Concept Note

Project/Programme Title:	Climate Adaptation and Technology Leveraging for Enhanced Climate Resilience in Eastern Uganda (CATLER – Uganda)
Country(ies):	Republic of Uganda
National Designated Authority(ies) (NDA):	Ministry of Finance, Planning, and Economic Development
Accredited Entity(ies) (AE):	Ministry of Water and Environment
Date of first submission/ version number:	*[YYYY-MM-DD] [V.0]*
Date of current submission/ version number	*[YYYY-MM-DD] [V.0]*

GREEN CLIMATE FUND

Please submit the completed form to **fundingproposal@gcfund.org**, using the following name convention in the subject line and file name:
"CN-[Accredited Entity or Country]-YYYYMMDD"

Notes

- The maximum number of pages should **not exceed 12 pages**, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.
- As per the Information Disclosure Policy, the concept note, and additional documents provided to the Secretariat can be disclosed unless marked by the Accredited Entity(ies) (or NDAs) as confidential.
- The relevant National Designated Authority(ies) will be informed by the Secretariat of the concept note upon receipt.
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A. Project/Programme Summary (max. 1 page)			
A.1. Project or programme	☒ Project ☐ Programme	**A.2. Public or private sector**	☒ Public sector ☐ Private sector
A.3. Is the CN submitted in response to an RFP?	Yes ☐ No ☒ If yes, specify the RFP: _____	**A.4. Confidentiality[1]**	☐ Confidential ☒ Not confidential
A.5. Indicate the result areas for the project/programme	Mitigation: Reduced emissions from: ☐ Energy access and power generation ☐ Low emission transport ☐ Buildings, cities and industries and appliances ☒ Forestry and land use Adaptation: Increased resilience of: ☐ Most vulnerable people and communities ☒ Health and well-being, and food and water security ☐ Infrastructure and built environment ☐ Ecosystem and ecosystem services		
A.6. Estimated mitigation impact (tCO2eq over lifespan)		**A.7. Estimated adaptation impact (number of direct beneficiaries and % of population)**	
A.8. Indicative total project cost (GCF + co-finance)	Amount: USD 25,000,000	**A.9. Indicative GCF funding requested**	Amount:
A.10. Mark the type of financial instrument requested for the GCF funding	☒ Grant ☐ Reimbursable grant ☐ Guarantees ☐ Equity ☐ Subordinated loan ☐ Senior Loan ☐ Other: specify_____		
A.11. Estimated duration of project/ programme:	5 years	**A.12. Estimated project/ Programme lifespan**	20 Years
A.13. Is funding from the Project Preparation Facility requested?[2]	Yes ☒ No ☐ Other support received ☐ If so, by who:	**A.14. ESS category[3]**	☐ A or I-1 ☐ B or I-2 ☒ C or I-3
A.15. Is the CN aligned with your accreditation standard?	Yes ☒ No ☐	**A.16. Has the CN been shared with the NDA?**	Yes ☒ No ☐
A.17. AMA signed (if submitted by AE)	Yes ☐ No ☐ If no, specify the status of AMA negotiations and expected date of signing:	**A.18. Is the CN included in the Entity Work Programme?**	Yes ☐ No ☐
A.19. Project/Programme rationale, objectives and approach of programme/project (max 100 words)	The project aims to enhance climate resilience in Eastern Uganda through a multifaceted approach addressing water scarcity, energy needs, and sustainable agriculture. By installing solar-powered irrigation systems, promoting drought-resistant seeds, and implementing forest landscape restoration, the project aligns with Uganda's NDC commitments. It seeks to reduce GHG emissions and increase adaptive capacity in vulnerable communities. The project will leverage public-private partnerships, capacity building, policy frameworks, and innovative financing mechanisms to ensure sustainability. Through targeted interventions, it will improve food and water security,		

[1] Concept notes (or sections of) not marked as confidential may be published in accordance with the Information Disclosure Policy (Decision B.12/35) and the Review of the Initial Proposal Approval Process (Decision B.17/18).
[2] See here for access to project preparation support request template and guidelines
[3] Refer to the Fund's environmental and social safeguards (Decision B.07/02)

	foster economic development, and build resilience against climate change impacts in rural areas.

Abbreviations and Acronyms

AFOLU	Agriculture, Forestry, and Other Land Uses
BAU	Business-as-Usual
CBI	Community-based Irrigation
CCD	Climate Change Department
CO2	Carbon dioxide
CSO	Civil Society Organization(s)
CTCN	Climate Technology Center and Network
ENSO	El Niño Southern Oscillation
FBE	Forest-based Enterprises
FMNR	Farmer-Managed Natural Regeneration
GDP	Gross Domestic Product
GHG	Greenhouse gas(es)
IMC	Inter-Ministerial Committee
IOD	Indian Ocean Dipole
ITCZ	Inter-Tropical Convergence Zone
LDC	Least Developed Countries
MoLG	Ministry of Local Government
MoFPED	Ministry of Finance, Planning, and Economic Development
MAAIF	Ministry of Agriculture, Animal Industry, and Fisheries
MoSTI	Ministry of Science, Technology, and Innovation
MEMD	Ministry of Energy and Mineral Development
MFI	Micro-Finance Institutions
MTTI	Ministry of Tourism, Trade, and Industry
MWE	Ministry of Water and Environment
NAMA	Nationally Appropriate Mitigation Actions
NAP-Ag	National Adaptation Plan for Agriculture
NARO	National Agricultural Research Organization
NDC	Nationally Determined Contributions
NDE	National Designated Entity
NDP	National Development Plan
NEMA	National Environmental Management Authority
NFA	National Forestry Authority
NSCS	National Seed Certification Services
NWSC	National Water and Sewerage Corporation
PMU	Project Management Unit
PPP	Public-Private Partnership(s)
PV	Photovoltaic
RAE	Responsive Agricultural Extension
RWH	Rainwater harvesting
SME	Small & Medium Enterprises
SRWH	Surface Runoff Water Harvesting
STI	Science, Technology, and Innovation (Secretariat)
TAP	Technology Action Plan
TNA	Technology Needs Assessment
UBOS	Uganda Bureau of Statistics

UNMA	Uganda National Meteorological Authority
UNCST	Uganda National Council of Science and Technology
URA	Uganda Revenue Authority
VSLA	Village Savings and Loan Associations

B. Project/Programme Information (max. 8 pages)

B.1. Context and baseline (max. 2 pages)

B.1.1. Climate Rationale

Uganda, a landlocked country in East Africa, experiences a tropical climate with two rainy seasons and faces significant vulnerability to climate change despite its minimal contribution to global greenhouse gas emissions. The eastern region, characterized by its highlands, plateaus, and valleys near Mount Elgon, lies at an average elevation of 1,269 meters and supports over 8 million people as of 2020 (UBOS 2021). Agriculture, the primary livelihood and a critical contributor to regional income, is increasingly threatened by environmental degradation and climate variability. Fertile volcanic soils historically supported robust agricultural productivity, but frequent landslides and the region's sandy, acidic soils have led to declining yields, recurrent food shortages, and occasional famines (Nyandiko et al. 2020). Rapid urbanization has compounded challenges in solid waste management and increased the risk of disease outbreaks, while educational standards have declined, particularly in rural areas, highlighting the region's growing development challenges (UNICEF Uganda 2019).

B.1.1.1. Current Climate

Uganda's climate is influenced by several atmospheric systems, including the Indian monsoon, the Congo air mass, the Indian Ocean Dipole (IOD), the Inter-Tropical Convergence Zone (ITCZ), and the El Niño Southern Oscillation (ENSO). These systems contribute to significant variability in rainfall patterns across the country. The eastern region, particularly around Mount Elgon, experiences higher humidity year-round due to its unique topography, contrasting with the drier conditions typically found in the western part of Uganda (Nicholson 2018).

Rainfall in eastern Uganda is most intense during the March to May and September to November seasons, with peak averages of 190 mm, 175 mm, and 170 mm in April, May, and October, respectively (UNMA 2022). Over the past few decades, there has been a noticeable increase in extreme rainfall events, particularly in the eastern region and areas around Lake Victoria. These events have led to greater risks of flooding and landslides, with indices such as R95 and R99p showing significant increases in daily extreme rainfall in recent years (Funk et al. 2015).

In addition to changes in rainfall, Uganda has also experienced a steady rise in average temperatures, with a 1.3°C increase since 1960 (UNMA 2022). This warming trend has been particularly pronounced in the northern and eastern regions, leading to more frequent and intense heatwaves. The rising temperatures are impacting agriculture, water resources, and public health, exacerbating the vulnerability of communities already struggling with the effects of climate variability (IPCC 2021).

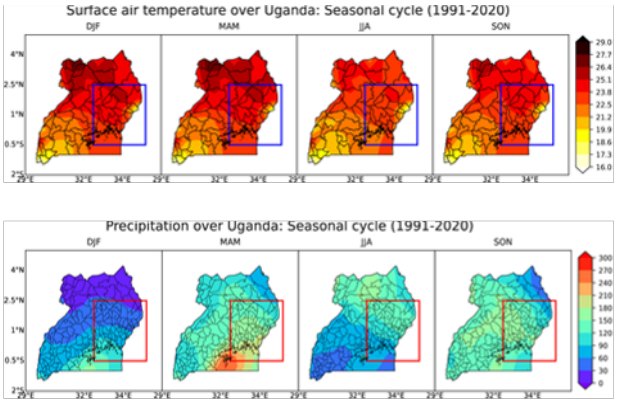


Figure 1: Spatial distribution of temperature and seasonal rainfall over Eastern Uganda: Source: Created via Climate Research Unit (CRU) datasets.

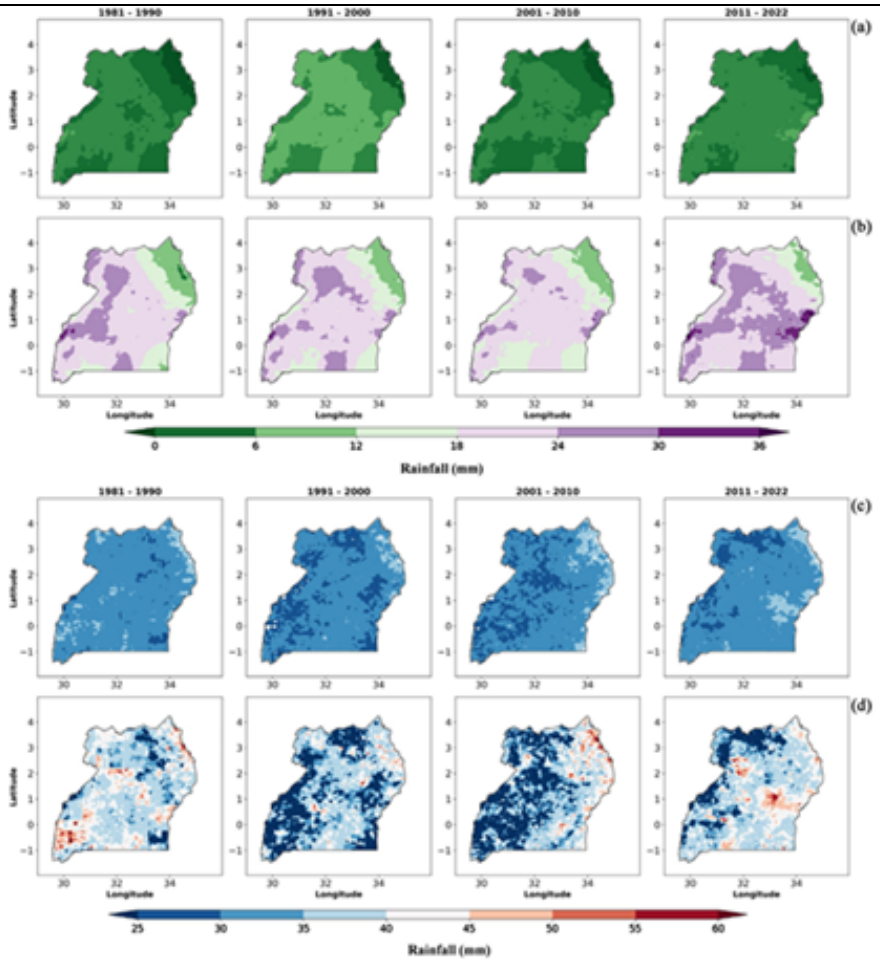
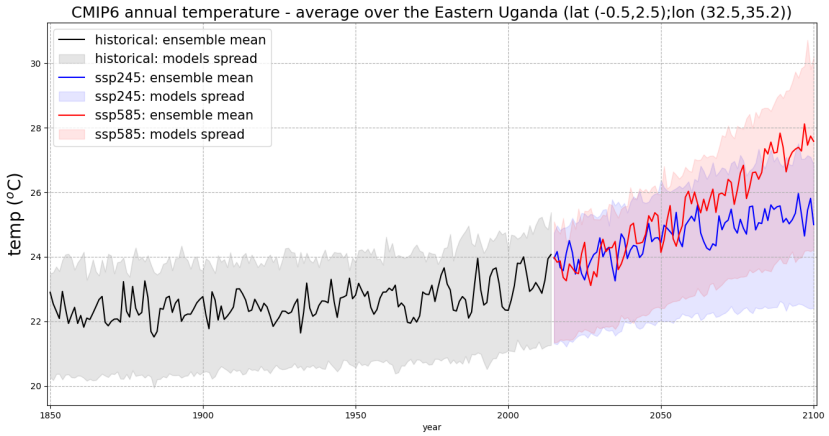


Figure 2: Decadal daily extreme rainfall spatial distribution during SON season over Uganda based on CHIRPS 1981 to 2022. (a) Rx1day, (b) Rx5days, (c) R95p and (d) R99p.
Source: CRU Datasets.[4]

B.1.1.2. Future Climate

The visualization of the CMIP6 (nine GCMs) annual average of temperature over the project area (1850 to 2100) (Figure 3) shows that the mean temperature was stable in the pre-industrial phase, but steadily increases since the 1990s. It shows further that, depending on the SSP scenario, the curve and increase of the global annual temperature differs. While for the middle case SSP2-4.5 scenario, the annual temperature over the eastern part of Uganda, could stabilize around 26 °C, in the worst case SSP5-8.5 scenario, the annual temperature could increase to above 28 °C. This temperature rise could increase water demand in agriculture, forestry, fisheries, and aquaculture sectors, putting pressure on water resources. In addition, higher temperatures could exacerbate health problems, increase energy consumption, and put additional strain on the eastern part of the country, which relies heavily on water resources for energy generation.



[4] Characteristics of Extreme Rainfall Events over Uganda during September to November Rainfall Season (scirp.org)

Figure 3: Inter-annual variability of near-surface temperature over the eastern part of Uganda from 1850 to 2100 under two scenarios (SSP2-4.5 and SSP5-8.5)
Source: Created via CRU datasets

B.1.2. Vulnerabilities and Impacts

The project area in Eastern Uganda, including districts like Bududa, faces significant vulnerability to climate change due to its varied landscapes of plateaus, mountains, valleys, and agricultural zones. High population density, poverty, deforestation, and settlements on fragile slopes amplify the region's susceptibility to extreme weather events. Increasingly erratic rainfall has led to riverbank bursts, landslides, and mudslides, severely impacting agricultural land, infrastructure, and ecosystems. Recent data indicate that from 2018 to 2022, Uganda experienced several extreme weather events, with droughts alone affecting over 1.3 million people and causing substantial crop and livestock losses, further exacerbating food insecurity in the region (FAO, 2022).

In August 2022, intense rainfall in the Mount Elgon region triggered devastating floods and landslides, displacing hundreds and resulting in nearly 30 fatalities in Mbale city. Bududa District, historically prone to landslides, witnessed severe destruction, continuing a troubling pattern of deadly landslides in the area, including the 2018 landslide that killed over 40 people (UNMA, 2022). The main factors driving these landslides include prolonged rainfall, deforestation, and land degradation, highlighting the urgent need for enhanced environmental protection and sustainable land management to mitigate future risks.

Agriculture Sector: The agricultural sector's vulnerability to climate change in Eastern Uganda has profound impacts on local communities, particularly in rural areas where livelihoods are heavily dependent on farming. The increasing frequency and intensity of extreme weather events, such as floods and droughts, have led to significant crop failures and food shortages. For instance, floods in April 2023 destroyed vast areas of farmland, resulting in the displacement of thousands of people and leaving many without a stable food supply (Uganda Red Cross, 2023). The disruption of agricultural cycles due to erratic rainfall has also led to a decline in household incomes, pushing already vulnerable populations deeper into poverty. The lack of resilience in farming practices exacerbates food insecurity, forcing communities to adopt coping mechanisms such as reducing meal frequency, selling livestock, or migrating to urban areas in search of alternative livelihoods (FAO, 2022).

Water Sector: The impacts of climate change on the water sector in Eastern Uganda are severe, particularly for communities that rely on natural water sources for drinking, irrigation, and sanitation. Prolonged dry spells have led to a significant reduction in water availability, causing water scarcity in many areas. This scarcity forces women and children, who are primarily responsible for water collection, to walk longer distances to access water, thereby reducing time for education and other productive activities (WaterAid, 2021). Additionally, intense rainfall events have caused widespread flooding, contaminating water sources with pollutants and increasing the prevalence of waterborne diseases such as cholera and dysentery. The contamination of water sources during floods further exacerbates health risks in communities with limited access to healthcare facilities, leading to higher morbidity and mortality rates (Ogega et al., 2021).

Forestry and Energy Sectors: The degradation of forests in Eastern Uganda, particularly around Mount Elgon, has had devastating effects on local communities. The loss of forest cover due to deforestation has increased the frequency of landslides, which destroy homes, farmland, and infrastructure, displacing entire communities and disrupting their livelihoods (Twinomuhangi et al., 2021). The reliance on biomass for energy, primarily firewood, has further strained the region's natural resources, leading to deforestation and soil degradation. This, in turn, has reduced the availability of forest resources that local communities depend on for their livelihoods, such as fuelwood, medicinal plants, and food. The decrease in forest cover has also contributed to the loss of biodiversity, which negatively impacts ecosystem services that support agriculture and water regulation, thereby increasing the vulnerability of communities to climate change (Opedes et al., 2022).

B.1.3. GHG Emissions Profile

In 2017, Uganda's greenhouse gas emissions were predominantly from the agriculture, forestry, and other land uses (AFOLU) sector, accounting for 83.7% of the total. The greenhouse gas inventory by Uganda's Climate Change Department (CCD) highlighted key sources of emissions, including energy, industry, waste, and land use activities such as livestock management and biomass burning. Total emissions reached 94,650 Gg CO_2e in 2017, nearly triple the levels recorded in 1995.

The AFOLU sector was responsible for 92% of CO_2 emissions, largely due to deforestation and forest degradation, while the energy sector, driven by fuel combustion and biomass burning, contributed 4,743 Gg CO_2. Livestock and rice

cultivation were significant sources of CH4, and the waste sector was the second largest contributor. AFOLU also accounted for 86% of N2O emissions, primarily from managed soils.[5]

Looking forward, Uganda's GHG emissions are projected to rise from 90.1 MtCO2e in 2015 to 148.8 MtCO2e by 2030 and 235.7 MtCO2e by 2050 under a business-as-usual (BAU) scenario. To address this, Uganda aims to reduce net emissions by 24.7% below the BAU scenario by 2030, equating to a 36 MtCO2e reduction. This goal will be pursued through circular economy measures and technology transfer across the energy, AFOLU, waste, and industrial sectors.[6]

B.1.4. Mitigation and Adaptation Needs

Key Needs	Description of Needs
Financial support to increase affordability of climate-smart technologies	The high poverty levels in Eastern Uganda have severely limited the adoption of climate-smart technologies, crucial for enhancing resilience against climate shocks. In 2019, 10.7% of the region's population fell back into poverty, surpassing the national average of 8.5% (UBOS 2019). To overcome this, financial incentives and subsidies are essential to reduce the cost burden on smallholders. Affordable financing options, such as microloans and community-based schemes, can empower rural households to invest in technologies like drought-tolerant seeds, renewable energy systems, and efficient irrigation methods, ultimately enhancing their resilience to climate change.
Investment in strengthening research and development (R&D) for climate resilience	Strengthening research capacity within Uganda's national institutions is critical for the development and promotion of climate-adapted crop varieties, sustainable agricultural practices, and renewable energy solutions. Collaborative efforts between research institutions, the private sector, and international partners will drive innovation, ensuring that climate-resilient technologies are both relevant and effective. Continuous R&D investment will enable the adaptation of farming practices to the changing climate, supporting long-term sustainability in the region.
Enhanced access to climate-technology inputs and services	Timely and affordable access to essential climate-smart inputs and services is vital for the successful adoption of resilient technologies. This includes the provision of drought-tolerant seeds, water storage systems, and renewable energy components to farmers and local communities. Strengthening market access and offering credit services tailored to the needs of smallholders will encourage investment in these technologies. Establishing partnerships with private sector entities will streamline the supply of these inputs, ensuring that farmers can implement climate-resilient practices effectively and sustainably.
Capacity building and training for inclusive climate adaptation	Building the technical capacity of key stakeholders, including extension workers, local technicians, women, and youth, is crucial for the widespread adoption and effective implementation of climate-smart technologies. Targeted training programs should be developed to equip these groups with the necessary skills to support local communities in adapting to climate change. Developing a skilled workforce capable of installing, operating, and maintaining technologies like solar systems, biogas units, and efficient irrigation systems will ensure their long-term sustainability and resilience.
Strengthened institutional coordination and policy enforcement	Effective institutional coordination and strong policy support are necessary to create an enabling environment for climate-smart technology adoption. Improved collaboration between government agencies, NGOs, and the private sector will ensure a cohesive and strategic approach to promoting and implementing these technologies. Strengthening policy implementation and enforcement will provide a robust regulatory framework that supports sustainable practices, enhances technology adoption, and ensures that climate adaptation efforts are aligned with national development goals.
Sustainable land and resource management practices	In Eastern Uganda, unsustainable agricultural practices and unclear land ownership rights have led to soil degradation and reduced food security. Addressing land rights issues and promoting sustainable land management practices, such as agroforestry and conservation agriculture, are critical for restoring soil health and improving water retention. These measures will reduce the region’s vulnerability to climate extremes and ensure that natural resources are managed sustainably, supporting the long-term resilience of rural communities.
Increasing community awareness and engagement with climate technologies	Raising awareness about the benefits of climate-smart technologies and fostering community engagement are essential for driving their adoption. Educational campaigns, workshops, and informational materials can bridge knowledge gaps, encouraging the acceptance and proper use of innovative technologies. Targeted outreach efforts should highlight the long-term benefits of adopting climate-resilient practices, fostering a culture of sustainability and

[5] Uganda’s Third National Communication to the UNFCCC, 2022.

[6] Updated Nationally Determined Contributions (NDC), 2022.

	resilience within rural communities. Developing practical guides and manuals will provide communities with the tools needed to implement and maintain these technologies effectively.

B.1.5. Alignment with National Priorities

The project is closely aligned with the following national development priorities:

2022 Nationally Determined Contributions (NDC): Focuses on capacity building, technology transfer, and gender mainstreaming. This project contributes to NDC goals through financial and institutional capacity building and gender-responsive skills development.

National Development Plan (NDP III, 2020 - 2025): Targets freshwater availability, forest coverage, disaster risk reduction, and sustainable resource use. The project supports these objectives by transferring climate technologies in water, forest, and energy sectors to enhance rural resilience.

Uganda Vision 2040: Emphasizes food and water security, renewable energy adoption, and policy modernization. The project aligns by promoting climate technologies in key sectors to support food and water security and low-emissions development.

Uganda's REDD+ Strategy and Action Plan (2020): Aims to mitigate climate impacts on forests and promote gender-balanced benefits. The project contributes through climate-smart agriculture, forest regeneration, and clean cooking solutions, in line with REDD+ strategies.

National Adaptation Plan for Agriculture: Focuses on enhancing agricultural resilience to climate change. The project aligns with this plan by promoting climate-smart practices and technologies in agriculture.

The Uganda Green Growth Development Strategy (2017/18 - 2030/31)[7]: The project will climate resilience through sustainable agriculture, forestry, and energy practices, aligning with the strategy's focus on natural capital management, sustainable agriculture, and green energy investments to drive low-emission economic growth and create green jobs.

B.1.6. Barriers to Climate Technology Development and Transfer

Financial Barriers: High initial costs of climate-smart technologies, compounded by unclear tax policies on essential components like solar panels, significantly hinder adoption in Eastern Uganda. The absence of accessible financial mechanisms, such as loans or grants, further limits the ability of communities to invest in these technologies. Institutional budget constraints and poor resource prioritization, particularly in the wake of COVID-19, exacerbate the situation, leading to inadequate support for climate-smart initiatives.

Knowledge and Awareness Constraints: The adoption of climate technologies is hampered by a widespread lack of understanding and awareness of their benefits. Communities and local stakeholders often underestimate the risks posed by climate change, reducing the urgency for transitioning to sustainable solutions. Additionally, significant skill gaps exist in the installation, operation, and maintenance of these technologies, both at the community level and among extension workers, limiting effective implementation.

Private Sector and Income Constraints: The low level of private sector investment in climate technologies, coupled with the generally low disposable income of residents in the region, restricts the ability of communities to adopt new technologies. There is also a disconnect between technology providers and local communities, often due to financial barriers, which further complicates the diffusion of these technologies. The lack of personal funds among individuals further perpetuates the cycle of limited adoption.

Coordination and Communication Challenges: Poor coordination among key stakeholders, including government agencies, NGOs, and local communities, hinders collaborative efforts to address climate-related issues. Ineffective communication channels and inadequate infrastructure, such as limited internet connectivity, exacerbate these challenges, leading to fragmented efforts and limited engagement in climate initiatives.

Policy and Regulatory Challenges: Outdated policies related to technology adoption and environmental conservation, along with weak enforcement mechanisms, pose significant barriers to the uptake of climate-smart technologies. Even where relevant policies exist, their impact is often undermined by insufficient enforcement and lack of incentives for adoption, stalling progress toward sustainable development goals.

[7] The Uganda Green Growth Development Strategy, 2017

Gender Equality Challenges: Women in Eastern Uganda face significant barriers in accessing education, training, and financial resources, limiting their ability to engage with and benefit from climate-smart technologies. Traditional gender roles and societal norms often exclude women from decision-making processes, further marginalizing them in climate resilience efforts.

B.2. Project/Programme description (max. 3 pages)

Describe the expected set of components/Deliverables and subcomponents/activities to address the above barriers identified that will lead to the expected Outputs.

The project is designed to address the barriers to adoption of climate-smart technologies, prioritized in the Technology Action Plans (TAPs), for strengthening the resilience in agriculture, forestry, energy sectors in Eastern Uganda and guarantee inclusive and sustainable growth.

Goal statement: IF the climate-smart technologies prioritized in the Technology Action Plans (TAPs) for Uganda are effectively applied in water and energy use in agricultural systems and forest landscapes in Eastern Uganda, **THEN** the resilience of local communities to climate threats and their carbon offsets will be increased, contributing to the NDC goals of low-carbon and climate-resilient development, **BECAUSE** adoption of climate-smart technologies will mitigate carbon emissions, improve resource efficiency, and promote sustainable land management practices for a more sustainable and resilient future for Uganda and its inhabitants.

Specific objectives:

- To improve climate resilience in Uganda's agriculture sector through the promotion of climate-smart farming practices.
- To promote sustainable economic growth by catalyzing local nature-based enterprise development, with technical and financial resources and enhanced markets access.
- To strengthen institutional capacity and policy frameworks to ensure the sustainability of climate action, with capacity building, advocacy, and improved monitoring and evaluation mechanisms.

Component 1: Strengthening Adaptive Capacity in Agriculture and Water Systems

Component 1 aims to enhance the agricultural sector's resilience by addressing financial, knowledge, and infrastructure barriers that limit the adoption of climate-smart practices. It focuses on improving access to climate-adapted seed varieties, water management, and technical capacity, ensuring that smallholders are equipped to cope with erratic weather patterns and prolonged droughts. The component includes investment in research, establishment of seed banks, and support for affordable technologies.

Output 1.1: Widespread access to affordable climate-adapted seed varieties is achieved.

Activity 1.1.1: Increase investment in research institutions to lower production costs for climate-adapted crop and tree seed species.

Deliverable 1.1.1.1: High-precision equipment provided to NARO and decentralized seed research centers to lower production costs of promising flood and drought tolerant crop and seed species.
Deliverable 1.1.1.2: Training manuals developed for technical personnel to operate and maintain new equipment.
Deliverable 1.1.1.3: Flood and drought-resistant crop and treed seed species developed for key crop and cash crops e.g., coffee, rice, etc., adjusted for various agro-ecological zones.

Activity 1.1.2: Partner with and promote Zonal Research Institutes (ZRIs) at the sub-regional levels to produce, store, and market high quality climate-adapted crop and tree seed species.

Deliverable 1.1.2.1: Partnership agreements with national-level research institutes and ZRI's to increase farmers' access to and affordability of climate-adapted seed varieties.
Deliverable 1.1.2.2: Storage centers at ZRI's revamped to increase storage capacity and farmer access to seeds.

Activity 1.1.3: Provide technical capacity building for extension workers and farmers including women and youth on seed authenticity and farming techniques to ensure adequate production in the project area.

Deliverable 1.1.3.1: Extension worker capacity needs assessment reports and plans developed at the district level
Deliverable 1.1.3.2: Training materials on seed authenticity and sustainable farming practices developed.
Deliverable 1.1.3.3: Ten (10) district-level information hubs established to distribute best practices and lessons.

Activity 1.1.4: Support seed affordability through subsidies and local financing schemes.

Deliverable 1.1.4.1: Subsidies and loan schemes for farmer seed affordability incorporated into the Parish Development Model at the local level and local Savings and Credit Cooperative Organizations (SACCOs).

Output 1.2: Enhanced water management practices for sustained agricultural production.

Activity 1.2.1: Procure and install water harvesting equipment and storage tanks in households, schools, and hospitals

Deliverable 1.2.1.1: RWH equipment and 700 storage tanks (10 m^3) installed in households and institutions to increase access to clean and safe water for production.

Deliverable 1.2.1.2: Catalogue on RWH developed and distributed in local languages through publication, radio/TV shows to enhance local knowledge of the environmental, social, and economic benefits of RWH.

Deliverable 1.2.1.3: Twenty (20) community-level SRWH storage tanks (100,000 m^3) installed in designated catchment areas to reduce damage to wetlands and agricultural landscapes from flooding.

Activity 1.2.2: Establish small-scale solar-powered community-based irrigation (CBI) units in farming communities to support agricultural production in the dry months.

Deliverable 1.2.2.1: Extension worker capacity needs assessments reports and plans on the installation, operation, and maintenance of CBI units at the local levels.

Deliverable 1.2.2.2: 120 small-scale CBI units established, irrigating 12,000 hectares of agricultural land in the project area

Activity 1.2.3: Conduct capacity-building workshops on sustainable water management practices and establish demonstration centers.

Deliverable 1.2.3.1: Sub-county-level capacity needs assessments reports, building plans, and workshop reports ensuring increased knowledge and uptake of sustainable water management practices at the village and sub-county levels.

Deliverable 1.2.3.2: Four (4) Sub-regional demonstration centers and training materials developed to create continuous availability of teaching materials to farmers and growing communities.

Activity 1.2.4: Develop equitable rules for water infrastructure management and equitable benefit sharing.

Deliverable 1.2.4.1: Rules of engagement manual developed for water harvesting technologies.

Component 2: Advancing Forest Landscape Restoration and Sustainable Livelihoods

Component 2 targets the intertwined issues of deforestation, greenhouse gas emissions, and unsustainable land management by promoting sustainable enterprises and restoring forest landscapes. This component emphasizes community engagement, particularly among women and youth, to ensure widespread adoption and long-term sustainability of climate-smart practices. It aims to reduce pressure on forest resources through alternative energy solutions and support for nature-based enterprises.

Output 2.1: Reduced GHG emissions through adoption of renewable energy and forest conservations initiatives.

Activity 2.1.1: Leverage existing partnerships between Government, private technology providers and vendors, and community members to promote adoption of alternative energy sources like solar PV and bio-latrines.

Deliverable 2.1.1.1: Partnership agreements or MoU's established between government actors, technology providers, and end users to increase private sector investment in renewable energy.

Deliverable 2.1.1.2: Deployment of 3 MW of rooftop solar PV installed in households, schools, and hospitals.

Deliverable 2.1.1.3: Capacity needs assessment reports and training materials on installation, operations, and maintenance of solar and bio-latrine technologies made available at information centers for extension workers and end users.

Deliverable 2.1.1.4: 30 bio-latrines installed in schools and hospitals to ease pressure on forest resources.

Activity 2.1.2: Incentivize the application of FMNR for forest restoration to support agricultural production and restore forest landscapes and enhance wetland protection.

Deliverable 2.1.2.1: Incentives for land allocation for FMNR and forest management plans developed.

Deliverable 2.1.2.2: Capacity needs assessment reports and building plans for FMNR in forest-adjacent communities developed.

Deliverable 2.1.2.3: Inputs such as planting materials/seeds and services for the restoration of 50,000 ha of degraded forests provided in the project area.

Activity 2.1.3: Create awareness and strengthen community engagement in forest restoration.

Deliverable 2.1.3.1: Awareness meetings, announcements, and media released and organized at cultural, village, sub-county, and district levels highlighting the benefits of FMNR.

Deliverable 2.1.3.2: Increased publication of literature on FMNR benefits at information hubs.

Activity 2.1.4: Empower women and youth with FMNR knowledge and skills.

Deliverable 2.1.4.1: Training materials on FMNR application made available to men, women, and youth at sub-county level demonstration centers.

Output 2.2: Increased economic resilience through sustainable nature-based enterprise development and improved market access.

Activity 2.2.1: Promote access to inputs and services for diversified forest-based enterprises (FBEs) in forest adjacent communities.

Deliverable 2.2.1.1: Inputs and services distributed to 500 FBEs aimed at forest resource conservation.

Deliverable 2.2.1.2: Awareness campaigns on FBE benefits conducted and material made available and information hubs.

Activity 2.2.2: Enhance market infrastructure and access to financial services for bulk production.

Deliverable 2.2.2.3: Market linkages for FBE products established at district levels.

Activity 2.2.3: Provide capacity building and mentoring for FBE management.

Deliverable 2.2.3.1: Capacity needs assessments reports and building plans completed for 500 FBEs on business management, sustainable production, and product marketing.

Deliverable 2.2.2.2: Training materials for skills development for FBE management groups, including women and youth, made available at district-level information hubs.

Activity 2.2.4: Foster collaboration with NGOs, CSOs, and authorities to support FBE development

Deliverable 2.2.4.1: Partnership agreements or MoUs with local NGOs and CSOs signed.

Component 3: Enhancing Financial and Regulatory Frameworks for Long-Term Climate-Smart Technology Adoption

Component 3 focuses on creating an enabling environment for climate-smart technology adoption by addressing financial and policy barriers. It seeks to reduce costs through tax incentives and establish financing schemes like revolving funds. By updating outdated policies and improving institutional coordination, this component ensures the effective integration of climate-smart technologies into development plans.

Output 3.1: Farmers and technology end-users can afford technology inputs and services long-term via financial support mechanisms established at the local and national levels.

Activity 3.1.1: Develop tax incentives for climate technology components with traditionally complex procurement processes.

Deliverable 3.1.1.1: Tax incentives for climate technology components established, including a 16% tax cut for solar components.

Activity 3.1.2: Partner with the private sector and MFIs to provide soft loans for technology equipment and ongoing technology support for farmers and last-mile end users.

Deliverable 3.1.2.1: Partnership agreements with MFIs and SMEs signed.

Activity 3.1.3: Provide capacity support for financial institutions to invest in climate technologies.

Deliverable 3.1.3.1: Training tools and capacity-building initiatives for SMEs developed that communicate and alleviate perceived risks associated with agro-investments especially among financial institutions.

Activity 3.1.4: Establish long-term financing schemes for climate technology adoption that can be invested in post-harvest loss and value addition technologies and initiatives.

Deliverable 3.1.4.1: A renewable energy revolving fund established at the national level.

Deliverable 3.1.4.2: Seed funding provided for village savings and loan associations (VSLAs) to support access to inputs and services.

Deliverable 2.1.4.3: Other financing schemes to support post-harvest loss (e.g., drying racks, solar drying and storage facilities, capture fisheries, etc.) and value addition technologies.

Output 3.2: Strengthened Regulatory and Institutional Frameworks

Activity 3.2.1: Provide support for the standardization of regulations, procedures, and norms aimed at climate technology safety and development in the sub-regions.

Deliverable 3.2.1.1: Updated and all-rounded climate technology standards and regulations to support technology uptake in the long term.

Activity 3.2.2: Conduct regulatory impact assessments and stakeholder consultations for new or updated regulations and/or standards targeting an increased uptake of environmentally-sound technologies in Eastern Uganda.

Deliverable 3.2.2.1: Regulatory impact assessment reports completed.

Activity 3.2.3: Develop complementary data and tools to support existing M&E frameworks under MWE to track technology uptake and regulatory enforcements.

Deliverable 3.2.3.1: Joint action plans and monitoring mechanisms developed.

Activity 3.2.4: Establish a multi-institutional coordination framework to facilitate collaboration and information exchange at the landscape, sub-county, district, and national levels

Deliverable 3.2.4.1: Coordination framework established at sub-county, district, and national levels.

The project design assumes stable political and institutional support, effective stakeholder collaboration, community acceptance, adequate financial resources, successful policy implementation, technological feasibility, and improved market access and infrastructure development.

The theory of change diagram can be found under **Annex B** of this concept note.

B.2.2. Consistency with National Regulatory and Legal Frameworks

The project fits in closely with several national policies in Uganda, showing a unified response to address the key challenges and priorities. By applying the **National Irrigation Policy** (2017), this project prioritizes water management through water harvesting reservoirs and tanks for irrigation purpose using solar powered irrigation pumps. The operation also targets increasing irrigated land as well as sustaining crop production during dry periods, both of which are consistent with national development aims.[8]

Similarly, it supports the 2018 **Uganda's National Seed Policy** by sensitizing farmers on drought and flood-resistant seeds varieties, which will help in ensuring food security throughout Eastern Uganda.[9] This is further in line with the 2015 **National Climate Change Policy**, specifically the adaptation measures for the water, agriculture, forestry, and energy.[10] Also, the project is aligned with achieving the goal of Uganda's 2016 **National Agricultural Extension Strategy** that concentrates on targeted capacity building for agricultural extension workers and facilitation of information sharing forums as well as promoting partnership with NGOs to enhance quality and relevance of extension services.[11]

Moreover, this plan shows environmental stewardship in accordance with national legislation. It encourages low carbon resilience in rural areas using climate smart technologies for Agriculture, Forestry and Energy Sectors thereby minimizing negative environmental impacts which are consistent with the objectives of the **National Environmental Act** of 2019.[12]

B.2.3. Implementation Arrangements

The Ministry of Water and Environment (MWE), GCF's Accredited Entity and established in 2007, is responsible for the development, management, and regulation of Uganda's water and environmental resources. It prioritizes minimizing environmental and social impacts and ensures gender-responsive approaches in all its projects. MWE's mandate, derived from the Constitution and the Local Government Act, includes policy formulation, standard-setting, monitoring, coordination, and providing technical support across the water and environment sectors. The ministry operates through three Directorates—Water Development, Water Resources Management, and Environmental Affairs—alongside various departments and agencies.

MWE will collaborate with the Climate Technology Center and Network (CTCN) who will act as a co-Executing entity for planned activities under all Components. CTCN has the mandate to promote the accelerated transfer of environmentally sound technologies for low carbon and climate resilient development in developing countries. As a co-executing entity for this project, CTCN will be part of the Steering Committee of the project and will work closely with MWE, the GCF National Designated Authority in Uganda (the Ministry of Finance, Planning, and Economic Development), and the CTCN National Designated Entity (the Science, Technology, and Innovation Secretariat) to ensure full alignment with national priorities throughout the term of the project. CTCN is hosted by UNEP, and together with its Network members, offers a wide range of expertise engaging in about 1,500 activities related to climate technologies in over 150 countries. CTCN´s Network Members will be invited to formulate the GFC Full Proposal and PPF in case this Concept Note is approved by the GCF, and could be involved in the implementation of the project once approved. CTCN consists of two parts: a center—a

[8] National Irrigation Policy, MWE & MAAIF, 2017.
[9] National Seed Policy, MAAIF, 2018.
[10] National Climate Change Policy, MWE, 2015.
[11] National Agricultural Extension Strategy 2016 – 2021, MAAIF, 2016.
[12] Uganda National Environment Act, NEMA, 2019.

coordinating entity located in UN City Copenhagen—and a worldwide network of organizations that delivers CTCN services—both virtually and in-person. In short, the center operates the network, and together they constitute the CTCN.

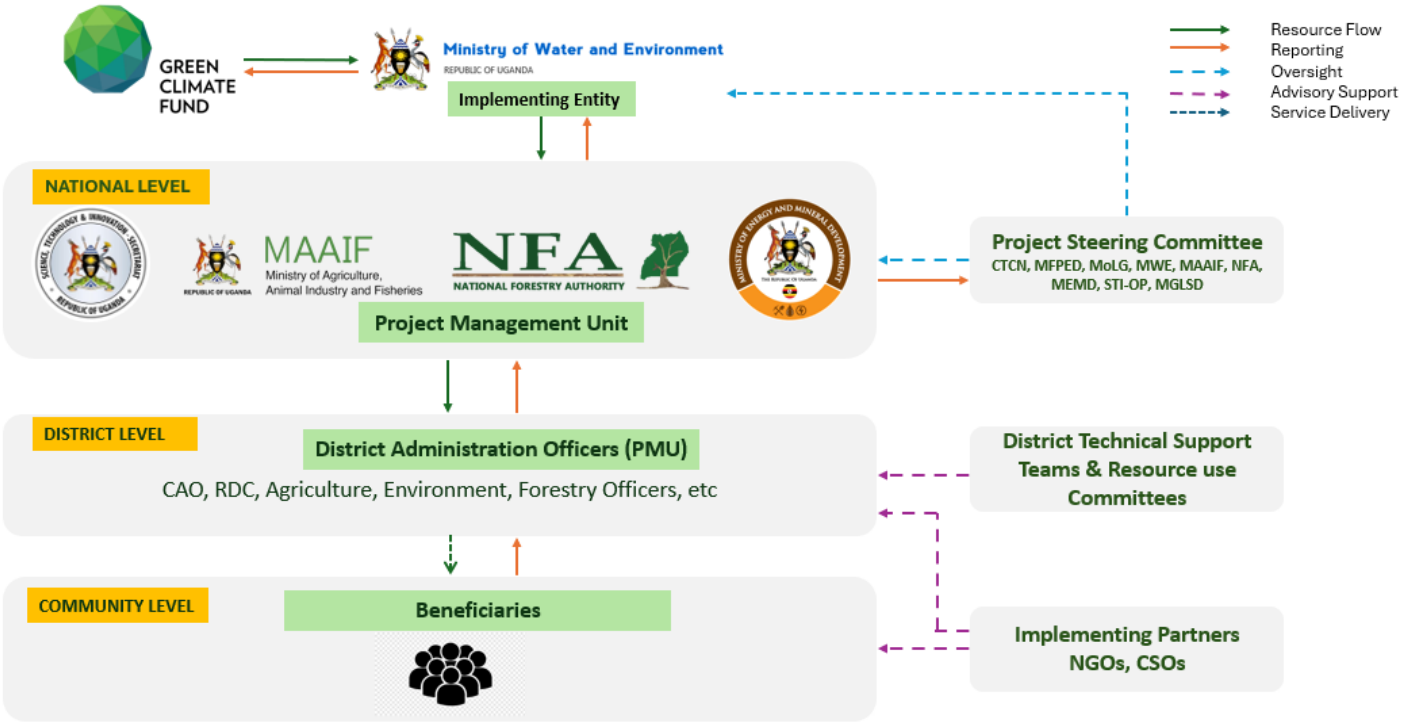


Figure 4: Project implementation arrangements

B.2.4. Risk Analysis

Risk Category	Risk(s) Description	Likelihood of Occurrence	Impact Level	Mitigation Strategies	Mitigation Entities
Financial	Reliance on external funding and government budgets may lead to funding gaps or delays, affecting project implementation and sustainability. Unforeseen expenses such as increases in material costs or infrastructural challenges could lead to budget overruns.	Low	Medium	Diversification of funding sources. Contingency funds like the renewable energy revolving fund for different sub-sector technologies. Foster Public-Private Partnerships (PPP), and NGOs. Conduct feasibility studies and cost-benefit analyses to estimate project expenses accurately.	NDA, MWE
Operational/Institutional	Coordination challenges among multi-level stakeholders may lead to inefficiencies and delays in implementation. Insufficient community participation and engagement may lead to	Low	Low	Establish an inter-ministerial committee (IMC) to oversee TAP implementation. An inter-institutional coordination framework to enhance coordination for TAP implementation.	MWE, PMU, NDA, UNCST

	resistance or opposition to project activities.			Promote responsive extension services with grievance redress mechanisms.	
Technical Challenges	Complexities in implementing advanced technologies or lack of skilled personnel may lead to technical setbacks	Low	Medium	Increase technical capacity building for extension workers and project management teams. Establish partnerships with technical experts and research institutions to access specialized knowledge and expertise.	PMU, IMC, MWE, MAAIF, MEMD, NFA, FSSD
Supply Chain Disruptions	Dependence on external suppliers for technology components/equipment may expose the project to supply chain disruptions and delays.	Low	Low	Diversify supply chains by providing support for local manufacturing of inputs/equipment.	PMU, MFPED, MWE, MTTI
Environmental Risks	The occurrence of natural disasters like landslides, flooding, and drought could impact project activities. Disturbance of ecosystems and natural habitats as a result of the project's activities.	Low	Low	Conduct environmental and social impact assessments (ESIA) to identify potential risks. Monitor environmental indicators regularly and adapt project activities to changing environmental conditions.	MWE-CCD, NEMA, NWSC, PMU
Monitoring and Evaluation	Inadequate monitoring and evaluation systems may hinder the project's ability to track progress, assess Outputs, and make informed decisions for course correction.	Low	Medium	Implement improved monitoring and backstopping mechanisms/frameworks to track project progress, assess Outputs, and identify areas for improvement. Foster a culture of learning and adaptation within the project team to facilitate evidence-based decision-making and continuous improvement.	UNCST, MoSTI, PMU, MWE, IMC, etc

B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)

B.3.1. Impact Potential

This project is strategically designed to significantly amplify the resilience of Eastern Uganda's communities to climate threats while concurrently enhancing carbon sequestration capabilities. Specifically, the project targets the introduction of climate-smart agricultural practices across 12,000 hectares, directly benefiting over 871,600 people including 352,100 women. It will indirectly benefit a total of 4,487,000 people including indirectly benefiting 2,253,000 women. By establishing 10 district-level demonstration/information centers, the project ensures widespread adoption and sustainability of these practices. Additionally, the reforestation and sustainable land management activities aimed at restoring 50,000 hectares are projected to sequester about 1,468,389 tons of CO2 annually, addressing Uganda's commitments under its NDCs. This targeted intervention supports both adaptation through enhanced agricultural productivity and mitigation through increased forest cover, embodying a dual approach to addressing climate change.

B.3.2. Paradigm Shift Potential

This project is strategically positioned to foster a paradigm shift towards sustainable agricultural and forestry practices within Eastern Uganda and similar ecologies. By integrating climate-smart technologies with enhanced water management and reforestation techniques, the project establishes a model of resilience that can be replicated across other districts and regions. The project also aims to create a mindset change amongst the population in the project area in ways like creating awareness of the dangerous effects of bush burning for agricultural expansion and the environmental, social, health, and education benefits of adopting environmentally friendly technologies.
The sustainability of these interventions is guaranteed through the creation of financial incentives and services such as a renewable energy revolving fund, policy development and enforcement, and incentivizing public-private partnerships (PPP), ensuring ongoing support for the adoption of these technologies. Furthermore, the project will establish a framework for continuous learning and adaptation, incorporating both modern technological advances and traditional knowledge, thus promoting a resilient, scalable model for climate adaptation.

B.3.3. Sustainable Development Potential

The sustainable development potential of this project is significant, with a focus on enhancing social, economic, and environmental resilience in Eastern Uganda. Socially, the project will empower rural communities by improving access to climate-smart agricultural technologies and water management systems for water-stressed households, directly addressing food insecurity and improving livelihoods, particularly for women and youth. These groups, often disproportionately affected by climate change, will benefit from targeted capacity-building initiatives that ensure equitable access to resources, reducing inequalities and fostering inclusive participation in sustainable development.

Economically, the project will increase the income-generating potential of smallholder farmers and forest-based enterprises by promoting sustainable practices that enhance productivity and resilience. It will further create new green jobs within Eastern Uganda, thereby creating income for youth and women locally. Environmentally, it will contribute to the restoration and conservation of critical ecosystems, such as the Mount Elgon Forest landscapes, through reforestation and sustainable land management practices. These efforts will not only enhance biodiversity and soil fertility but also reduce greenhouse gas emissions, aligning with Uganda's NDCs and supporting long-term sustainability in line with Uganda's Green Growth Development Strategy.

B.3.4. Needs of Recipient

Eastern Uganda is acutely vulnerable to climate change, with over 8 million people at risk due to increased frequency of landslides, floods, and prolonged droughts (UNMA 2023). The region's reliance on rainfed agriculture exacerbates its vulnerability, as erratic rainfall patterns lead to crop failures, food insecurity, and loss of livelihoods. In areas like Bududa, recurrent landslides not only displace communities but also destroy vital agricultural land, compounding the economic challenges faced by local populations (Nimusiima 2021). The high population density in these regions further intensifies the impact, as large numbers of people are concentrated in areas prone to climate-related disasters (World Bank 2020). This project aims to directly address these vulnerabilities by introducing climate-resilient agricultural practices, such as drought-tolerant seed varieties and improved water management systems, which are crucial for sustaining livelihoods in the face of climate change. By targeting the most at-risk populations, particularly those in highland and lowland areas, the project seeks to reduce their exposure to climate-induced risks and enhance their resilience.

The economic and social development of Eastern Uganda is significantly hindered by widespread poverty and the region's dependence on subsistence farming, which is highly susceptible to climate variability. With poverty rates exceeding the national average, approximately 10.7% of the population lives below the poverty line, making them particularly vulnerable to climate shocks (UBOS 2019). The lack of financial resources and access to climate-smart technologies further exacerbates their vulnerability, limiting their ability to adapt to changing climatic conditions (FAO 2020). This project will focus on empowering economically disadvantaged communities, with a particular emphasis on women and youth, who are often the most affected by climate change (UNDP 2021). Through capacity-building initiatives, improved access to climate-resilient technologies, and the promotion of sustainable livelihood options, the project aims to enhance the adaptive capacity of these communities, ensuring they are better equipped to manage the impacts of climate change and contribute to the region's long-term resilience.

B.3.5. Country Ownership

The project is firmly rooted in Uganda's national climate strategy and priorities, demonstrating strong alignment with the National Climate Change Policy, Nationally Determined Contributions (NDCs), and the Technology Action Plans (TAPs). By directly supporting Uganda's goals for climate resilience and sustainable development, the project contributes to the country's broader objectives of low-carbon growth and enhanced adaptive capacity. The project is also supported by Uganda's enabling policy and institutional frameworks, ensuring that it is well-integrated into national efforts to combat

climate change. This coherence with existing national policies underscores the project's importance in achieving the country's climate targets and its role in advancing Uganda's sustainable development agenda.

The project will be implemented by the Ministry of Water and Environment (MWE) in close collaboration with other government agencies, local NGOs, and community-based organizations. The MWE has a proven track record of successfully delivering similar projects, which ensures their capacity to manage and execute the interventions effectively. A comprehensive stakeholder engagement process has been conducted, involving consultations with civil society organizations, local communities, and relevant government agencies. The feedback received has been instrumental in refining the project design to ensure that it addresses the needs and priorities of the affected communities. This inclusive and consultative approach not only strengthens country ownership but also enhances the project's effectiveness and sustainability by embedding it within the local context and ensuring that it is responsive to the realities on the ground.

B.3.6. Efficiency and Effectiveness

The CATLER project, aimed at enhancing climate resilience in Eastern Uganda, adheres to critical investment criteria necessary for its bankability and sustainability. Affordability is central to facilitating access for the 871,600 beneficiaries (1.8% of the population). All climate-resilient technologies deployed, including solar-powered irrigation systems and drought-resistant seeds, will undergo rigorous testing and vetting to ensure effectiveness. Each intervention must demonstrate clear climate, environmental, and financial benefits to qualify for the funding. The project targets a cost of around $28.65 per beneficiary made resilient to climate change, with measurable effects on reducing greenhouse gas emissions and strengthening adaptive capacity. To mobilize blended finance, the project will leverage partnerships and innovative financing mechanisms, starting with a total project cost of $25 million. The GCF grant will cover initial capital costs while attracting additional funding from private sector investments. The project aims to create a demonstration effect that encourages stakeholders to invest further, targeting a co-financing ratio that maximizes resource mobilization. An operation and maintenance plan will ensure long-term sustainability and viability post-funding, with incentives in place for local stakeholders to maintain the benefits achieved. By fostering collaboration and focusing on sustainable practices, CATLER aims to enhance food and water security while building resilience against climate change impacts in rural communities.

B.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)

Engagement with national and local stakeholders in Uganda has been comprehensive and ongoing, ensuring that the development of the concept note is closely aligned with the country's climate priorities. Uganda's Technology Needs Assessment (TNA), completed in 2021 under the coordination of the Uganda National Council for Science and Technology (UNCST), was a key milestone. The TNA project was a nationally driven effort that involved a two-day technology prioritization workshop with key stakeholders, resulting in the selection of priority technologies and the development of Technology Action Plans (TAPs) aimed at increasing the uptake of these technologies across key sectors. Recognizing the limited institutional capacity to develop bankable funding proposals, the UNCST spearheaded the creation of a request for technical assistance from the Climate Technology Centre and Network (CTCN), seeking support to advance these TAPs into a full bankable project proposal for the Green Climate Fund (GCF).

This concept note, grounded in the TAPs and other national priorities, is the result of extensive engagement with a wide range of stakeholders. The TNA project was led by a technical team comprising the Head of the Climate Change Department (CCD), the Technology Lead Negotiator for Uganda and Least Developed Countries (LDCs), the CTCN National Designated Entity (NDE) focal point, and other technical staff from the MWE, as well as consultations with the National Designated Authority (NDA), NEMA, MoFPED, MAAIF, MoSTI, MoLG, MEMD, NFA, and other national actors. These engagements continued during this concept note's development and will be maintained at the proposal development stage.

In April 2024, a consultation meeting involving the CTCN National Designated Entity, Science, Technology, and Innovation (STI) Secretariat, and CTCN was held to establish the foundation for developing the project proposal within the context of this project. A project kick-off workshop was also held in October 2024 to gather stakeholder input into the concept note. Moving forward, an additional stakeholder consultation workshop is planned. It will focus on validating the funding proposal before its submission to the GCF. These workshops will engage a diverse group of stakeholders, including technology vendors/providers, financial institutions, farmers' groups, district-level government officers, CSOs, research institutions, community members, and development partners in the sub-regions. Additionally, targeted consultations will be conducted with indigenous communities in eastern Uganda to ensure that the project's activities and Deliverables are aligned with their specific needs and priorities.

C. Indicative Financing/Cost Information (max. 3 pages)

C.1. Financing by components (max ½ page)

Component	Outputs	Indicative cost (USD)	GCF financing		Co-financing		
			Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institution
Component 1	Output 1.1	1,269,000		Grant			
	Output 1.2	2,121,000		Grant			
Component 2	Output 2.1	3,480,000		Grant			
	Output 2.2	670,000		Grant			
Component 3	Output 3.1	1,550,000		Grant			
	Output 3.2	910,000		Grant			
Indicative total cost (USD)		**25,000,000**					

C.2. Justification of GCF funding request (max. 1 page)

Uganda has set a clear and ambitious target to reduce its greenhouse gas emissions by 24.7% below the Business-as-Usual (BAU) scenario by 2030 (Uganda's NDC 2022). However, achieving this goal poses significant challenges due to the country's limited financial resources. Uganda's climate strategy prioritizes adaptation, focusing on critical sectors such as agriculture, water, forestry, energy, and infrastructure. Despite these efforts, the country lacks a comprehensive strategy to mobilize the estimated USD 28.1 billion required to finance both conditional and unconditional adaptation and mitigation measures by 2030. This funding is crucial for technology development, transfer, and capacity building across all sectors. Compounding these challenges is Uganda's rising public debt, which stood at 52% of GDP, or USD 25 billion, as of June 2023. The high level of indebtedness significantly restricts the government's ability to finance its climate actions independently, underlining the urgent need for international financial support (IMF 2023).

In addition to fiscal constraints, Uganda faces substantial barriers to attracting private sector investment in climate technologies. The perception of high risks and low returns has deterred significant private sector involvement, which is crucial for scaling up climate resilience initiatives (Climate Action Tracker 2022). Financial institutions in Uganda are generally hesitant to offer favorable financing terms for climate-related projects, which exacerbates the funding gap. Stringent collateral requirements and high-interest rates further restrict access to finance for smallholders and SMEs. These challenges are compounded by a lack of awareness and technical expertise among private sector actors about the potential benefits of climate investments, leading to low investment levels (Uganda's Financial Sector Assessment 2022). Additionally, the complexity and administrative burden of accessing climate finance pose significant barriers for rural communities and SMEs, limiting their ability to secure necessary funding for climate adaptation and mitigation projects.

Given these financial and structural challenges, the Green Climate Fund (GCF) grant is crucial to bridging the financing gap and supporting Uganda's climate ambitions. The GCF grant will enable the development and transfer of critical climate technologies to rural communities in Eastern Uganda, as identified in the Technology Action Plans (TAPs). By providing concessional finance, the GCF will reduce the financial risks associated with climate investments, thereby encouraging private sector participation and empowering vulnerable communities to adopt climate-resilient practices. This project aligns with GCF's strategic focus on prioritizing support for Least Developed Countries (LDCs) and African nations, facilitating Uganda's progress toward its NDC targets. The GCF funding will ensure sustained investment in climate resilience, promote the widespread adoption of climate-smart technologies, and foster long-term sustainable development in Uganda, particularly in the most vulnerable sub-regions in the east.

C.3. Sustainability and replicability of the project (exit strategy) (max. 1 page)

To ensure the long-term sustainability of the project's Outputs, the project emphasizes building robust institutional capacity across all levels, fostering community ownership of technologies, and facilitating continuous knowledge sharing and learning at the community, landscape, local government, and national levels. The project will prioritize continuous training and technical capacity-building programs for extension workers, technical staff, smallholders, and local communities to ensure the ongoing operation and maintenance of climate-smart technologies. For instance, the training materials and catalogs developed during the project will be housed in district-level information hubs, providing a continuous source of knowledge on sustainable farming practices, water management, and land use. This will help cultivate an environmentally conscious society capable of sustaining the project's achievements long after GCF funding has been fully disbursed.

Central to the project's sustainability strategy is the inclusive participation and ownership of technologies by the local communities, particularly women and youth. By empowering these groups through targeted training programs and actively involving them in decision-making processes, the project ensures that all stakeholders have a vested interest in

maintaining and utilizing the infrastructures and technologies developed. Financial sustainability will be further reinforced through the promotion of financial incentives such as seed funding for village savings and loan associations (VSLAs), favorable loan terms for local enterprises, subsidies for farmers, and tax incentives for climate technology components. These measures are designed to maintain access to affordable financial services, ensuring that investments in climate-smart technologies continue beyond the project's life. The promotion of local nature-based enterprises through skills development and market access will also drive sustainable economic growth and foster alternative livelihoods that are both economically viable and environmentally sustainable.

Moreover, investment in research and development through institutions like NARO, Makerere University, and other decentralized research programs will guarantee the ongoing availability of climate-adapted seeds, thereby enhancing food security. These institutions will also generate valuable data on the social, economic, and environmental benefits of climate technologies, further encouraging their adoption post-project. Lastly, through the review and updating of policies, stakeholder consultations, and the establishment of inter-agency coordination mechanisms, the project will strengthen the policy and regulatory environment, ensuring the effective diffusion and replicability of climate-smart technologies across Uganda, even after the project concludes. This comprehensive approach ensures that the project's impacts are sustainable, scalable, and replicable, contributing to Uganda's broader climate resilience and development goals.

For non-grant instruments, explain how the capital invested will be repaid and over what duration of time.

D. Supporting documents submitted (OPTIONAL)

- ☒ Map indicating the location of the project/programme
- ☒ Diagram of the theory of change
- ☐ Economic and financial model with key assumptions and potential stressed scenarios
- ☐ Pre-feasibility study
- ☐ Evaluation report of previous project
- ☒ Results of environmental and social risk screening

Self-awareness check boxes

Are you aware that the full Funding Proposal and Annexes will require these documents? Yes ☒ No ☐

- Feasibility Study
- Environmental and social impact assessment or environmental and social management framework
- Stakeholder consultations at national and project level implementation including with indigenous people if relevant
- Gender assessment and action plan
- Operations and maintenance plan if relevant
- Loan or grant operation manual as appropriate
- Co-financing commitment letters

Are you aware that a funding proposal from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes ☒ No ☐

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Annex A: Map indicating the proposed project area

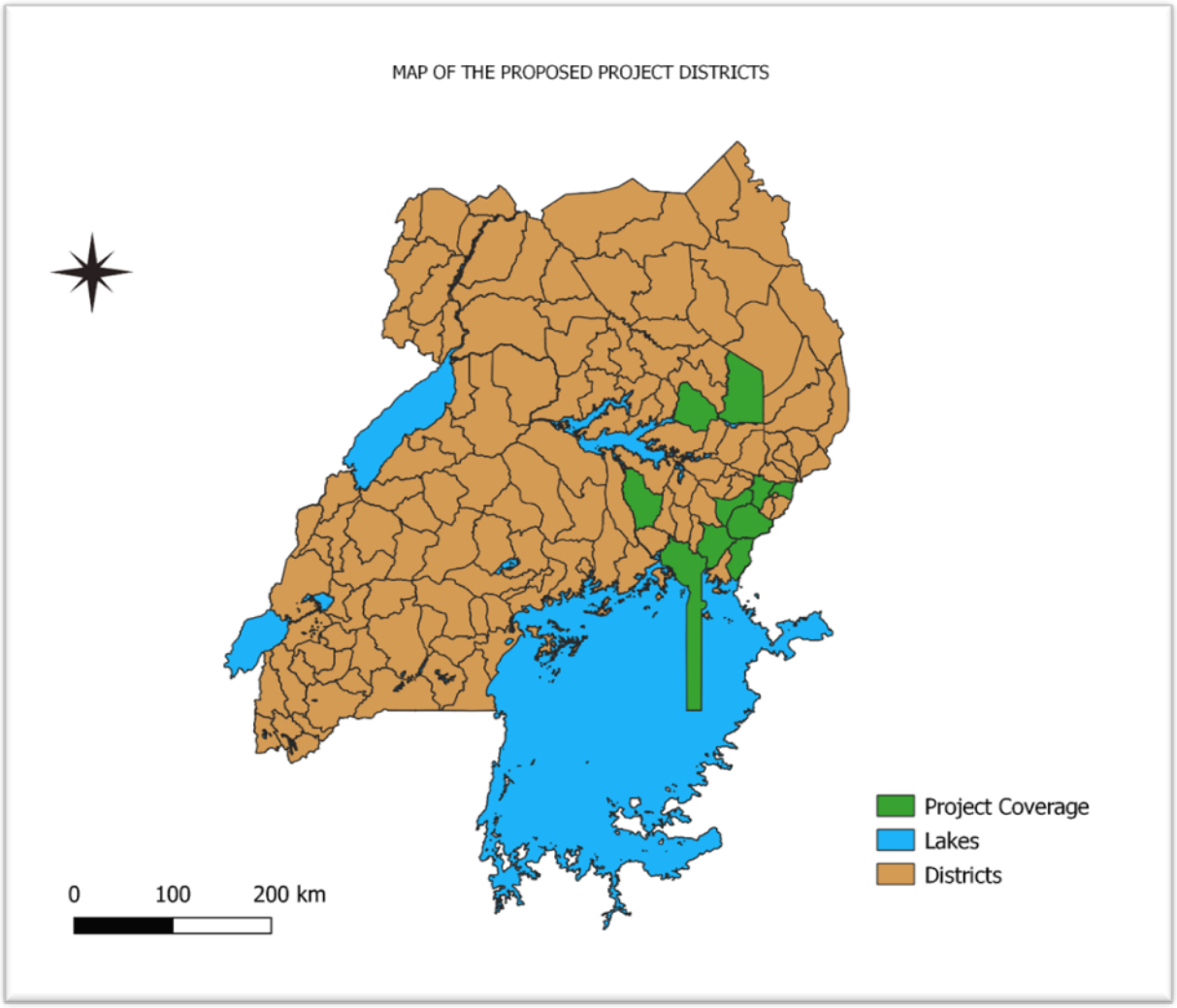
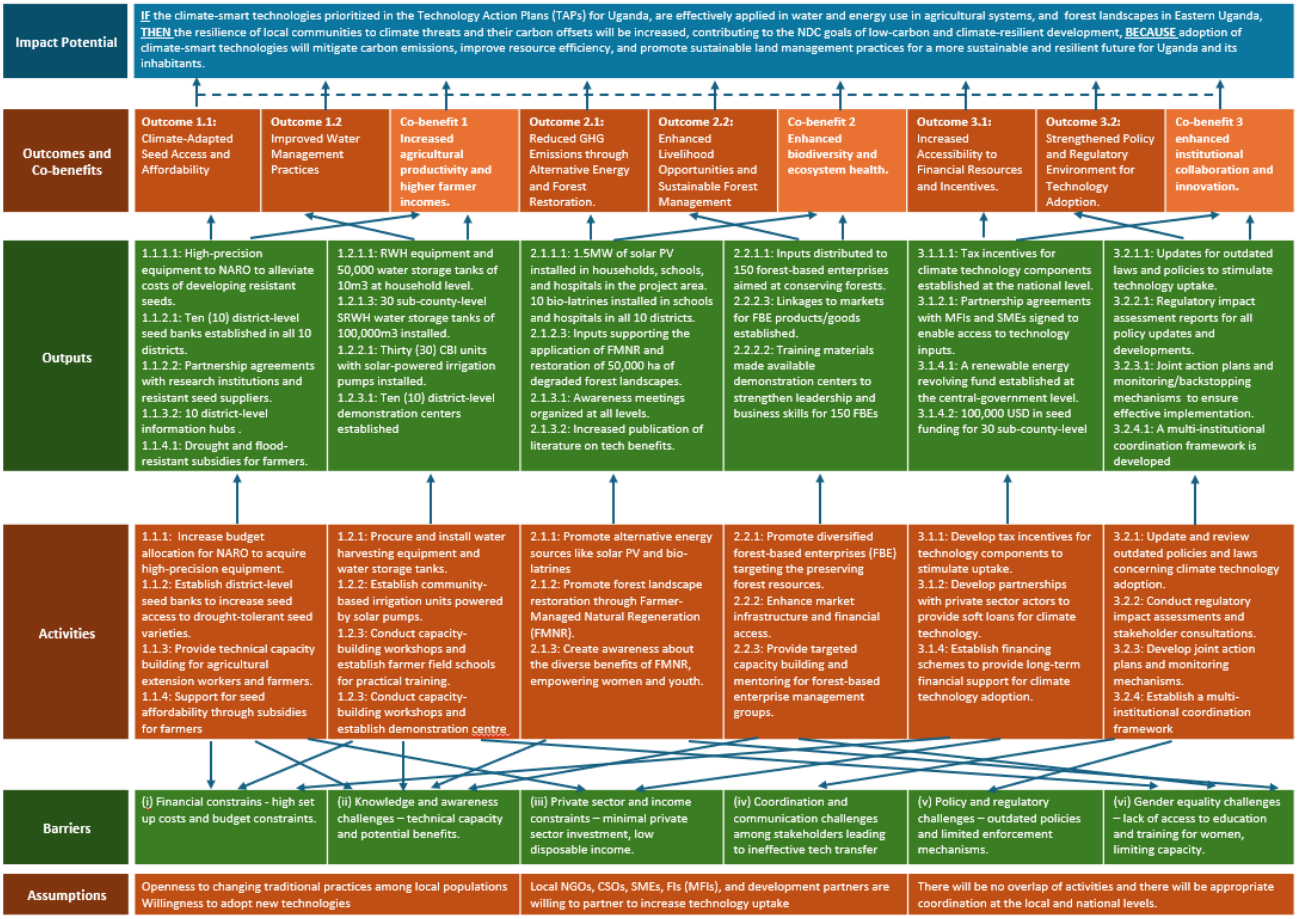


Figure 5: Map of proposed districts for intervention

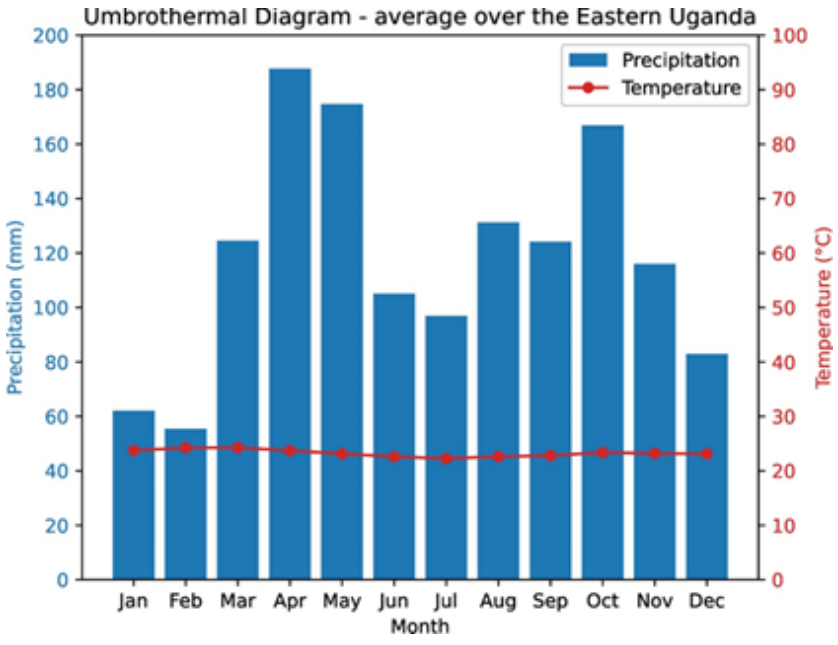
The project will be implemented in 3 sub-counties per district, in each of the 4 selected Sub-regions as follows:

Sub-region	Districts
Teso Sub-region	Soroti and Katakwi
Bugisu Sub-region	Bududa and Mbale
Bukedi Sub-region	Tororo, Busia, and Butalejja
Busoga Sub-region	Bugiri, Mayuge, and Kamuli

Annex B: Theory of Change Diagram



Annex C: Umbro-thermal diagram showing annual average temperature and precipitation over Eastern Uganda



Annex D: Environmental and Social Screening Checklist

Part A: Risk Factors

Please indicate your answers to the questions below and provide an explanation on the response selected. In cases when the TBD response has been selected, please explain briefly why you are not able to determine now and when in the project cycle the question will be addressed.

If the criteria is not applicable to the project you may write N/A in the justification box.

Risk Factors	YES	NO
Will the activities involve associated facilities and require further due diligence of such associated facilities?	☐	☒
Please provide a justification of your answer: The intervention under Climate Adaptation and Technology Leveraging for Enhanced Climate Resilience in Eastern Uganda (CATLER – Uganda) pose positive impact and limited risk exposure to affected communities. The overall project benefit will improve on the climatic resilience of East Uganda. Some of the intended benefits include improved water use, greater utilization of energy and sustainable agriculture. As such, no additional due diligence of the associated facilities is required.		
Will the activities involve trans-boundary impacts including those that would require further due diligence and notification to affected states?	☐	☒
Please provide a justification of your answer: Owing to the border nature of several of the project specific districts in Eastern Uganda, some trans-boundary impact will be realized with other surrounding districts and in Kenya. As stated above, the impact will be positive and have limited risk exposure.		
Will the activities adversely affect working conditions and health and safety of workers or potentially employ vulnerable categories of workers including women and children?	☐	☒
Please provide a justification of your answer: The project focusses on building climate resilience in Eastern Uganda through a variety of ways including Investment in strengthening research and development (R&D) for climate resilience, Increased access to inputs and services for farmers, local communities and businesses, improved institutional coordination and community awareness among others. These activities will be delivered and disseminated through well-defined structures within the local communities and existing government systems. As such working conditions will not be affected nor will the safety of workers. No children will be employed. Under Component 1 of the project; Strengthening Climate Resilience in Agriculture and Forestry Through Sustainable Practices and Technologies. The project intervention calls for the development of 10 seed banks. Procurement measures will be put in place to ensure that no children are hired for the actual construction work during this phase.		
Will the activities potentially generate hazardous waste and pollutants including pesticides and contaminate lands that would require further studies on management, minimization and control and compliance to the country and applicable international environmental quality standards?	☐	☒
Please provide a justification of your answer: The bulk of the Deliverables under the project are specific interventions through capacity building and stakeholder engagement and facilitation to address climate challenges. On the other hand, the project drives at delivering greener solutions that have a positive impact on the environment.		
Will the activities involve the construction, maintenance, and rehabilitation of critical infrastructure (like dams, water impoundments, coastal and riverbank infrastructure) that would require further technical assessment and safety studies?	☐	☒

Please provide a justification of your answer: The bulk of the Deliverables under the project are specific interventions through capacity building and stakeholder engagement and facilitation to address climate challenges with the only physical infrastructure development through the development of 10 seed banks. The three components of the project are Strengthening Climate Resilience in Agriculture and Forestry Through Sustainable Practices and Technologies, Catalyzing Local Economic Growth and Nature-Based Enterprises with Technical and Financial Support and Enhancing Financial and Policy Frameworks for the Widespread Adoption of Climate-Smart Technologies		
Will the proposed activities potentially involve resettlement and dispossession, land acquisition, and economic displacement of persons and communities?	☐	☒
Please provide a justification of your answer: the project seeks to work with beneficiaries in the existing communities to improve on their climate adaptation. This will be delivered through capacity building and stakeholder engagement.		
Will the activities be located in or in the vicinity of protected areas and areas of ecological significance including critical habitats, key biodiversity areas and internationally recognized conservation sites?	☐	☒
Please provide a justification of your answer: the project area is the 10 districts of Eastern Uganda i.e.the four Sub-regions of Teso, Bukedi, Busoga, Bugisu. The area doesn't have significant critical habitats and key biodiversity areas with the only protected area in the region being Mount Elgon National Park. The park hosts no protected flora or fauna. The park has a variety of scenery; this includes cliffs, caves, waterfalls, gorges, mesas, calderas, hot springs, and the mountain peaks. The most popular areas are the four explorable, vast caves where frequent night visitors such as elephants and buffaloes come to lick the natural salt found on the cave walls.		
Will the activities affect indigenous peoples that would require further due diligence, free, prior and informed consent (FPIC) and documentation of development plans?	☐	☒
Please provide a justification of your answer: the project area has no indigenous people that require engagement. The area is hosted by agricultural communities that practice both subsistence and semi-commercial farming. These communities are to be engaged on the the potential impact of existing traditional practices and the impact to the climate and environment and how to adopt new practices that promote climate resilience.		
Will the activities be located in areas that are considered to have archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values or contains features considered as critical cultural heritage?	☐	☒
Please provide a justification of your answer: the areas of Eastern Uganda are heavily settled on with agricultural and other economic activities like fishing and forestry. There exist no sites with archaeological (prehistoric), paleontological, historical, cultural, artistic, and religious values or sites of cultural heritage.		

Part B: Specific environmental and social risks and impacts

Assessment and Management of Environmental and Social Risks and Impacts	YES	NO	TBD
Has the E&S risk category of the project been provided in the concept note?	☒	☐	☐
Has the rationale for the categorization of the project been provided in the relevant sections of the concept note?	☒	☐	☐

Are there any additional environmental, health and safety requirements under the national laws and regulations and relevant international treaties and agreements?	☐	☒	☐
Please provide a justification of your answer: the concept note provides for a B rating under the ESS assessment.			
Are the identification of risks and impacts based on recent or up-to-date information?	☒	☐	☐
Please provide a justification of your answer: the risk assessment is based on the latest information and driven by the latest research in the project feasibility study.			
Labour and Working Conditions	**YES**	**NO**	**TBD**
Will the activities potentially have impacts on the working conditions, particularly the terms of employment, worker's organization, non-discrimination, equal opportunity, child labour, and forced labour of direct, contracted, and third-party workers?	☐	☒	☐
Please provide a justification of your answer: the project execution will rely on existing community and government structures. These are already aligned to equal opportunity, non-use of child or forced labor.			
Will the activities pose occupational health and safety risks to workers including supply chain workers?	☐	☒	☐
Please provide a justification of your answer: the project execution will rely on existing community and government structures. These ensure adherence to occupational health and safety. The only construction related activity is the development (or improvement) of 10 seed banks. Health and safety standards will be communicated to contractors as per contract terms.			
Resource Efficiency and Pollution Prevention	**YES**	**NO**	**TBD**
Will the activities generate (1) emissions to air; (2) discharges to water; (3) activity-related greenhouse gas (GHG) emissions, (4) noise and vibration; and (5) wastes?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement. No emissions, discharge or emissions will be generated.			
Will the activities utilize significant number of natural resources including water and energy?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement. No water resources are to be utilized in project delivery.			
Will there be a need to develop detailed measures to reduce pollution and promote sustainable use of resources?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement. The overall project deliverables are geared to climate resilience in the project districts to promote sustainable use of resources.			

Community Health, Safety, and Security	YES	NO	TBD
Will the activities potentially generate risks and impacts to the health and safety of the affected communities?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda.			
Will there be a need for an emergency preparedness and response plan that also outlines how the affected communities will be assisted in times of emergency?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda. The project scope isn't around emergency preparedness. However, the project will support in developing emergency prevention activities around the environment like frequent landslides in the areas through sustainable use of forests and climate smart agriculture. This will contribute to emergency preparedness.			
Will there be risks posed by the security arrangements and potential conflicts at the project site to the workers and affected community?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda.			

Land Acquisition and Involuntary Resettlement	YES	NO	TBD
Will the activities likely involve land and acquisition and/or physical or economic displacement?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda.			

Biodiversity Conservation and Sustainable Management of Living Natural Resources	YES	NO	TBD
Will the activities potentially introduce invasive alien species of flora and fauna affecting the biodiversity of the area?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda. No new flora or fauna is to be introduced into the area through this project.			
Will the activities have potential impacts on or be dependent on ecosystem services including production of living natural resources (eg.agriculture, livestock, fisheries, forestry)?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda. The intended impact is to instead improve on the sustainability of the natural resources.			

Indigenous Peoples	YES	NO	TBD
Will the activities potentially have any indirect impacts on indigenous peoples, ethnic minorities, or vulnerable and marginalized groups?	☐	☒	☐

Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda. All communities in the project districts are to be engaged.

The intervention will instead provide for a positive impact to the communities on how to use resources sustainably and adopt climate resilient measures.

Cultural Heritage	**Yes**	**NO**	**TBD**
Will the activities restrict access to the cultural heritage sites and properties?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda.			
Will there be a need to prepare a chance-find procedure in case of the discovery of cultural heritage assets?	☐	☒	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda.			

Stakeholder engagement and grievance	**Yes**	**NO**	**TBD**
Will the activities include a continuing stakeholder engagement procress and a grievance redress mechanism and integrated into the management/implementation plans?	☒	☐	☐
Please provide a justification of your answer: the project deliverables are around capacity building and stakeholder engagement of communities within the 10 districts of Eastern Uganda. The project will ensure continuous stakeholder engagement through the existing local, community and government structures.			

Annex E: SWOT analysis of prioritized climate technologies in Technology Action Plans (TAPs)

Technology	Strengths	Weaknesses	Opportunities	Threats
Agriculture Sector				
Crop breeding for climate-adapted seed varieties	- Rich biodiversity - Research institutions available	- Insufficient funding for agricultural R&D - Lack of adequate facilities and equipment - Shortage of skilled personnel	- Increasing demand for nutritious and high-yielding crop varieties - Climate resilience - Public-private partnership opportunities	- Competition from imported crops and varieties - Emerging pests and diseases
Community-based irrigation	- Enhances agricultural productivity - Efficient water use - Reduces vulnerability to drought	- High initial infrastructure costs - Requires regular maintenance - Potential conflict over water use	- Government support for water management - Increased agricultural Deliverable - Potential for market integration	- Water resource competition - Limited access to affordable financing
Responsive Agricultural Extension	- Enhances farmer knowledge - Supports adoption of climate-smart practices - Facilitates technology dissemination	- Low ratio of extension workers to farmers - Limited resources for outreach - Requires continuous training	- Government support for agricultural extension - Integration with digital platforms - Potential for public-private partnerships	- High turnover of extension workers - Limited access to rural areas
Water Sector				
Roof-top rainwater harvesting	- Abundant rainfall in Eastern Uganda - Cost-effective implementation - Reduces pressure on natural water sources	- Dependence on seasonal rainfall patterns - Potential contamination if storage is not maintained - Limited technical skills	- Local community engagement in sustainable resource management - Integration with agricultural practices - Supportive policies	- Competition for water resources from other sectors - Limited funding for large-scale projects
Surface runoff water harvesting	- Enhances water security - Reduces soil erosion and flood risks - Low-cost water supply solution	- Dependence on rainfall - Potential contamination if not managed properly - Requires land space for infrastructure	- Government support for water management - Potential for agricultural integration - Opportunities for community involvement	- Climate variability affecting runoff patterns - Competition for land resources
Deep well water extraction	- Provides reliable water supply - Can be implemented in areas with limited surface water availability	- High drilling costs - Risk of over-extraction and depletion - Requires technical expertise	- Potential for public-private partnerships - Increased water security - Government incentives for water management	- Groundwater contamination risks - Depletion of aquifers due to over-extraction

Forestry Sector				
Farmer-managed natural regeneration	- Low-cost reforestation method - Enhances soil fertility - Reduces erosion and restores degraded lands	- Requires long-term commitment - May face resistance from farmers - Requires continuous monitoring	- Government support for reforestation - Potential for carbon credits - Enhanced biodiversity and ecosystem services	- Land use conflicts - Risk of encroachment by livestock
Forest-based enterprises	- Provides alternative livelihoods - Promotes sustainable forest management - High potential for value addition	- Limited access to markets - Initial investment costs can be high - Requires technical training	- Growing demand for forest products - Opportunities for eco-tourism - Government incentives for forest conservation	- Market fluctuations - Risk of over-exploitation of forest resources
Integrated pest management	- Environmentally friendly - Reduces health risks - Long-term cost savings for farmers	- Effectiveness varies with conditions - Demands regular monitoring - Initial high setup costs - Requires substantial knowledge	- Government support for sustainable practices - Market demand for organic products - Opportunities for capacity building	- Pest resistance to biological controls - Economic pressure may favor cheaper chemical solutions - Inconsistent policies
Energy Sector				
Rooftop Solar PV	- Reduces reliance on fossil fuels - Low operating costs - High potential for off-grid areas	- High initial capital investment - Intermittent energy supply due to weather conditions - Requires technical maintenance	- Government incentives for renewable energy - Growing demand for clean energy - Potential for private sector investment	- Market volatility for solar components - Competition from other renewable sources
Efficient Institutional Cook Stoves	- Reduces fuel consumption - Decreases deforestation - Improves indoor air quality	- High initial cost for institutions - Requires behavior change - Limited availability of components	- Government support for clean cooking technologies - Growing awareness of health benefits - Potential for scale-up	- Competition from traditional stoves - Limited access to financing
Bio-Latrines (using biogas)	- Provides clean energy - Reduces waste and improves sanitation - Lowers greenhouse gas emissions	- High initial installation costs - Requires technical expertise for operation and maintenance - Limited adoption in rural areas	- Government support for renewable energy - Potential for carbon credits - Integration with institutional infrastructure	- Potential health risks if not maintained properly - Competition from other sanitation technologies