiency	
	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	
8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient, and sustainable	
12	Ensure sustainable consumption and production patterns	The CTCN TA will promote hydroponics farming technique to communities towards ensuring

		sustainable production of food and animal feeds.
13	Take urgent action to combat climate change and its impacts	
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	The CTCN TA will introduce hydroponics farming technique to climate-impact prone communities to promote sustainable agricultural practices thereby mitigating the effect of climate change and ensuring food security.
	13.2 - Integrate climate change measures into national policies, strategies, and planning	
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	The CTCN TA will train farmers and community members alike on climate change impact and mitigation strategies.
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	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	
14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	
15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. Classification of technical assistance:

Please tick the relevant boxes below	Primary	Secondary
1. Decision-making tools and/or information provision		
2. Sectoral road maps and strategies		
3. Recommendations for legal reforms, policies, and regulations		
4. Financing facilitation		
5. Private sector engagement and market creation		✓
6. Research and development of new technologies		
7. Feasibility of technology options		✓
8. Piloting and deployment of technologies in local conditions	✓	
9. Technology identification and prioritization		✓

Please note that all CTCN technical assistance contributes to strengthening the capacity of in-country actors.

14. Monitoring and evaluation process:

Upon contracting the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. This monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) THE COUNTRY on overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer on the experience and knowledge gained through the technical assistance; and (iii) the CTCN Director on the timeliness and appropriateness of the activities and outputs.