Risk Assessment and Mitigation Plan

for the Technical Assistance on

Empowering Communities with Sustainable Agricultural Systems; piloting a small-scale hydroponics system in: Kubau LGA, Kaduna State, Nigeria.

Submission date: 25th May 2025
Request ID:
Technical Assistance (TA) start and end date: 2nd May 2024 - 2nd April 2025

Submitted by: Engr. Sadiq Abubakar Gulma
Executive Director
Green Habitat Initiative (GHI)
R. I. Uzoma Street, Block B8, House A (Opp. Midway Plaza),
Ministry of Finance Quarters, Wuye, Abuja, Nigeria.
Tel: +2348032913535
Email: sadiq@greenhabitat.ng

TABLE OF CONTENTS

LIST OF ACRONYMS

CTCN	Climate Technology Centre and Network
GHI	Green Habitat Initiative
DCC	Department of Climate Change
NGO	Non-Governmental Organisation
TA	Technical Assistance

1.Introduction and Context

This Risk Management Plan outlines the comprehensive strategies for identifying, assessing, and mitigating potential risks associated with the implementation of a small-scale hydroponics system pilot project in Kubau, Kaduna State, Nigeria. The project aims to address pressing challenges stemming from climate change, insecurity due to violent conflicts, and food insecurity in the region by introducing sustainable agricultural practices.

Kaduna State, located in Northern Nigeria, faces multiple interconnected challenges, including climate change-induced droughts, escalating violence due to ethnic and religious tensions, and widespread food insecurity. These challenges have exacerbated poverty, undermined livelihoods, and perpetuated cycles of conflict and instability in the region.

In response to these complex challenges, there is a critical need for innovative and sustainable solutions that promote resilience, improve food security, and enhance livelihoods for vulnerable communities in Kaduna State. The piloting of a small-scale hydroponics system presents an opportunity to address these challenges holistically by leveraging renewable energy, technology, and agricultural innovation.

Hydroponics, a soilless farming technique that utilises nutrient-rich water solutions to grow plants, offers several advantages over traditional farming methods, including higher yields, reduced water usage, and year-round cultivation. By harnessing solar power to sustainably power hydroponics systems, the project aims to provide a viable alternative to conventional agriculture while minimising environmental impact and enhancing climate resilience.

The Key Objectives of the Technical Assistance are:

I. Establish functional and sustainably powered hydroponics systems as demonstration and training centres in target communities.
II. Provide farmers with secure livelihood opportunities to reduce the risk of conflict and violence.
III. Equip community members with agricultural and technical expertise to construct, operate, and maintain hydroponics systems independently.
IV. Develop localised adaptation solutions tailored to the specific needs and challenges of the community.
V. Improve food security by increasing crop yields through the adoption of hydroponics systems.

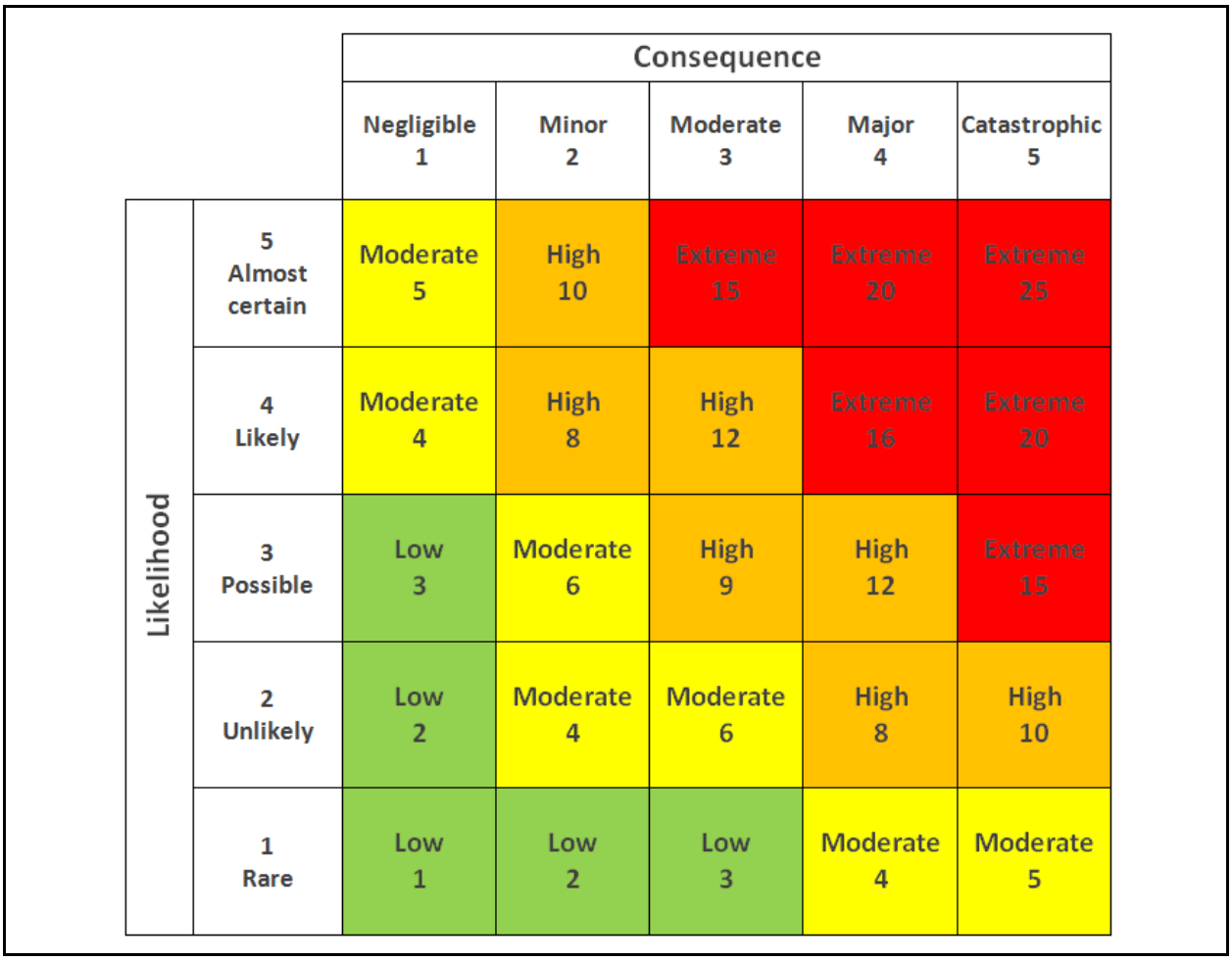
VI. Foster climate-resilient agricultural practices that can withstand the impacts of climate change.

2. Stakeholders in the Risk Management Plan

Key stakeholders that will be directly engaged in the risk management of the technical assistance include, but are not limited to:

I. Climate Technology Centre and Network - CTCN
II. Green Habitat Initiative (GHI) - The TA implementer
III. National Council on Climate Change
IV. Kaduna State Budget and Economic Planning Commission
V. State Ministries of Agriculture and Environment.
VI. Rural farmer cooperatives/ Groups.
VII. Women farmer groups
VIII. Youth groups
IX. People with disabilities

3.Risk Matrix



Likelihood		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

4.Risk Score

S/N	Identified Risks	Risk Score
Technological Risks		
I	Risks associated with the design, installation, operation, and maintenance of hydroponics systems, including equipment failure, technical complexity, and inadequate expertise.	4
Operational Risks		

2	Supply Chain Disruptions: Delays or shortages in equipment or materials could impede project progress.	9
3	Human Resource Constraints: Staff turnover, illness, or lack of training might affect project implementation.	6
Environmental Risks		
4	Extreme weather events such as floods, rain, high temperatures and windstorms could impact project activities and the hydroponic system.	9
5	Risks involving potential negative impacts on the environment due to the implementation of hydroponics systems such as energy consumption, water use, etc.	1
Security and Social Risks		
6	Civil unrest or conflicts that might disrupt project operations.	12
7	Theft or Vandalism: Equipment or infrastructure could be targeted by criminals.	9
8	Communal conflicts might pose a threat to the safety and security of project personnel.	9
9	Funding shortages, budget overruns, or financial constraints due to price instability can impact project implementation.	9
10	Community resistance or cultural misunderstandings around key project concepts could affect project acceptance and effectiveness.	4
11	These risks involve challenges related to community engagement, social cohesion, and inclusivity.	2

5.Risk Identification and Mitigation Strategies

S/N	Identified Risks	Mitigation Strategy

Technological Risks:		
1	Technical Risks: Technical risks involve challenges related to the design, installation, operation, and maintenance of hydroponics systems, including equipment failure, technical complexity, and inadequate expertise.	Conduct thorough feasibility studies and technical assessments; engage qualified experts for system design and installation; provide comprehensive training and support to local staff and community members; establish regular maintenance schedules and protocols.
Operational and Financial Risks:		
2	Supply Chain Disruptions: Delays or shortages in equipment or materials could impede project progress.	Diversified Suppliers: Identify multiple vendors for critical supplies to mitigate supply chain disruptions.
3	Human Resource Constraints: Staff turnover, illness, or lack of training might affect project implementation.	Cross-Training: Ensure that team members are proficient in multiple roles to address human resource constraints.
4	Financial Risks: Funding shortages, budget overruns, or financial constraints due to price instability can impact project implementation.	Monitoring budget expenditures closely and developing contingency plans for funding gaps.
Environmental Risks:		
5	Climate Variability: Extreme weather events such as floods, rain, high temperatures, and windstorms could impact project activities and the hydroponic system.	Implement appropriate measures to strengthen project infrastructure and protect it from potential damage, such as flood-resistant design and windstorm-resistant structures.
6	Environmental Risks: These risks involve potential negative impacts on the environment due to the implementation of hydroponics systems, such as energy consumption, water use, etc.	Assess potential environmental impacts and implement measures to minimise negative effects. Use sustainable practices such as water conservation, waste management, and organic nutrient solutions.
Security and Social Risks:		
7	Personnel safety risks: communal conflicts might pose a threat to the safety and security of project personnel.	Conduct security assessments; implement access controls and surveillance systems; engage with local security authorities and community leaders to address security concerns.

8	Civil unrest or conflicts might disrupt project operations.	Community Engagement: Build strong relationships with local communities to enhance project security and sustainability through community ownership.
9	Theft or Vandalism: Equipment or infrastructure could be targeted by criminals.	Ensure the human physical security of the centre is provided. Set up community structures to ensure the safety and management of the centre. Consider insuring the system.
10	Community resistance risk: Community resistance or cultural misunderstandings around key project concepts (i.e. soilless farming, use of nutrient solutions, etc) could affect project acceptance and effectiveness.	Engage with the cultural influencers (i.e. religious clerics and traditional authorities) to build trust and understanding and address concerns through transparent communication and involvement.
11	Social risk: These risks involve challenges related to community engagement, social cohesion, and inclusivity.	Engage with key groups in the communities through participatory approaches to ensure meaningful involvement and ownership of the project.