ADAPTATION FUND

LOCALLY-LED ADAPTATION PROJECT/PROGRAMME PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT / PROGRAMME INFORMATION

Project / Programme information

Title of Project/Programme	PACT: Enhancing climate resilience in Busoga sub-region through locally led adaptation strategies
Country	Uganda
Thematic Focal Area	Multisector projects
Type of Implementing Entity	National Implementing Entity
Implementing Entity	Ministry of Water and Environment
Executing Entity	Victoria Basin Facility for Propulsion of Clean Development (VBF4CD)
Delivery Partner	Struggle Against Poverty
AF Project ID	AF00000530
Amount of Financing Requested	US$5,000,000
Letter of Endorsement signed	Yes ☒ No ☐
Stage of Submission	☒ This concept has been submitted before ☒ This is a response to comments on the first submission

Please note that concept note documents should not exceed 50 pages, including annexes.

Table 1. Acronyms

AF	Adaptation Fund	AF SRF	Adaptation Fund Strategic Results Framework
CAAP	Community Adaptation Action Plan	CAC	Community Adaptation Committee
CAIF	Community Adaptation Investment Facility	CSA	Climate-Smart Agriculture
C1-C5	Components 1-5	DDP	District Development Plan
DWRM	Directorate of Water Resources Management	EE	Executing Entity
ESMF	Environmental and Social Management Framework	ESP	Environmental and Social Policy
FFS	Farmer Field School	FPIC	Free, Prior and Informed Consent
GAP	Gender Action Plan	GCF	Green Climate Fund
GESI	Gender Equality and Social Inclusion	GRM	Grievance Redress Mechanism
IE / NIE	Implementing Entity / National Implementing Entity	LLA	Locally Led Adaptation
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries	MEAL	Monitoring, Evaluation, Accountability and Learning
MWE	Ministry of Water and Environment	NAP	National Adaptation Plan
NAPA	National Adaptation Programme of Action	NARO	National Agricultural Research Organisation
NDC	Nationally Determined Contribution	NEMA	National Environment Management Authority
PACT	Participatory Adaptation and Community Transformation	PFG	Project Formulation Grant
PWD	Person with Disability	SAP	Struggle Against Poverty
ToC	Theory of Change	UBOS	Uganda Bureau of Statistics
UCSATP	Uganda Climate Smart Agricultural Transformation Project	UgIFT	Uganda Intergovernmental Fiscal Transfers Program
UNMA	Uganda National Meteorological Authority	USP	Unidentified Sub-Project
VBF4CD	Victoria Basin Facility for Propulsion of Clean Development	VfM	Value for Money
VSLA	Village Savings and Loan Association	WUC	Water User Committee

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AF	Adaptation Fund	AF SRF	Adaptation Fund Strategic Results Framework
ZARDI	Zonal Agricultural Research and Development Institute		

PROJECT / PROGRAMME BACKGROUND AND CONTEXT

Uganda is highly vulnerable to climate change because its economy, food systems and rural livelihoods depend heavily on rain-fed agriculture and climate-sensitive natural resources. Agriculture contributes about 24.09% of GDP, yet it is increasingly exposed to rainfall variability, rising temperatures, drought, flooding and ecosystem degradation (World Bank, 2023; UBOS, 2024). Average temperatures have increased by about 1.3°C since the 1960s; rainfall is less reliable and extreme events are more damaging (World Bank, 2021; GIZ, 2021; IPCC, 2021).

Busoga faces a sharper adaptation problem because climate hazards interact with chronic poverty, smallholder agriculture and degraded ecosystems. Although the sub-region comprises 11 districts, PACT will implement directly in Iganga, Kaliro, Luuka, Bugweri and Namutumba. Wider Busoga is retained for learning and replication only.

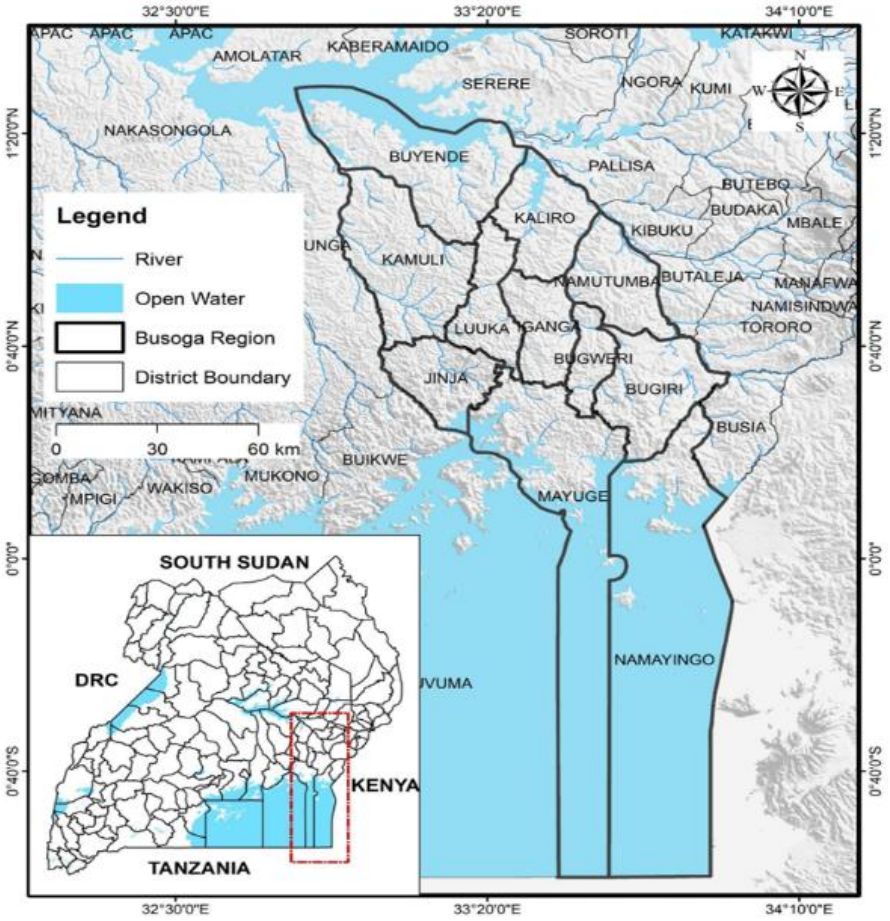


Figure 1. Busoga sub-region and district context

The Comprehensive Study Report on Climate Change Adaptation in Busoga Region (2025) is the concept-stage evidence base. It establishes the five-district baseline for climate risk, socioeconomic vulnerability, gender and vulnerable groups, household adaptation, environmental degradation, existing interventions, district priorities and potential sites. PFG will not repeat that study. It will validate residual implementation variables: final beneficiary registers, C2/C3 pathway assignments, C4 site files, affected-user mapping, unit costs, safeguards, O&M, additionality, CAIF tools, baselines, targets and CAIF-ready package files.

The study confirms a high-vulnerability baseline. Busoga has about 4.37 million people and the study cites 74.8% living below the US$2.5/day poverty line. In the five-district household survey, agriculture is the primary livelihood for 92.9% of households; the average household has seven members; more than 60% of household heads had not completed primary education; 22.2% of households were female-headed,

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rising to 38% in Bugweri; 33.6% had at least one member with a disability; and only 36.2% had a regular income source. These conditions constrain access to climate information, finance, extension, markets and adaptive technologies, and justify targeting by vulnerability rather than by administrative spread alone.

Table 2. Concept-stage evidence anchors and PFG validation boundary

Busoga study evidence used now	Use in this concept note	What remains for PFG
Five-district hazard and impact evidence: dry spells, rainfall uncertainty, flooding/waterlogging, wind/hail effects, food insecurity, water stress and livelihood disruption.	Grounds the climate rationale and the C2/C3/C4 pathway logic. Table 3 links hazards to pathway responses.	Site-level severity ranking, seasonal calendars, final package allocation and water-source feasibility.
Socioeconomic and vulnerability profile: agriculture dependence, female-headed households, disability prevalence, low education, irregular income and weak finance access.	Grounds targeting, gender/vulnerable-group analysis, C2 food-security logic and C3 finance-readiness logic.	Beneficiary registers, household disaggregation, vulnerable-group validation and no-double-counting controls.
Financial access evidence: VSLA use, limited SACCO access and households without formal financial services.	Frames C3 as readiness-gated adaptation finance, not generic microcredit.	SACCO/VSLA readiness, governance, debt-safety and package files.
Environmental degradation evidence: deforestation, wetland encroachment, land degradation, Iziru CFR, Bunafu LFR and parts of Mpologoma wetland.	Grounds C4 ecosystem recovery-management, pressure-relief agreements and full-cost baseline logic.	C4 boundaries, user mapping, legal/access status, safeguards category, hectare measurement and O&M.
Participatory evidence: household survey, KIIs, FGDs, FPIC and inclusion of women, youth and persons with disabilities.	Grounds consultation evidence and shows communities shaped diagnosis, priorities, coping evidence and support needs.	CAAP validation, beneficiary/site disclosure, scorecards and implementation-stage monitoring records.
Study design and consultation evidence: 437 households in five preselected districts; 27 KIIs; 14 FGDs; separate male/female survey-participant FGDs and mixed youth FGDs; field observations and photographs.	Strengthens the consultation, targeting, gender/inclusion and LLA evidence base. It shows that PACT is not relying only on institutional consultations.	PFG will validate final attendance/category records, participation quality, beneficiary registers, affected users and site-level consent/disclosure records.
Community support and priority evidence: financial/business start-up support (29.3%), irrigation support (11.1%), training/skills (10.3%), tree seedlings (9.9%); priority support areas include water infrastructure/irrigation (19.7%), planting trees (17.4%) and livestock rearing (15.4%).	Grounds C2 food-security packages, C3 adaptation finance/market readiness and C4 tree, water and ecosystem-pressure-reduction logic in stated community priorities.	PFG will convert these preferences into eligible package cards, unit costs, readiness checks, safeguards screening, O&M plans and CAIF-ready files.
Existing initiative visibility and coordination evidence: only about one quarter of households acknowledged government-led environmental initiatives, while the study recorded sensitisation, law enforcement/regulation and wetland/waterbody protection as visible initiative types.	Grounds PACT disclosure, CAIF additionality checks, public beneficiary/site lists and district coordination as adaptation controls, not administrative add-ons.	PFG will verify active initiative locations, beneficiaries, focal persons and records before approving any package.
Sector-constraint boundary requested by reviewers: domestic water distance/source evidence; production-water and irrigation gaps; low education and practical	Makes clear that PACT has enough evidence to justify C2, C3 and C4 at concept stage while avoiding premature site-specific claims. It	PFG verifies water-source reliability and safety, irrigation inventory and unit costs, model farmer/FFS and extension channels, UNMA/MWE/Mpologoma advisory

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Busoga study evidence used now	Use in this concept note	What remains for PFG
extension needs; authorised weather/advisory channels; VSLA/no-finance evidence; and degradation drivers.	also prevents CR5 from being read as deferred to PFG.	routes, SACCO/VSLA readiness, C4 site boundaries, affected users, safeguards and O&M.

Table 3. Project-relevant climate hazards and adaptation pathways

Hazard / impact pathway	Five-district evidence and observed impacts	PACT response
Longer dry spells, delayed/early rains, rainfall uncertainty and water stress	Longer dry spells were the most reported manifestation overall (35.9%), highest in Luuka (43.2%) and also high in Iganga (37.0%), Namutumba (36.4%) and Kaliro (34.5%). Affected households linked dry spells to food insecurity and reduced crop yields; water scarcity is also reflected in dry-period coping, including buying water and seeking irrigation support.	C2: climate-smart main livelihood intensification, soil-water conservation, selective water assets, model farms/FFS, local-language advisories and post-harvest food protection.
Flooding, increased rainfall, waterlogging and lowland/wetland pressure	Increased rainfall was reported by 11.4% of households overall, with high shares in Iganga (13.5%), Bugweri (13.0%) and Kaliro (11.2%). Flash/increased floods are localised but important, especially Kaliro (7.1%). The study describes low-lying terrain, wetlands, seasonal wetland formations, crop wash-away, waterlogging and flood-prone lowlands.	C4 with C2/C3 transition links: ecosystem recovery-management, water-source/buffer protection, affected-user mapping, pressure-relief agreements and food/income support before restrictive resource rules.
Strong winds and hailstorms	Stronger winds were reported by 18.4% overall, including Bugweri (20.5%), Kaliro (20.8%), Iganga/Luuka (19.3%) and Namutumba (12.6%). Hailstorms were reported by 11.7% overall and highest in Namutumba (18.0%). FGDs and KIIs link stronger wind damage to deforestation; reported effects include damaged houses, fallen seed heads and crop loss.	Addressed indirectly through resilient production, post-harvest protection, safer siting of assets, agroforestry/tree buffers, advisories and C5 learning; not a standalone investment stream.
Climate-sensitive and seasonal income exposure	Income is climate-sensitive: 42.2% of reported income sources are crop farming on less than 10 acres, 19.7% livestock and 12.5% wage/casual labour. Only 36.2% of households have regular income. VSLA access is common (42.5%), but 29.1% report no financial-service access; formal banks reach only 4.3%. Climate shocks therefore translate quickly into food purchase, rationing, debt and degrading coping.	C3: screened lower-climate-risk income-security packages, adaptation finance readiness, SACCO/VSLA strengthening, coaching and market links to reduce climate sensitivity of household incomes.
Ecosystem degradation, biomass pressure and loss of soil/water buffering	Environmental degradation is widespread: 81.6% reported an increasing rate, highest in Namutumba (90.2%), Luuka (84.0%) and Bugweri (82.9%). Main challenges are deforestation (47.2%), wetland encroachment (24.1%) and land degradation (15.0%). Key drivers include illegal logging/charcoal burning (30.5%), wetland drainage (16.3%), population pressure (14.9%) and unsustainable agriculture (14.9%).	C4: ecosystem recovery-management, shared-resource governance, Community Resource Compacts, pressure-relief agreements and C2/C3 alternatives for affected users.
Pests and diseases associated with climate variability	Climate variability is associated with crop and livestock pests and diseases, especially under dry spells, increased rainfall and increased temperatures. The evidence supports advisory, input-quality and practice-response measures under C2, but not a separate pest/disease component at concept stage.	Addressed through C2 advisory, input-quality screening, model farms/FFS, climate-smart production and post-harvest protection.

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District-level hazard evidence defines the investment scope. Dry spells, rainfall uncertainty, localised flooding, water stress, wind/hail effects, income shocks and environmental degradation are retained because the study shows direct links to food insecurity, reduced crop yields, water scarcity, damaged houses and ecosystem pressure. Dry spells were associated with food insecurity and reduced crop yields among affected households; delayed/early rains were strongly associated with food insecurity; flash floods were associated with food insecurity, crop loss, house damage and some loss of life; and hailstorms were associated with food insecurity, crop loss and house damage. This is why C2 protects food-production resilience, C3 reduces climate-sensitive income exposure, and C4 manages ecosystem and shared-resource pressure.

Current sector constraints are sufficiently evidenced for concept-stage design but still require PFG validation before investment. Domestic water access varies by distance and source: 28.6% of households reported their nearest source at 0.1-0.5 km, 22.2% at 0.501-1 km, and 16.7% at 1.01-2 km; Namutumba had the highest 1-2 km burden (27.8%). Production-water support remains selective because the study recommends affordable irrigation and rainwater harvesting but does not provide a full infrastructure inventory. Extension and advisory support must be practical and local-language because more than 60% of household heads had not completed primary education. Finance must be readiness-gated because 29.1% report no financial-service access and weak formal credit can deepen vulnerability if climate shocks disrupt repayment. PFG will validate source yield, ownership, safety, O&M, advisory channels, extension actors, SACCO/VSLA readiness, market continuity and site-level degradation drivers before CAIF approval.

PACT will use authorised UNMA, MWE, Mpologoma EWS or district-recognised channels; it will not claim creation of a new early-warning system unless PFG confirms a formal additional EWS-strengthening output. CAIF will require SACCO/VSLA governance and debt-safety screening for C3 finance, and boundary, affected-user, safeguards and O&M verification for C4 sites before approval.

Targeting and scale for direct implementation

PACT will prioritise sub-counties, parishes, communities and shared-resource areas where food insecurity, income insecurity and ecosystem degradation reinforce each other. C2, C3 and C4 may be layered or sequenced, but not every site will receive every pathway. Final allocation will follow vulnerability scoring, CAAP validation, safeguards screening, unit-cost confirmation, O&M review and CAIF approval.

Table 4. Vulnerability-led targeting, concept-stage scale and district distribution

Decision level	Concept-stage rule / scale	Use in implementation
Selection criteria	Hazard exposure and observed impact (20); poverty, household vulnerability and vulnerable-group presence (20); agriculture dependence and food/income sensitivity (15); ecosystem degradation/resource pressure (15); compound vulnerability/pathway overlap (15); overlap/additionality with other initiatives (7); community readiness/local governance feasibility (5); safeguards and O&M feasibility (3).	Selects locations where climate hazards affect food security, income security and ecosystem function together, while screening out unsafe, duplicated or unmaintainable packages.
Target geography	5 districts: Iganga, Kaliro, Luuka, Bugweri and Namutumba. Wider Busoga is learning/replication geography only.	Keeps implementation within the evidence base and prevents spreading resources thinly across all 11 districts.
Sub-counties, parishes and clusters	10-15 sub-counties; 20-30 parishes; 30-50 communities/clusters; 15-25 priority compound-vulnerability clusters.	About two to three sub-counties, four to six parishes and six to ten clusters per district, adjusted by evidence and CAIF approval.
Direct households	7,500 unique direct pathway households: about 4,500 C2 food-security households and 3,000 C3 households or group-member equivalents.	C2/C3 households are not double-counted. C4 and C5 community benefits are tracked separately unless household-level support is provided.
C2 package scale	50-75 C2 cohorts, roughly 60-90 households per cohort depending on package mix and costs.	Food-security resilience pathway.

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Decision level	Concept-stage rule / scale	Use in implementation
C3 package scale	75-100 C3 package files, roughly 25-40 household/member equivalents per file.	Readiness-gated income-security and adaptation-finance pathway.
C4 package scale	5-10 shared-resource packages; up to 500 ha under improved recovery management, not claimed as fully restored hectares.	Normally one to two C4 packages per district. Measures diagnosis, affected-user mapping, agreements, action and monitoring.
Indicative district envelope	Iganga, Kaliro, Luuka, Bugweri and Namutumba each start at about 20%, adjustable by +/-5 percentage points.	Final distribution depends on vulnerability scoring, CAAP validation, safeguards feasibility, O&M readiness, package mix and CAIF approval.
District emphases	Iganga: climate-smart agriculture, irrigation and alternative livelihoods. Luuka: agroforestry, water conservation and climate-resilient farming. Namutumba: irrigation systems, livestock promotion and food-security interventions linked to Mpologoma/wetland/water pressures. Bugweri: agroforestry, forest/wetland protection and small business development. Kaliro: reforestation, soil conservation and diversified farming, with stronger C4/shared-resource governance where wetland or water pressure is confirmed.	District emphases come from the study and guide planning only. Final packages require CAAP validation, site/beneficiary disclosure, non-duplication checks, safeguards feasibility, O&M readiness, unit-cost confirmation and CAIF approval.

Table 5. C4 ecosystem recovery-management measurement ladder

Level	What PACT measures
Degradation driver identified	Wetland cultivation, tree cutting, charcoal/firewood pressure, soil erosion, water-source pressure, overgrazing or unsustainable farming.
Affected users mapped	Vulnerable households/resource users affected by the degraded resource or proposed recovery rules.
Pressure-relief agreement reached	Community/resource-use rules, recovery zones, buffer zones or access arrangements agreed and disclosed.
Transition support linked	Vulnerable users affected by resource-use changes linked to C2 or C3 where appropriate.
Recovery action initiated	Assisted natural regeneration, enrichment planting, wetland demarcation, water-source/buffer protection or soil-water conservation.
Area under recovery management	Hectares under agreed climate-resilient recovery management measured and monitored.
Early recovery signal tracked	Seedling survival, reduced encroachment, protected buffer, vegetation regrowth, reduced open degradation activity or improved compliance.

Socio-economic, ecosystem and institutional barriers

The five target districts face a climate-insecurity-degradation trap. Dry spells, rainfall uncertainty, flooding and water stress reduce food availability and income. Food and income stress then push households toward short-term coping such as wetland cultivation, charcoal and biomass dependence, unsustainable lowland farming, overuse of fragile soils and pressure on water and forest resources. Degradation weakens soil fertility, water regulation, habitat integrity and natural buffering, raising vulnerability to the next shock.

The binding barriers are high input costs, weak access to appropriate finance, limited extension, weak actionable climate information, weak O&M, limited local accountability, social exclusion, market uncertainty and duplication risks. PACT responds through a locally led but technically screened model: C1 establishes local decision rights and CAIF; C2 reduces food insecurity; C3 reduces climate-sensitive income exposure; C4 reduces pressure on shared ecosystems; and C5 turns field evidence into adaptive learning.

Component 3 is adaptation because it reduces the climate sensitivity of household income. Many target households depend on rain-fed crop production, livestock, casual labour or climate-exposed natural-resource use, so dry spells, crop failure, water stress and related disruptions can rapidly translate into lost

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income, food insecurity, debt and degrading coping. C3 therefore supports only screened lower-climate-risk income options that diversify household earnings away from excessive dependence on rainfall-sensitive or environmentally degrading sources and that can remain viable or recover under identified climate stresses.

Adaptation finance will enable eligible households and groups to meet the up-front costs of adopting these options, while SACCO/VSLA readiness, governance and debt-safety checks will reduce the risk that repayment obligations amplify vulnerability after a climate shock. Coaching and market linkages—including buyer links, aggregation, quality and market information and service arrangements—strengthen the commercial continuity of supported options and reduce the risk that an otherwise climate-resilient livelihood fails because households cannot access inputs or markets during or after shocks. Finally, CAIF screening excludes options that increase pressure on wetlands, forests, soils or water resources, preventing income diversification from simply shifting climate risk into ecosystem degradation. Together, these measures create the causal pathway from lower climate exposure, to greater income continuity and shock-recovery capacity, to reduced distress coping and ecosystem pressure; the specific options selected will be determined through community choice and the C3 screening gates set out in Tables 11 and 23.

PROJECT / PROGRAMME OBJECTIVES

PACT will strengthen the adaptive capacity of vulnerable households and communities in the five target districts of Busoga through locally led, evidence-based and technically screened adaptation investments that reduce food insecurity, income insecurity and pressure on shared ecosystems and natural resources.

- Establish LLA governance and an EE-housed CAIF for community validation, household pathway selection, fund-flow controls, safeguards screening and accountability.
- Strengthen food-security resilience through climate-smart intensification of main food-production livelihoods.
- Strengthen income-security resilience through screened alternative livelihoods, adaptation finance readiness and market linkages.
- Place shared ecosystem, water and natural-resource functions under improved climate-resilient recovery management and community-controlled governance.
- Document, learn from and disseminate locally led adaptation evidence through KM, learning and adaptive evidence use.

Table 6. Project components and financing

Component	Expected concrete outputs	Expected outcome	Amount (US$)
1. Locally Led Adaptation Governance and EE-housed Community Adaptation Investment Facility	1.1 CACs and related local structures established/strengthened early; 1.2 CAAPs prepared and validated; 1.3 CAIF rules, scoring tools, fund-flow controls and approval gates operational; 1.4 scorecards, grievance channels, recourse and accountability loops operational; 1.5 local finance and low-risk implementation routes defined and disclosed.	Communities and households participate in locally led adaptation decisions thxrough clear governance, validation, accountability, finance-access and approval systems.	380,507
2. Food-Security Resilience through Climate-Smart Main Livelihood Intensification	2.1 C2 package files approved/workplanned; 2.2 CSA intensification packages adopted; 2.3 model farms and FFS/action-learning sites supported; 2.4 viable household/group food-production resilience assets supported; 2.5 post-harvest food protection improved.	Food-security vulnerable households improve resilience of their main livelihood and reduce climate-driven food shortages.	1,584,000
3. Income-Security Resilience through Alternative Livelihoods and Adaptation Finance	3.1 C3 package files approved/work planned; 3.2 SACCO/VSLA and adaptation finance readiness strengthened; 3.3 screened lower-climate-risk income-security packages financed/coached; 3.4 market linkages and enterprise access strengthened; 3.5 productive income-security assets supported where justified.	Income-security vulnerable households and groups reduce dependence on climate-sensitive, seasonal or environmentally degrading income sources.	1,056,000

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Component	Expected concrete outputs	Expected outcome	Amount (US$)
4. Ecosystem Function Recovery and Community-Controlled Natural Resource Systems	4.1 shared ecosystem/natural-resource sites prioritised; 4.2 degraded ecosystem areas brought under improved climate-resilient recovery management; 4.3 WUC/resource-user governance strengthened; 4.4 pressure-relief agreements implemented and affected users linked to C2/C3 transition support.	Ecosystem and shared-resource functions that buffer climate vulnerability are placed under community-controlled recovery management.	700,000
5. Knowledge Management, Learning and Adaptive Evidence Use	5.1 KM strategy implemented; 5.2 C2/C3/C4 learning documented; 5.3 traditional/local knowledge documented and integrated; 5.4 cross-site learning facilitated; 5.5 adaptive learning reviews and management responses completed; 5.6 replication and policy-learning products disseminated.	Project evidence, community experience and implementation lessons are documented, shared and used to improve adaptation delivery and replication.	450,000
Total Activity Cost	**Components 1 - 5**		**4,170,507**
Project/programme execution cost	Coordination, routine implementation management, work planning, routine monitoring, progress and financial reporting, fiduciary administration, procurement support, safeguards tracking, registry administration and implementation follow-up. These functions are outside Component 5.	AF-compliant implementation management and routine reporting are adequately resourced.	437,788
Total project/programme cost	**Components 1-5 plus execution cost.**		**4,608,295**
IE project-cycle management fee	MWE/NIE oversight, fiduciary review, safeguards and gender compliance oversight, progress/financial review, final evaluation report, independent audit report, management-response follow-up and closure reporting.	NIE oversight and compliance functions supported.	391,705
Amount of financing requested	**Total project cost plus IE fee.**		**5,000,000**

Table 7. Projected implementation calendar

Milestone	Expected date
Start of project/programme implementation	January 2027
Mid-term review	January 2029
Project/programme closing	December 2031
Terminal evaluation	30 January 2032

Theory of Change

PACT's Theory of Change starts from a simple diagnostic: climate hazards become household vulnerability through food insecurity and income insecurity. These pressures increase reliance on wetlands, forests, soils and water sources. Degradation then weakens natural buffering and deepens vulnerability to the next shock. PACT breaks the trap through C1 decision rights, CAAPs, CAIF and accountability; C2 food-security resilience; C3 climate-screened income-security resilience; C4 ecosystem and shared-resource recovery management; and C5 learning for adaptive implementation and replication.

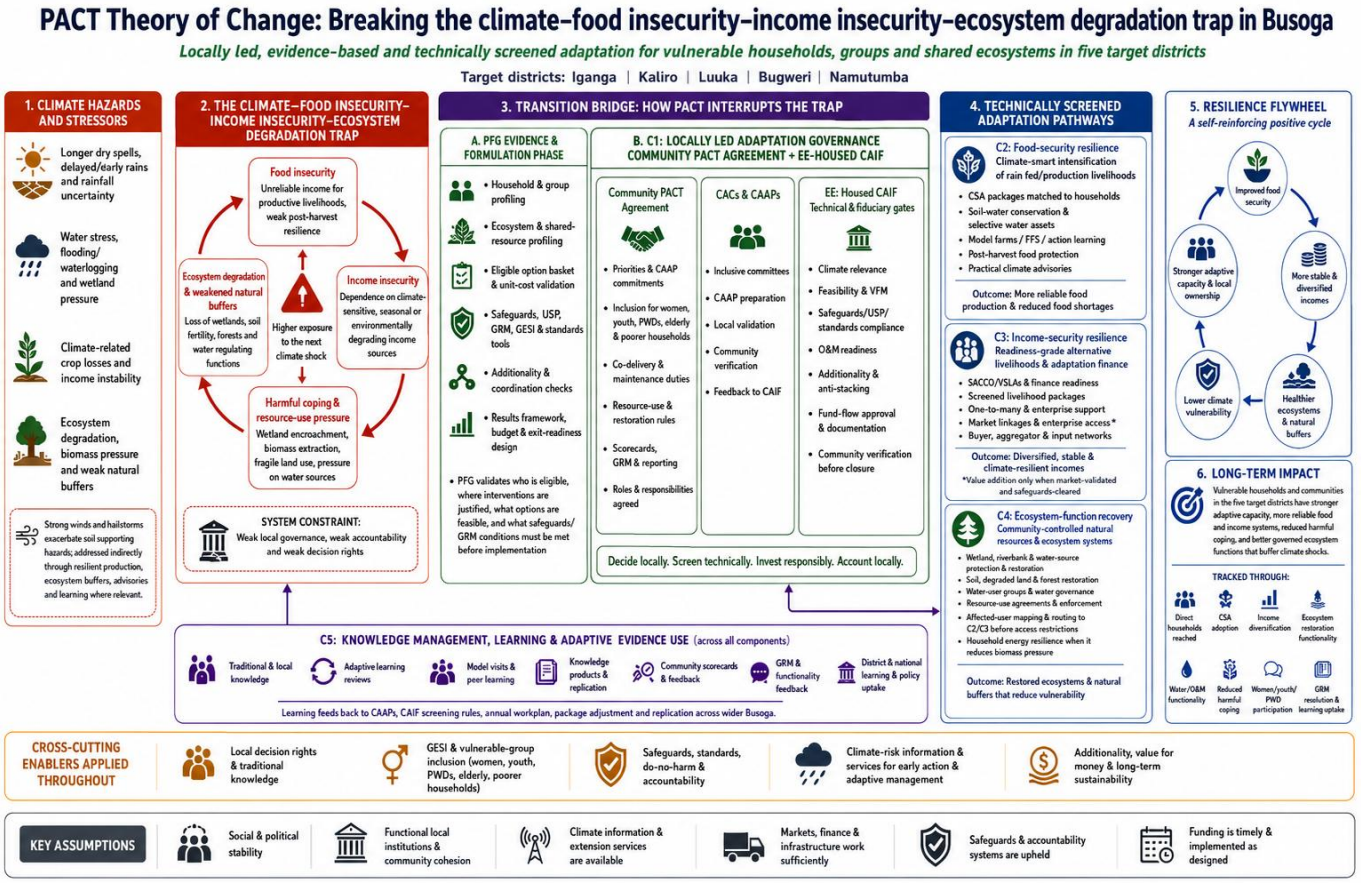


Figure 2. PACT Theory of Change: breaking the climate-food insecurity-income insecurity-ecosystem degradation trap

Adaptation Fund Strategic Results alignment

PACT aligns with the Adaptation Fund Strategic Results Framework revised in October 2025. Table 8 follows the current AF SRF Alignment Table Template and maps PACT's project outcomes and outputs to the Fund outcomes, outputs and indicators that most closely correspond to the project's adaptation logic.

Core Indicator 1: Number of beneficiaries applies project-wide. PACT currently estimates 7,500 unique direct C2/C3 pathway households. This household figure will not be reported as 7,500 people. During PFG, validated household and beneficiary registers will establish the corresponding number of direct and indirect people and the required disaggregation by sex, vulnerable group and sector, while applying the project's no-double-counting rule. Additional applicable core indicators are **Indicator 5 / Core Indicator 4** for ecosystems and natural resources brought under protection, restoration or improved management under C4, and **Indicator 6B / Core Indicator 5** for households with increased income or avoided decrease in income under C3. **Indicator 4 / Core Indicator 3** will apply where PACT finances and completes qualifying physical adaptation assets. PACT does not claim Core Indicator 2 because it will use authorised existing warning and advisory systems rather than establish or improve a new early-warning system

Table 8a. Alignment of PACT with the Adaptation Fund Strategic Results Framework: Outcome level alignment

Project Outcomes	Project Outcome Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
C1 Outcome: Communities and households participate in locally led adaptation decisions through clear governance, validation, accountability,	Number of local institutions with strengthened capacity to prioritise, screen, finance, implement and monitor climate-resilient adaptation packages; number of local institutions/communities exercising documented	**Outcome 2:** Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and	**Indicator 2:** Institutions with strengthened capacity to understand and better address climate risks and resilience.	**380,507**

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finance-access and approval systems.	decision-making roles within the PACT LLA system.	environmental losses.		
C2 Outcome: Food-security vulnerable households improve resilience of their main livelihood and reduce climate-driven food shortages.	Number of direct beneficiaries adopting new or improved climate-resilient food-production and post-harvest practices; percentage/number of supported C2 households reporting reduced climate-driven food-production or post-harvest losses.	**Outcome 6:** Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas. **Outcome 4 applies where qualifying physical assets are financed.**	**Indicator 6A:** People adopting improved and/or new climate-resilient livelihood practices. **Indicator 4 / Core Indicator 3**, where applicable: Physical assets improved or constructed to withstand climate variability and change.	**1,584,000**
C3 Outcome: Income-security vulnerable households and groups reduce dependence on climate-sensitive, seasonal or environmentally degrading income sources.	Number of people adopting supported lower-climate-risk livelihood practices; number of supported households with increased income or avoided decrease in income; percentage of supported households reducing dependence on climate-sensitive or environmentally degrading income sources.	**Outcome 6:** Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.	**Indicator 6A:** People adopting improved and/or new climate-resilient livelihood practices; **Indicator 6B / Core Indicator 5:** Households with increased income, or avoided decrease in income.	**1,056,000**
C4 Outcome: Ecosystem and shared-resource functions that buffer climate vulnerability are placed under community-controlled recovery management.	Hectares of ecosystems/natural resources brought under protection, restoration or improved climate-resilient management; number of targeted C4 sites demonstrating agreed early recovery or improved-management signals.	**Outcome 5:** Increased ecosystem resilience in response to climate change and variability-induced stress.	**Indicator 5 / Core Indicator 4:** Ecosystems and natural resources brought under protection, restoration, or improved management in response to climate variability and change.	**700,000**
C5 Outcome: Project evidence, community experience and implementation lessons are documented, shared and used to improve adaptation delivery and replication.	Number of targeted stakeholders demonstrating strengthened awareness of climate risks and locally relevant adaptation responses through PACT learning processes; number of documented CAIF/workplan decisions adjusted in response to verified learning.	**Outcome 3:** Strengthened awareness and ownership of adaptation and climate risk reduction processes.	**Indicator 3A:** People with strengthened awareness of climate change risks and how to better address them.	**450,000**
Total outcome-level grant amount				**4,170,507**

Table 8b. Alignment of PACT with the Adaptation Fund Strategic Results Framework: Output level alignment

Project Output(s)	Project Output Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
C1 Outputs 1.1–1.5: CACs and related local	Number of CAC/local structures established or	**Output 2.1:** Strengthened	**Indicator 2.1:** Institutions	**380,507**

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structures established/strengthened; CAAPs prepared and validated; CAIF rules and approval gates operational; scorecards, GRM and recourse operational; local finance and implementation routes defined and disclosed.	strengthened and publicly validated; number of CAAPs community-validated; CAIF approval/recourse system operational; number of unique local institutions receiving funding or other direct support under the LLA modality; number of local institutions/communities exercising documented decision-making over adaptation solutions.	capacity of institutions to understand and better address climate risks. **Output 2.2:** Increased readiness and capacity of national and sub-national entities to directly access and programme adaptation finance. **Output 3.3:** Increased ownership of adaptation and climate risk reduction processes.	supported to strengthen capacity to understand and address climate risks and resilience. **Indicator 2.2:** Local institutions receiving funding or other direct support under the locally led adaptation modality. **Indicator 3.3:** Number of local institutions and/or communities responsible for decision-making over how adaptation solutions are defined, prioritized, designed and/or implemented.	
C2 Outputs 2.1–2.5: C2 package files approved; climate-smart agriculture packages adopted; model farms/FFS supported; viable food-production resilience assets supported; post-harvest food protection improved.	Number of approved climate-screened C2 package files; number of people receiving targeted food-production resilience support; number adopting supported climate-resilient practices; number of functioning model farm/FFS learning sites; number of qualifying climate-resilient sector services/assets completed and functional where financed.	**Output 6.1:** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability. **Output 4.1**, where applicable: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability.	**Indicator 6.1:** People receiving targeted support for new and/or improved livelihoods to manage climate risk. **Indicator 4.1:** Development sector services strengthened to respond to climate variability and change.	**1,584,000**
C3 Outputs 3.1–3.5: C3 package files approved; SACCO/VSLA and adaptation-finance readiness strengthened; lower-climate-risk income-security packages financed/coached; market linkages strengthened; productive assets supported where justified.	Number of approved C3 package files; number of SACCO/VSLA/group mechanisms with strengthened climate-finance readiness and governance; number of people receiving targeted support for lower-climate-risk livelihoods; number of supported packages with functioning market linkages; number of qualifying productive assets supported.	**Output 6.1:** Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability. **Output 2.1:** Strengthened capacity of institutions to understand and better address climate risks.	**Indicator 6.1:** People receiving targeted support for new and/or improved livelihoods to manage climate risk. **Indicator 2.1:** Institutions supported to strengthen capacity to understand and address climate risks and resilience.	**1,056,000**
C4 Outputs 4.1–4.4: Shared ecosystem/natural-resource sites prioritised; degraded areas brought under improved recovery	Number of sites prioritised with affected-user mapping; hectares under improved climate-resilient recovery management; number of WUC/resource-user institutions strengthened;	**Output 5.1:** Vulnerable ecosystem services and natural resource assets strengthened in response to climate	**Indicator 5.1:** Ecosystems and natural resources targeted by activities to improve protection, restoration and/or	**700,000**

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management; WUC/resource-user governance strengthened; pressure-relief agreements implemented and affected users linked to C2/C3 transition support.	number of pressure-relief agreements implemented; number of affected vulnerable users linked to transition support.	change impacts, including variability. **Output 2.1**, for institutional strengthening.	management. **Indicator 2.1:** Institutions supported to strengthen capacity to understand and address climate risks and resilience.	
C5 Outputs 5.1–5.6: KM strategy implemented; C2/C3/C4 learning documented; traditional/local knowledge documented and integrated; cross-site learning facilitated; adaptive learning reviews and management responses completed; replication and policy-learning products disseminated.	Number of climate-resilience knowledge products/tools developed and shared, by type and sector; number of learning exchanges/reviews completed; number of management-response actions documented following learning reviews.	**Output 3.2:** Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning.	**Indicator 3.2:** Climate resilience knowledge products and/or tools developed and shared with stakeholders.	**450,000**
Total output-level grant amount				**4,170,507**

Table 9. AF core-indicator treatment and no-double-counting rule

Control issue	PACT treatment
Beneficiaries	Count each direct C2/C3/C4 household/person once in aggregate, even where a household participates in more than one pathway. Service contacts such as training, advisories, scorecards and peer visits do not inflate beneficiary totals.
Early warning systems	Generally not claimed. PACT uses authorised advisory/risk information unless PFG confirms a formal additional EWS-strengthening output.
Assets	Count only climate-screened, standards-compliant and O&M-backed assets/services with a clear adaptation function.
Income	Use only for C3 where income-security results are linked to climate-income-risk reduction, shock absorption or avoided loss, not generic enterprise income.
Natural assets	Use only for C4 sites/assets under improved climate-resilient recovery management. Do not claim full ecological restoration.
Direct access caution	Do not describe CACs, WUCs, SACCOs/VSLAs or community groups as formal AF direct-access entities unless confirmed by final AF guidance and MWE/NIE.
Disaggregation	District, sex, youth, PWD, elderly persons where feasible, vulnerability category, direct/indirect status and pathway; assets/services by site, type, hazard, O&M and resource-user group.

Table 10. PFG request summary and formulation outputs

PFG item	Cost / cap	Main output
Base PFG	Direct US$137,334 IE fee US$11,673 Total US$149,007 Within cap	Core formulation: targeting, beneficiary registers, C2/C3/C4 package feasibility, unit costs, safeguards, O&M, baseline/target protocol and full proposal finalisation.
Additional LLA PFG	Direct US$92,020 IE fee US$7,822 Total	LLA operating design: CAC/CAAP rules, CAIF manual, Local Finance Routing Schedule, community package cards, scorecards, recourse, GRM, disclosure and local accountability tools.

PFG item	Cost / cap	Main output
	US$99,842 Within cap	
Total PFG request	Direct US$229,354 IE fee US$19,495 Total US$248,849	Month 1-Month 7 formulation executed by VBF4CD under MWE/NIE oversight.
A1 Targeting, pathway assignment and segmentation	US$49,030	Final beneficiary registers, household/group/site profiles, affected-user mapping and no-double-counting logic.
A2 Option-basket and package feasibility	US$34,320	C2/C3/C4 feasibility, provider/market checks, water-asset feasibility, O&M, standards and VfM checks.
A3 Representative LLA, Community PACT and CAIF operating design	US$70,000	CAC/CAAP rules, CAIF manual, package templates, Local Finance Routing Schedule, disclosure, scorecards, recourse and Package Cards. Note: Detailed cost breakdown provided in the PFG Submission Form.
A4 Safeguards, GESI and compliance instruments	US$35,000	ESMF, ESP/USP tools, exclusion list, GRM manual, sensitive-case protocol, safeguards and standards matrix.
A5 Results, adaptive management and additionality	US$17,220	AF SRF crosswalk, baseline/target protocol, additionality matrix, KM tools, GRM-to-KM trend template and learning tracker.
A6 Full proposal finalisation	US$23,784	Technical reviews, detailed budget, implementation arrangements, exit-readiness, write-shop and LLA annex integration.

Table 10 gives the whole-dollar PFG control figures for the separate PFG submission form: Base PFG USD 149,007; Additional LLA PFG USD 99,842; total PFG USD 248,849. The PFG form identifies AF Project ID AF00000530, VBF4CD as the PFG executing entity under MWE/NIE oversight, and the IE Coordinator contact and signature block.

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Project components and adaptation activities

PACT will implement five mutually reinforcing components. Each component below identifies the intended outcome, the outputs to be delivered, the actors responsible for the main activities, the climate-risk pathway addressed, and the role of communities in decisions and delivery. The component and output structure is fixed at concept stage and remains aligned with Table 6, the Theory of Change and the budget. Final quantities, sites, unit costs and the mix of eligible adaptation packages will be confirmed during Project Formulation Grant (PFG) preparation and through the Community Adaptation Investment Facility (CAIF).

In this section, **Community Adaptation Committees (CACs)** are the community-level representative structures supporting locally led adaptation decisions; **Community Adaptation Action Plans (CAAPs)** record community-validated adaptation priorities; **Water User Committees (WUCs)** support management of shared water resources; **Savings and Credit Cooperative Organisations (SACCOs)** and **Village Savings and Loan Associations (VSLAs)** support suitable local finance pathways; and **Farmer Field Schools (FFSs)** provide practical farmer learning. The **Executing Entity (EE)** coordinates implementation under the oversight of the Ministry of Water and Environment as the National Implementing Entity (MWE/NIE).

Table 11. Component design: outcomes, outputs, activities, hazards, LLA role and delivery route

n	Outputs	Indicative activities	Hazards / vulnerability pathway	LLA decision role and delivery / finance route
C1. LLA governance / CAIF. Outcome: communities and households participate in locally led adaptation decisions through governance, validation, accountability, finance access and approval systems.	1.1 The EE, districts and communities establish or strengthen CACs to provide accountable local adaptation decision structures. 1.2 CACs facilitate and communities validate CAAPs to record locally prioritised climate risks and adaptation actions. 1.3 The EE operationalises CAIF rules and approval gates to convert community priorities into eligible adaptation packages. 1.4 The EE and CACs operationalise scorecards, GRM and recourse arrangements to strengthen accountability. 1.5 The EE discloses available local finance and implementation routes so communities understand how approved priorities will be delivered.	The EE and Delivery Partners, working with districts and communities, will identify legitimate local structures and establish or strengthen CACs so representative community decision-making is in place. CACs will facilitate CAAP preparation and community validation so climate risks and priorities are locally defined. The EE will prepare and operate the CAIF manual, package files, scoring tools, disclosure procedures and recourse records so validated priorities can be screened and financed transparently. The EE and districts will orient CACs, WUCs, SACCOs/VSLAs, model farmers and FFS actors so each understands its delivery and accountability role.	Governance, accountability, duplicate-financing, safeguards and finance-access barriers across all pathways.	Communities select and validate representatives, risks, priorities and package choices. The EE and Delivery Partners facilitate. The EE-housed CAIF screens and routes finance; CACs, districts and MWE/NIE support accountability and escalation.
C2. Food-security resilience. Outcome: food-security vulnerable households improve resilience of their main livelihood and reduce climate-driven food shortages.	2.1 The EE and CACs approve climate-screened C2 package files for eligible food-security vulnerable households. 2.2 Supported households adopt appropriate CSA packages to reduce climate-related production losses. 2.3 District production teams, model farmers and FFS facilitators support model farms and FFS sites for practical adaptation learning. 2.4 The EE supports viable food-production resilience assets where technical, safeguards and O&M requirements are met. 2.5 Supported households improve post-harvest practices to reduce weather-related food losses.	The EE and CACs will confirm C2 beneficiary registers and climate-risk eligibility so support reaches food-security vulnerable households. District production teams, Delivery Partners, model farmers and FFS facilitators will support households to select and apply appropriate resilient crops, soil-water conservation, mulching/composting, agroforestry and local advisories to reduce production losses from dry spells and rainfall uncertainty. Where technically viable, the EE will support selective water harvesting or small irrigation, and households will receive practical support for drying, storage, handling and food-reserve practices to reduce post-	Dry spells, rainfall uncertainty, water stress, crop failure, local flooding/waterlogging, wind/hail effects and post-harvest weather risk.	Households select from approved options; CACs validate inclusion. Delivery is through EE procurement, Delivery Partners, district production teams, model farmers, FFS and low-risk community routes after CAIF approval.

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n	Outputs	Indicative activities	Hazards / vulnerability pathway	LLA decision role and delivery / finance route
		harvest losses and climate-driven food shortages.		
C3. Income-security resilience. Outcome: households and groups reduce dependence on climate-sensitive, seasonal or environmentally degrading income sources.	3.1 The EE, CACs and participating groups approve C3 package files that demonstrate a climate-income-risk rationale. 3.2 The EE and qualified finance/delivery partners strengthen SACCO, VSLA and group readiness for safe adaptation finance. 3.3 Eligible households and groups receive finance and coaching for screened lower-climate-risk income options. 3.4 The EE and Delivery Partners strengthen market linkages to improve the viability and continuity of supported livelihoods. 3.5 Productive assets are supported only where they are justified within an approved adaptation package.	The EE and CACs will confirm C3 household and group registers, while SACCOs, VSLAs, groups and qualified Delivery Partners will undertake readiness, governance and debt-safety checks so adaptation finance does not increase vulnerability. The EE will apply climate-income-risk and market screening to proposed livelihood options so financed activities reduce dependence on climate-sensitive or environmentally degrading incomes. Qualified Delivery Partners will provide finance-linked coaching, while the EE and market actors will support buyer links, aggregation, quality information and service arrangements so supported livelihoods remain commercially viable and better able to withstand or recover from climate shocks.	Climate-sensitive income, crop-failure income shocks, seasonal cash gaps, market disruption, weak recovery and degrading coping.	Households and groups choose options; SACCOs/VSLAs/groups participate in readiness validation. CAIF checks the climate, market, debt and ecosystem-pressure rationale. Finance is routed through approved mechanisms, EE procurement or Delivery Partner coaching.
C4. Ecosystem recovery management. Outcome: ecosystem and shared-resource functions that buffer climate vulnerability are placed under community-controlled recovery management.	4.1 Communities, district technical teams and the EE prioritise degraded ecosystem and shared-resource sites with a clear climate-resilience function. 4.2 Communities and technical teams place selected degraded areas under improved recovery management. 4.3 The EE and districts strengthen WUC and resource-user governance so shared resources can be managed and maintained locally. 4.4 Communities implement pressure-relief agreements and link affected vulnerable households to appropriate C2/C3 transition support.	The EE, district technical teams and communities will profile candidate sites and map affected users so recovery actions address documented degradation and climate vulnerability. Communities and resource users will prepare Community Resource Compacts and agree recovery zones, buffers and resource-use arrangements so recovery measures have local legitimacy. Technical teams and communities will implement appropriate assisted natural regeneration, enrichment planting, wetland/water-source protection and soil-water measures to restore climate-buffering functions. The EE and districts will	Ecosystem degradation, biomass pressure, water-source pressure, dry-spell/water stress, flooding/wetland pressure, soil erosion and income-driven extraction.	Communities and resource users negotiate rules, validate sites and monitor recovery. Non-beneficiary affected users receive disclosure, objection windows, scorecards and GRM access. Delivery is through EE/Deliver

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n	Outputs	Indicative activities	Hazards / vulnerability pathway	LLA decision role and delivery / finance route
		strengthen WUC/resource-user rules, O&M and monitoring, and CACs will link vulnerable or high-pressure users to C2/C3 support or referral where appropriate so ecosystem recovery does not simply transfer livelihood costs to affected households.		y Partner technical routes, WUC/resource-user O&M and community co-managed or community-managed routes where risk is low.
C5. KM, learning and adaptive evidence use. Outcome: project evidence and community experience are documented, shared and used to improve adaptation delivery, CAIF decisions and replication.	5.1 The EE establishes and implements the KM and learning strategy, calendar and evidence rules. 5.2 Communities and delivery actors document C2/C3/C4 learning so package performance can inform future decisions. 5.3 Communities document relevant traditional/local knowledge for screening and appropriate integration. 5.4 The EE and Delivery Partners facilitate peer and cross-site exchanges so communities and institutions can compare adaptation experience. 5.5 The EE completes adaptive learning reviews and a management-response tracker so verified lessons result in documented action. 5.6 The EE and MWE/NIE disseminate validated learning and final replication products for district, national and wider Busoga learning.	The EE C5 team, acting as Learning Secretariat, will prepare the KM strategy, learning questions, annual calendar, roles and evidence/consent rules so learning is captured consistently. Model farmers/FFS facilitators, SACCOs/VSLAs/groups, WUCs/resource users, CAC focal persons and district teams will capture community case notes and C2 food-security, C3 adaptation-finance/market and C4 ecosystem-recovery learning, with Delivery Partners supporting documentation. Communities and the EE will document and screen traditional/local knowledge, and the EE and Delivery Partners will organise district learning reviews, model-farm/WUC/SACCO-VSLA cross-site exchanges and community read-backs. The EE will disseminate validated learning through local-language materials, radio and district/MWE-NIE channels and prepare annual adaptive learning notes, a management-response tracker, workplan-adjustment notes and a final replication brief so evidence feeds directly into adaptation delivery and replication.	Cross-cutting learning on dry spells, rainfall uncertainty, food insecurity, climate-sensitive incomes, ecosystem degradation and the performance of C2/C3/C4 adaptation pathways.	Communities define practical learning questions, validate case notes and lessons, and challenge performance through reviews and exchanges. Local actors capture evidence; Delivery Partners support documentation; the EE C5 team consolidates products. Findings feed C2/C3/C4 package adjustment, CAIF screening and approval practice, annual workplans and management decisions;

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n	Outputs	Indicative activities	Hazards / vulnerability pathway	LLA decision role and delivery / finance route
				MWE/NIE and districts review annual learning. C5 funds KM/learning only—not routine M&E, audit, evaluation, financial reporting or individual GRM case management.

Cross-component LLA decision rights, fund-flow and accountability

CAC composition and selection will be publicly validated and inclusion-sensitive. Each CAC will draw on legitimate local structures while ensuring practical participation of women, youth, persons with disabilities or their representatives, vulnerable-household voices, relevant resource users and pathway-specific actors such as WUCs, SACCOs/VSLAs, farmer groups, model farmers or FFS actors. Membership, mandate, conflict-of-interest disclosure, reporting lines and replacement rules will be finalised during PFG and disclosed before CAAP prioritisation begins.

PACT separates community decision rights from fiduciary control. Communities, households and groups identify, prioritise, validate and monitor adaptation priorities through CAAPs, CACs, WUCs, SACCOs/VSLAs, disclosure meetings, scorecards and GRM channels. The EE-housed CAIF then converts community-validated priorities into financeable packages by applying disclosed gates for climate relevance, ESP/USP, GESI, O&M, VfM, additionality, beneficiary eligibility, anti-elite capture and duplicate-financing control.

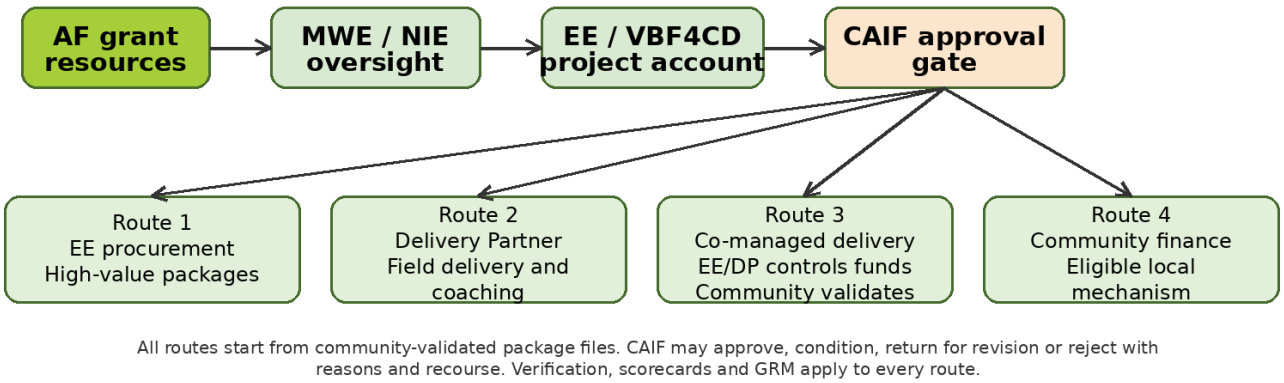


Figure 3. PACT fund-flow and delivery routes

Table 12. CAIF composition, decision procedure, route controls and recourse

Element	Concept-note rule
CAIF composition	EE chair/delegate; finance/fiduciary officer; safeguards/GESI officer; relevant technical specialist; district technical

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Element	Concept-note rule
	representative where relevant; Delivery Partner representative where relevant; community validation participants from CAC, WUC, SACCO/VSLA, producer group, resource-user group or beneficiary group.
Quorum and decision status	A decision meeting requires EE chair/delegate, finance/fiduciary, safeguards/GESI and relevant technical functions. Community validation participants present the priority and receive the decision but do not vote on fiduciary approval of their own package.
Decision types	Approved; approved with conditions; returned for revision; or rejected. No package is approved where community validation is missing, safeguards screening incomplete, fiduciary route unclear or conflict-of-interest declarations absent.
Screening gates	Climate relevance; ESP/USP; GESI; O&M; value for money; additionality; legal/fiduciary readiness; anti-elite capture; duplicate-financing control; standards; and beneficiary/site eligibility.
Community recourse	CAIF must give reasons for non-approval, a revision route and recourse through CACs, GRM, EE safeguards/accountability and MWE/NIE escalation. Reasons are issued within 5 working days; an explanation meeting is available within 10 working days on request; revision/resubmission is normally allowed within 20 working days; second review follows within 15 working days after complete resubmission; GRM acknowledgement is within 5 working days and response/referral normally within 30 working days where feasible.
Community-managed versus community-benefiting funds	Only low-risk packages through legally and fiduciary eligible mechanisms count as community-managed finance. EE-procured or DP-delivered packages may be locally selected and community verified but are not counted as community-managed finance. PFG will test a planning hypothesis of about 10-15% of activity resources through community-managed routes and 20-25% through combined community-managed/co-managed routes.
Route 1: EE procurement	Used for high-value, technical, safeguards-sensitive or permit-dependent packages. EE controls procurement and payment; communities verify priority, site, delivery and functionality.
Route 2: Delivery Partner implementation	Used for facilitation, coaching, mobilisation, field delivery and learning under EE agreement, supervision, reporting and safeguards controls.
Route 3: Community co-managed delivery	EE/DP manages funds while communities validate specifications, beneficiary/site lists, delivery and closure. Used where decision rights are strong but fiduciary, technical or safeguards controls require EE/DP fund control.
Route 4: Community-managed finance / implementation	Approved local institutions manage funds, advances, sub-grants or adaptation finance for low-risk packages only after due diligence, milestone release, public records, multiple signatories, disclosure and closure verification.
CAIF non-duplication package gate	Every package file must check household/group overlap, asset/site overlap, function overlap, timing overlap, result-claim risk and local disclosure before approval, release or closure. CAIF may approve, condition, refer, sequence, redesign or reject with recorded reasons.

B. Economic, social and environmental benefits, including gender and vulnerable groups

The Busoga study provides the concept-stage basis for PACT's Initial Gender Assessment (Annex 3). Climate vulnerability is shared within households but experienced differently by women, men, children,

elderly persons and persons with disabilities. PACT therefore uses the household as the main adaptation unit without treating households as gender-neutral.

Table 13. Initial gender and inclusion assessment at concept stage

Busoga study evidence	Assessment for PACT	Design response
Women were perceived as most vulnerable for most climate effects, generally 23.0%-31.5%. Men followed at 19.5%-28.8% and ranked highest for floods at 25.8%.	Gender is not women-only participation. Women face food, care, water, biomass and coping burdens; men face crop-income, casual-work and income-provider stress.	C1 requires women's and men's participation in CAAPs, disclosure, scorecards and GRM. C2 reduces food/post-harvest stress. C3 reduces climate-sensitive income stress. C4 applies no access restrictions without affected-user mapping and transition support.
Children below 12 recorded perceived vulnerability of about 14.6%-19.6%; PWDs reached 10.2% for droughts and 9.8% for lightning.	Children, elderly persons and PWDs may lack decision control but bear food, health, mobility, communication and service-access impacts.	Vulnerability scoring, accessible venues, local-language communication, PWD-accessible GRM, lower-labour options where feasible and tracking of households with vulnerable members.
Low income was the strongest vulnerability driver, ranked by more than 20% of respondents across the five districts.	Poor households have limited capacity to buy food, recover from crop loss, invest in adaptation or avoid distress coping. Finance may harm if treated as ordinary credit.	C2 is the lower-risk pathway for ultra-vulnerable households. C3 uses readiness-gated finance, governance checks, coaching, market screening and no automatic borrowing.
Limited land was reported at 17% in Kaliro, 15% in Bugweri and 14% in Iganga, Luuka and Namutumba.	Land scarcity can push poorer and resource-dependent households into wetlands, forest land and fragile soils. Recovery rules may harm if alternatives are absent.	C4 requires affected-user mapping before access rules, and links protection to C2/C3 transition support where needed. Rules are disclosed, negotiated and grievance-accessible.
About 22% of surveyed households were female-headed; 33.6% had at least one member with a disability; average household size was seven.	Female-headed, PWD and high-dependency households may face labour, mobility, information, asset-control and time constraints.	Transparent beneficiary validation, objection windows, scorecards, GRM, practical demonstrations, lower-labour options where feasible and differentiated learning through C5.
More than 60% of household heads had not completed primary education; only 36% of households had at least one member with regular income.	Written advisories, one-off training and complex applications may exclude households most in need.	Model farms, FFS/action-learning sites, local-language facilitation, visual tools, repeated demonstrations and accessible CAAP, disclosure and GRM processes.
The study and review comments identify barriers around land, credit, inputs, extension, markets and decision-making.	Representation alone is insufficient; PACT must track who influences priorities, accesses support, controls assets and carries O&M or labour duties.	CACs, WUCs, SACCOs/VSLAs and CAAPs will use transparent selection, disclosure, scorecards, objection windows and GRM. C5 tracks differentiated influence and benefits.

Vulnerable groups will be identified through PFG household and group profiling, with attention to female-headed households, persons with disabilities, elderly-headed households, youth, low-literacy households and households below the poverty line. Ultra-vulnerable households will not be pushed automatically into finance or enterprise risk.

Table 14. Economic, social and environmental benefits by pathway and vulnerable group

Pathway	Main vulnerable groups	Economic benefits	Social / inclusion benefits	Environmental / pressure-reduction benefits
C1 LLA governance, CAAPs, CAIF, scorecards and GRM	Women, men, youth, PWDs, elderly persons, low-literacy and poorer households, resource users and groups at risk of exclusion.	Reduced waste from poorly targeted, duplicated or non-adaptive support;	More influence over priorities, beneficiary lists, site selection and package adjustment; clearer recourse.	Better decisions on wetlands, water sources, fragile soils, recovery areas and pressure-relief agreements.

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Pathway	Main vulnerable groups	Economic benefits	Social / inclusion benefits	Environmental / pressure-reduction benefits
		stronger O&M and VfM discipline.		
C2 Food-security resilience	Food-insecure, female-headed, elderly-headed, PWD and poorer households; women carrying food-provisioning burdens.	More reliable food production under dry spells and rainfall uncertainty; reduced crop and post-harvest losses; lower distress food purchases where production stabilises.	Fewer hunger periods, reduced coping pressure, practical local-language learning and safer support for ultra-vulnerable households.	Improved soil moisture management, reduced erosion, stronger on-farm soil-water function and reduced emergency expansion into fragile ecosystems.
C3 Income-security resilience	Income-insecure households; youth/women's groups with readiness; men facing income-provider stress; resource-dependent households needing transition options.	More diversified and less climate-sensitive income; improved recovery after shocks; finance tied to adaptation, not generic credit.	Reduced income stress; safer enterprise entry; better capacity to meet food, school, health and household costs; lower over-indebtedness risk.	Reduced reliance on wetland encroachment, charcoal, biomass extraction, fragile lowland farming and other degrading coping where linked to C4 pressure relief.
C4 Ecosystem recovery management and shared-resource governance	Wetland, forest-edge and water-source users; households affected by degradation or resource-use rules; poorer households using fragile ecosystems as coping space.	Protection of natural assets that support production, water access and climate buffering; reduced long-term losses from degraded soils, wetlands and water sources.	Fairer access rules, reduced conflict, transition support before restrictions and stronger community control over shared resources.	Improved wetland, soil, water-source and forest-pressure functions; reduced degradation pressure; early recovery signals monitored.
C5 KM, learning and adaptive evidence use	CACs, WUCs, SACCOs/VSLAs, model farmers, FFS participants, district actors, women, youth, PWDs and wider Busoga learning audiences.	Lower future delivery costs through better package selection and avoidance of weak approaches.	Communities compare what works, raise concerns and influence workplan adjustments; local-language dissemination improves access.	Learning from recovery management, water governance, soil-water practices and pressure-relief agreements improves future ecosystem-sensitive adaptation.

Beneficiary counting discipline is fixed at concept stage. PACT estimates 7,500 unique direct pathway households: about 4,500 C2 food-security households and 3,000 C3 income-security households or group-member equivalents. Each household will be counted once, even where it receives several services. Service contacts such as FFS attendance, advisories, scorecards, model visits and trainings will be tracked separately and will not inflate direct beneficiaries. Wider C4 and C5 benefits will be counted as indirect or community-level benefits unless household-level support is provided.

The support demand in the Busoga study also protects the adaptation rationale for C3: households asked for financial/business start-up support, training and skills, livestock, small businesses and capital, but PACT will finance these only where they reduce climate-sensitive income exposure, improve shock absorption, avoid debt stress and reduce pressure on wetlands, forests, fragile soils or water sources.

Environmental and social risks will be managed through Category B treatment, USP screening, CAIF approval gates, safeguards screening, O&M readiness checks, grievance channels and community scorecards. PFG will validate final household counts, group-member equivalents, district distribution, beneficiary disaggregation, PWD accessibility, displacement status, Indigenous Peoples determination if relevant, and any FPIC requirements.

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C. Cost-effectiveness

PACT improves cost-effectiveness by using existing district, sub-county, parish and community systems instead of creating a parallel delivery structure. It keeps eligibility, safeguards, fiduciary clearance, value-for-money review, additionality and package approval with the EE-housed CAIF under MWE/NIE oversight. This division lowers transaction costs without weakening control.

Table 15. Cost-effectiveness through existing local systems and route discipline

Existing system leveraged	PACT use	Cost-effectiveness contribution	Boundary control
District technical offices	Technical witnessing, site knowledge, statutory fit and coordination with ongoing initiatives.	Avoids parallel technical structures and repeated diagnostics.	District actors advise and verify; CAIF retains eligibility, safeguards, fiduciary, VfM and approval functions.
Sub-county and parish structures	Mobilisation, meeting records, disclosure, local validation and local-plan fit.	Reduces mobilisation and validation costs; improves traceability.	Public disclosure, objection windows and GRM reduce elite-capture risk.
CACs and CAAPs	Risk ranking, priority setting, beneficiary/site validation, objection records and scorecards.	Reduces spending on externally imposed or low-priority packages.	CAIF screens all packages before financing.
WUCs and resource-user structures	Water-source governance, O&M, resource-use rules, recovery monitoring and affected-user validation.	Reduces asset failure, access conflict and post-project maintenance risk.	Approval requires capacity, safeguards and affected-user mapping.
SACCOs, VSLAs and groups	Finance readiness, savings discipline, group validation, monitoring and possible adaptation-finance route.	Avoids creating new rural finance channels and uses existing trust/savings systems.	Only legally and fiduciary eligible mechanisms may manage funds; informal VSLAs may support selection and monitoring unless a compliant legal route is confirmed.
Model farmers and FFS/action-learning sites	Demonstration, peer learning, local-language advisory delivery and seasonal adaptation learning.	Avoids artificial demonstration farms and one-off training models.	Sites must be credible, accessible to women, youth and PWDs, and monitored for inclusion.
Existing initiative and district records	Overlap screening, referrals, lessons and additionality checks.	Avoids duplicate financing, repeated targeting and parallel beneficiary records.	Additionality and non-duplication are checked through Section F and the CAIF gate.

The Local Finance Routing Schedule will classify each package by cost, fiduciary risk, technical complexity, safeguards risk, O&M burden and local institution readiness. Low-risk actions may be community-managed where legal and fiduciary eligibility is confirmed; moderate-risk packages may be community co-managed; high-value, technical, permit-dependent or safeguards-sensitive packages stay under EE procurement or Delivery Partner delivery.

Cost-effectiveness also comes from matching support to stated community priorities rather than importing a generic package. The study ranks financial/business start-up support, irrigation, training/skills, tree seedlings, livestock, seeds/fertilisers and water-harvesting or storage materials among the support needs; PACT converts these into screened package options rather than automatic entitlements.

D. Consistency with national, sub-national and local sustainable development strategies

PACT is consistent with Uganda's national climate, development, biodiversity and adaptation frameworks and with the priorities reflected in the District Development Plans and lower-local government priorities of Iganga, Kaliro, Luuka, Bugweri and Namutumba. At national level, PACT operationalises priorities for climate-resilient agriculture, household livelihood resilience, water security, ecosystem protection and restoration, locally led adaptation and integration of climate action into development planning. At district and lower-local levels, these priorities translate into food security, water for production, natural-resource

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management, wetland and forest protection, livelihood improvement, participation of women and youth, disaster-risk reduction and parish-level development. PFG will validate the exact current DDP, sub-county and parish references for the final selected sites; the national-policy alignment set out below is established at concept stage..

Table 16. Concept-stage alignment with local, national and technology priorities

Instrument / level	Alignment priority	PACT response	PFG validation
Fourth National Development Plan (NDP IV)	Climate-resilient and productive agriculture, improved household livelihoods and incomes, sustainable natural-resource management, water security and stronger local delivery systems.	C2 strengthens climate-resilient food production; C3 reduces dependence on climate-sensitive income through viable alternative livelihoods and adaptation finance; C4 restores ecosystem functions that support water, soils and production; C1 embeds delivery in district, parish and community structures; C5 supports learning and replication.	Confirm final programme/indicator references and district-plan linkages; substantive alignment is established at concept stage.
National Climate Change Policy (2015)	Mainstream climate change into sector and local development planning; strengthen adaptation of vulnerable communities; improve climate information, institutional capacity and ecosystem resilience.	C1 integrates locally led adaptation into local planning and decision-making; C2 and C3 reduce household sensitivity to rainfall, food and income shocks; C4 strengthens climate-buffering ecosystems; C5 supports climate information, learning and adaptive management.	Confirm final policy-reference and indicator mapping only.
National Biodiversity Strategy and Action Plan (NBSAP)	Conservation, restoration and sustainable use of biodiversity and ecosystems, including forests, wetlands and other natural-resource systems, with community participation and reduced pressure on degraded ecosystems.	C4 supports climate-resilient wetland, forest, soil and water-source recovery and management. C2 and C3 reduce food- and income-driven pressure on these ecosystems by providing viable adaptation and transition pathways for affected households.	Confirm site-specific biodiversity values, restoration measures, affected users and safeguards during detailed design.
National Adaptation Framework (2016)	Integrate adaptation into national and local planning; strengthen institutional coordination, evidence-based prioritisation, resilience of vulnerable communities and implementation of locally appropriate adaptation actions.	C1 provides the local planning and decision architecture through CAAPs, CACs and CAIF; C2-C4 translate locally identified climate risks into screened food-security, income-security and ecosystem-resilience investments; C5 captures evidence for adaptive management and replication.	Confirm detailed planning and indicator linkages in the full proposal; alignment is not deferred to PFG.
Iganga district and lower-local priorities	Agriculture dependence, food-production vulnerability, finance constraints and resource-pressure risks.	C1 CAAP/CAC validation; C2 food-security resilience; C3 readiness-gated income-security support; C4 where water, wetland, soil or forest pressure is confirmed.	Confirm DDP, sub-county and parish references, final community ranking, beneficiary records and site/safeguards files.
Kaliro district and lower-local priorities	Wetland/shared-resource pressure, water/ecosystem governance and alternative livelihood pressure relief.	C4 wetland/resource recovery management and WUC/resource-user governance; C2/C3 to reduce	Confirm resource-site fit, affected-user mapping, district natural-resource

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Instrument / level	Alignment priority	PACT response	PFG validation
		food and income pressure on shared resources.	priorities and initiative overlap.
Luuka district and lower-local priorities	Dry-spell exposure, food-production stress and degraded forest/resource signals.	C2 dry-spell/rainfall-resilience support; C4 forest/land recovery management and pressure-relief agreements; C3 where readiness exists.	Confirm district plan fit, forest/resource-site status, land/access issues, safeguards and affected users.
Bugweri district and lower-local priorities	Tree-based support, water/irrigation support, business-capital needs and forest/wetland pressure management.	Balanced C2/C3/C4 package mix: food-security resilience, readiness-gated income support and ecosystem recovery management.	Confirm package readiness, local institution capacity, water-source feasibility, safeguards and non-duplication.
Namutumba district and lower-local priorities	Food-security vulnerability, water/wetland pressure and Mpologoma-related shared-resource relevance.	C2 food/water-stress support; C4 wetland/water-source governance and recovery management; C3 transition support where ecosystem pressure is income-driven.	Confirm catchment/wetland fit, affected-user mapping, plan references, safeguards and initiative overlap.
Uganda NDC, NAP/NAP process and NAPA legacy priorities	Climate-resilient agriculture, water security, ecosystem resilience, disaster-risk reduction, vulnerable-community adaptation and local capacity.	C1-C5 link local planning, food-security resilience, income-risk reduction, ecosystem recovery management and KM/replication to national adaptation priorities.	Confirm final reference wording and indicator linkage in the full proposal.
Climate Change Act, 2021	Coordinated climate action through public institutions and local planning/implementation systems.	PACT works through district, sub-county, parish and community systems while retaining MWE/NIE oversight and EE accountability. CACs are project-level LLA structures, not statutory climate committees.	Map CACs to relevant district/lower-local climate coordination structures, focal persons or committees where these exist.
Uganda TNA/TAP: water stress, rainwater harvesting and community irrigation	Water stress, dry spells and production-water constraints.	C2 supports selective water assets only where climate relevance, water-source reliability, O&M and safeguards are confirmed.	Confirm source feasibility, unit costs, O&M, safeguards and readiness.
Uganda TNA/TAP: climate-resilient crops and responsive extension	Dry spells, rainfall uncertainty, crop losses and low adaptive capacity.	C2 supports CSA, model farms/FFS, local-language advisories and practical demonstrations.	Confirm option basket, input standards, extension channels and farmer readiness.
Uganda TNA/TAP: forest/land and ecosystem recovery-management practices	Degraded wetlands, forests, soils and water-source functions that buffer climate risks.	C4 supports areas under improved climate-resilient recovery management, pressure-relief agreements and affected-user transition support.	Confirm sites, users, species/practices, access rules, safeguards and monitoring indicators.
Uganda TNA/TAP: technology uptake and finance readiness	Adaptation technologies require user capacity, finance, maintenance and market support.	C3 links readiness-gated adaptation finance, coaching and market links to lower-climate-risk income options.	Confirm SACCO/VSLA/group readiness, market logic, debt risk and technology suitability.

E. National technical standards and ESP compliance

Technical compliance will be organised by pathway and investment type. Each CAIF package file will identify applicable national law, regulation or technical standard; responsible authority or validation route;

permit, clearance or technical check; compliance evidence; safeguards/USP status; O&M condition; and capacity support required. No package proceeds to procurement, delivery, community finance or closure until the register is complete.

Table 17. National technical standards, validation routes and capacity support by investment type

Investment type	Applicable instruments	Authority / validation route	Compliance evidence before approval or release	Capacity support
Food-production assets, CSA, seed and planting material	Seeds and Plant Act; Plant Protection and Health Act, 2015; Agricultural Chemicals (Control) Act; MAAIF/NARO/ZARDI guidance; relevant UNBS standards.	MAAIF/NARO/ZARDI; District Production/Agriculture Offices; certified suppliers.	Approved variety/source; supplier certification; input-quality record; safe-use guidance; district technical review; safeguards screen; complaint channel.	District/CAC/model farmer orientation on input standards, seed-source verification, safe chemical use, farmer records and defect reporting.
Water harvesting, production water and selective irrigation	Water Act; Water Resources Regulations; National Irrigation Policy; National Environment Act, 2019; National Environment (Environmental and Social Assessment) Regulations, 2020; MWE/DWRM siting, abstraction, drainage and construction requirements.	MWE/DWRM; District Water Office; District Engineer; NEMA where required; WUCs for O&M.	Water-source reliability; permit determination; siting and land/user access; WUC/O&M plan; safeguards screen; technical sign-off; water-user conflict check.	WUC training on O&M, water-use rules, records, source protection, inclusive access, complaint handling and maintenance.
Wetlands, forests, degraded land and ecosystem recovery management	National Environment Act, 2019; National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000; National Forestry and Tree Planting Act, 2003; Environmental and Social Assessment Regulations, 2020; biodiversity, invasive-species and NFA/local forest-management requirements where applicable.	NEMA; MWE Wetlands Department; District Natural Resources/Environment Offices; NFA or relevant forest authority; WUC/resource-user structures.	Site status; affected-user mapping; access/use agreement; species/practice validation; invasive-species check; safeguards screen; recovery plan; monitoring indicators; C2/C3 transition link.	CAC/WUC/resource-user training on recovery rules, affected-user mapping, conflict handling, monitoring and local-language disclosure.
C3 adaptation finance, SACCO/VSLA/group mechanisms	Tier 4 Microfinance Institutions and Money Lenders Act, 2016; Tier	EE/CAIF; eligible SACCO/group/cooperative structures; UMRA/licensing route where applicable;	Legal/fiduciary eligibility; governance record; beneficiary list; repayment/finance	SACCO/VSLA/group clinics on records, repayment rules, climate screening, borrower

Investment type	Applicable instruments	Authority / validation route	Compliance evidence before approval or release	Capacity support
and livelihood packages	4/SACCO regulations; Cooperative Societies Act; local group registration rules; consumer protection and group governance requirements.	District Commercial/Community Development Offices.	rules; over-indebtedness screen; climate-relevance test; market logic; anti-capture declaration; safeguards screen.	protection, disclosure, women/youth/PWD access and over-indebtedness safeguards.
Low-risk community sub-project route	Applicable sector laws above; AF ESP/USP; EE/NIE fiduciary procedures.	CAIF; EE finance/procurement; EE safeguards/GESI; district technical offices; eligible CAC/WUC/group mechanism.	Route classification; value threshold; simple agreement; multiple signatories; milestone release; receipts/accounting; public disclosure; safeguards screen; completion verification; GRM access.	Community Package Card training, simple accounting, receipt filing, public expenditure display, milestone reporting, scorecards and complaints.
Construction, works, labour and occupational safety	Occupational Safety and Health Act, 2006; Employment Act, 2006; Workers Compensation Act; National Environment Act, 2019; ESA Regulations, 2020; local building/public-health requirements.	EE procurement; District Engineer; District Water/Environment/Labour offices; NEMA where applicable; contractors/service providers.	Work method statement; labour conditions; PPE/safety plan; child-labour exclusion; accident reporting; insurance/compensation where applicable; site screen; completion certificate.	Contractor/community orientation on safe work, labour rights, no child labour, PPE, accident reporting, public safety and grievance channels.
Procurement, product quality and supplier control	EE/NIE procurement procedures; AF fiduciary requirements; UNBS product standards for goods; PPDA principles where applicable; anti-corruption and conflict-of-interest controls.	EE procurement; MWE/NIE oversight; UNBS/certified suppliers where applicable; CAIF for package eligibility.	Procurement route decision; specifications; supplier eligibility; product certification; conflict-of-interest declarations; delivery notes; community verification.	CAC/community orientation on delivery verification, defects, complaint channels, conflict reporting and supplier relationship disclosure.
Climate information, early warning and advisory dissemination	Uganda National Meteorological Authority Act, 2012; National Climate Change Act, 2021; authorised UNMA, MWE/DWRM, OPM/NECOC and district protocols for weather, climate,	UNMA; MWE/DWRM; OPM/NECOC where applicable; district structures; Delivery Partners for local-language translation.	Authorised source; date/validity; translation record; dissemination channel; local-language interpretation; feedback record. PACT will not generate official forecasts.	CAC/model farmer/FFS training on interpreting advisories, avoiding misinformation, local-language dissemination and linking advisories to planting/water decisions.

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Investment type	Applicable instruments	Authority / validation route	Compliance evidence before approval or release	Capacity support
	hydrological and early-warning information.			
Safeguards / USP screening	AF ESP and Gender Policy; National Environment Act, 2019; National Environment (Environmental and Social Assessment) Regulations, 2020; sector-specific laws above.	EE safeguards/GESI officer; CAIF; NEMA where required; MWE/NIE oversight; district technical offices for local facts.	USP/ESP screening form; risk category; exclusion-list check; mitigation measures; GRM disclosure; monitoring responsibilities; CAIF approval condition.	CAC, WUC, SACCO/VSLA, district and Delivery Partner orientation on screening triggers, exclusion list, GRM, vulnerable-group access and monitoring records.

PACT will not retain household energy as a standalone output. If any biomass-pressure reduction measure is considered under C4.4, it must pass CAIF adaptation screening and comply with applicable UNBS product standards.

F. Duplication, coordination and complementarity

Duplication is a formal CAIF approval risk. PACT will not finance equivalent support for the same household, group, asset, water source, ecosystem site or service package already covered by another initiative, and will not count another initiative's result as a PACT result.

The Busoga study strengthens the case for this control. Only 24.69% of respondents acknowledged government-led environmental initiatives, while 75.31% did not; among visible initiatives, households cited sensitisation/awareness, law enforcement/regulation and wetland/waterbody protection. PACT therefore treats coordination, disclosure and additionality checks as delivery safeguards: the problem is not only project overlap, but low visibility of who is already supporting which household, group, asset or site.

Table 18. Project-by-project duplication risk, complementarity and avoidance mechanism

Related initiative / category	Overlap with PACT	Duplication risk	PACT complementarity	Avoidance mechanism
Mpologoma Early Warning System / AF-financed work	Risk information, catchment/water risk and flood/drought advisories in relevant areas.	Duplicating EWS infrastructure, messaging or warning structures.	PACT uses authorised risk/advisory information in CAAPs, C2/C4 timing and learning; it will not create a parallel EWS unless PFG confirms a clear additional function.	Map channels and focal persons during PFG; CAIF verifies additionality before any advisory/risk-information package.
Uganda Climate Smart Agricultural Transformation Project (UCSATP)	CSA, extension, irrigation or production support.	Same households/groups receive equivalent CSA inputs, training or assets.	PACT targets vulnerability-led gaps and links C2 support to CAAPs, CAIF, safeguards, O&M, ecosystem-pressure logic and accountability.	Beneficiary/site disclosure; district production-office checks; CAIF no-duplication and no-claim rule.
SAYE and other youth livelihood/finance initiatives	Youth enterprise, finance, skilling	C3 could duplicate enterprise grants,	PACT supports only climate-	PFG verifies beneficiary

Related initiative / category	Overlap with PACT	Duplication risk	PACT complementarity	Avoidance mechanism
	and livelihood support.	finance or coaching.	screened income-security packages that reduce climate-sensitive income exposure and debt/ecosystem risk.	records and active support; CAIF applies climate-income-risk, debt-safety and non-duplication tests; refer where SAYE-type support is better.
GCF Wetlands project	Wetland management, recovery, livelihoods and resource-use controls.	Duplicating wetland recovery-management, livelihood-transition or site activities.	PACT supports locally validated recovery-management gaps, affected-user transition through C2/C3, pressure-relief agreements and community monitoring where additionality is confirmed.	C4 site/user mapping; wetland focal-person checks; Community Resource Compact; CAIF site-level additionality note.
EcoProsperity and environment/livelihood initiatives in Busoga	Ecosystem, livelihoods, green enterprise or community conservation activities.	Overlap with C3 livelihood packages or C4 recovery-management.	PACT adds CAAP/CAC decision rights, CAIF screening, public disclosure, scorecards and full-cost/additionality controls.	PFG confirms locations, active support and beneficiary/site records; CAIF requires no equivalent support.
UgIFT Micro-Scale Irrigation	Micro-scale irrigation hardware and water-for-production support.	Duplicating irrigation equipment or technical support.	PACT may support complementary O&M, WUC governance, water-use rules, climate advisory linkages or household pathway support where not covered.	District water/production checks; asset/site disclosure; technical/O&M and water-source reliability review; CAIF additionality note.
A-GRIP, CRAFT, UBEP and similar agriculture/enterprise/energy initiatives	Agribusiness, climate-smart value chains, enterprise support, biomass/energy or resilience services.	Duplicating enterprise finance, market links, inputs, clean energy or production support.	PACT uses lessons and referrals but finances only additional adaptation functions tied to C2, C3 or C4.	PFG verifies current titles, locations and active support; CAIF non-duplication and no-claim rule.
Parish Development Model, district initiatives and lower local government programmes	Finance, mobilisation, parish planning, production and local development support.	PACT read as parallel parish/rural-development funding or financing the same households for the same function.	PACT uses parish/district records for targeting, disclosure, referrals and alignment, but finances only	Parish/district records, public beneficiary lists, objection windows, CAIF additionality checklist and referral decisions.

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Related initiative / category	Overlap with PACT	Duplication risk	PACT complementarity	Avoidance mechanism
			climate-relevant adaptation functions.	

Table 19. Coordination and non-duplication controls

Level / control	Responsibility	Frequency / trigger	Output
MWE/NIE oversight	Review additionality approach, high-risk overlaps, safeguards-sensitive coordination and AF compliance.	PFG, annual review and escalation cases.	Oversight comments, corrective action or clearance.
EE/VBF4CD	Maintain Additionality and Coordination Register; convene district/partner checks; require existing-support checks in CAIF package files.	Quarterly and before CAIF approvals.	Updated register, CAIF decisions and referral notes.
District technical offices	Verify current initiatives, sites, beneficiary records and sector overlap in agriculture, water, environment, community development and commercial services.	During PFG, workplanning and package review.	District verification notes and coordination minutes.
Community structures	Disclose beneficiary/site lists, validate overlap, identify duplicated/missing support and raise objections.	Before CAIF approval and during implementation.	Disclosure records, objection-window records, scorecards and GRM entries.
C5 learning function	Capture lessons from related initiatives without treating their outputs as PACT results.	Quarterly and annually.	External-initiative lesson notes and learning management-response tracker entries.
CAIF checklist	Household/group, asset/site, function, timing, result-claim and disclosure checks.	Every package file before approval, release and closure.	Approve, condition, refer, sequence, redesign or reject with recorded reasons.

G. Learning and knowledge management

Component 5 is PACT's federated learning and evidence system. It will not finance routine M&E, registry operation, financial reporting, audit, terminal evaluation or IE oversight. Knowledge is generated locally, stewarded centrally by the EE C5 Learning Secretariat, and fed back into CAIF, workplans and communities.

Table 20. Component 5 KM products, channels and responsibilities

C5 output / tool	Concrete activity or product	Channels	Responsibility / use
5.1 KM and learning strategy	KM strategy, learning questions, annual calendar, roles matrix, metadata and consent protocol, repository rules.	Project inception, district orientation, CAC/WUC/group briefings.	EE C5 KM Lead as Learning Secretariat; Delivery Partners and districts support evidence capture.
5.2 C2 learning	Food-security practice notes, package performance notes, post-harvest protection notes and model farm/FFS learning briefs.	FFS sessions, model visits, local-language sheets, radio messages and district reviews.	Model farmers, FFS facilitators, district production teams and EE C5 team; feeds C2 package adjustment.
5.2 C3 learning	Adaptation-finance readiness notes, market-linkage briefs, enterprise-risk notes and debt-safety learning.	SACCO/VSLA meetings, group coaching, district commercial/community development sessions.	SACCO/VSLA/group recorders, Delivery Partners, EE finance/safeguards/C5 teams; feeds CAIF C3 screening.
5.2 C4 learning	Recovery-management briefs, WUC/resource-user notes,	WUC meetings, resource-user forums,	WUC/resource-user recorders, district natural-

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C5 output / tool	Concrete activity or product	Channels	Responsibility / use
	Community Resource Compact lessons and early recovery-signal notes.	district natural-resource reviews and cross-site visits.	resource teams, EE safeguards/C5; feeds C4 package and compact design.
5.3 Traditional/local knowledge	Traditional/local knowledge note documenting practices from elders, women's groups, farmers, WUCs and resource users, screened for climate relevance and safeguards.	Community read-backs, local-language materials and peer exchanges.	CAC learning focal persons, elders, women's groups, WUCs, EE safeguards/C5; integrates useful practices only after screening.
5.4 Peer exchange	Cross-site exchanges, model-farm visits, WUC learning visits, SACCO/VSLA learning visits and district learning events.	Field visits, community forums, district learning reviews.	EE and Delivery Partners facilitate; communities share and challenge lessons.
5.5 Adaptive learning reviews	Annual adaptive learning note, scorecard and GRM trend synthesis, learning management-response tracker and workplan adjustment notes.	Annual workplanning, CAIF review, MWE/NIE supervision and district reviews.	EE prepares; MWE/NIE and districts review; decisions recorded as adopt, adapt, avoid, refer or monitor.
5.6 Dissemination and replication products	Community case notes, C2/C3/C4 briefs, district briefs, final replication brief and policy/replication products where justified.	Local language, radio, district briefs, MWE/NIE channels and wider Busoga replication events.	EE leads; MWE/NIE supports clearance and dissemination. Wider Busoga receives learning only, not direct implementation.
KM/GRM boundary	GRM protects people; KM improves the system. Individual complaint files, complainant identities and sensitive case details are protected and do not become KM products. Only closed, anonymised trends may feed learning.	Restricted GRM register; anonymised trend summaries; sensitive-case protocol; public products cleared only after consent, anonymisation and review.	EE safeguards/accountability officer protects cases; C5 uses trends only to improve CAIF screening, safeguards, workplans and delivery routes.
Minimum evidence grading	Grade 0 raw; Grade 1 locally validated; Grade 2 technically verified; Grade 3 triangulated; Grade 4 policy/scientific grade where methods, consent, anonymisation and review are sufficient.	Repository and product release controls.	C5 determines evidence grade and releases products only where quality and consent permit.

H. Consultative process

The consultative process has two evidence layers. The concept note annexes record institutional and technical consultations. The community and vulnerable-group consultation layer is documented in the Busoga Study Report 2025, which used a mixed-methods, participatory and human-rights-based approach with household interviews, KIIs and FGDs. The study explicitly sought the views of women, youth and people living with disabilities and applied free, prior and informed consent.

The Busoga Study covered the five target districts through 437 household interviews, 27 KIIs and 14 FGDs, including separate male and female FGDs and mixed youth FGDs. It used a participatory, human-rights-based approach, included women, youth and persons with disabilities, and applied FPIC. The concept note uses this evidence for diagnosis and design influence; PACT will claim exact category-specific attendance only where attendance sheets support it.

Quantitative evidence came from 437 household interviews across the five preselected districts. Qualitative evidence came from 27 key informant interviews and 14 FGDs, including district/local government, NGOs/INGOs, financial-sector actors, MAAIF, MWE Wetlands, NEMA, NARO, Makerere University, private-sector actors and community groups. Field observations documented visible climate impacts and environmental degradation. PFG will validate residual site, beneficiary, attendance-category and implementation records.

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At concept stage, communities led the diagnosis of hazards, coping pressures, vulnerable groups, support needs, ecosystem-use pressures and participation barriers; they did not make final financing decisions. That boundary is deliberate and avoids overclaiming. During PFG and implementation, community leadership moves into CAAP prioritisation, beneficiary and site validation, package review, disclosure, scorecards, GRM use and adaptive learning before CAIF approval and financing.

The Busoga Study Table 2 and Annex VI, together with available field attendance records, provide the supporting consultation evidence. Where attendance records do not separately identify persons with disabilities, female-headed households, elderly persons or poor households, PACT relies on the study vulnerability evidence and verifies participation quality during PFG through CAAP validation, disclosure, scorecards and GRM access.

Table 21. Consultation evidence and design response

Evidence requirement	Verified evidence now	How the concept note uses it	PFG / implementation follow-through
Reconcile annexes with study report	CN annexes are mainly institutional/technical; the Busoga study supplies the community consultation layer.	Treats the two as complementary, not contradictory.	Busoga Study Table 2, Annex VI and available attendance records support the submission evidence; PFG records final CAAP and site-level participation.
Community consultation coverage	Study Table 2 gives five district/sub-county locations, 27 KIIs and 14 FGDs.	Grounds community evidence on hazards, coping pressures, support needs and barriers.	CAAPs complete final community prioritisation, beneficiary/site validation and implementation monitoring.
Vulnerable-group engagement	Study methods state women, youth and PWDs were included through participatory, human-rights-based methods with FPIC.	Supports the Initial Gender Assessment, vulnerability scoring, accessible engagement, scorecards and GRM.	PFG validates participation quality, final beneficiary registers, accessibility and grievance access.
Female-headed, poorer, low-literacy and PWD households	Vulnerability evidence identifies these groups, but snippets do not prove all attended specific FGDs as separate categories.	Their vulnerabilities shape targeting and pathway rules without overclaiming attendance.	Public disclosure, objection windows, scorecards and GRM correct exclusion or elite capture; PFG verifies participation quality.
How communities shaped design	Communities reported dry spells, rainfall uncertainty, crop losses, food insecurity, income stress, weak finance access, water constraints and ecosystem degradation.	Design shifted from fixed activities to pathways: C2 food security, C3 income security, C4 ecosystem recovery and C1 LLA governance/CAIF.	Communities lead CAAP prioritization, validate beneficiary/site lists, monitor through scorecards, raise grievances and participate in learning.
Support needs from consultations	Support needs included finance/start-up, irrigation, training, tree seedlings, livestock, inputs and facilities.	Converted into an eligible option basket rather than a pre-defined delivery package.	CAIF approves only locally prioritized, climate-relevant, safeguards-compliant and additional packages.

I. Justification for funding requested: full cost of adaptation

PACT requests AF financing as the full cost of adaptation for a locally led adaptation pathway in Iganga, Kaliro, Luuka, Bugweri and Namutumba. Without AF support, climate hazards continue to weaken food production and income; food and income insecurity increase distress borrowing, food purchase/rationing, seasonal labour, wetland cultivation, biomass extraction and overuse of fragile land and water; degradation then reduces the natural buffers households need for the next shock.

Business-as-usual without AF: households remain dependent on vulnerable rain-fed production, food purchase and meal rationing after shocks, limited or unsuitable finance, weak visibility of existing

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government support, wetland and forest pressure, fragile water and soil systems, and fragmented initiatives that do not create a locally accountable adaptation pathway.

The local business-as-usual baseline is documented in household coping data. During longer dry spells, households mainly buy food from nearby areas (58.5%), ration meals (28.7%), store food where possible (16.1%), reclaim wetlands for moist soils (12.9%) or change livelihoods (13.5%). Under delayed or early rains, households reported buying food (36.5%), reclaiming wetlands (30.2%), crop diversification (34.9%), meal rationing (19.0%) and livelihood change (20.6%). Under more frequent drought, buying food rose to 67.5%, with 32.5% seeking government assistance and 15.0% rationing meals. This is the baseline PACT must shift: reactive food purchase, rationing, wetland pressure and unsupported livelihood change are not sufficient adaptation.

The request is not the cost of generic agriculture, enterprise or environment activities. It is the incremental cost of making locally prioritized support function as adaptation under Busoga hazards, while avoiding duplication and over-claiming. CAIF will approve a package only where the file documents baseline condition, hazard addressed, existing support checked, additionality type, incremental adaptation function, delivery route, safeguards/O&M conditions and no-claim status.

Component financing is presented in Table 6. Table 22 explains the corresponding local baseline, AF-financed incremental adaptation function and additionality/control logic

Table 22. Full cost of adaptation: local baseline, AF-financed incremental adaptation function and additionality.

Component / budget line	Local baseline without AF	AF-financed incremental adaptation function	Additionality / control gate
C1 LLA governance / CAIF	Communities may be consulted but priorities are not systematically connected to climate screening, safeguards, finance routing, disclosure, recourse or duplicate-financing control.	CAAPs, CAC validation, CAIF approval gates, disclosure, scorecards, GRM/recourse and community resource decision spaces.	CAIF package files, public disclosure, conflict-of-interest checks, affected-user participation for shared resources and recourse records.
C2 Food-security resilience	Rain-fed food production remains exposed to dry spells, rainfall uncertainty, water stress, local flooding, wind/hail and post-harvest weather risk.	Climate-screened food-security packages: soil-water practices, timing/advisory support, model farms/FFS, selective water assets where viable and post-harvest protection.	Household/group duplicate check, hazard rationale, option-basket screening, standards/O&M for water assets, public disclosure and CAIF additionality note.
C3 Income-security resilience	Household income remains seasonal, climate-sensitive and often tied to rain-fed production or degrading coping; generic credit can deepen vulnerability.	Readiness-gated adaptation finance and income-security packages screened for hazard resilience, market continuity, debt safety and ecosystem-pressure effects.	C3 climate-income-risk test, SACCO/VSLA/group due diligence, over-indebtedness screen, market continuity check, non-duplication and no-claim rule.
C4 Ecosystem recovery management	Wetlands, forests, soils and water sources remain under pressure from food and income insecurity; direct household support alone cannot protect communal resources.	Recovery-management actions, Community Resource Compacts, affected-user mapping, hazard-period rules, O&M, pressure-relief support and community-benefiting assets where justified.	Site/user mapping, safeguards/USP screening, WUC/resource-user governance, O&M plan, public disclosure, compact approval and CAIF resource-pressure note.
C5 KM, learning and adaptive evidence use	Lessons remain fragmented across projects, districts and communities; field experience may not change package design, CAIF guidance or workplans.	Verified learning through evidence grading, C2/C3/C4 briefs, local knowledge screening, annual learning notes, management-response tracker and final replication brief.	KM/MEAL boundary, learning capture obligations, tracker, release controls and no routine M&E/audit/evaluation in C5.

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Component / budget line	Local baseline without AF	AF-financed incremental adaptation function	Additionality / control gate
Execution cost	AF-compliant delivery, routine monitoring, registry management, safeguards tracking, reporting and coordination would not be available for this integrated LLA model.	Project coordination, routine implementation management, workplanning, reporting, fiduciary administration, procurement support, safeguards tracking and implementation follow-up.	Kept outside C5. Execution cost is US$437,788, 8.76% of total financing including IE fee and 9.5% of project cost before IE fee.
IE fee	MWE/NIE oversight, fiduciary compliance, audit/evaluation oversight and closure functions are required for AF delivery.	NIE project-cycle management, oversight, compliance review, independent evaluation/audit oversight and closure.	IE fee is US$391,705, 8.5% of total project cost before the fee.
Total request	Business-as-usual trap remains: vulnerable rain-fed agriculture, weak finance access, ecosystem degradation, fragmented initiatives and low visibility of government support.	Full PACT LLA package across C1-C5, execution and NIE oversight.	Total request locked at US$5,000,000.

Table 23. Package-level adaptation gates for C3, C4 and additionality

Gate	Question / required evidence
Baseline test	What happens to this household, group, asset, site or function without AF?
Existing-support test	Is another initiative already supporting the same household, group, asset, site or equivalent adaptation function?
Additionality type	Gap, targeting, climate-function, climate-proofing, risk-reduction, complementarity, sequencing, governance, commons-protection, community-benefiting, hazard-period or learning.
Hazard-function test	Which local hazard does the package help households, systems or resources withstand or recover from?
C3 hazard resilience	Can the income option survive or recover from dry spells, water stress, flooding, crop failure, raw-material shortage, transport disruption or market disruption?
C3 income-sensitivity	Does it reduce dependence on rain-fed crop income or climate-exposed natural-resource extraction?
C3 debt-safety	Could repayment become harmful after a hazard, and what borrower-protection or rescheduling/referral mechanism exists?
C3 market-continuity	Are inputs, buyers, transport and demand likely to remain viable during climate-stress periods?
C3 ecosystem-pressure	Does the income option reduce, rather than increase, pressure on wetlands, forests, soils or water?
C4 Community Resource Compact	Resource boundary, user mapping, pressure diagnosis, community rules, hazard-period rules, transition support logic, community-benefiting interventions, non-beneficiary decision rights, O&M, monitoring, review and recourse.
No-claim test	PACT claims only its incremental adaptation function and not another project's result.

J. Sustainability and exit strategy

PACT treats sustainability as a design condition. The EE will prepare the exit strategy during PFG/full proposal development, with design work under A6 and operational refinement under execution costs. The strategy will specify responsible actors, O&M arrangements, institutional anchoring, handover conditions and post-project functionality checks for CACs, WUCs, SACCOs/VSLAs, water assets, ecosystem recovery-management sites, enterprise assets and learning products.

The study also shows why the exit strategy must be built around existing local systems but not depend on them without support. District and sub-county actors reported sensitisation, tree planting and CSA training, but also chronic resource constraints, limited staffing and transport limitations. PACT therefore invests in CACs, WUCs, SACCO/VSLA readiness, model farmers, FFS/action-learning sites, district

learning reviews and package-level O&M rather than assuming that unsupported institutions can maintain the adaptation gains.

Table 24. Sustainability and exit focus by pathway

Pathway	Sustainability focus
C1	CACs, CAIF tools, CAAPs, scorecards and grievance channels anchored in legitimate local structures without transferring sensitive feasibility or approval functions to districts.
C2	Household adoption of CSA, viable privately controlled food-production assets, model-farm/FFS learning continuity, post-harvest food protection and O&M.
C3	SACCO/VSLA governance, repayment discipline, market linkages, enterprise survival and safeguards against over-indebtedness.
C4	WUCs, community resource rules, source protection, ecosystem maintenance and pressure-reduction agreements linked to household pathway support.
C5	Usable knowledge products, replication notes and adaptive learning taken up by districts, MWE, Delivery Partners and community institutions.
Carbon finance	Not treated as a core sustainability mechanism at concept stage; may be explored only as feasibility or learning where appropriate.

K. Environmental and social impacts and risks

PACT is provisionally classified as Category B because it will finance locally selected food-security, income-security, water-related, ecosystem-recovery, community-benefiting and adaptation-finance packages with site-specific but manageable risks. The project uses a USP approach because final household packages, group packages, ecosystem sites, community-benefiting assets, finance routes and resource-use agreements will be selected or refined through PFG profiling, CAAPs, community validation and CAIF approval. USP does not defer safeguards; every package must pass screening, categorisation, mitigation planning, disclosure, GRM access and CAIF approval before financing.

Risk identification covers direct, indirect, cumulative and transboundary risks. At concept stage, no material transboundary impacts are expected because activities are localised and screened before financing. Indirect and cumulative risks may arise through water-source pressure, ecosystem access rules, finance and debt stress, resource displacement, works and labour, pollution, duplicate support or unequal access. These risks will be managed through the exclusion list, package-level ESP/USP screening, CAIF approval, local disclosure, GRM access, O&M conditions and monitoring.

Table 25. ESP checklist: 15 Adaptation Fund principles

AF ESP principle	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
1. Compliance with the Law	—	**D:** Site-specific C2–C4 investments may miss applicable water, wetland, forestry, agriculture, labour, procurement, finance or local-government requirements. **I:** Delivery partners/community actors may apply requirements inconsistently. **T:** None identified. **C:** Multiple small investments may compound compliance and oversight gaps. **Risk: Moderate.**
2. Access and Equity	—	**D:** Elite capture, unfair targeting, unequal access to finance/shared assets, or exclusion of affected non-beneficiaries. **I:** Readiness, contribution or finance requirements may disadvantage poorer, land-constrained or less-connected households. **T:** None identified. **C:** Repeated unequal selection across C2–C4 could concentrate benefits among better-resourced groups. **Risk: Moderate.**
3. Marginalized and Vulnerable Groups	—	**D:** Women, youth, PWDs, elderly persons, poorer households and vulnerable resource users may face barriers to meetings, benefits, finance, information or grievance channels. **I:** Resource-use changes may disproportionately affect households dependent on wetlands, forests or common resources. **T:** None identified. **C:** Overlapping poverty, disability, gender, age and resource-dependence constraints may compound exclusion. **Risk: Moderate.**
4. Human Rights	—	**D:** Coercive or unfair resource-use restrictions, discrimination, retaliation or unresolved grievances may affect rights and participation. **I:** Local

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		power imbalances may suppress meaningful voice or recourse. **T:** None identified. **C:** Repeated unresolved decisions or restrictions could progressively disadvantage affected groups. **Risk: Moderate.**
5. Gender Equality and Women's Empowerment	—	**D:** Women may face unequal access to or control over land, finance, agricultural inputs, extension, markets, supported assets and project decisions. **I:** Participation or livelihood requirements may increase care, time or labour burdens or exclude women unable to meet finance/readiness conditions. **T:** None identified. **C:** Existing inequalities may be reinforced across multiple project pathways. **Risk: Moderate.**
6. Core Labour Rights	—	**D:** Small works and community activities may involve unsafe conditions, unfair or unpaid labour, child labour, forced labour or contractor misconduct. **I:** Weak labour practices among contractors, suppliers or community delivery arrangements may affect workers. **T:** None identified. **C:** Multiple dispersed works may increase aggregate labour-safeguard exposure. **Risk: Moderate.**
7. Indigenous Peoples	—	No Indigenous Peoples group has been identified in the concept-stage evidence. **D:** Residual risk of failing to identify a qualifying group or collective/customary rights at final sites. **I:** Customary knowledge, resource use or participation could be overlooked if such rights are present. **T:** None identified. **C:** No material cumulative risk identified at concept stage. **Risk: Low.**
8. Involuntary Resettlement	—	**D:** Physical displacement and involuntary land acquisition are not proposed, but C4 resource-management measures may restrict economic access to wetlands, forests, water, biomass or other resources. **I:** Restrictions could cause livelihood displacement or loss of resource-based income. **T:** None identified. **C:** Restrictions across several sites could cumulatively affect resource-dependent households. **Risk: Moderate.**
9. Protection of Natural Habitats	—	**D:** Poorly located or designed water, agricultural, livelihood or restoration activities may disturb wetlands, forests, water sources or other natural habitats. **I:** Improved access or livelihood activity could shift pressure to adjoining habitats. **T:** None identified. **C:** Multiple small interventions may alter habitat condition, connectivity or local hydrology. **Risk: Moderate.**
10. Conservation of Biological Diversity	—	**D:** Inappropriate species, planting material or resource-management practices may disturb biodiversity or introduce unsuitable/invasive species. **I:** Restricting extraction in one area may displace pressure elsewhere. **T:** None identified. **C:** Repeated habitat disturbance or unsuitable species choices could cumulatively reduce local biodiversity. **Risk: Moderate.**
11. Climate Change	—	**D:** Poorly selected technologies, crops, water assets or livelihood options may fail under projected hazards or constitute maladaptation. **I:** Some livelihood or infrastructure choices could increase resource demand or emissions. **T:** None identified. **C:** Multiple water or production investments could create aggregate resource pressure under worsening dry spells and rainfall uncertainty. **Risk: Moderate.**
12. Pollution Prevention and Resource Efficiency	—	**D:** Agrochemical misuse, construction waste, unsafe storage, inefficient water use or polluting livelihood activities may contaminate soil or water. **I:** Waste, runoff or chemical residues may affect downstream users and ecosystems. **T:** None identified. **C:** Numerous small pollution sources or abstractions may become significant collectively. **Risk: Moderate.**
13. Public Health	—	**D:** Unsafe water points, contamination, poor drainage, disease vectors, agrochemical exposure or works accidents may affect communities and workers. **I:** Poor operation of shared assets may create longer-term sanitation or exposure risks. **T:** None identified. **C:** Multiple inadequately managed assets could increase localized public-health burdens. **Risk: Moderate.**
14. Physical and Cultural Heritage	—	**D:** Site works may encounter previously unidentified physical heritage, graves, sacred or culturally important places. **I:** Resource-management rules could unintentionally affect access to culturally important sites or practices. **T:** None identified. **C:** No material cumulative risk identified at concept stage. **Risk: Low.**

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15. Lands and Soil Conservation	—	**D:** Poorly designed cultivation, water, restoration or erosion-control works may cause erosion, compaction, waterlogging or soil disturbance. **I:** Changed resource use may shift cultivation or degradation pressure to adjacent land. **T:** None identified. **C:** Multiple land-use changes may cumulatively worsen erosion or soil degradation within local landscapes. **Risk: Moderate.**
D = direct, I = indirect, T = transboundary, C = cumulative.		

Screening note: Risk ratings reflect inherent concept-stage risks **before mitigation**. No mitigation or management measures are included in this checklist. Site- and activity-specific assessment, mitigation measures, responsibilities and monitoring requirements will be developed through the project's USP screening process and consolidated in the ESMP at the fully developed proposal stage. The screening considers direct, indirect, transboundary and cumulative risks and impacts in accordance with the AF ESP.

Table 26. USP management and grievance redress system

System element	Concept-note rule
USP step 1: eligible option basket	PFG confirms eligible C2/C3/C4 package categories and community-benefiting asset types.
USP step 2: exclusion list	High-risk, non-adaptive, duplicate or legally non-compliant activities are removed before scoring. Category A/high-risk packages are excluded or redesigned.
USP step 3: package screening and categorisation	Every package is screened against all 15 AF ESP principles, gender/inclusion, climate relevance, standards, O&M and duplication, then categorised as low or moderate.
USP step 4: mitigation and disclosure	Package files include mitigation, O&M, labour, access, pollution, biodiversity and inclusion controls, then disclose beneficiary/site/package information and GRM channels in local language or accessible formats.
USP step 5: CAIF gate, monitoring and closure	No approval, release or closure without completed screening and safeguards file. Implementation tracks scorecards, GRM, safeguards actions and closure verification.
GRM access	Beneficiaries, non-beneficiaries, affected resource users, workers and community members may complain through CAC focal persons, WUC/resource-user focal persons, SACCO/VSLA/group focal persons, community meetings, oral complaints, scorecard sessions, suggestion boxes, phone/SMS/WhatsApp, district focal points and the EE safeguards/accountability officer.
GRM timelines and escalation	Log within 2 working days where reported locally; acknowledge within 5 working days; assign within 10 working days; resolve standard cases within 30 working days where feasible. Serious, sensitive, unresolved or systemic cases escalate to MWE/NIE.
GRM protection and KM boundary	Confidentiality, no retaliation, local-language access, oral/anonymous complaints and PWD-accessible channels apply. Individual complaint files and identities remain protected; only closed, anonymised trends feed C5 learning and CAIF/workplan correction.

CAIF will not approve, release funds for or close a package where a material unresolved grievance affects eligibility, site selection, resource access, safeguards, O&M, procurement integrity, beneficiary selection or community validation. During PFG, PACT will prepare the ESMF, screening forms, risk-categorisation protocol, exclusion-list tool, package-level mitigation template, disclosure template, GRM manual, GRM register, sensitive-case protocol, monitoring forms and CAIF linkage procedures.

PART III: IMPLEMENTATION ARRANGEMENTS

Project implementation arrangements

The Ministry of Water and Environment will act as the National Implementing Entity and retain fiduciary, oversight, reporting and compliance responsibility to the Adaptation Fund. VBF4CD will act as Executing Entity, manage implementation, house the CAIF, maintain the project account, prepare workplans and reports and supervise Delivery Partners. Delivery Partners may implement defined work packages under EE supervision. District, sub-county and parish actors will support alignment, validation, local records, mobilisation and witnessing of community processes, but they will not replace statutory authorities, EE fiduciary controls, safeguards review, VfM review or CAIF final package approval.

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Table 27. Approved implementation and fund-flow delivery channels

Route / function	When used	Fund control	Community role
EE procurement	High-value, technical, safeguards-sensitive or permit-dependent goods, works or services.	EE controls procurement and payment under MWE/NIE oversight.	Community validates priority, site/beneficiary list, delivery and functionality; GRM available.
Delivery Partner implementation	Field facilitation, coaching, technical package delivery, mobilisation, learning and support to community processes.	Delivery Partner implements under EE agreement, supervision, reporting and safeguards controls.	Communities participate in CAAPs, validation, monitoring, scorecards and read-back.
Community co-managed delivery	Low/moderate-risk packages where community decision rights are strong but EE/DP fund control remains necessary.	EE or Delivery Partner manages funds; community validates design, delivery and closure.	CAC/WUC/SACCO/VSLA/group confirms priorities, monitors delivery and signs off functionality where appropriate.
Community-managed finance / implementation	Approved low-risk packages through legal and fiduciary eligible SACCOs, registered groups, cooperatives, WUCs or other approved mechanisms.	Eligible local institution manages funds under simple agreement, multiple signatories, milestone release, public records and closure verification.	Community/group manages or implements the package, keeps records, discloses spending and participates in scorecards/GRM.
CAIF approval	All package files before fund release, procurement, community finance or closure.	EE-housed CAIF screens and routes; it is not a separate executing entity.	Community validation participants present priorities, receive reasons and may request revision, second review or GRM/MWE escalation.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government

Table 28. Record of endorsement on behalf of government

Name	Position / Ministry	Date
Dr. Rathaman Ggoobi	Permanent Secretary / Secretary to the Treasury, Ministry of Finance, Planning and Economic Development	18 February 2026

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board and prevailing National Development and Adaptation Plans and, subject to approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund. The Implementing Entity will be fully legally and financially responsible for implementation.

Table 29. Implementing Entity certification

Name	Role	Contact
Dr. Alfred Okot Okidi	Permanent Secretary, Ministry of Water and Environment; Head of the NIE	alfredokidi64@gmail.com
Joseph Lule	NIE Coordinator Principal Economist Ministry of Water and Environment	Email: josephlule2@gmail.com | Tel: +256 773 313 107

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Annex 1: List of stakeholders consulted in the field

Table 30. Field stakeholders consulted

No.	Name	Gender	Phone number	Email address	Position	District
1	Musenero Bernard	Male	0771674292 / 0750566383	bmusenero@gmail.com	DNRO	Luuka
2	Dr. Batyani James	Male	0759619461 / 0782355068		DPO	Luuka
3	Paulo Diogo	Male	0782936589	d.polo19@gmail.com	DNRO	Kaliro
4	Thomas Kibalya	Male			SAO	Kaliro
5	Abdul Samanya	Male	0779800732	abdisamanya@yahoo.co.uk	DNRO	Iganga
6	Dr. Apollo Musiita	Male	0775632391		DPO	Namutumba
7	Ikaaba Dauda	Male	0772923376	ikaabad@gmail.com	DNRO	Namutumba
8	Bazibu Julius	Male	0779315560 / 0756808014	Juliusbazibu5@gmail.com	Wetland system supervisor	Kaliro
9	Kalange Muhamood	Male	0776838447		DPO	Bugweri
10	Najjuma Sarah	Female	0774679653	najjuma_sarah@yahoo.com	Senior Environment officer	Bugweri
11	Wamukuyu Fred	Male	0705641538		DNRO	Bugweri
12	Agutut Harriet	Female	0701052529		Satelite Manager, BRAC	Iganga
13	Joseph Kyegombe	Male	0701907318 / 0764838026	Josephs2012@gmail.com	Executive Director SMAD	Namutumba
14	Makumba Julius	Male	0774931003		SCDO - Ikumbya S/C	Luuka
15	Joseph Kiranga	Male	0753523352		Youth Leader Bukobo Village - Ikumbya S/C	Luuka
16	Rogers Ntogona	Male			Assistant RDC	Luuka
17	Rashid Mukaire	Male		apstruggle@gmail.com	SAP - MD	Iganga
18	Tiwaaku Florence	Female	0771469855 / 0755004452	tiwakuflorence@gmail.com	Environment Officer	Iganga
19	Agutut Harriet	Female	0701052529		Satelite Manager, BRAC	Jinja
20	Joseph Kyegombe	Male	0701907318	Josephs2012@gmail.com	ED SMAD	Namutumba
21	Moses Iyereget	Male	0701533124		AMREF	Busoga region
22	Brenda Yariwo	Female	0776156160		ONE ACRE FUND	Jinja
23	Namuganza Naiba	Female	0775358914		SDO - Bukamba	Kaliro
24	Makumba Julius	Male	0774931003		SCDO - Ikumbya	Luuka

Annex 2: List of stakeholders at the national validation workshop

Table 31. National validation workshop stakeholders

No.	Name	Gender	Email address	Position / organisation	District
1	Mr. Musenero Bernard	Male	bmusenero@gmail.com	District Natural Resources Officer	Luuka
2	Mr. Paulo Diogo	Male	d.polo19@gmail.com	District Natural Resources Officer	Kaliro
3	Mr. Abdul Samanya	Male	abdisamanya@yahoo.co.uk	District Natural Resources Officer	Iganga
4	Mr. Ikaaba Dauda	Male	ikaabad@gmail.com	District Natural Resources Officer	Namutumba

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No.	Name	Gender	Email address	Position / organisation	District
5	Mr. Bazibu Julius	Male	Juliusbazibu5@gmail.com	Wetland system supervisor	Kaliro
6	Ms. Najjuma Sarah	Female	najjuma_sarah@yahoo.com	Senior Environment officer	Bugweri
7	Mr. Wamukuyu Fred	Male		DNRO	Bugweri
8	Mr. Tiwaaku Florence		tiwakuflorence@gmail.com	Environment Officer	Iganga
9	Dr. Kasozi Nasser	Male		Buginyanya ZARDI Director	
10	Mr. Mukaire Rashid	Male	apstrugle@gmail.com	Secretary General	Iganga
11	Ms. Nantale Anne	Female	anantale@yahoo.com	Board Chairperson - Struggle Against Poverty	Iganga
12	Mr. Arthur Kimeze	Male	arthur.kimeze@gggi.org	GGGI	
13	Mr. Pablo Martinez	Male	pablo.martinez@gggi.org	GGGI	
14	Ms. Florence Mukaminega	Female	mukaminega@gggi.org	GGGI	
15	Ms. Liliane Uwanziga Mupende	Female	liliane.mupende@gggi.org	GGGI	
16	Mr. Robert Asiimwe	Male	r.asiimwe@alcuganda.com	Consultant	
17	Ms. Charity Kibooga	Female	kibooga@alcuganda.com	Consultant	
18	Mr. Ocare Denis	Male	docare2009@gmail.com	Ag. Commissioner-PPD	MWE
19	Mr. Joseph Lule	Male	josephlule2@gmail.com	Principal Policy Analyst	MWE
20	Ms. Constance Apule	Female	apuleconnie@gmail.com	S/Economist	MWE
21	Ms. Natukunda Lillian	Female	lilylina1711@gmail.com	S/Economist	MWE
22	Ms. Namwiira Mildred Martha	Female	namiira11@yahoo.com	S/Economist	MWE
23	Joseph Kyegombe	Male	Josephs2012@gmail.com	Executive Director SMAD	Namutumba
24	Kalange Muhamood	Male		DPO	Bugweri
25	Dr. Apollo Musiita	Male		DPO	Namutumba
26	Dr. Batyani James	Male		DPO	Luuka
27	Ogaza Gozan	Male		DPO	Iganga
28	Mr. Innocent Mpiriirwe	Male	mpiriirwe1976@gmail.com	Consultant	
29	Mr. George Illebo	Male	tilebo14@hotmail.com	Consultant	
30	Ms. Constance Nakiyemba	Female	Consie123@gmail.com	Consultant	
31	Mr. Fred Kisaakye	Male	kisaakyefredric@gmail.com	Consultant	
32	Brenda Yariwo	Female		ONE ACRE FUND	

Annex 3: INITIAL GENDER ASSESSMENT

The 2025 Comprehensive Study covered the five PACT target districts using 437 household interviews, 27 key informant interviews and 14 focus group discussions. Separate male and female FGDs and mixed youth FGDs were conducted, and the study states that a participatory and human-rights-based approach was used to include women, youth and persons with disabilities with free, prior and informed consent. Here we summarize the gendered implications of the that report on Climate Change Adaptation in Busoga Region, especially Sections 4.5.1 and 4.5.2, supported by Sections 4.1, 4.1.3, 4.6 and 4.8.

The assessment follows the Adaptation Fund Gender Policy and Action Plan (amended March 2021) and the Fund's updated gender guidance. Accordingly, it looks beyond female participation counts to differentiated vulnerabilities, roles, capabilities, access to resources and decision-making, and to the practical design changes needed to provide equitable opportunity to build climate resilience.

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Evidence boundary. The Busoga Study provides sex-disaggregated vulnerability data and strong household/qualitative evidence, but it does not report sex-disaggregated outcome tables for land ownership/control, credit access, agricultural input access, extension access, market access or intra-household decision-making. Those six areas are therefore treated below as concept-stage structural gender gaps and design risks requiring controls now and quantification/validation during PFG and full proposal preparation; no unsupported women-versus-men differential is invented.

Gender-differentiated climate vulnerability and household roles

The study shows that climate vulnerability is shared within households but is not gender-neutral. Adult women were perceived as the most vulnerable group for most reported climate effects, while adult men followed closely and were perceived as slightly more vulnerable to flash/increased flooding. The figures below are respondents' perceived shares by group, not incidence rates.

Climate effect (Study Table 16)	Adult female (%)	Adult male (%)	Pattern
Reduction in rainfall	31.5	28.8	Women higher
Flash/increased floods	23.6	25.8	Men slightly higher
Delayed/early onset of rains	27.1	25.6	Women higher
Increased temperatures	25.6	24.6	Women slightly higher
Increase in rainfall	25.8	23.7	Women higher
Longer dry spells	24.0	22.8	Women higher
Hailstorms	26.2	22.1	Women higher
Stronger winds	23.0	22.1	Women slightly higher
More frequent droughts	22.8	21.6	Women slightly higher
Lightning	24.4	19.5	Women higher

Source: Busoga Study 2025, Section 4.5.1, Table 16. The study's narrative and FGDs explain the roles behind these perceptions.

Women's vulnerability is linked in the study to food provisioning, care and immediate household coping. A district production officer explained that women are expected to find and prepare food for the household, so food shortages transfer directly into additional stress for them. The study also records that men experience strong income-provider pressure when drought and other shocks reduce farm income, casual work and household cash flow. PACT therefore treats gender as a two-sided adaptation issue: food, care and resource-access burdens affecting women, and climate-sensitive income and provider stress affecting men, with overlapping impacts on the whole household.

The same evidence shows important intersectional vulnerabilities. In the five-district sample, 22.2% of households were female-headed (38% in Bugweri), 33.6% had at least one member living with a disability, average household size was seven, more than 60% of household heads had not completed primary education, 92.9% of household heads relied on agriculture as a livelihood, and only 36.2% of households had a regular income source. Children, elderly persons and persons with disabilities therefore remain material risk groups even where they are not the household decision-maker.

Structural gender gaps and PACT design responses

The table below addresses the six structural barriers named by the reviewer. Each row distinguishes what the Busoga Study establishes from the remaining gender gap and shows how the existing PACT architecture responds without redesigning the project.

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Barrier	Study evidence / boundary	Gender gap / design risk	PACT design response	Components
Land	Limited land was a reported vulnerability factor (14.8% overall; 15.4% male and 12.7% female in Study Table 17). The study links land scarcity to wetland/forest encroachment. Female-headed households are 22.2% overall. Sex-disaggregated ownership/control of land was not reported.	A land-title or asset-control requirement could exclude legitimate users, tenants or female-headed households; ecosystem recovery rules could also shift costs onto resource users who lack alternatives.	Do not use formal land title as the sole eligibility test for household support. Record access/use rights and who controls the supported asset. Under C4, complete affected-user mapping before access restrictions and link restrictions to C2/C3 transition support where needed; disclose rules and provide recourse.	C1, C2, C4
Credit and adaptation finance	42.5% of households reported VSLA access, 8.5% SACCO access, 5.6% microfinance access and 4.3% commercial-bank access, while 29.1% reported no financial-service access. Financial constraints were reported slightly more by females (14.3%) than males (13.1%); low income was also higher among females (26.2% vs 23.7%).	A credit-only delivery model could exclude poorer and female-headed households or increase debt stress. Household-level finance access is documented, but sex-disaggregated borrowing, control of loans and control of proceeds are not yet quantified.	C3 finance remains readiness-gated: debt-safety, governance and climate-income-risk checks precede finance; no household is automatically pushed into borrowing. C2 remains a lower-risk route for ultra-vulnerable households. Track sex of finance beneficiaries, decision/control over financed assets and proceeds, and grievance access.	C1, C2, C3
Agricultural inputs	Households requested improved inputs, including seeds/fertilizers and drought-resistant varieties; FGDs asked for drought-resistant seed and practical training. The study does not report sex-disaggregated access to input suppliers or control over inputs.	Cash constraints, mobility, timing and intra-household asset control can determine who actually receives and uses resilient seed, soil-water inputs or post-harvest support, even where the household is selected.	Deliver inputs only through hazard-screened C2 packages; use quality/standards screening; locate and schedule distribution/demonstration accessibly; verify receipt and use at household level; do not make high cash co-financing a default condition for the most vulnerable; monitor who controls the supported asset/input.	C1, C2
Extension services and climate information	The study reports low education, uneven extension reach and late/insufficient support; over 60% of household heads had not completed primary education. It identifies knowledge-transfer and technical-extension gaps. Sex-disaggregated extension reach is not reported.	Text-heavy, one-off or distant extension can exclude low-literacy participants and people with care, mobility or time constraints; women may be present but unable to influence technical choices.	Use local-language, visual and repeated practical learning through model farmers and FFS/action-learning sites; schedule sessions to reduce care/time barriers; use authorised climate advisories; track participation and decision influence by sex and vulnerability group, not attendance alone.	C1, C2, C5

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Barrier	Study evidence / boundary	Gender gap / design risk	PACT design response	Components
Markets	The study identifies livelihood diversification, startup capital, training and market engagement as adaptation needs, while noting structural barriers such as credit, training, startup capital and market access. Sex-disaggregated market access and income control are not reported.	Market-linked adaptation can fail if women or poorer households cannot travel, aggregate volumes, meet quality requirements, negotiate buyers or control resulting income. Finance without a viable market can increase risk rather than reduce it.	C3 requires climate-income-risk and market screening before finance; uses buyer links, aggregation, quality information and service arrangements where viable; allows group mechanisms where they lower transaction barriers; tracks who accesses the market linkage and who controls resulting income/assets.	C1, C3, C5
Decision-making	Study methods included separate male/female FGDs and the household questionnaire collected decision-making variables, while Section 4.5.1 documents different household roles. The published results do not provide a quantified sex-disaggregated table on intra-household decision control.	Representation quotas alone do not prove influence. Women, youth, PWDs or poorer households can attend meetings yet have little power over priorities, beneficiary lists, package choices, asset control or resource-use rules.	C1 uses CAC/CAAP validation, public disclosure, objection windows, scorecards and GRM/recourse. PACT will track who proposes, validates and benefits from decisions and who controls supported assets. CAIF may screen climate/fiduciary/safeguard requirements but must provide reasons and recourse when a community priority is not approved.	C1, C5
Care, labour and time burden (cross-cutting)	Study narratives link women's climate vulnerability to food provisioning and care; water access can require substantial travel and households are large. The study also shows labour/mobility constraints for PWD and elderly household members.	Adaptation can unintentionally shift unpaid labour, O&M or meeting burdens onto women or vulnerable household members.	Use accessible meeting times/venues, local-language tools and lower-labour options where feasible; assign O&M roles explicitly; test who carries labour/time costs during PFG; use GRM and scorecards to detect unequal burdens.	C1-C5

How the assessment changes PACT implementation across C1-C5

The gender response is embedded in the existing five-component design rather than added as a parallel gender project. The commitments below apply to targeting, package preparation, CAIF screening, delivery and learning.

Component	Gender-responsive design commitment
C1. LLA governance / CAIF	Ensure women, men, youth, PWDs and vulnerable households can influence CAAP priorities and validate beneficiary/site choices; disclose criteria and decisions; use scorecards, objection windows and accessible GRM/recourse; monitor decision influence, not only attendance.
C2. Food-security resilience	Prioritise climate-driven food insecurity and the household food-provisioning burden; provide hazard-screened, practical and accessible CSA, soil-water, post-harvest and viable water-related options; maintain a lower-risk route for households not ready for debt or enterprise risk.

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Component	Gender-responsive design commitment
C3. Income-security resilience	Treat alternative livelihoods, adaptation finance and market links as adaptation only where they reduce climate-sensitive income exposure. Apply readiness and debt-safety gates, market screening, coaching and transparent finance access; monitor control of financed assets and resulting income.
C4. Ecosystem recovery management	Map affected users and differentiated dependence on wetlands, forests, water sources and fragile land before changing access rules. Avoid enforcement-first recovery; link restrictions to feasible C2/C3 transition support, transparent community resource rules and GRM/recourse.
C5. Knowledge management and learning	Disaggregate learning by sex, age, disability and vulnerability group; document whether women and men actually access, influence and benefit from C2/C3/C4 support; feed findings into annual adaptive learning notes, workplans and CAIF decisions.

PFG/full proposal validation and Gender Action Plan boundary

This Initial Gender Assessment is complete for concept stage; PFG will not repeat the Busoga Study. PFG and full proposal development will validate only the residual implementation variables needed to convert this assessment into measurable commitments and a funded GAP.

- quantify intra-household decision-making and women's/men's control over land, productive assets, income and adaptation finance;
- disaggregate actual access to agricultural inputs, extension/climate information and markets by sex, age, disability and relevant vulnerability status;
- test care, mobility, labour and O&M burdens associated with candidate C2/C3/C4 packages and adjust delivery arrangements where exclusion risks arise;
- set sex-, age- and disability-disaggregated baselines, targets and indicators for participation, decision influence, access, asset/income control and benefits;
- confirm safe and confidential channels for gender-related exclusion, harassment, retaliation or other grievances within the project GRM;
- prepare the full Gender Action Plan with actions, indicators, responsibilities, timetable, budget treatment and monitoring arrangements across C1-C5.

Full-proposal test: the GAP should show, for each component, not only how many women and men participate, but whether structural barriers to land, finance, inputs, extension, markets and decision-making were reduced sufficiently for them to influence decisions and obtain comparable adaptation benefits.

Key sources

Ministry of Water and Environment (2025). A Comprehensive Study Report on Climate Change Adaptation in Busoga Region. Key sections used: 3.1.1, 3.2.1, 3.3, 4.1, 4.1.3, 4.5.1, 4.5.2, 4.6 and 4.8; Tables 4, 7, 16, 17, 28 and 29.

Adaptation Fund. Gender Policy and Action Plan (amended March 2021), OPG Annex 4.

Adaptation Fund. Updated Gender Guidance Document for Implementing Entities on compliance with the Adaptation Fund Gender Policy (2022).

Adaptation Fund Board Secretariat. Technical Review for AF00000530, third-review CAR 3: request for a distinct Initial Gender Assessment annex.

ANNEX 4: COMMUNITY CONSULTATION ATTENDANCE EVIDENCE AND VERIFICATION NOTE

This annex reconciles the community-consultation claim with evidence of field roster titled “Focus Group Discussions Held During the Assessment of the Climate Change Impacts in 5 Selected Districts of Busoga Sub-region”. The roster records date, participant name, village, age, district and category columns labelled Male, Female, Elder and PWD.

Fieldwork provenance is additionally supported by the Ministry of Water and Environment introduction letter dated 3 March 2025, addressed to the Chief Administrative Officers of Iganga, Kaliro, Luuka, Namutumba and Bugweri. The letter authorises the consultant to gather data, engage local stakeholders and conduct field assessments, including community engagement to inform project design.

The 2025 Busoga Study remains the substantive consultation record. Its methods state that the study used participatory and human-rights-based methods, sought the views of women, youth and persons with disabilities, applied free, prior and informed consent, and conducted separate male and female FGDs and mixed youth FGDs. Its FGD tool defines youth participants as ages 18-30 and calls for separate recording of male, female, elderly and PWD participation.

What the retained roster verifies

- 104 named participant records are visible in the retained roster, with recorded ages ranging from 18 to 79 years.
- The records fall across 13 distinct date-location combinations between 21 and 27 March 2025.
- The roster contains 45 Male markers, 43 Female markers, 8 Elder markers, 7 PWD markers and one record with no visible category marker.
- Using the Busoga Study FGD-tool definition of youth as ages 18-30, 48 of the 104 records fall in that age range. This is a transparent derivation from recorded age, not a separately marked youth-status field.

Verified attendance summary from the retained roster

Date	Village	District	Total	Male marker	Female marker	Elder marker	PWD marker	Youth 18-30*	Unmarked
21 Mar 2025	Nawansega	Iganga	8	7	0	0	1	2	0
21 Mar 2025	Wante	Iganga	8	0	6	1	1	1	0
22 Mar 2025	Buholo	Iganga	8	7	0	1	0	2	0
22 Mar 2025	Namakoko B	Iganga	8	1	4	0	3	3	0
23 Mar 2025	Iwungiro	Bugweri	8	4	4	0	0	6	0
24 Mar 2025	BubogoB	Iganga	8	1	7	0	0	0	0
25 Mar 2025	Bukobo	Namutumba	8	0	7	0	0	2	1
25 Mar 2025	Mwendanfuko	Iganga	8	1	4	2	1	6	0
25 Mar 2025	Nawansega	Iganga	8	8	0	0	0	0	0
26 Mar 2025	Bulike	Kaliro	8	4	3	0	1	8	0
26 Mar 2025	Nabitende	Iganga	8	5	3	0	0	8	0
27 Mar 2025	Kuto B	Luuka	8	3	5	0	0	8	0
27 Mar 2025	Kuuto A	Luuka	8	4	0	4	0	2	0

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* Youth 18-30 is derived from the recorded age using the definition in the Busoga Study FGD guide. Male/Female/Elder/PWD are the roster's visible category markers, not independently verified demographic variables.

Limits of the retained attendance evidence

Sex and vulnerability are not independently recorded. The retained summary uses one visible marker among Male/Female/Elder/PWD for most participants. Where a participant is marked Elder or PWD, the file does not independently show that participant's sex. The Male and Female marker totals therefore must not be presented as a complete sex-disaggregation of all 104 attendees.

Youth is derivable; female-headed and below-poverty status are not. Youth can be derived only because age is recorded and the study tool defines youth as 18-30. The roster contains no field for female-headed-household status or below-poverty-household status. Those categories must not be back-filled from names, appearance, occupation, village or household assumptions.

How vulnerable groups were engaged and how inputs informed PACT

Engagement quality is evidenced principally by the Busoga Study methods and findings, not by the attendance sheet alone. Community members and vulnerable groups participated through household interviews, KIIs and FGDs, including separate male and female FGDs and mixed youth FGDs. The study states that women, youth and persons with disabilities were intentionally included through a participatory, human-rights-based approach and free, prior and informed consent.

Consultation evidence	What participants/study established	PACT design response
Hazards, food insecurity and coping	Communities described longer dry spells, rainfall uncertainty, storms, hail, flooding, crop loss, food purchase/rationing and water stress.	C2 prioritises household food-security resilience through hazard-screened CSA, water/soil measures and post-harvest support.
Income shocks and limited alternatives	FGDs and household evidence show climate-sensitive farm/casual-work income, livelihood switching and limited finance/market access.	C3 uses alternative livelihoods, readiness-gated adaptation finance and market links to reduce climate sensitivity of household income.
Wetland/forest pressure as coping	The study documents wetland cultivation/reclamation and other degrading coping responses when rainfall fails or food/income pressure rises.	C4 combines ecosystem recovery with affected-user mapping and C2/C3 transition support rather than enforcement-first restrictions.
Gender and vulnerable-group constraints	Women, men, youth, PWDs, elderly and poorer households experience different food, income, mobility, information and resource-access constraints.	C1 uses inclusive CAAP/CAC processes, disclosure, scorecards and accessible GRM/recourse; C5 tracks differentiated learning and benefits.

Concept-stage boundary: these consultations shaped the climate diagnosis, priorities, coping evidence, vulnerable-group analysis and support needs. They did not constitute final community financing decisions. During PFG and implementation, communities will lead CAAP prioritisation, beneficiary/site validation, package review, disclosure, scorecards, grievance/recourse and monitoring before and during CAIF-supported implementation.

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THE REPUBLIC OF UGANDA

MINISTRY OF WATER AND ENVIRONEMNT
PLOT NO. 3-7 KABALEGA CRESCENT LUZIRA
P.O. BOX 20026
KAMPALA –UGANDA

03rd March 2025

The Chief Administrative officer
Iganga District Local Government

The Chief Administrative officer
Kaliro District Local Government

The Chief Administrative officer
Luuka District Local Government

The Chief Administrative officer
Namutumba District Local Government

The Chief Administrative officer
Bugweri District Local Government

INRODUCTION LETTER OF THE CONSULTANT TO UNDERTAKE STUDIES FOR PREPARATION OF AN ADAPTATION FUND PROJECT IN SELECTED DISTRICTS IN BUSOGA SUB-REGION

The Ministry of Water and Environment, with the generous support of the Global Green Growth Institute (GGGI), is in the process of preparing a comprehensive and bankable project proposal for the Adaptation Fund. This project aims to address the pressing climate change hazards in Iganga and the surrounding districts.

To ensure the successful development of this proposal, we have engaged a consultant (Athari Lulu Consults Limited-ALC) to conduct preliminary studies in selected districts within the Busoga Sub-region. These essential studies will include a thorough assessment of the current climate change impacts, the identification of vulnerable areas, and the development of strategic interventions to support communities adapt to these effects.

The consultant will be visiting your district to gather critical data, engage with local stakeholders, and conduct field assessments. We request your cooperation in providing the necessary support and access to relevant information and resources. This may include facilitating meetings with district officials, community leaders, and other key stakeholders, as well as granting access to pertinent documents and sites.

The objectives of these preliminary studies are to:

i. Assess the current climate change impacts and vulnerabilities in the selected districts.
ii. Identify and prioritize adaptation measures that can be implemented to enhance resilience.
iii. Engage with local communities and stakeholders to gather valuable insights and ensure their involvement in the project design.
iv. Develop a robust project proposal that addresses the specific needs and challenges of the region.

Your district's cooperation and support are vital to the successful completion of these studies. We are confident that with your assistance, the Ministry will develop a project proposal that will significantly contribute to enhancing resilience to climate change in the Busoga Sub-region.

Thank you for your usual cooperation.

Dr. Alfred Okot Okidi
PERMANENT SECRETARY

Cc Minister for Water and Environment
Minister of State for Environment
Minister of State for Water
Resident District Commissioner
District Chairperson

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FOCUS GROUP DISCUSSIONS HELD DURING THE ASSESSMENT OF THE CLIMATE CHANGE IMPACTS IN 5 SELECTED DISTRICTS OF BUSOGA SUB-REGION

Date	Participant Name	Village	Age	District	Male	Female	Elder	PWD
		FGD ONE						
3/21/2025	Kiranda disoka james	Nawansega	32	Iganga	☐			
3/21/2025	Kagoya mariam	Wante	23	Iganga		☐		
3/22/2025	Basoma George	Buholo	29	Iganga	☐			
3/22/2025	Nadase betty	Namakoko B	51	Iganga		☐		
3/23/2025	Bateganya Peter	Iwungiro	32	Bugweri	☐			
3/24/2025	Babita prossy	BubogoB	34	Iganga		☐		
3/25/2025	Kifutuko Lawufu	Mwendanfuko	71	Iganga			☐	
3/26/2025	Namwase Miriam	Bulike	28	Kaliro				☐
3/25/2025	Mwidu patrick	Nawansega	31	Iganga	☐			
3/25/2025	Nabwiro irene	Bukobo	28	Namutumba		☐		
3/26/2025	Nankonfu yona	Nabitende	21	Iganga	☐			
3/27/2025	Asio harriet	Kuto B	26	Luuka		☐		
3/27/2025	Masaba Robert	Kuuto A	19	Luuka	☐			
		FGD TWO						
3/21/2025	Bageya abasa	Nawansega	44	Iganga	☐			
3/21/2025	Napping saudah	Wante	42	Iganga		☐		
3/22/2025	Henry wayira	Buholo	78	Iganga	☐			
3/22/2025	Marium Bawaye	Namakoko B	28	Iganga				☐
3/23/2025	Nabudo Sharifa	Iwungiro	24	Bugweri		☐		
3/24/2025	Nakaryowa janet	BubogoB	49	Iganga		☐		
3/25/2025	Amuzira Afusa	Mwendanfuko	79	Iganga			☐	
3/26/2025	Maria Seri	Bulike	22	Kaliro		☐		
3/25/2025	Basaliwa yosam	Nawansega	54	Iganga	☐			
3/25/2025	Naigaga fridah	Bukobo	24	Namutumba		☐		
3/26/2025	Waiswa akuzasi	Nabitende	30	Iganga	☐			
3/27/2025	Nabwire sefoloza	Kuto B	19	Luuka		☐		
3/27/2025	Kinomya Robert	Kuuto A	30	Luuka	☐			
		FGD THREE						
3/21/2025	Kasolo kasim	Nawansega	40	Iganga	☐			
3/21/2025	Namusabi zura	Wante	32	Iganga		☐		
3/22/2025	Lindi moses	Buholo	65	Iganga			☐	
3/22/2025	Jessica katayike	Namakoko B	70	Iganga				☐
3/23/2025	Nabwire Taminsi	Iwungiro	23	Bugweri		☐		
3/24/2025	Naigaga Eseza	BubogoB	46	Iganga		☐		
3/25/2025	Budhugo Noah	Mwendanfuko	19	Iganga	☐			
3/26/2025	Walubi Moses	Bulike	26	Kaliro	☐			
3/25/2025	Duru blasiyo	Nawansega	40	Iganga	☐			
3/25/2025	Nakisige silivia	Bukobo	36	Namutumba		☐		
3/26/2025	Kwebelelawo esther	Nabitende	25	Iganga		☐		
3/27/2025	Nabiryo rusia	Kuto B	21	Luuka		☐		
3/27/2025	Nantaja John	Kuuto A	59	Luuka	☐			
		FGD FOUR						
3/21/2025	Kakayire muhamad	Nawansega	54	Iganga	☐			
3/21/2025	Nakasolo ramulah	Wante	40	Iganga		☐		
3/22/2025	Kagudde charl	Buholo	40	Iganga	☐			
3/22/2025	Annet Mutesi	Namakoko B	26	Iganga		☐		

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3/23/2025	Kamuje Fato	Iwungiro	27	Bugweri	☐			
3/24/2025	Nangobi joy	BubogoB	54	Iganga		☐		
3/25/2025	Ibanda Muzafalu	Mwendanfuko	25	Iganga				☐
3/26/2025	Niobium Sosani	Bulike	18	Kaliro	☐			
3/25/2025	Jula Michael	Nawansega	40	Iganga	☐			
3/25/2025	Nabirye ruth	Bukobo	53	Namutumba		☐		
3/26/2025	Kaumba Rajab	Nabitende	29	Iganga	☐			
3/27/2025	Sabiti eria	Kuto B	22	Luuka	☐			
3/27/2025	Friday Andrew	Kuuto A	71	Luuka			☐	
		FGD FIVE						
3/21/2025	Bogeere Martin	Nawansega	63	Iganga	☐			
3/21/2025	Nabira faridah	Wante	65	Iganga		☐		
3/22/2025	Keezi bakari	Buholo	36	Iganga	☐			
3/22/2025	Namajja rukia	Namakoko B	31	Iganga				☐
3/23/2025	Namuwoya Tolofaina	Iwungiro	32	Bugweri		☐		
3/24/2025	Namboyira Florence	BubogoB	50	Iganga		☐		
3/25/2025	Nakasango Najuwa	Mwendanfuko	28	Iganga		☐		
3/26/2025	Kirenzi Martin	Bulike	21	Kaliro	☐			
3/25/2025	Malinzi amulamu	Nawansega	58	Iganga	☐			
3/25/2025	Nangobi lovisa	Bukobo	65	Namutumba		☐		
3/26/2025	Wayonona amunoni	Nabitende	30	Iganga	☐			
3/27/2025	Mbayinga Francis	Kuto B	30	Luuka	☐			
3/27/2025	Musana Dononzio	Kuuto A	77	Luuka			☐	
		FGD SIX						
3/21/2025	Ntambi hamidu	Nawansega	26	Iganga	☐			
3/21/2025	Namukuve annet	Wante	45	Iganga				☐
3/22/2025	Mudhole william	Buholo	68	Iganga	☐			
3/22/2025	Federesi Kwetega	Namakoko B	60	Iganga	☐			
3/23/2025	Galimera Peter	Iwungiro	25	Bugweri	☐			
3/24/2025	Naigaga rose	BubogoB	44	Iganga		☐		
3/25/2025	Nakisuyi Winnie	Mwendanfuko	23	Iganga		☐		
3/26/2025	Ngobi Wicylif	Bulike	18	Kaliro	☐			
3/25/2025	Isabirye mulani	Nawansega	52	Iganga	☐			
3/25/2025	Kasatta jennifer	Bukobo	56	Namutumba		☐		
3/26/2025	Waibuga prossy	Nabitende	19	Iganga		☐		
3/27/2025	Ngenda grace	Kuto B	28	Luuka		☐		
3/27/2025	Lurgan Issa	Kuuto A	70	Luuka			☐	
		FGD SEVEN						
3/21/2025	Weere hamidu	Nawansega	32	Iganga	☐			
3/21/2025	Kagoya loy	Wante	56	Iganga		☐		
3/22/2025	Samanya jaliru	Buholo	30	Iganga	☐			
3/22/2025	Mbwali Naume	Namakoko B	37	Iganga		☐		
3/23/2025	Balikowa Hamidu	Iwungiro	26	Bugweri	☐			
3/24/2025	Mpanzira Eseza	BubogoB	59	Iganga	☐			
3/25/2025	Kwagala Resty	Mwendanfuko	24	Iganga		☐		
3/26/2025	Mukyeyaya Lydia	Bulike	25	Kaliro		☐		
3/25/2025	Bayisi Samuel	Nawansega	76	Iganga	☐			
3/25/2025	Bahati sarah	Bukobo	40	Namutumba		☐		
3/26/2025	Kasada henry	Nabitende	29	Iganga	☐			
3/27/2025	Bendo collin	Kuto B	20	Luuka	☐			

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3/27/2025	Katanga Foloni	Kuuto A	73	Luuka		☐	
		FGD EIGHT					
3/21/2025	Waiswa muhamad	Nawansega	29	Iganga			☐
3/21/2025	Nangobi gloria	Wante	70	Iganga		☐	
3/22/2025	Mugumira Robert	Buholo	61	Iganga	☐		
3/22/2025	Mangetout ssenya	Namakoko B	20	Iganga		☐	
3/23/2025	Namuhanga Hajira	Iwungiro	28	Bugweri		☐	
3/24/2025	Naigaga zaina	BubogoB	32	Iganga		☐	
3/25/2025	Kannada Aminsi	Mwendanfuko	24	Iganga		☐	
3/26/2025	Nangobi Merida	Bulike	20	Kaliro		☐	
3/25/2025	Isabirye bumali	Nawansega	45	Iganga	☐		
3/25/2025	Mwende lydia	Bukobo	38	Namutumba			
3/26/2025	Wambuga David	Nabitende	30	Iganga		☐	
3/27/2025	Mqogererwa rafarel	Kuto B	29	Luuka		☐	
3/27/2025	Dawn Martin	Kuuto A	41	Luuka	☐		
					☐		

Source: Athari Lulu Consults Limited-ALC)

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Ministry of Finance,
Planning & Economic
Development,
P.O Box 8147
Kampala, Uganda

18th February, 2026

The Adaptation Fund Board,
C/O Adaptation Fund Board Secretariat,
Email: Secretariat@Adaptation-Fund.org,
Fax: 202 522 3240/5

ENDORSEMENT LETTER FOR THE PROJECT TITLED "ENHANCING CLIMATE RESILIENCE IN BUSOGA SUB-REGION THROUGH LOCALLY LED ADAPTATION STRATEGIES"

In my capacity as the National Designated Authority for the Adaptation Fund in Uganda, I confirm that the above regional project/ programme is in line with Uganda's priorities in implementing adaptation actions to reduce the adverse impacts of, and risks, posed by climate change in Uganda.

Accordingly, I am pleased to endorse the above national project/programme proposal to be supported by the Adaptation Fund.

If approved, the project/ programme will be implemented by Ministry of Water and Environment and executed by the Global Green Growth Institute/ Struggle Against Poverty/ Lake Victoria Basin Facility.

Ramathan Ggoobi
PERMANENT SECRETARY/SECRETARY TO THE TREASURY

Copy to: - Permanent Secretary, Ministry of Water and Environment
- Country Representative, Global Green Growth Institute

Revised PFG Submission Form

Project Formulation Grant (PFG)

Submission Date:	14 August 2026
Adaptation Fund Project ID:	AF00000530
Country/ies:	Uganda
Title of Project/Programme:	Participatory Adaptation and Community Transformation (PACT): Enhancing climate resilience in Busoga sub-region through locally led adaptation strategies
Type of IE (NIE/RIE/MIE):	National Implementing Entity (NIE)
Implementing Entity:	Ministry of Water and Environment
Executing Entity/ies:	Victoria Basin Facility for Propulsion of Clean Development (VBF4CD)
PFG Executing Entity confirmation:	Victoria Basin Facility for Propulsion of Clean Development (VBF4CD) will execute the PFG under Ministry of Water and Environment / National Implementing Entity oversight.

A. Project Preparation Timeframe

Start date of PFG	Month 1
Completion date of PFG	Month 7

B. Proposed Project Preparation Activities ($)

The PFG request is structured in two complementary windows. The Base PFG covers the core formulation work required to convert the endorsed concept note into a full proposal, including evidence verification, targeting, package feasibility, safeguards, results framework, additionality, budget finalization and proposal quality assurance. The Additional LLA PFG covers the incremental formulation work required to operationalise locally led adaptation, especially community decision-making, representative community structures, Community PACT Agreements, CAIF procedures, community scorecards, grievance feedback loops and locally grounded accountability systems. The two windows are mutually reinforcing but not duplicative.

Base PFG request

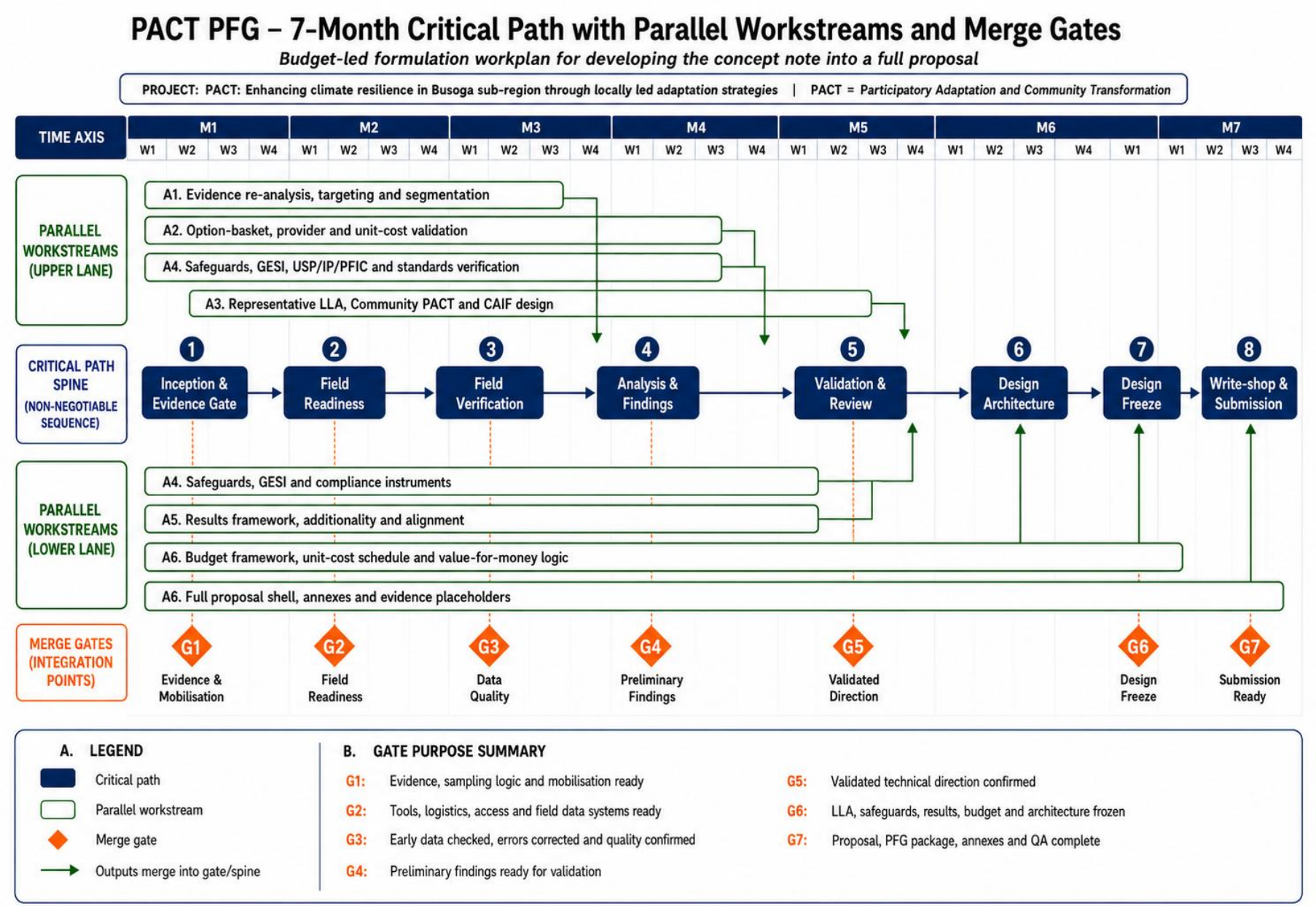
List of proposed project preparation activities	Output of the PFG activities	US$ Amount	Budget note
1. Diagnostic targeting, profiling and segmentation	Validated household, group, ecosystem/shared-resource and affected-user evidence; targeting and sampling logic; segmentation; beneficiary counting and benefit-layering with duplicate-financing control.	US$42,030	Specialist re-analysis, field tool refinement, household and group profiling, C4 site verification, GIS/mapping, affected-user discussions, data cleaning, synthesis and district validation.
2. Option-basket validation and package feasibility	Final C2, C3 and C4 option-basket logic; provider/service verification; unit-cost benchmarks; O&M and value-for-money checks for selective assets.	US$34,320	Provider interviews, quotation checks, market-linkage and service-area verification, C2/C3/C4 package typology validation, water-asset O&M and selective-asset screening rubric.

3. Project-specific safeguards, GESI and compliance instruments	USP/ESP screening and risk-categorisation package; exclusion list; GRM protocol and register; project ESMF and package-level ESMP/mitigation framework; in-depth gender assessment and Gender Action Plan; IP/FPIC verification; standards-to-activity matrix; safeguards monitoring tools and Category B confirmation note.	US$30,000	Safeguards/GESI specialist inputs; targeted vulnerable-group and IP/FPIC verification; ESMF/ESMP and Gender Action Plan preparation; legal/standards review; GRM, exclusion-list and risk-categorisation tool development; targeted district validation.
4. Results framework, additionality, alignment and adaptive management design	AF SRF crosswalk, baseline/target/disaggregation protocol, additionality/overlap matrix, local-policy alignment verification and traditional/local knowledge integration note.	US$13,200	MEL/data specialist support for results framework, baseline/target protocol, additionality verification by site/beneficiary/package and DDP/local policy alignment checks.
5. Full proposal finalisation, budget, write-shop and QA	Detailed budget framework, proposal shell, implementation arrangements, exit-readiness text, write-shop outputs, red-team QA, final editing and production.	US$17,784	Technical integration and proposal consolidation, technical reviews, budget framework, proposal writing, implementation/exit-readiness drafting, write-shop, red-team review, editing and production allowance.
Subtotal: Base direct formulation cost		US$137,334	
Project/Programme Cycle Management Fee charged by the Implementing Entity (8.5%)		US$11,673	**IE oversight and project-cycle management fee.**
Total Base PFG request		US$149,007	Within the Base PFG ceiling.

The management fee will be used to manage and execute the following Base PFG activities.

Activity	Budget USD
Coordination meetings	US$3,502
Supervision and monitoring	US$4,086
Reviewing and reporting	US$1,751
Communication	US$1,167
Office supply / document management	US$1,167
Total	US$11,673

Illustration of the Project formulation process



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Please describe below each of the PFG activities and provide justifications for their need and for the amount of funding required:

Activity 1: Diagnostic targeting, profiling and segmentation

This activity will convert the existing Busoga concept-stage evidence base into implementation-ready targeting and segmentation files for the five target districts. It will re-analyse and spatially organise the Busoga Study evidence, validate residual sub-county/parish/community targeting variables, prepare and test beneficiary-register tools, conduct targeted household/group verification where needed, verify ecosystem/shared-resource sites, map affected users and produce beneficiary-counting and benefit-layering controls. The amount is required to translate the study findings into final beneficiary registers, site files, baselines/targets, readiness and implementation controls without repeating the Busoga Study.

Activity 2: Option-basket validation and package feasibility

This activity will validate the eligible adaptation option basket and test whether proposed C2, C3 and C4 package types are feasible, costable and serviceable in the target districts. It will verify providers, market actors, service areas, quotations, unit costs, O&M assumptions, value-for-money benchmarks and selective asset risks. The amount is required to avoid a full proposal built around generic packages, unsupported unit costs or unverified suppliers.

Activity 3: Project-specific safeguards, GESI and compliance instruments

This activity will prepare the project-specific safeguards, GESI and compliance instruments required for the full proposal. It will develop USP/ESP screening and risk-categorisation tools, an exclusion list, GRM protocol/register, project ESMF and package-level ESMP/mitigation framework, an in-depth gender assessment and Gender Action Plan, IP/FPIC verification note, mitigation-budget rules, standards-to-activity matrix, safeguards monitoring tools and a Category B confirmation note. The amount is required because PACT uses locally selected or refined activities and multiple delivery/finance routes; the full proposal therefore needs a complete screening, mitigation, accountability and monitoring architecture before implementation financing is released.

Activity 4: Results framework, additionality, alignment and adaptive management design

This activity will prepare the full proposal results framework, AF SRF crosswalk, baseline/target/disaggregation protocol, additionality matrix, overlap verification, local-plan alignment and adaptive-learning logic. The amount is required to demonstrate that PACT is additional to ongoing initiatives, measurable against AF results expectations, and capable of adaptive management without inflating routine M&E costs inside activity components.

Activity 5: Full proposal finalisation, budget, write-shop and QA

This activity will consolidate all formulation evidence into a coherent full proposal, detailed budget, implementation arrangements, exit-readiness package, annexes and response matrix. It includes the inception and technical review process, budget framework, proposal shell, write-shop, red-team QA, final editing and production support. The amount is required to ensure the full proposal is internally consistent, submission-ready and aligned with the concept, PFG evidence, safeguards, LLA architecture and budget logic.

For LLA Projects only

If requesting additional funding for LLA projects to enable devolving decision making to the local level, please specify the activities that would directly serve to enable devolving decision making to the lowest appropriate level and enable local actors to make informed decisions on how adaptation actions are defined, prioritized, designed, and implemented:

List of proposed LLA project preparation activities	Output of the PFG activities	US$ Amount	Budget note
1. LLA field testing of household/community decision split	District-tested evidence on how households, groups and communities will exercise decision rights through CACs, CAAP processes, Community PACT Agreements, WUCs, SACCOs/VSLAs, scorecards and grievance channels, including how C2/C3 household choices and C4 community priorities will be captured, validated, disclosed and reconciled through CAIF screening.	US$7,000	LLA specialist support, local testing participant facilitation and vehicle support for five district testing modules.
2. Representative LLA, Community PACT and CAIF operating design	Representative LLA decision-rights architecture; Community PACT agreement suite; CAC/CAAP composition, selection and operating rules; CAIF manual; fund-flow SOP; approval files; community disclosure, scorecard, grievance and verification protocols showing how local actors define, prioritise, validate, monitor and provide feedback on adaptation actions.		LLA/CAIF specialist and legal/fiduciary support, local-language notes, synthesis workshop, testing packs and district-specific model files. Detailed cost basis for sub-activities 2.1-2.6 is provided below.
2.1 CAC/CAAP governance and community decision-rights design	CAC composition, selection, representation and operating rules; community/household decision-rights matrix; CAAP prioritisation, validation, conflict-of-interest and replacement procedures; operating templates.	12,000	
2.2 CAIF governance, screening, approval and recourse system	CAIF composition and quorum rules; screening and approval sequence; approval/conditional approval/revision/rejection procedures; recorded reasons; resubmission and community-recourse procedures; CAIF operating manual.	15,000	
2.3 Fund-flow and Local Finance Routing Schedule design	Fund-flow SOP from MWE/NIE through VBF4CD/CAIF to approved delivery routes; community-managed versus community-benefiting finance rules; SACCO/group eligibility and due-diligence tools; fiduciary controls and milestone-release procedures.	12,000	
2.4 Community PACT and package-control documentation suite	Community PACT Agreement templates; Community Package Cards; CAIF package files; beneficiary/site validation records; approval, revision, delivery-verification and closure templates.	10,000	
2.5 District-specific, disclosure and accessible operating tools	Five district operating-model files; community disclosure and objection tools; verification records; local-language notes and accessibility adaptations for community-facing LLA tools.	9,000	

2.6 Integrated LLA operating package, synthesis and quality assurance	Consolidation of CAC–CAAP–CAIF–finance-routing tools into one operational package; synthesis workshop; legal/fiduciary/technical review; final operating manual and tool suite ready for field testing and full-proposal integration.	12,000	
3. LLA-linked safeguards, GRM and scorecard interface testing	Integrated safeguards/GRM escalation logic and tested scorecard interface for exclusion, non-delivery, safeguards breach and accountability risks.	US$5,000	Safeguards/GESI specialist support and district validation transport for LLA-linked GRM and scorecard interface testing.
4. Community scorecard and adaptive learning feedback-loop design	Community scorecard protocol and feedback loop showing how local monitoring evidence updates CAIF screening, workplans and package adjustment.	US$4,020	MEL specialist support and targeted review refreshments for LLA scorecard and adaptive-learning design.
5. LLA operating-package integration and consistency verification	LLA operating package and annexes integrated into the full proposal, with consistency verification across Community PACT, CAIF, decision rights, finance routes, scorecards, GRM, safeguards interfaces and LLA tools.	US$6,000	LLA technical lead and QA support for operating-package and annex integration, cross-document consistency checks, and final validation of the LLA decision-rights, finance-routing and accountability architecture.
Subtotal: Additional LLA direct formulation cost		US$92,020	
Project/Programme Cycle Management Fee charged by the Implementing Entity (8.5%)		US$7,822	IE oversight and project-cycle management fee.
Total Additional LLA PFG request		US$99,842	Within the Additional LLA PFG ceiling.
Total PFG request: Base PFG + Additional LLA PFG		US$248,849	Combined PFG request for Month 1-Month 7 formulation.

The management fee will be used to manage and execute the following Additional LLA PFG activities.

Activity	**Budget USD**
Coordination meetings	US$2,347
Supervision and monitoring	US$2,738

Reviewing and reporting	US$1,173
Communication	US$782
Office supply / document management	US$782
Total	US$7,822

Please provide justifications for their need and for the amount of additional funding required:

Activity 1: LLA field testing of household/community decision split

This activity will test the representative LLA operating distinction between household-level pathway choices and community-level shared-resource priorities. It will verify how CACs, CAAP processes, Community PACT Agreements, WUCs, SACCOs/VSLAs, scorecards and grievance channels can be used to support local diagnosis, prioritisation, validation, disclosure, monitoring and feedback. The activity is required because PACT must avoid both top-down package delivery and open-ended community veto over technical safeguards, procurement and fiduciary controls. It will show how communities are empowered to define and prioritise adaptation actions while the CAIF preserves climate relevance, safeguards, O&M, fiduciary and value-for-money discipline.

Activity 2: Representative LLA, Community PACT and CAIF operating design

This activity is the core Additional LLA PFG investment. It will produce the decision-rights architecture, Community PACT agreement suite, CAC/CAAP operating rules, CAIF operating manual, fund-flow and delivery-channel SOPs, scoring tools, approval files, scorecards, community verification notes and closure templates. The amount is justified because the LLA architecture must be designed as an accountable operating system before implementation funding is approved.

The activity will ensure that community empowerment is not limited to consultation, but is translated into documented decision rights, community validation records, fund-flow triggers, scorecards, grievance pathways and implementation feedback loops.

Activity 3: LLA-linked safeguards, GRM and scorecard interface testing

This activity will connect locally led processes to safeguards, GRM and exception escalation. It is required because local decision-making must be meaningful but cannot bypass ESP, USP, GESI, fiduciary, O&M or technical standards. This will protect the credibility of LLA by ensuring that community-selected actions remain inclusive, safe, technically feasible and compliant with AF ESP, USP and GESI requirements.

Activity 4: Community scorecard and adaptive learning feedback-loop design

This activity will define how community scorecards, feedback, grievance information and learning reviews influence CAIF screening, annual workplans and package adjustment. It is required to make local accountability operational rather than symbolic. This creates the feedback mechanism through which community monitoring evidence influences implementation decisions rather than remaining a reporting exercise.

Activity 5: LLA operating-package integration and consistency verification

This activity will integrate the LLA operating package into the full proposal and annexes and verify that decision rights, CAIF controls, fund-flow routes, community accountability, GRM, safeguards interfaces and scorecards are consistent across all documents. It is required to ensure that the Additional LLA formulation outputs operate as one coherent system rather than as standalone tools.

Implementing Entity

IE oversight, coordination, supervision, quality assurance, review and reporting, communication and document-management support for the Additional LLA PFG, including review of community-decision tools, CAIF procedures, scorecards, GRM interfaces and LLA annexes.

IE Coordinator / IE	Signature	Date	Project Contact	Telephone	Email
Ministry of Water and Environment IE Coordinator: Joseph Lule		27 May 2026	Dr Hannington Bukomeko	+256 779219696	hbukomeko@gmail.com

Ref.	Costed sub-activity	Indicative cost basis / inputs	Amount (US$)
2.1	**CAC/CAAP governance and community decision-rights design**	LLA governance specialist; five-district CAC/CAAP validation sessions; decision-rights and operating-template development; synthesis and revisions.	**12,000**
2.2	**CAIF governance, screening, approval and recourse system**	CAIF/LLA specialist plus safeguards, fiduciary and legal review; approval/recourse workflow design; operating-manual drafting, testing and revision.	**15,000**
2.3	**Fund-flow and Local Finance Routing Schedule design**	Fiduciary/local-finance specialist; SACCO/group eligibility and due-diligence tools; fund-flow controls; milestone-release and routing-protocol review.	**12,000**
2.4	**Community PACT and package-control documentation suite**	Technical documentation and legal input; Community PACT/package-card templates; beneficiary/site control files; field testing, revision and controlled-document production.	**10,000**
2.5	**District-specific, disclosure and accessible operating tools**	Five district operating-model adaptations; community disclosure/objection testing; local-language notes; accessibility adaptations and verification tools.	**9,000**
2.6	**Integrated LLA operating package, synthesis and quality assurance**	Integrated synthesis workshop; legal/fiduciary/technical red-team review; tool consolidation; final manual/tool-suite production and quality assurance.	**12,000**
	Total Activity 2	Six costed sub-activities above	**70,000**

Annex 1: List of stakeholders consulted in the field

Table 30. Field stakeholders consulted

No.	Name	Gender	Phone number	Email address	Position	District
1	Musenero Bernard	Male	0771674292 / 0750566383	bmusenero@gmail.com	DNRO	Luuka
2	Dr. Batyani James	Male	0759619461 / 0782355068		DPO	Luuka
3	Paulo Diogo	Male	0782936589	d.polo19@gmail.com	DNRO	Kaliro
4	Thomas Kibalya	Male			SAO	Kaliro
5	Abdul Samanya	Male	0779800732	abdisamanya@yahoo.co.uk	DNRO	Iganga
6	Dr. Apollo Musiita	Male	0775632391		DPO	Namutumba
7	Ikaaba Dauda	Male	0772923376	ikaabad@gmail.com	DNRO	Namutumba
8	Bazibu Julius	Male	0779315560 / 0756808014	Juliusbazibu5@gmail.com	Wetland system supervisor	Kaliro
9	Kalange Muhamood	Male	0776838447		DPO	Bugweri
10	Najjuma Sarah	Female	0774679653	najjuma_sarah@yahoo.com	Senior Environment officer	Bugweri
11	Wamukuyu Fred	Male	0705641538		DNRO	Bugweri
12	Agutut Harriet	Female	0701052529		Satelite Manager, BRAC	Iganga
13	Joseph Kyegombe	Male	0701907318 / 0764838026	Josephs2012@gmail.com	Executive Director SMAD	Namutumba
14	Makumba Julius	Male	0774931003		SCDO - Ikumbya S/C	Luuka
15	Joseph Kiranga	Male	0753523352		Youth Leader Bukobo Village - Ikumbya S/C	Luuka
16	Rogers Ntogona	Male			Assistant RDC	Luuka
17	Rashid Mukaire	Male		apstruggle@gmail.com	SAP - MD	Iganga

No.	Name	Gender	Phone number	Email address	Position	District
18	Tiwaaku Florence	Female	0771469855 / 0755004452	tiwakuflorence@gmail.com	Environment Officer	Iganga
19	Agutut Harriet	Female	0701052529		Satelite Manager, BRAC	Jinja
20	Joseph Kyegombe	Male	0701907318	Josephs2012@gmail.com	ED SMAD	Namutumba
21	Moses Iyereget	Male	0701533124		AMREF	Busoga region
22	Brenda Yariwo	Female	0776156160		ONE ACRE FUND	Jinja
23	Namuganza Naiba	Female	0775358914		SDO - Bukamba	Kaliro
24	Makumba Julius	Male	0774931003		SCDO - Ikumbya	Luuka

Annex 2: List of stakeholders at the national validation workshop

Table 31. National validation workshop stakeholders

No.	Name	Gender	Email address	Position / organisation	District
1	Mr. Musenero Bernard	Male	bmusenero@gmail.com	District Natural Resources Officer	Luuka
2	Mr. Paulo Diogo	Male	d.polo19@gmail.com	District Natural Resources Officer	Kaliro
3	Mr. Abdul Samanya	Male	abdisamanya@yahoo.co.uk	District Natural Resources Officer	Iganga
4	Mr. Ikaaba Dauda	Male	ikaabad@gmail.com	District Natural Resources Officer	Namutumba
5	Mr. Bazibu Julius	Male	Juliusbazibu5@gmail.com	Wetland system supervisor	Kaliro
6	Ms. Najjuma Sarah	Female	najjuma_sarah@yahoo.com	Senior Environment officer	Bugweri
7	Mr. Wamukuyu Fred	Male		DNRO	Bugweri
8	Mr. Tiwaaku Florence		tiwakuflorence@gmail.com	Environment Officer	Iganga
9	Dr. Kasozi Nasser	Male		Buginyanya ZARDI Director	
10	Mr. Mukaire Rashid	Male	apstrugle@gmail.com	Secretary General	Iganga
11	Ms. Nantale Anne	Female	anantale@yahoo.com	Board Chairperson - Struggle Against Poverty	Iganga
12	Mr. Arthur Kimeze	Male	arthur.kimeze@gggi.org	GGGI	
13	Mr. Pablo Martinez	Male	pablo.martinez@gggi.org	GGGI	
14	Ms. Florence Mukaminega	Female	mukaminega@gggi.org	GGGI	

No.	Name	Gender	Email address	Position / organisation	District
15	Ms. Liliane Uwanziga Mupende	Female	liliane.mupende@gggi.org	GGGI	
16	Mr. Robert Asiimwe	Male	r.asiimwe@alcuganda.com	Consultant	
17	Ms. Charity Kibooga	Female	kibooga@alcuganda.com	Consultant	
18	Mr. Ocare Denis	Male	docare2009@gmail.com	Ag. Commissioner-PPD	MWE
19	Mr. Joseph Lule	Male	josephlule2@gmail.com	Principal Policy Analyst	MWE
20	Ms. Constance Apule	Female	apuleconnie@gmail.com	S/Economist	MWE
21	Ms. Natukunda Lillian	Female	lilylina1711@gmail.com	S/Economist	MWE
22	Ms. Namwiira Mildred Martha	Female	namiira11@yahoo.com	S/Economist	MWE
23	Joseph Kyegombe	Male	Josephs2012@gmail.com	Executive Director SMAD	Namutumba
24	Kalange Muhamood	Male		DPO	Bugweri
25	Dr. Apollo Musiita	Male		DPO	Namutumba
26	Dr. Batyani James	Male		DPO	Luuka
27	Ogaza Gozan	Male		DPO	Iganga
28	Mr. Innocent Mpiriirwe	Male	mpiriirwe1976@gmail.com	Consultant	
29	Mr. George Illebo	Male	tilebo14@hotmail.com	Consultant	
30	Ms. Constance Nakiyemba	Female	Consie123@gmail.com	Consultant	
31	Mr. Fred Kisaakye	Male	kisaakyefredric@gmail.com	Consultant	
32	Brenda Yariwo	Female		ONE ACRE FUND	

2025



A COMPREHENSIVE STUDY REPORT ON CLIMATE CHANGE ADAPTATION IN BUSOGA REGION

THE REPUBLIC OF UGANDA

Ministry of Water and Environment

A COMPREHENSIVE STUDY REPORT ON CLIMATE CHANGE ADAPTATION IN BUSOGA REGION

Global Green Growth Institute

ALC LTD
ATHARI LULU CONSULTS LIMITED

ACKNOWLEDGEMENTS

This report was prepared by Athari Lulu Consults Limited for the Ugandan Ministry of Water and Environment, with funding support from the Global Green Growth Institute (GGGI). We gratefully acknowledge the valuable technical reviews and insightful comments provided by various colleagues from the Ministry and GGGI, which greatly contributed to the quality of this report.

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LIST OF ACRONYMS

ALC	Athari Lulu Consults
CBOs	Community Based Organizations
CSOs	Civil Society Organizations
DPO	District Production Officer
DNRO	District Natural Resources Officer
FGD	Focus Group Discussion
GDPR	General Data Protection Regulations
KII	Key Informant Interview
I-NGO	International Non-Governmental Organization
IPCC	Intergovernmental Panel on Climate Change
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NARO	National Agricultural Organization
NEMA	National Environmental Organization
NDC	Nationally Determined Contribution
NGOs	Non-Governmental Organizations
OPM	Office of the Prime Minister
RCP	Representative Concentration Pathway
UBoS	Uganda Bureau of Statistics
UNCDF	United Nations Capital Development Fund
UNMA	Uganda National Meteorology Authority
US$	United States Dollar
VSBK	Vertical Shaft Brick Kiln

EXECUTIVE SUMMARY

Uganda, particularly the Busoga region, faces significant challenges due to climate change, characterized by high vulnerability and low adaptive capacity. Busoga sub-region is highly susceptible to climate change impacts due to high poverty rates, environmental degradation, and reliance on rain-fed agriculture. This study assessed climatic threats, environmental conditions, socioeconomic dynamics, and existing resilience efforts. The field report examined the climate change adaptation challenges to inform locally-led adaptation strategies.

Key findings included:

1. **Climate threats**: The region experiences prolonged dry spells, erratic rainfall, floods, hailstorms, and rising temperatures. These factors disrupted agriculture, exacerbated food insecurity, and damaged infrastructure. Over 40% of households reported longer dry spells as the most severe impact, followed by stronger winds (18%) and increased rainfall (11%).

2. **Environmental degradation**: This issue was driven by unsustainable agricultural practices, deforestation, wetland encroachment, and population pressure. More than 75% of respondents reported a lack of awareness regarding government-led initiatives to mitigate these issues, indicating a need for improved communication and action.

3. **Socioeconomic profile**: Busoga region has a total population of 4,372,349 (2,147,597 male and 2,224,752 female), with 74.8% living below the poverty line (US$ 2.5 per day). This situation is exacerbated by land degradation from unsustainable agricultural practices, deforestation, and wetland conversion. The average household size was seven members, with 93% relying on agriculture and 35% engaging in some form of non-agricultural activities such as casual labor and trade. The study also revealed low education levels, with over 60% of household heads having not completed primary level of education, which hinders access to climate information and adaptive practices. Moreover, gender disparities existed, as women and female-headed households (22%) faced higher vulnerability due to caregiving roles and resource inequity.

4. **Institutional gaps**: Only 25% of households acknowledged government-led initiatives, highlighting weak policy implementation and communication.

To address the above issues, the study recommends the following:

- Promotion of climate-smart agriculture, including the use of drought-resistant crops, agroforestry, and soil conservation techniques such as contour farming and mulching.
- Investment in infrastructure by expanding affordable irrigation and rainwater harvesting systems to mitigate water scarcity.

- Support livelihood diversification by encouraging alternative income sources, such as poultry, aquaculture, and small businesses, to reduce reliance on climate-sensitive sectors.
- Strengthening policy and capacity building by enhancing local governance, enforcing environmental regulations, and improving community training on adaptive practices.
- Promotion of gender inclusion by targeting women and marginalized groups with tailored financial and technical support.
- Strengthening of institutional support for climate adaptation initiatives.

To implement the above recommendations, the study established that the private sector has a critical role to play in addressing the climate adaptation challenges outlined in the Busoga report by leveraging its resources, innovation, and market-driven approaches.

The private sector can enhance climate resilience in Busoga by investing in climate-smart agriculture through drought-resistant seeds, precision farming tools, and agroforestry initiatives. It can improve infrastructure via affordable solar-powered irrigation, rainwater harvesting, and waste management solutions. By developing value chains, offering microfinance products, and promoting eco-tourism, businesses can diversify livelihoods and strengthen market access. Partnerships with NGOs and governments can amplify training in adaptive practices and digital platforms for weather advisories. Advocacy for green policies, Corporate Social Responsibility (CSR) driven conservation projects, and ethical sourcing from sustainable farms further align profit with community resilience, fostering inclusive growth and long-term environmental stewardship.

1.0 BACKGROUND

1.1 Introduction

Uganda, like many developing countries, remains highly vulnerable to the adverse effects of climate change, characterized by high exposure and low adaptive capacity. According to the Notre Dame Global Adaptation Initiative (ND-GAIN 2022), Uganda ranks as the 18th most vulnerable country to climate change impacts and the 28th least ready in terms of preparedness. With the country's predominantly rural population heavily reliant on rain-fed agriculture and natural resources for their livelihoods, climatic phenomena such as prolonged droughts, erratic rainfall, floods, and rising temperatures have disrupted key sectors especially agriculture leading to food and water shortages, livestock losses, human migrations, and resource-based conflicts (Twongyirwe et al., 2019; Nuwagira & Yasin, 2022).

The Busoga sub-region, located in Eastern Uganda, is among the areas highly affected by these climate impacts due to its heightened socioeconomic vulnerability and low adaptive capacity. The region faces severe socioeconomic vulnerabilities, including high rates of both monetary poverty (29.4%) and multidimensional poverty (45.1%) (UBOS, 2022). The monetary poverty rate represents the proportion of people living below the national poverty line based on income, while the multidimensional poverty captures deprivations across health, education, living standards, employment, and financial inclusion dimensions. Notably, Busoga records the highest deprivation in productive employment among all sub-regions, with 36% of the population deprived in this indicator (UBOS, 2022)

Additionally, land degradation driven by wetland conversion for rice and sugarcane farming, inappropriate agricultural practices, and deforestation (including for charcoal production) has significantly disrupted ecosystem services such as soil fertility, water regulation, and habitat integrity. These environmental stresses are compounded by other systemic challenges in the region, including gender inequalities, high illiteracy rates, rapid population growth, and limited economic diversification, all of which constrain the ability of households and communities to effectively adapt to climate change and achieve sustainable development.

As a result, this has disrupted ecosystem services, particularly provisioning services, through habitat fragmentation, soil erosion, declining soil fertility and productivity, and nutrient loading of water bodies. In addition, the Busoga region is challenged by gender inequalities, high illiteracy rates, high population growth, and limited economic development, which limit the capacity of communities to adapt to climate change and achieve sustainable development.

To address the above issues, the Government of Uganda has developed various national strategies and policies including Uganda's Vision 2040; Uganda's National Development Plan

(NDP III & IV), Uganda Green Growth Development Strategy, 2017/18–2030/31; National Climate Change Policy; Uganda's updated Nationally Determined Contributions (NDCs), National Adaptation Framework; the National Environment Act; Uganda's National Adaptation Programme of Action (NAPA), and Uganda's National Biodiversity Strategy and Action Plan (NBSAP), etc. Despite these government strategies and policies being in place, progress on the ground remains deficient, visibly patchy, and generally weak and lacking in many aspects. The populations and ecosystems in the Busoga region have largely remained vulnerable to the negative impacts of climate change and other environmental shocks and stresses. Unfortunately, even when faced with such climate change-related risks and disasters, the resilience and adaptive capacities of the population, and especially the most vulnerable and marginalized groups in Busoga region, remain extremely limited, requiring additional support to address the critical challenges in the short and longer term, particularly in areas of sustainable land use practices, resilient and sustainable alternative livelihoods, and gender mainstreaming.

1.2 Study Purpose and Scope

This study aimed to provide a contextual understanding of the climate adaptation challenges currently facing the Busoga region, to inform the development of a well-grounded concept note for locally led adaptation strategies. The insights gathered will help identify context-specific entry points for interventions, ultimately supporting the design of solutions with a high likelihood of success. The study was guided by the following objectives:

1. Assess current and expected climatic threats in the study area, considering the effects of climate change.
2. Evaluate the level of environmental degradation and identify the responsible activities.
3. Provide socioeconomic profiles of potential beneficiaries in the study area.
4. Identify innovative, cost-effective and scalable locally led adaptation initiatives that can be implemented by the project to build community resilience.
5. Establish a role/contribution for private sector players' involvement in proposed initiatives and environmental management.
6. Further define a project area of intervention.
7. Recommend complementary actions to accelerate local development and poverty alleviation within the project area.
8. Identify the alternative livelihood options to be undertaken by the project to address environmental degradation and poverty in the project area.
9. Develop a learning and knowledge management strategy to capture and disseminate lessons learned from the proposed project.

2.0 OVERVIEW OF BUSOGA REGION

2.1 Location

Busoga, a region in eastern Uganda, spans approximately 10,318 square kilometres and comprises 11 districts: Bugiri, Bugweri, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, Namayingo, and Namutumba (Figure 1). Geographically, it is bordered by Lake Kyoga to the north, separating it from the Lango sub-region; by Victoria Nile to the west, delineating its boundary with the Buganda region; to the south by Lake Victoria; and to the east by the Mpologoma River, which separates it from Bukedea and Bugisu.

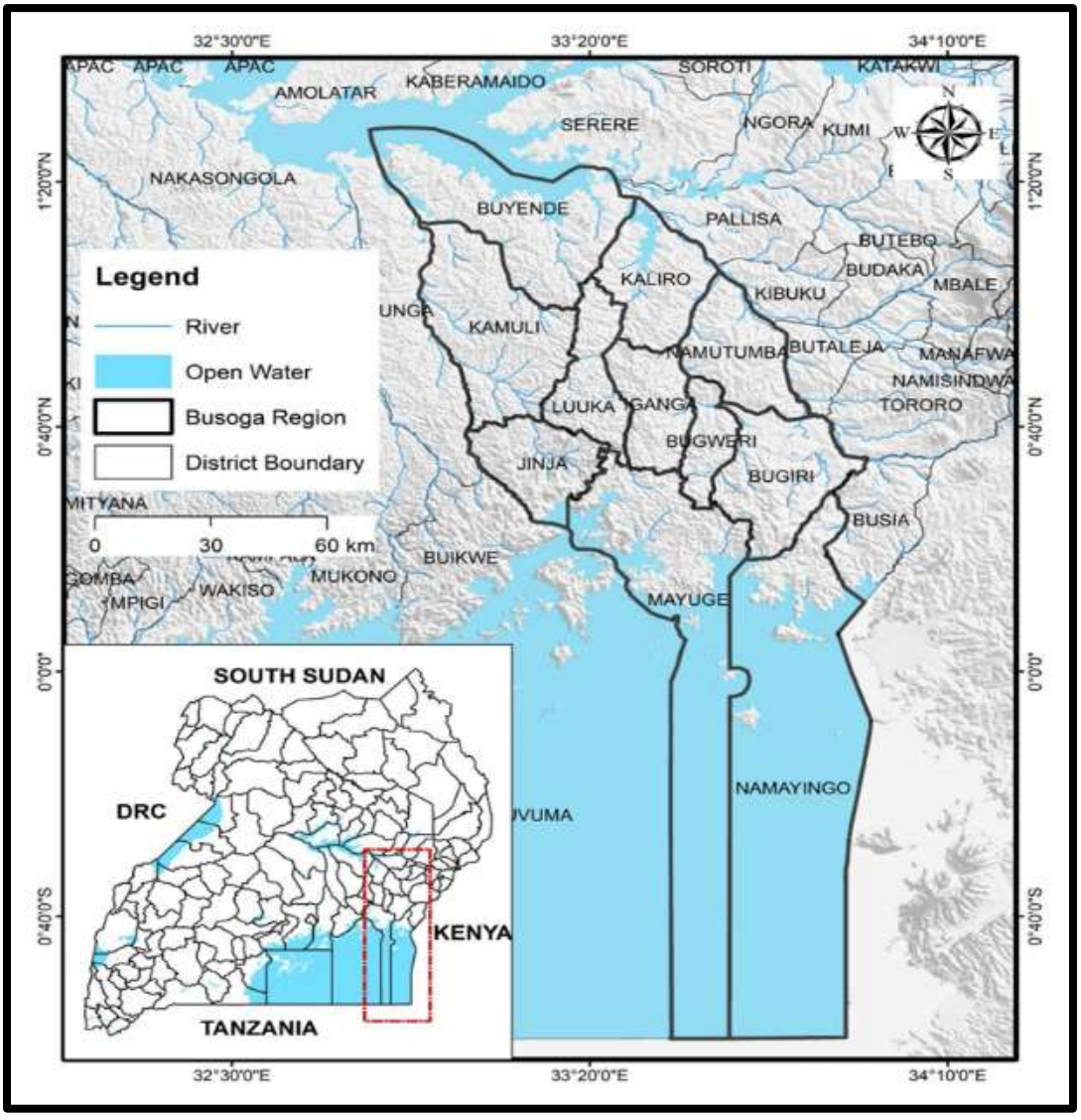


Figure 1: Map of Uganda showing Busoga Sub region

2.2 Topography

Busoga Sub-Region is characterized by undulating plains, river valleys, lake shores, and wetlands. This region lies at an altitude ranging from approximately 1,000 to 1,300 meters above sea level, forming a relatively low-lying terrain compared to some of Uganda's highland areas. The prevalent landforms include gently revolving hills spread out with lowland areas, predominantly in the north near Lake Kyoga, where seasonal flooding and wetland formations are reported as a common feature. A significant topographical feature of the Busoga sub-region is Lake Victoria, which borders the southern part of this region (with Mayuge and Namayingo districts). The shoreline of Lake Victoria provides a low-lying landscape that gradually rises inland. In the western part of this sub-region, the River Nile forms a natural boundary, cutting through the region as it flows northward from Lake Victoria. The Nile's valley is characterized by alluvial plains, which contribute to the fertility of adjacent lands. The region also features remnants of forest reserves and isolated hills, with the most remarkable one being Mabira Forest, located near Jinja city/district.

In the study districts of Namutumba, Luuka, Iganga, Bugweri, and Kaliro, the terrain largely consists of undulating plains with relatively gentle slopes and relatively flat plains. These areas experience seasonal wetland formations, particularly near water bodies, wetlands, and low-lying valleys. Agriculture is the dominant land use and source of livelihoods for people in this region, majorly influenced by its landscape and topographical features.

2.3 Soils

The Busoga Sub-Region is characterized by predominantly leached red or clay-rich soils, which are deeply weathered due to prolonged exposure to intense tropical rainfall. These soils, common in Iganga, Luuka, and Namutumba districts, have a sandy clay loam to clay loam texture and are rich in iron and aluminium oxides. However, they tend to be low in organic matter and essential nutrients such as nitrogen and phosphorus, making them susceptible to fertility depletion if not properly managed. The high degree of leaching limits the natural fertility of these soils, necessitating the use of organic amendments and soil conservation techniques to maintain productivity (NEMA, 2020).

In addition to leached red or clay-rich soils, fertile river-deposited soils (alluvial soils) are found in river valleys and floodplains, particularly along the River Nile and Lake Kyoga. These soils are relatively fertile, benefiting from the periodic deposition of nutrient-rich sediments during seasonal flooding. Farmers utilize these areas for wetland rice cultivation, vegetable farming, and other intensive agricultural activities, as the soils retain moisture and support high-yield crops. However, unsustainable land use practices, including excessive wetland encroachment, threaten the long-term productivity of these fertile zones (UBOS, 2022).

Other soil types in Busoga include acidic and nutrient-poor soils, which are found in parts of Bugweri, Kaliro, and some areas near Mayuge. These soils are moderately fertile but prone to acidification and compaction, which can restrict root growth and water infiltration. Continuous cropping and improper soil management practices exacerbate nutrient depletion in these soils, highlighting the need for sustainable soil fertility management practices such as crop rotation, agroforestry, and organic matter incorporation (MAAIF, 2019). In contrast, black clayey soils and vertisols dominate low-lying areas and depressions, where they tend to retain water for extended periods. These soils, often found in Namutumba and parts of Kaliro, are poorly drained and highly susceptible to waterlogging, making them suitable for rice, sugarcane, and yam cultivation but less ideal for crops requiring well-drained conditions.

Despite the diversity of soils in the region, several challenges threaten soil productivity and sustainability. Soil erosion and degradation are widespread, particularly in areas with undulating terrain and intensive land use. The removal of natural vegetation for agriculture has accelerated topsoil loss through surface runoff, reducing soil fertility and leading to declining crop yields. Additionally, acidification and nutrient depletion, especially in leached and red-clay soils, have been exacerbated by continuous cultivation without adequate soil replenishment measures. Seasonal waterlogging remains a major challenge in certain districts, affecting crop selection and limiting land use options. Furthermore, declining organic matter content due to shortened fallow periods and overgrazing has weakened soil structure and reduced its capacity to retain moisture, making crops more vulnerable to drought and erratic rainfall patterns (NARO, 2021).

2.4 Climate

Busoga region, like the rest of Uganda, experiences a tropical climate with two rainy seasons (March to May, September to December). It receives an average annual rainfall of 1200mm, and temperatures range between 18ºC-30ºC. However, the region also experiences unpredictable rainfall patterns or amounts, often leading to extreme conditions such as severe droughts, flooding, or relatively higher temperatures. This often leads to disruptions in people's agriculture and livelihoods, such as crop failure, destruction of property, which increase the vulnerability of the poorer segments of the population.

2.5 Vegetation

The Busoga sub-region is characterized by a forest-savanna mosaic, though human activities have significantly altered its natural vegetation. The vegetation integrates grasses and shrubs, with a mixture of forest remnants and colonizing savannah trees in some areas. The dominant flora includes grasses (Pennisetum purpureum, Hyparrhenia rufa) and scattered tropical trees (Markhamia lutea, Ficus, Albizia spp., Etc.). In districts like Namutumba, the vegetation has been heavily modified by agriculture. The region has forest reserves such as Bukaleeba, South Busoga, Walulumbo, Iziru, and various local reserves within the districts. Some of the reserves, like Bukaleeba have been severely encroached on for commercial tree planting. The high population density of the sub-region is also exerting pressure on the forest cover. Iziru forest reserve in Luuka CFR (103 ha) and Bunafu LFR (28 ha)—both degraded due to sugarcane farming and charcoal production (Uganda-Luuka-WASH-Master-Plan-2021). Part of Mpologoma wetland system, which has been degraded in some areas due to intensive rice growing and unsustainable use of resources offered by the wetlands, traverses the Busoga.



Figure 2: A section of Mpologoma Wetland system

3.0 Methods

3.1 Study design and Approach

3.1.1 Study design

To ensure a comprehensive understanding of climate adaptation strategies and environmental challenges in the target districts, the study used a mixed-methods approach (Figure 2). Due to the complex nature of climate change and its various impacts on people, the approach fostered greater engagement with diverse stakeholders to generate a comprehensive understanding and enhance the validity and reliability of the study findings. A participatory and human-rights-based approach was adopted for the study to ensure that the views of all stakeholders including women, youth, and people living with disabilities, were gathered and utilized and that all stakeholders provided free, prior, and informed consent. The study utilized both secondary and primary data collected on household demographic and socio-economic characteristics, climate change impacts. Drawing from both current and older data sets allowed a more compresence presentation of both current and historical elements of the subjects under study. Qualitative data from key informant interviews and focus group discussions were collected alongside individual/household interviews. The integration of different methodologies advanced innovative insights and solutions, which was critical for identifying cost-effective and scalable locally led adaptation initiatives in the Busoga region.

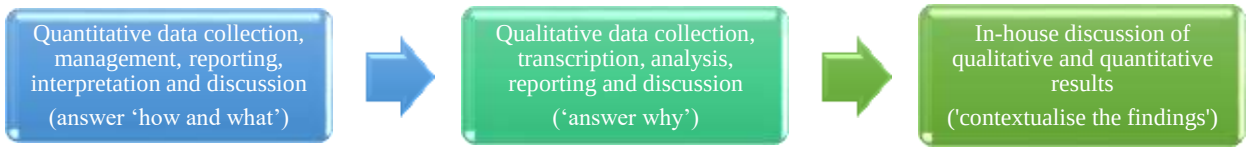


Figure 3: Stepwise data generation process and mixed methods approach illustration

3.1.2 Study execution approach

The study involved sequential phases as highlighted below to gather data, analyze, and synthesize the data.

Inception meeting: This involved meetings with GGGI and MWE to get more information and details about the assignment, map key stakeholders, and acquire supporting documents relevant for the assignment.

Desk review: Preliminary desktop study using secondary data sources, such as published studies, district reports, and available databases, on climate change, threats, environmental degradation, and responsible activities in Busoga region and Uganda at large were reviewed to help identify and prioritize potential intervention sites in the selected districts of Busoga region. Some of the reviewed documents include Uganda's National Environment Act 2019, Climate Change Act 2020, Local Government Act, Forestry Act, Uganda's Vision (2040), and National Development Plans (III & IV).

Stakeholder identification: Preliminary mapping, identification, and engagement of key stakeholders, including District Local government officials, cultural leaders, local communities, CSOs, NGOs, CBOs, private sector actors, etc., was conducted to understand the historical, socio-cultural, economic, and environmental context of the Busoga region. These engagements helped to build local support, explain the project's objectives and benefits, select study sites, and address any concerns raised by stakeholders. During this phase, necessary permissions and approvals for site access were also secured.

Study site visits: These were conducted to assess the suitability, security, and accessibility of the target sites. The site visits supported validating some environmental, demographic, and geographical parameters obtained during the preliminary desk review, ensuring that the selected sites met the project's requirements. In addition, vulnerabilities, risks, and opportunities for impactful interventions were identified during the site visits.

Tool development: Informed by the desk review, primary data collection tools and data collection strategies/approaches were developed. These included individual household-level structured questionnaires (Annex 1), a Focus group discussion checklist (Annex 2), and key informant interview guides (Annex 3). In addition, a case study checklist (Annex 4) about the vertical shaft brick kiln with Struggle Against Poverty, an NGO in Busoga, that has constructed a Vertical Shaft Brick Kiln (VSBK) but has yet to acquire the necessary machinery for full operation was developed.

Selection, recruitment, and training of enumeration team: Qualified and experienced enumerators were recruited to collect data in the study area. Recruitment considered competence, possession of previous research experience (especially in climate and household surveys), ability to communicate in the local language (a must), and residence in the study areas. The minimum qualification for an enumerator position was a diploma preferably in environmental sciences, agriculture, or livelihoods-related discipline. Gender balance on the team was also ensured. A total of fourteen (14) enumerators (10 for quantitative and 4 for qualitative), directly supervised by the ALC field coordinator, were recruited for the entire exercise. The enumerators were adequately trained to cover the objectives of this assessment, study procedures, interviewing skills, and techniques for facilitating and recording responses to enable them to collect good quality data. Role plays in the local language spoken in the Busoga region were performed during the training.

3.2 Data collection methods, tools, and techniques

3.2.1 Qualitative data collection

Qualitative data collection employed an exploratory approach in the selected five districts to enable deeper exploration, context-specific nuances, and better understanding of the climate-related challenges, current adaptation strategies, and opportunities. The study objectives were utilized to develop open-ended questions to guide the data collection process, focusing on the identification of key stakeholders (government, NGOs, community-based organizations, private sector) and their roles, current adaptation initiatives, as well as gaps and challenges in climate adaptation efforts, and policy frameworks and recommendations. On the other hand, FGDs were conducted with community members, smallholder farmers, and vulnerable groups to capture lived experiences and community-led adaptation initiatives. Discussions were guided by an FGD checklist and covered climate change risks and community experiences, community adaptation strategies, barriers to climate adaptation, alternative livelihoods and opportunities, proposed resilience-building initiatives, adequacy of government and non-government support, and community recommendations for improving adaptation to the effects of climate change. Separate FGDs of male and female survey participants and a mixed youth FGD were conducted in either village selected for the study. A set of guiding questions was developed to inform the VSBK case study, aiming to explore its potential role in enhancing individual and community resilience to climate change. In addition to interviews and discussions, field observations were conducted to document visible signs of climate impacts, vulnerabilities, and environmental degradation. Photographs were taken to capture key features, which were later critically analyzed to generate further insights.

3.2.2 Quantitative data collection

Quantitative data was collected using a computer-aided personal interview (CAPI) using tablets, administered at household level, to improve efficiency, minimize errors, and facilitate real-time data monitoring. Based on the information gaps identified through the pre-data collection exercises, a structured questionnaire was developed and programmed into electronic form. The quantitative tool focused on household demographic and socio-economic information, climate change awareness and perceptions, vulnerabilities and their causes, environmental degradation and land use, local knowledge on climate change adaption, climate adaptation strategies, alternative livelihoods and income diversification, community involvement, and recommendations. Tablets were used to complete the questionnaires. Completed questionnaires were submitted to the ODK server. Each enumerator received an introduction letter from GGGI and MWE for district clearance, as well as a local field guide familiar to the community to assist with household visits.

3.3 Sampling strategy

3.3.1 Selection of study sites

A multistage sampling approach was used to select the villages from which respondents were identified for interviewing as shown in Figure 4. The districts of interest were predetermined by the project to include Iganga, Kaliro, Luuka, Bugweri and Namutumba. Sampling was done at subcounty, village and household level. In the first step, the most vulnerable sub-county to climate change impacts was selected from a list of sub counties presented in order of vulnerability to climate change effects with the help of the District Natural Resource Officer and the Environment Officer in each district. In the second stage, a list of villages in the selected sub county were compiled with the help of the Sub County chiefs and two villages that had been most affected by climate change impacts were selected to make a total of 10 villages for the entire study.

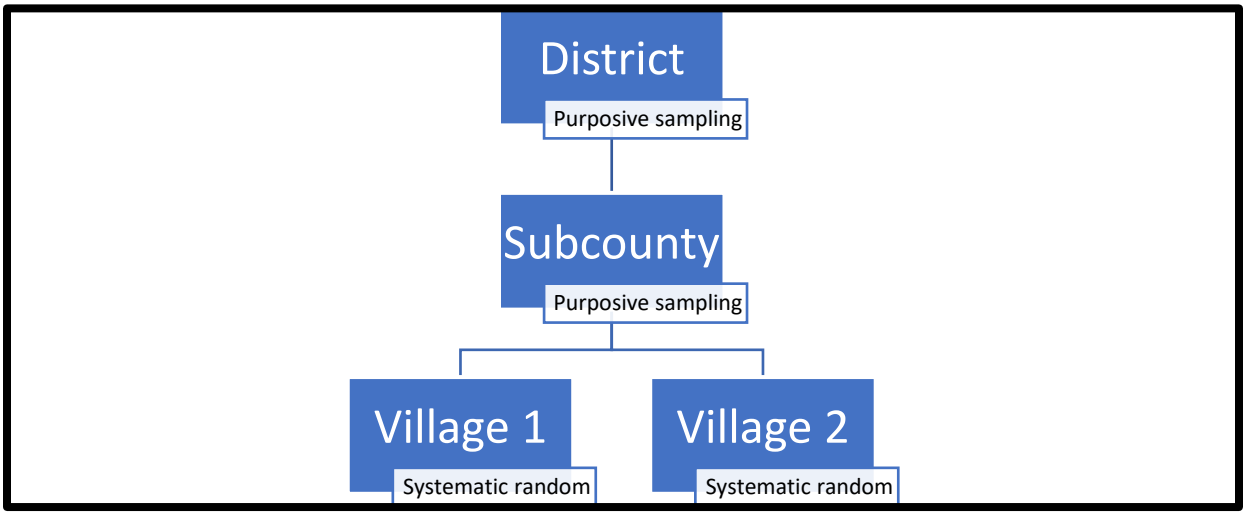


Figure 4: Sampling procedure

3.3.2 Selection of participating households

In the final stage of sampling, systematic random sampling was done to select the n^{th} household to come to 30 households per village (60 per district) as minimum (Table 1). An allowance of at least 20% per district was added to allow for non-response. Table 1 shows the sub counties and households that were used for the study.

Table 1: Sample size per district

District	Sub-county	Target households	No. of households
Luuka	Ikumbya	60	88
Kaliro	Bukamba	60	86
Iganga	Nawansega	60	91
Bugweri	Ibulanku	60	82
Namutumba	Nangonde	60	90
Total		**300**	**437**

The unit of analysis for this study is the household. The target respondents for the quantitative data were household heads (or their spouses) of households that derive a living from their immediate environment and can, as such, provide information on lived experiences of climate change and its impact on their livelihoods. These included but were not limited to farmers, brick makers, and fishermen, who have lived in the same community for no less than ten (10) consecutive years to ensure that respondents can identify long-term changes/patterns in temperature, precipitation averages, and other environmental or climate-related aspects.

For the qualitative data, several stakeholders were consulted both at national and sub national (district, subcounty and parish levels) through key informant interviews, and focus group discussion.

Table 2: Summary of stakeholders consulted during the study

Category	District (Sub-County)/ Organisation	Key Informants	FGDs
Local government	Luuka (Ikumbya)	4	3
	Kaliro (Bukamba	4	3
	Iganga (Namungalwe)	2	3
	Bugweri (Ibulanku)	4	2
	Namutumba (Nangonde)	2	3
NGOs/ INGOs	AMREF Health Africa	1	
	One Acre Fund	1	
	Struggle Against Poverty	1	
	Sustainable Multi-Sectoral Action for Development	1	
Financial sector	BRAC Uganda	1	
National level	Ministry of Agriculture, Animal Industries and Fisheries-	1	
	Ministry of Water and Environment- Wetland department	1	
	National Environmental Management Authority-	1	
Research and Academia	National Agricultural Research Organization	1	
	Makerere University – College of Agricultural and Environmental Sciences	1	
Private Sector	Clean Energy Stoves	1	
Total		**27**	**14**

4.0 RESULTS PRESENTATION AND INTERPRETATION

This section presents the results, and their interpretations derived from both primary data (qualitative and quantitative) collected as well as the data from secondary sources. It starts with a description of the socioeconomic and demographic characteristics of the region and the sampled households (4.1). The historic and projected climatic conditions are presented in 4.2, while 4.3 explores the aspects of environmental degradation in the study area. In the next subsections, the study presents aspects of climate change manifestations (4.4) and effects and adaptation to climate change at the community and household level (4.5). The section wraps up with a look at the existing initiatives as well as the community's aspirations in terms of adapting to climate change. The results are disaggregated by district and, whenever possible, gender to provide a more nuanced and context-specific narrative.

4.1 Demographics and socioeconomic characteristics

4.1.1 Population and demographic characteristics

Table 3 shows the total population of the Busoga sub-region and the respective 11 districts in 2014 and 2024. The population has grown at an annual rate of 2.1% between 2014 and 2024 compared to the national average of 2.9%. The total population of the sub-region was 4,372,349 in 2024 compared to 3,583,196 in 2014, accounting for 9.5% of the total population (45,935,046) in Uganda in 2024 (https://www.ubos.org/explore-statistics/20/).

Table 3: Population growth in the Districts of Busoga sub region

District	2014			2024			Growth Rate (%)
	Male	Female	Total	Male	Female	Total	2014-2024
Busoga	1,741,301	1,841,895	3,583,196	2,147,597	2,224,752	4,372,349	2.1
Kamuli	236,389	249,930	486,319	263,902	275,797	539,699	1.1
Jinja city	120,093	126,981	247,074	137,785	154,601	292,386	1.7
Mayuge	229,252	243,987	473,239	278,071	283,977	562,048	1.8
Kaliro	115,969	120,230	236,199	143,531	142,432	285,963	2.0
Namutumba	123,911	128,646	252,557	154,114	157,349	311,463	2.2
Namayingo	106,303	109,140	215,443	132,666	133,678	266,344	2.2
Buyende	158,615	164,452	323,067	201,120	202,924	404,044	2.3
Luuka	113,566	124,454	238,020	146,957	151,736	298,693	2.3
Bugiri	185,925	196,988	382,913	235,884	245,292	481,176	2.4
Iganga	162,432	176,879	339,311	205,269	221,327	426,596	2.4
Bugweri	78,750	86,136	164,886	104,187	108,017	212,204	2.6
Jinja	110,096	114,072	224,168	144,111	147,622	291,733	2.7

Table 4 presents the demographic and socioeconomic characteristics of the households surveyed in the five districts. The results show that households are comprised of seven members on average, which is on the higher end compared to the 4.5 members per household national average. In addition, more than half of the household members are, on average, children below 18 years, while three members on average are children below 14 years. This type of demographic arrangement puts additional strain on the few adults to meet the needs of the entire household. The data also shows that 33% of the households had at least one member living with a disability, the highest being in Namutumba (39%). The most common disability was physical disability (55%), followed by sight (17%) and mental disability (15%).

Although the average age of the household heads was 50 years, households in Kaliro were younger (47 years) compared to household heads in Bugweri (54 years). In addition, 22% of the households have a female as a household head, with some district-level differences. In Bugweri, 38% of the household heads were female, suggesting potentially higher vulnerability to the effects of climate change in this district. Of these household heads, 92% engaged in agriculture, while 35% engaged in non-agriculture activities to derive a living, further affirming the level of dependence on agriculture as a source of livelihood.

On average, at least two household members (out of seven) earned an income in the household, implying a higher dependence ratio with every one household member's income having to meet the needs of three household members. There was no difference in the number of male and female household members earning an income. In addition, 36% of the households had at least one member with access to a regular source of income (weekly, monthly), showing the irregularity or seasonality of income flows at the household level. Seasonal and irregular incomes increase vulnerability to the effects of climate change and other shocks or stressors in the household if careful planning for the seasonal sources of income is not done.

In terms of education, an average household head had completed 5 years of education, with distinct district-level differences. Household heads in Bugweri had completed seven years of education compared to 4 years for household heads in Kaliro and Namutumba. In addition, over 60% of the household heads had not completed primary education, with some (26%) having no form of formal education accessed (Figure 5). The low education attainment not only limits one's ability to access formal employment but also limits their ability to interpret especially written information, further excluding them from accessing and utilizing available information related to subjects such as adaptation to climate change.

Table 4: Socioeconomic and demographic characteristics

Characteristic	All		District									
			Bugweri		Iganga		Kaliro		Luuka		Namutumba	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age of the household head (years)	50.9	16.3	54.6	17.8	51.0	16.9	47.3	14.1	51.0	15.8	50.8	16.5
Household head's years of completed education	5.1	3.9	7.1	4.4	5.7	4.0	3.9	3.0	5.0	3.6	4.0	3.6
Total number of people in the household	7.0	3.4	6.6	3.4	6.9	3.3	7.2	3.4	6.7	2.8	7.7	3.8
Adult females (18 and older)	1.6	1.1	1.7	1.3	1.6	1.1	1.7	1.3	1.4	1.1	1.6	1.1
Adult males (18 and older)	1.4	1.1	1.3	1.2	1.6	1.0	1.5	1.2	1.3	1.1	1.4	0.9
Children 14-17 years	0.8	1.3	0.9	1.5	0.8	1.5	0.9	1.2	0.9	1.1	0.7	1.0
Children below 14 years	3.1	2.4	2.6	2.0	2.9	2.6	3.0	2.1	2.9	2.1	4.0	2.9
Number of household members who earned an income in the last 12 months	1.6	0.9	1.5	1.1	1.6	0.8	1.5	0.7	1.6	1.1	1.6	0.8
Male members who earned an income in the last 12 months	0.9	0.6	0.8	0.7	1.0	0.6	0.9	0.6	1.0	0.8	0.9	0.5
Female members who earned an income in the last 12 months	0.7	0.6	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.5
Percentage of households with a female head	22.2		38.0		15.0		16.0		22.0		21.0	
Percentage of household heads engaged in agricultural activities as a source of livelihood	92.9		89.0		92.0		90.0		97.0		97.0	
Percentage of household head engaged in non-agricultural activities as a source of livelihood	35.0		38.0		41.0		43.0		25.0		29.0	
Percent of households with a member living with a disability	33.6		35.0		30.0		36.0		28.0		39.0	
Disability forms												
Physical disability (%)	55.8		55.0		52.0		61.0		44.0		63.0	
Speech/Oral disability (%)	7.5		3.0		4.0		6.0		8.0		14.0	
Hearing/Auditory disability (%)	13.6		17.0		0.0		16.0		16.0		17.0	
Sight disability (%)	19.7		28.0		41.0		6.0		24.0		6.0	
Mental disability (%)	15.0		17.0		22.0		13.0		16.0		9.0	
Households with access to a regular source of income (e.g., weekly, monthly etc.)	36.2		38.0		40.0		42.0		31.0		31.0	

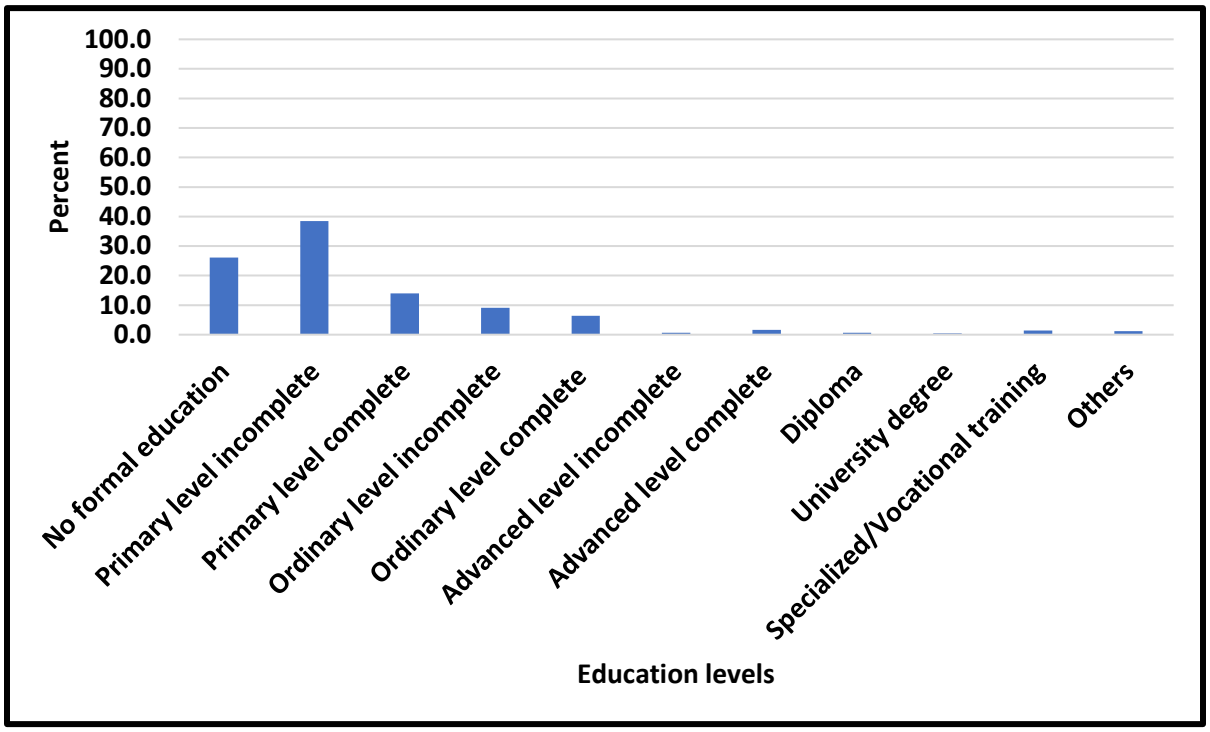


Figure 5: Household head's highest level of education completed

4.1.2 Livelihoods and Economic Activities

Agriculture plays a central role in the livelihoods of communities in the Busoga region, serving as the backbone of the local economy and a key source of food, income, and employment for households. Results from the survey further underscore the importance of agriculture in supporting both food and income security at the household level, with most farmers primarily engaging in agriculture at a subsistence level. Table 5 shows that more than 90% of the respondents practiced crop and livestock farming. Whereas some mentioned growing only crops, more than 50% grow both crops and rear livestock. For example, more than 60% of the respondents in Namutumba district reported practicing mixed framing. In addition to farming, households also participate in other agricultural-related activities such as fishing, as well as off-farm agricultural work as salaried workers or casual labourers. The most grown crops include maize, cassava, sweet potatoes, beans, groundnuts, and horticultural crops such as tomatoes, watermelons, and cabbages. Cash crops such as sugarcane and rice are also widely grown in the region. Livestock typically kept by households includes sheep, goats, cattle, pigs, and poultry. Besides farming, a few respondents also reported having other off-farm agricultural sources of income on both salaried and casual basis, all of which represented less than 15% of the responses.

Table 5: Household's economic activities per district

Household's economic activities	Overall	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Crop + livestock farming	54.7	52.1	54.8	52.0	51.8	62.1
Crop farming	39.9	45.2	38.1	41.6	40.0	35.6
Off-farm agricultural activities (Salaried)	0.3	1.4	0.0	0.0	0.0	0.0
Off-farm agricultural activities (casual)	2.5	1.4	3.6	2.6	3.5	1.2
Livestock rearing	1.5	0.0	1.2	1.3	3.5	1.2
Other- fishing	1.2	0.0	2.4	2.6	1.2	0.0

Regarding sources of income, results indicated that households generally derived financial support or income from several sources, as illustrated in Table 5. The primary source of income for over 40% of respondents was crop farming on less than 10 acres of land. This trend was consistent across all districts, suggesting that most households primarily engage in subsistence farming, growing crops mainly for household consumption and selling the surplus to meet financial needs. As one male FGD participant from Luuka district explained, "Most in our area do crop production where they eat some and sell some." The second most common income source was livestock farming, reported by approximately 20% of respondents. Like crop farming, this trend showed little variation across the districts. Livestock farming was most prominent in the Namutumba district (23%) and least reported in Kaliro district (15%).

Wage-based activities and casual labor also represented significant income sources for households. These included the provision of agricultural labor, masonry work, and other forms of manual labor. Additionally, a notable number of households engaged in self-employment through small-scale trade activities such as shopkeeping and trading in foodstuffs, as shown in Table 6. Trade was most prominent in Kaliro district (14%), followed by Iganga district (10%). Fishing emerged as a key income-generating activity, particularly in Kaliro district (14%), attributed to its proximity to freshwater bodies such as Lake Nakuwa and extensive swamp systems like Lumbuye.

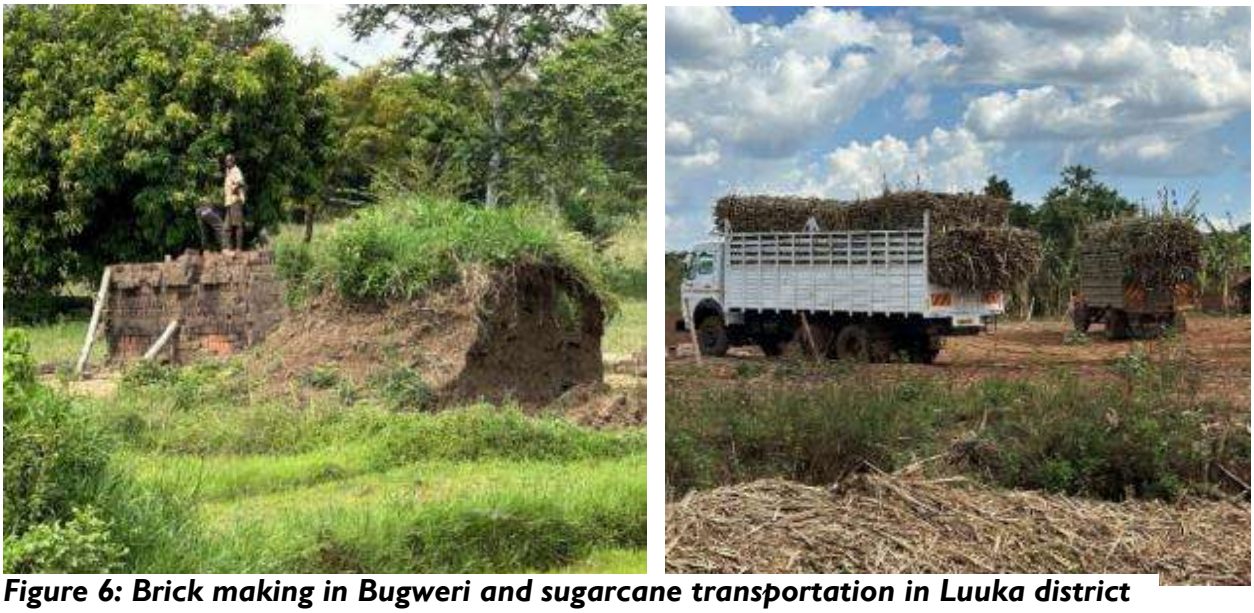


Figure 6: Brick making in Bugweri and sugarcane transportation in Luuka district

Other reported sources of income included salaried employment, vocational work such as tailoring, hair dressing, and cobblers, charitable donations, remittances from family and friends, as well as access to loans and credit from financial service providers. These findings align with insights gathered from focus group discussions. A woman's FGD participant in Iganga District summarized local livelihood strategies as follows: "*The livelihood activities include farming as number one, followed by trading/doing business, livestock rearing takes the third position, transport services, particularly boda-boda riders, take the fourth position, and lastly masons*."

Table 6: Sources of Household Income by District

Income sources	Overall (n=437)	Bugweri (n=82)	Iganga (n=91)	Kaliro (n=86)	Luuka (n=88)	Namutumba (n=90)
Crop farming (less than 10 acres cultivated)	42.2	41.3	40.6	38.9	46.8	42.9
Livestock farming	19.7	21.0	19.4	15.4	20.2	22.7
Wage-based activities/ causal labour	12.5	9.4	15.0	11.1	16.2	9.8
Self-employment in trade	9.4	7.3	10.0	13.6	8.7	7.4
Fishing activities/Fish farming	3.3	0.7	0.6	13.6		1.8
Private remittance/transfer	3.3	0.0	4.4	3.1	3.5	1.2
Salary	2.8	8.0	3.9	0.6	0.6	1.8
Credit and loans	1.6	1.5	1.7		1.7	3.1
Vocational Services (tailoring, hairdressing, cobbler etc.)	1.5	3.6	0.6	2.5		1.2
Charity/donations	1.4	2.2	1.7	0.6	0.6	1.8
Rental, interest, dividend income, land/property income)	1.2	0.7	1.1	0.6	1.7	1.8
Crop farming (above 10 acres)	0.6	0.0	0.6	0.0	0.0	2.5
Public transfer/pension, SAGE	0.5	4.4	0.6	0.0	0.0	1.8

4.1.3 Access to financial services

Households in the region reported various sources of financial services, as detailed in Table 7. Notably, over 40% relied on Village Savings and Loan Associations (VSLAs), which operate at the community level. However, a significant proportion of households reported having no access to financial services at all, with over 30% in both Luuka and Kaliro districts. This lack of financial access limits households' ability to obtain credit for family needs or agricultural inputs, thereby increasing their vulnerability to climate-related shocks such as prolonged dry spells, which negatively impact both crop and livestock production.

Other sources of credit included moneylenders, with 16% of households in Kaliro and Namutumba reporting access. Microfinance institutions were more accessible in Iganga District than in other districts. While commercial banks remained largely out of reach for most respondents, 12% of households in Iganga reported being able to access them, likely due to Iganga's central location and role as one of the regional business hubs.

Table 7: Household access to financial credit by district.

Financial services	Overall (n=437)	Bugweri (n=82)	Iganga (n=91)	Kaliro (n=86)	Luuka (n=88)	Namutumba (n=90)
Village Savings and Loan Associations (VSLAs)	42.5	46.3	32.2	46.2	48.5	44.1
None	29.1	25.0	28.1	29.9	38.6	25.4
Money lender	9.9	7.4	4.8	16.4	5.9	16.1
SACCOS	8.5	10.2	11.0	3.9	6.9	9.3
Microfinance institutions	5.6	7.4	12.3	2.9	0.0	2.5
Commercial Banks	4.3	3.7	11.6	1.0	0.0	2.5

4.1.4 Main sources of cooking fuel in households

Firewood remains the primary source of cooking fuel for over 80% of households, as shown in Table 8. In Namutumba, more than 95% of respondents rely on firewood, with a similar trend observed in Luuka District. Charcoal is the secondary source of fuel, though it is used by fewer than 10% of households across the region. The limited use of charcoal by households in Busoga implies that charcoal burning is almost entirely exploited for commercial purposes and not for accessing cooking energy in the households within.

Agricultural crop residues are also used as alternative fuels, particularly during periods of poor harvests caused by prolonged drought or delayed rainfall. This widespread reliance on biomass fuels is a major driver of deforestation in the Busoga region. Insights from individual discussions—such as the statement, "*Forest cover has been destroyed mainly firewood or charcoal production and thus the severity of the dry spell*", DNRO Kaliro. Further highlighting the unrestrained cutting of trees for firewood and charcoal production.

Table 8: Sources of cooking fuel per district

Main source of cooking fuel	Overall (n=437)	Bugweri (n=82)	Iganga (n=91)	Kaliro (n=86)	Luuka (n=88)	Namutumba (n=90)
Firewood	88.8	86.6	89.0	81.4	90.9	95.6
Charcoal	5.7	9.8	6.6	9.3	2.3	1.1
Agricultural crop residue	4.8	0.0	4.4	9.3	6.8	3.3
Electricity	0.7	3.7	0.0	0.0	0.0	0.0

4.1.5 Access to water for domestic use

Majority of households (29%) reported accessing water for domestic use from sources located between 100 to 500 meters from their homes (Table 9). These sources primarily include boreholes, protected wells, and in some cases, wetlands, rivers, and lakes. Water access patterns were generally consistent across districts, with the exception of Namutumba, where 28% of households reported walking 1 to 2 kilometres to reach the nearest water source. In Luuka, a smaller proportion of households (2%) reported accessing water from sources over 5 kilometres away. However, it should also be noted that some of the water sources accessed by the communities are unprotected and as such are not fit for human consumption as shown in Figure 7.

Table 9: Distance to nearest water sources for domestic use per district

Nearest water source (Kms)	Overall (n=437)	Bugweri (n=82)	Iganga (n=91)	Kaliro (n=86)	Luuka (n=88)	Namutumba (n=90)
Less than 0.1	21.1	34.2	29.7	5.8	19.3	16.7
0.1-0.5	28.6	42.7	34.1	29.1	22.7	15.6
0.501-1.00	22.2	14.6	19.8	26.7	27.3	22.2
1.01-2.00	16.7	7.3	11.0	25.6	11.4	27.8
2.01-3.00	6.4	1.2	4.4	4.7	11.4	10.0
3.01-5.00	3.9	0.0	1.1	7.0	3.4	7.8
5.01-10.00	0.5	0.0	0.0	0.0	2.3	0.0
Over 10	0.5	0.0	0.0	1.2	1.1	0.0
I don't know	0.2	0.0	0.0	0.0	1.1	0.0



Figure 7: Examples of water sources; borehole in Bugweri and L.Nakuwa in Kaliro

4.2 Climate Change Context and Expected Climatic Threats

4.2.1 Historical Climate Trends and Future Projections

Uganda, like many developing nations, is highly vulnerable to the adverse impacts of climate change due to its high exposure to climatic hazards and limited adaptive capacity. National projections under the primary Representative Concentration Pathways (RCPs) with the following thresholds; low (RCP2.6), medium (RCP4.5), and high (RCP8.5), suggest a consistent warming trend across the country (UNCDF, 2021). By the 2050s, Uganda could experience temperature increases of 1.8°C under high-emission scenarios, rising to as much as 3.7°C by the 2090s (UNCDF, 2021). These rising temperatures are expected to intensify aridity, extend dry seasons (especially from December to March), and increase the frequency of extreme weather events. Over the past 50 years, Uganda's average temperature has already risen by 0.28°C per decade, with hotter days becoming more frequent (UNCDF, 2021). Although total annual rainfall has remained relatively stable, its distribution has grown more erratic, with rainy seasons shifting by up to 30 days and shortening in duration by up to 40 days in some areas (OPM, 2019)

Uganda's climate is characterized by significant spatial and temporal variability in rainfall. The Central, Western, and Eastern regions typically experience two rainy seasons: March to May (MAM) and September to November (SON). The Northern region generally has one rainy season from April to October, with minimal rainfall from November to March. However, the timing of rainfall can vary considerably; the onset of rainy seasons can shift by 15 to 30 days (earlier or later), while the length of the rainy season can change by 20 to 40 days from year to year (UNCDF, 2023).

Under RCP4.5, mean annual temperatures are projected to increase by 1.5°C to 2.0°C by the 2050s and by 2.0°C to 2.5°C by the 2090s. Under RCP8.5, the projected increases are higher, with temperatures rising by 2.0°C to 3.0°C by the 2050s and by 4.0°C to 5.0°C by the 2090s (UNCDF, 2021). The most significant warming is expected during the June to September period. While projections indicate no significant change in average annual rainfall for the 2015-2045 period, an increase in rainfall during the typically dry December to February period is anticipated. This could lead to increased flood risks during these months. Additionally, the timing and distribution of rainfall are expected to become more unpredictable, potentially impacting agricultural activities.

The frequency and severity of floods and droughts are expected to rise. Under future scenarios, several districts, particularly in the West Nile subregion and central Uganda, are projected to experience significant increases in flood risk. Concurrently, the northern half of Uganda and parts of the western region, including Isingiro, Ntungamo, Rukungiri, and Mitoma, are anticipated to face significant drought risks (OPM, 2019). Notably, some districts may experience both increased flood and drought risks, posing complex challenges for water resource management and agriculture.

Eastern Uganda, and particularly the Busoga region, is not immune to these shifts. The region typically experiences a bimodal rainfall pattern (March to May and September to November), but communities have reported increasing unpredictability in rainfall onset and intensity. Prolonged dry spells and more frequent flooding events have disrupted agricultural cycles, increased food insecurity, and degraded natural resources. Notably, projections suggest that rainfall may rise during traditionally dry months like December to February, raising flood risks. Moreover, the Busoga region faces a moderate to significant risk of both droughts and floods due to climate variability. Although not yet classified as high-risk under current models, the compounding effects of climate stressors (coupled with high poverty levels and environmental degradation) make the region increasingly vulnerable.

4.2.2 Exposure to Select Climate Change Hazards

Uganda faces a major flood risk due to its many rivers and lakes, with flash and riverine floods being common (UNCDF, 2023). Table 10 shows the flood-prone areas in Uganda (OPM, 2019). Most flood-prone areas are in the northern and eastern parts of the country. Flood-prone areas in the eastern part are around Mount Elgon and the surrounding lowlands, including districts in the northern part of the Busoga sub region.

Table 10: Regional flood-prone areas in Uganda

Region	Flood-Prone Area (Depth >1.0m) (km^2)	% of Total Flood-Prone Area	Number of Flood-Prone Districts
Central	2,183	15%	22
Eastern	4,355	31%	27
Northern	5,928	42%	31
Western	1,699	12%	26
Total	**14,165**	**100%**	**106**

Source (OPM, 2019)

Drought is a key climate hazard in Uganda, particularly affecting the northeast and West Nile regions, with the Karamoja subregion being most at risk. While past droughts, like the one in 2017, have severely impacted food security, future projections show a significant increase in drought risk across much of the country, especially in northern and parts of western Uganda (UNCDF, 2023). The national disaster risk mapping exercise projected the eastern part of the country to have a moderate risk of drought, especially the districts closer to the cattle corridor (northern Busoga), which has an elevated risk of drought occurrence in future projections (OPM, 2019).



Figure 8: Flood-prone area in Kaliro district and a school block affected by windstorms in Bugweri district

In addition to floods and droughts, respondents also reported increasing frequency and strength of windstorms in their communities over the years. About 31% of Uganda is highly exposed to strong windstorms with speeds over 28 m/s (OPM, 2019). The Western and Central regions are most affected, followed by the Northern and Eastern regions (Table 11). The Eastern and Western regions have the highest number of districts impacted, with 32 and 31 districts, respectively. The effect of strong winds, as reported by the respondents in KIIs and FGDs, was exacerbated by the increased deforestation in the area.

Table 11: Regional windstorm-prone areas in Uganda

Region	Windstorm Coverage (Moderate-High) (km^2)	% of Total Coverage	Number of Districts Affected by Windstorm
Central	53,650	29%	24
Eastern	30,541	16%	32
Northern	49,123	26%	29
Western	54,101	29%	31
Grand Total	**187,415**	**100%**	**116**

(Source: OPM, 2019)

4.3 Environment: Challenges and Initiatives to Improve

In this subsection, the study presents the findings on the state of the environment, starting with the main challenges and proceeding to look at the perceived rate of degradation (respondents' and communities' views). The section also reports on the perceived causes and efforts to improve the quality of the environment as well as combat further degradation.

4.3.1 Main environmental challenges faced in the study area

The results indicate that the study area is significantly impacted by a range of environmental challenges, with deforestation and wetland encroachment being the most common across all districts (Table 12). These indicators collectively point to the overuse and mismanagement of natural resources, such as habitat destruction resulting from deforestation, wetland encroachment, or unsustainable farming practices. These practices can have long-term effects on both agricultural productivity and ecosystem services, in addition to species extinction or reduction in wildlife populations (MWE, 2016, 2020; NEMA, 2022; Uganda Vision 2040, 2013).

While the environmental challenges seem similar across districts, unique challenges can be observed in Iganga, Luuka, and Bugweri district reporting higher concerns of land degradation, while Kaliro reported higher concerns of overfishing. Land degradation and wetland degradation could be linked to growing land-use pressure, likely linked to rapid population growth and urbanization (UBoS, 2024). The relatively low concern for overfishing and biodiversity loss may reflect either lower dependency on aquatic ecosystems or limited awareness of these issues.

Table 12: Environmental challenges faced

Environmental challenges	Overall	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Land Degradation	15.0	18.8	20.2	5.4	16.2	13.4
Deforestation	47.2	46.2	46.4	41.9	55.4	46.3
Wetland Encroachment	24.1	22.2	24.4	24.8	16.9	30.9
Biodiversity Loss	2.5	6.8	1.2	1.6	0.0	3.4
Soil Erosion	4.3	4.3	6.6	4.7	5.4	0.7
Water Pollution	0.3	0.0	0.6	0.0	0.0	0.7
Overfishing	4.9	0.0	0.0	21.7	0.8	3.4
Poor Waste Management	1.7	1.7	0.6	0.0	5.4	1.3



Figure 9: Naigombwa swamp showing wetland degradation

4.3.2 Rate of environmental degradation

The respondents exhibited varying levels of perception on the rate of environmental degradation in their localities, as shown in Figure 10. For example, in Bugweri, 18% of respondents believe that environmental degradation has increased, while 25% report no change. Interestingly, only 11% feel that degradation has decreased. This suggests a moderately negative perception, where a significant proportion of the population sees persistent or worsening environmental conditions. The fact that the percentage reporting no change is higher than those reporting either an increase or decrease could indicate a perceived stagnation in environmental interventions or a slow pace of visible improvement, consistent with national challenges in environmental enforcement and coordination.

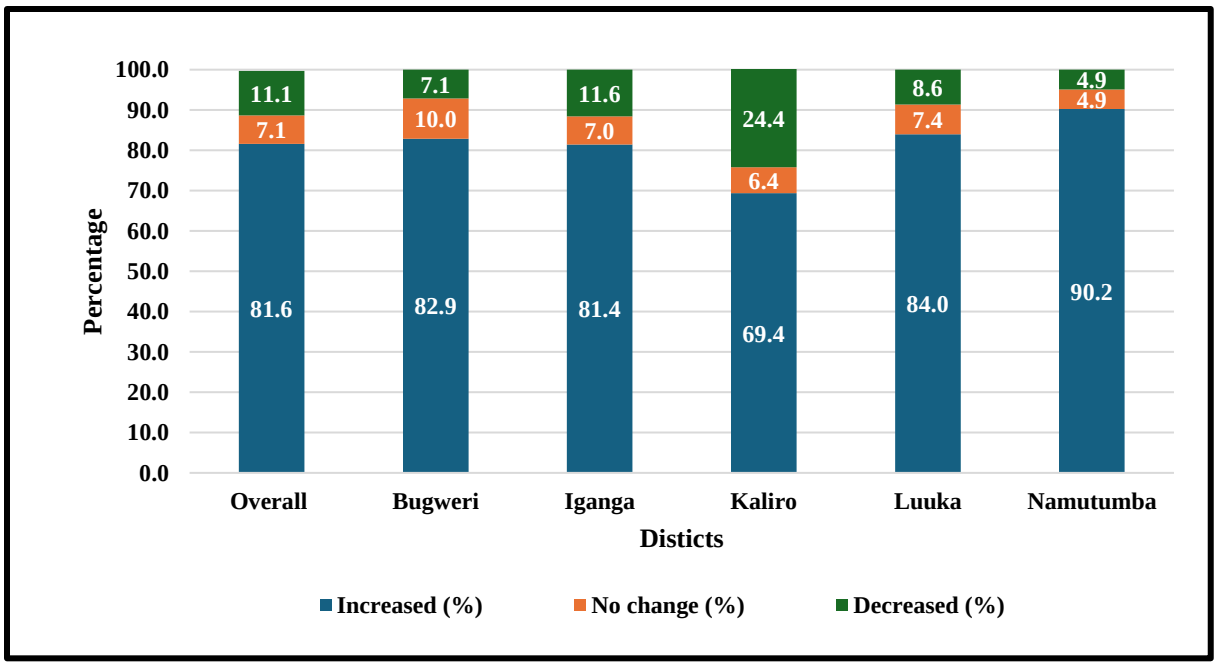


Figure 10: Change in the rate of environmental degradation

The rate of environmental degradation across selected districts in the Busoga sub-region reflects a worrying trend, with most respondents perceiving an increase in environmental degradation over time. On average, 81.6% of respondents across the five districts of Bugweri, Iganga, Kaliro, Luuka, and Namutumba reported an increase in the rate of environmental degradation (Figure 8). This perception was most pronounced in Namutumba District, where a huge number (90.2%) of respondents acknowledged worsening environmental conditions. Similarly high figures were observed in Luuka (84.0%) and Bugweri (82.9%), indicating a widespread concern about declining environmental quality. These findings align with the National Environment Management Authority (NEMA) reports, which have consistently warned about the unsustainable exploitation of natural resources, particularly land and forest resources, in rural Uganda (NEMA, 2022).

Remarkably, Kaliro District presented a relatively different pattern, with the lowest proportion (69.4%) reporting an increase in degradation and the highest proportion (24.4%) noting a decrease. This anomaly could be attributed to targeted environmental interventions or conservation initiatives, possibly by district-level environmental committees or NGO-led reforestation efforts. This could be due to a strong positive shift, likely driven by reforestation programs, climate-smart agriculture, or effective community-led conservation (MAAIF, 2020; NEMA, 2022). Kaliro's performance may exemplify the benefits of decentralized environmental governance and targeted investment in landscape restoration. The relatively high rate of improvement reported in Kaliro may also indicate growing awareness and community participation in sustainable land-use practices.

In contrast, despite being agriculturally productive, districts like Namutumba and Luuka continue to face high environmental pressure due to population growth, deforestation, and wetland

encroachment. This aligns with known issues in wetland encroachment, poor solid waste management, and land degradation (NEMA, 2022). The data suggest that Namutumba urgently needs targeted interventions, including afforestation, waste management, and climate-resilient land use planning (Uganda Climate Change Policy, 2015). Moreover, poor enforcement of environmental regulations and limited access to sustainable agricultural technologies may exacerbate the problem. The situation calls for urgent multi-sectoral action, involving both government and non-state actors, to implement sustainable land management practices, improve environmental education, and strengthen local environmental governance structures.

4.3.3 Causes of environmental degradation

The causes of environmental degradation in the study area are illustrated in Table 13. In general, the main causes across all districts are illegal logging and charcoal burning, wetland drainage for farming and settlement, population pressure, and unsustainable agriculture practices. This reflects an area undergoing rapid demographic and structural growth, likely resulting in land fragmentation, increased demand for natural resources, and unregulated expansion into ecologically sensitive areas, a trend well-documented in Uganda's urbanization policy framework (NPA, 2025). Respondents identify overfishing and destructive fishing methods as one of the causes of environmental degradation in Kaliro district. This is supported by findings in the Catchment Management Plans and Water and Environment Sector Reports, which have noted that the depletion of fish stocks in eastern Uganda is due to illegal fishing gear and a lack of regulation (MAAIF, 2020). Similar sentiments were highlighted by a male participant during group discussions that *"most people were chased away from the lake due to illegal fishing gears"*, men's FGD, Kaliro.

Table 13: Main Causes of Environmental Degradation

Cause	Overall	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Illegal Logging and charcoal burning	30.5	23.0	31.8	25.5	44.1	27.8
Wetland Drainage for farming and settlement	16.3	13.0	20.1	13.7	11.2	21.7
Population Pressure	14.9	24.5	12.3	12.4	12.5	14.4
Unsustainable Agricultural practices	14.9	13.7	18.4	13.7	13.8	14.4
Climate Change and Erratic weather patterns	8.2	9.4	6.2	6.5	5.9	12.8
Lack of Environmental Awareness and Enforcement	7.7	11.5	8.4	7.2	8.6	3.9
Overfishing and Destructive fishing methods	3.9	0.0	0.0	19.0	0.0	1.1
Overgrazing by Livestock	1.7	2.2	1.7	0.7	1.3	2.8
Poor Waste Disposal and pollution	0.9	0.7	1.1	0.0	1.3	1.1
Urbanization and Infrastructure Development	0.9	2.2	0.0	1.3	1.3	0.0



Figure 11: Wetland drainage- Man-made dam in Namutumba district.

4.3.4 Government-led Initiatives to Address Environmental Degradation

Environmental degradation presents a critical challenge to sustainable environmental management, including in the study districts of Bugweri, Iganga, Kaliro, Namutumba, and Luuka. This subsection aimed to assess the public awareness of government-led initiatives to combat environmental degradation within these districts. The survey results show that a significant majority of respondents (75.31%) in the study area believe that there are no such initiatives, while only 24.69% acknowledge the existence of such efforts (Figure 12). This suggests that most individuals in these areas do not perceive the government as actively tackling environmental challenges, which could indicate inadequate action or communication about environmental issues.

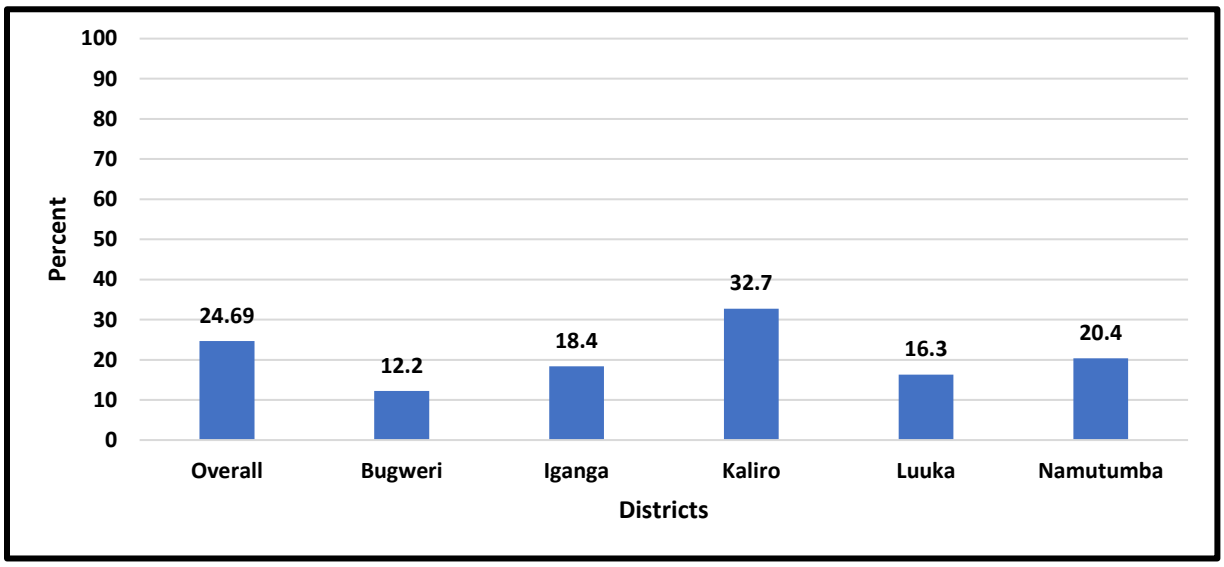


Figure 12: Percent of respondents aware of existing initiatives

The data reflects perceptions of government or community-led initiatives addressing environmental issues in five districts of Uganda's Busoga sub-region (Figure 12). A notable observation is the relatively high affirmative response in Kaliro (33%), suggesting a higher presence or awareness of environmental interventions compared to Bugweri (12%) and Luuka (16%). These differences may be attributed to district-level disparities in institutional capacity and civil society engagement. For example, the National Environment Management Authority (NEMA) acknowledges that decentralized environmental governance often faces implementation gaps due to limited local government resources and technical capacity (NEMA, 2019). Similarly, the Ministry of Water and Environment (2021) observes that while national frameworks are in place, actual enforcement and community engagement vary significantly by district.

The high percentage of respondents who report a lack of government-led initiatives implies that either existing programs are not widely visible, are ineffective, or have not reached most of the population. In contrast, the smaller proportion of respondents who recognize these initiatives

could suggest that government actions, if present, may be localized or insufficiently publicized to be fully effective or widely known. This disconnect points to a possible gap in awareness and outreach, which is crucial for the success of environmental programs. A researcher further emphasized that although the government has implemented some programs targeting climate change adaptation, there is a critical need to decentralize these initiatives for greater effectiveness. "It's very, very difficult to centralize adaptation," the researcher noted. "*It has to be put at the grassroots.*"

From a policy perspective, these results underline the need for more proactive and inclusive communication strategies to ensure that government, private sector, and NGO initiatives are better understood and more widely accepted by the communities. There may also be a need to evaluate and enhance the effectiveness of current environmental programs, especially in rural areas where such initiatives may not have a significant presence. Furthermore, the findings suggest that community engagement could be vital in bridging the gap between governmental policies and local populations, ensuring that programs are recognized and that citizens are empowered to participate in environmental protection.

4.4 Climate change-related experiences and adaptation approaches

4.4.1 Climate change-related manifestations

Table 14 shows the climate change manifestations that households in the study districts have experienced over time. In all five districts, longer dry spells were mentioned as the most common climate change impact experienced, with more than 40% of households in the Luuka district citing it, while more than 30% of the households in the other districts of Iganga, Kaliro, and Namutumba mentioned it too. Conversely, information obtained from group discussions indicated that longer dry spells were the most prevalent climate change impact observed in the study area. This, in turn, has had a significant impact on people's livelihoods, leading to a substantial reduction in harvests. As a result, widespread food insecurity has emerged, and vulnerability has increased. This was emphasized by several group participants, such as a man from the FGD in Kaliro district, who stated, "It is the drought that has affected us the most, we used to harvest a lot of produce but now the yield is very low", while a woman from the FGD in Luuka said that "we have poverty due to lack of food in homes as a result of drought." "Life is expensive because there is either crop loss, which will come in because of drought. The other thing is that the yields are low," as stated by the Senior Agricultural Officer of Kaliro district.

Following this, stronger winds were noted as another significant impact, as reported by over 17% of the respondents in Bugweri, Kaliro, Iganga, Luuka, and 14% in the Namutumba district. These have led to the destruction of crops and houses. This observation is echoed by a statement from a men's FGD in Bugweri district: "before we use to have winds and hailstorms, but they were not so strong and destructive like it is nowadays" and "strong winds damage houses and cause rice and maize seeds to fall off the stems" by a youth participant in FGD, Iganga district

Other climate change impacts mentioned included hailstorms, as mentioned by 18% of the households in Namutumba, 12% in Iganga, and 10% in Bugweri. Additionally, an increase in the amount of rainfall leading to flooding has become more common as reported in Iganga (14%), Bugweri (13%), and Kaliro (11%). The increase in rainfall is particularly challenging to farmers who have reclaimed wetlands for farming as their crops are washed away by the heavy rains due to flooding. This is highlighted by several statements from group discussions such as "*We have seen heavy rainfalls in a very short period and cause floods*", Men FGD, Kaliro, "*we have rains which come with very heavy rains, abnormally heavy, high intensity*", DPO Luuka.

Table 14: Climate change manifestations experienced by households per district

Climate change manifestation	Overall n = 437	Bugweri n= 82	Iganga n= 91	Kaliro n= 86	Luuka n= 88	Namutumba n=90
Longer dry spells	35.9	29.5	37	34.5	43.2	36.4
Stronger winds	18.4	20.5	19.3	20.8	19.3	12.6
Hailstorms	11.7	10.5	12	8.1	9.7	18
Increase in the amount of rainfall	11.4	13	13.5	11.2	9.7	9.7
Delayed or early onset of rains (Change of seasons)	6.5	8.5	5.2	4.6	7.4	6.8
Increased temperatures	5.3	5	5.7	6.6	4.5	4.4
More frequent droughts	4.1	5	5.2	3	1.1	5.8
Reduction in the amount of rainfall	2.8	2.5	2.1	3	3.4	2.9
Flash/increased frequency of floods	2.6	1.5	0	7.1	0.6	3.4
Lightening	1.2	4	0	1	1.1	0

4.4.2 Seasonality of climate change manifestations experienced

This subsection outlines the seasonal patterns of climate change impacts in the Busoga sub-region, focusing on the four most frequently reported manifestations. The results collectively demonstrate how climate risks are not only increasing in frequency but are also concentrated in specific months, aligning with Uganda's bimodal rainfall system. Such seasonal patterns demonstrate that climate-related shocks are not randomly distributed throughout the year but tend to cluster around seasonal transitions, namely, the onset of rains and dry periods. This seasonality has significant implications for agriculture planning, early warning systems, and adaptation strategies. Understanding when households are most affected provides critical entry points for targeted interventions, such as timely dissemination of climate advisories, drought-resistant crop promotion, and storm-resilient infrastructure development.

More frequent droughts

The highest reports of drought occurred during the dry months of January and February and from June to August. These correspond to Uganda's known dry seasons, with July and January showing the most pronounced peaks. This observation aligns with findings by NEMA (2019) and FEWS NET (2022), highlighting prolonged mid-year dry spells and increasing evapotranspiration as major contributors to agricultural and water stress in Eastern Uganda. The concentration of drought reports during these periods indicates households' heightened exposure to water scarcity, pasture loss, and crop failure during dry months, as indicated in Figure 13. Qualitative field responses reinforced these seasonal drought patterns. For example, one FGD participant

from Iganga emphasized, *"Yes, we experience a lot of drought and there is a lot of heat"*, while another expressed frustration: *"Regarding climate change, our traditional methods of predicting seasons, such as the rainy season, are becoming unreliable. We often experience dry seasons when we expect rain, which dries up everything."* A female respondent also mentioned, *"We used to have moderate sunshine, but now the sunshine prolongs into drought periods."*

Additional Key Informant Interviews (KIIs) supported this perspective. One KII respondent noted, *"Yes, the frequency is high because of the reckless destruction of the environment. That has been a major contributor to these dry spells."* Another added, *"Of course [climate events] occur every year… we lack trees to regulate the climate, and the seasons have changed."*

These accounts reveal how both community members and local leaders experience and interpret seasonal droughts attributing them not only to climate change but also to environmental degradation and deforestation.

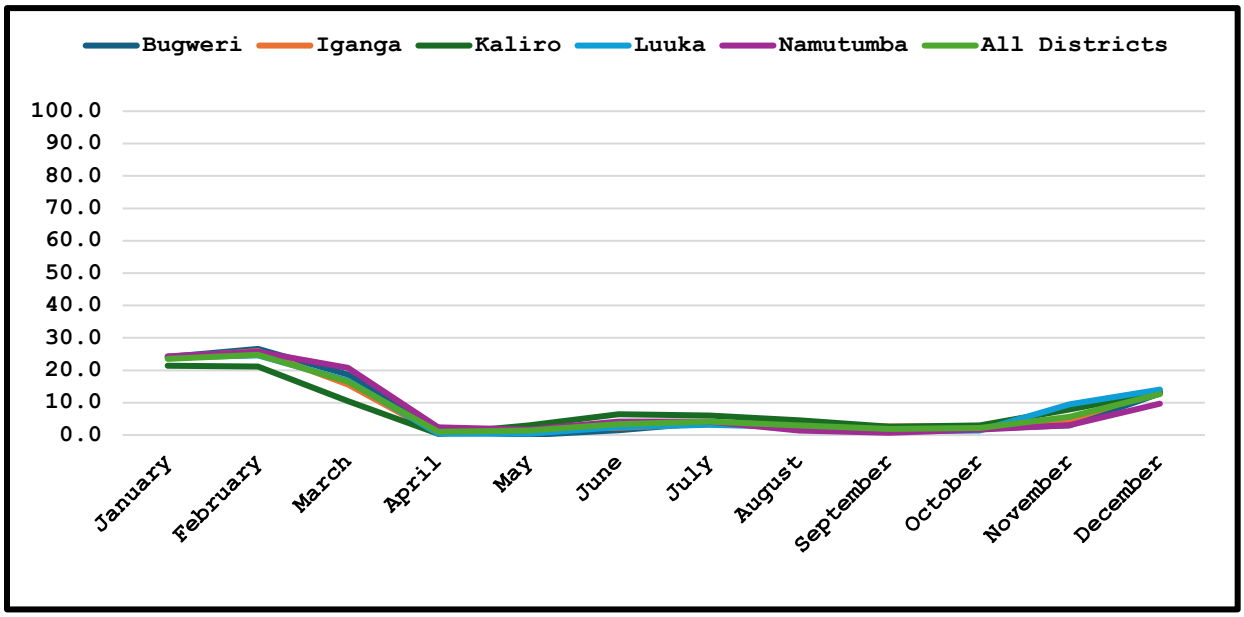


Figure 13: Percentage of HH reporting drought by month of occurrence

Storms

The incidence of storms was highest in April, May, and August, with April showing the most significant peak (Figure 14). These months correspond to periods of high atmospheric instability, particularly during the onset and transition of rainy seasons. The prominence of storms during these months is in line with meteorological observations of increased thunderstorm activity and windstorms during early rains. The Uganda National Meteorological Authority (UNMA) has previously issued warnings around these months due to severe convective weather, especially in low-lying and deforested areas where such events tend to be more damaging.

Qualitative findings strongly reinforced these trends. One KII respondent in the region explained, "*We receive a lot of rainfall accompanied with thunderstorms and strong winds. Sometimes roofs are*

blown off and trees fall on houses." Another emphasized the damage caused by seasonal transitions: "*Whenever the seasons change, especially from dry to wet, we experience heavy storms and wind that destroy crops and houses*." FGD participants echoed similar sentiments, with one community member stating, "*When it rains now, the wind is too strong, and it comes with destruction. Sometimes the rain comes with a lot of force and sweeps through gardens*."

These accounts confirm the increasing intensity and destructiveness of storms, which not only pose risks to shelter and infrastructure but also erode soil, damage crops, and disrupt livelihoods in rural settings. Community perception aligns with official climate alerts and underscores the need for adaptive shelter and early warning systems.

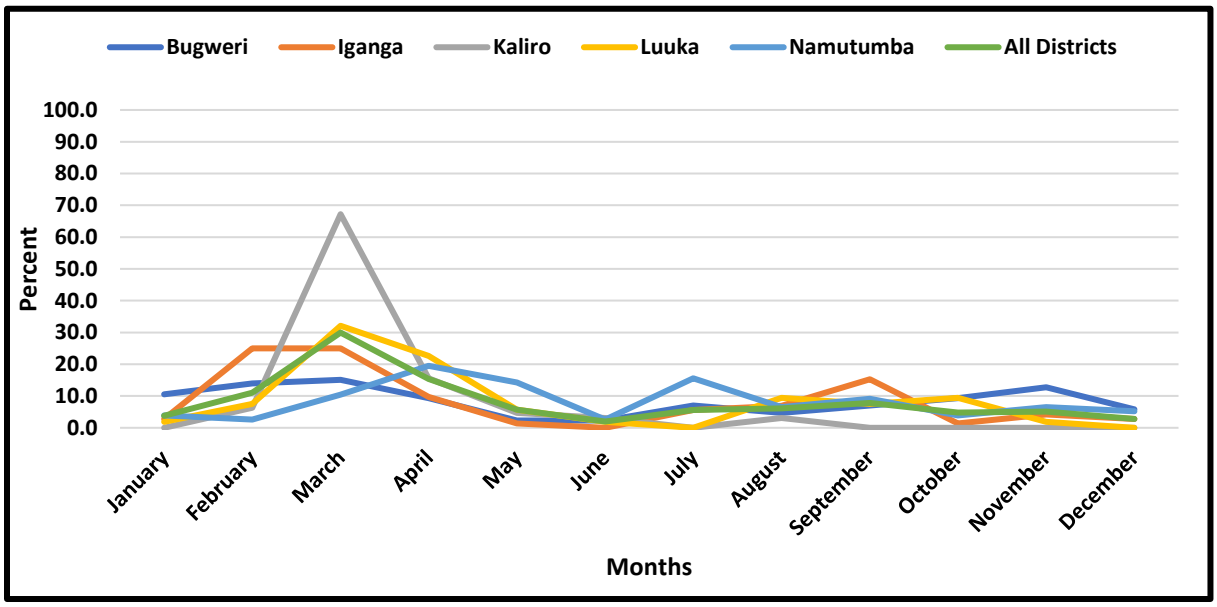


Figure 14: Percentage of HH reporting storms by month of occurrence

Increased Amount of Rainfall

Reports of increased rainfall peaked mainly in April, May, and October, months that align with the core rainy periods of the first and second wet seasons. April and May showed particularly high reporting, suggesting that although rains are expected during these months, the intensity and volume are often above normal. This can lead to flooding, waterlogging, and delayed harvests. This pattern is consistent with the Climate Risk Profile for Uganda (World Bank, 2020), which notes that rainfall intensity, rather than total volume, is a growing challenge, contributing to more frequent extreme weather events even during expected wet periods, as shown in Figure 15. This was clearly echoed in field discussions. One KII noted, "The rainfall is not just increasing it comes too much at once. You dig and plant, and then the whole garden floods, especially in low-lying areas." Another stated, "*Flooding is very common during rainy seasons now, especially around wetlands and near rivers*." FGD respondents also expressed their frustrations: "Sometimes rain falls for days without stopping. Our crops rot in the gardens, and we cannot even dry our produce properly."

These responses underscore the disruptive impacts of excessive rainfall not just for crops, but for infrastructure, food storage, and post-harvest handling pointing to a growing risk of crop loss and food insecurity even in typically productive seasons.

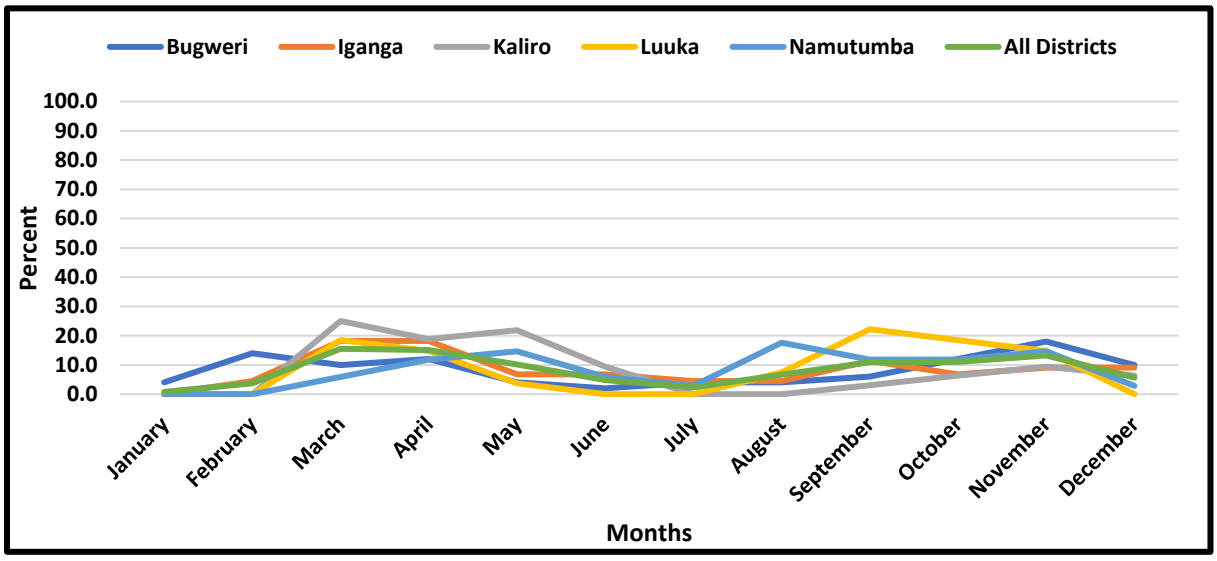


Figure 15: Percentage of HH reporting and increase in the amount of rainfall by month of occurrence

Delayed or Early Onset of Rains

Households most frequently reported delayed or early onset of rains around March and September, which correspond to the typical start of the two rainy seasons in Uganda (March–May and September–November), as indicated in Figure 16. These months exhibited peaks in reported anomalies, reflecting increased unpredictability in the onset of rains. Such inconsistencies directly affect the timing of agricultural activities such as land preparation and planting. This finding mirrors conclusions by Thornton et al. (2018) and UBoS (2021), which show that smallholder farmers are particularly sensitive to changes in seasonal onset, as it often leads to poor crop establishment and reduced yields.

Field narratives confirm these uncertainties. An FGD respondent in Mayuge lamented, "*We cannot predict the rain anymore. Sometimes we prepare and plant, and the rains delay. Other times it rains early and catches us unprepared.*" Another echoed, "*Our ancestors used to read signs and plan well, but now seasons change without warning.*" In KIIs, a local official stated, "*Rain comes late or sometimes too early. The planting calendar is disrupted, and people waste seed because they plant before the rain is steady.*"

These observations demonstrate how the shifting onset of seasons undermines traditional knowledge systems and agricultural planning, contributing to crop failure and increased household vulnerability.

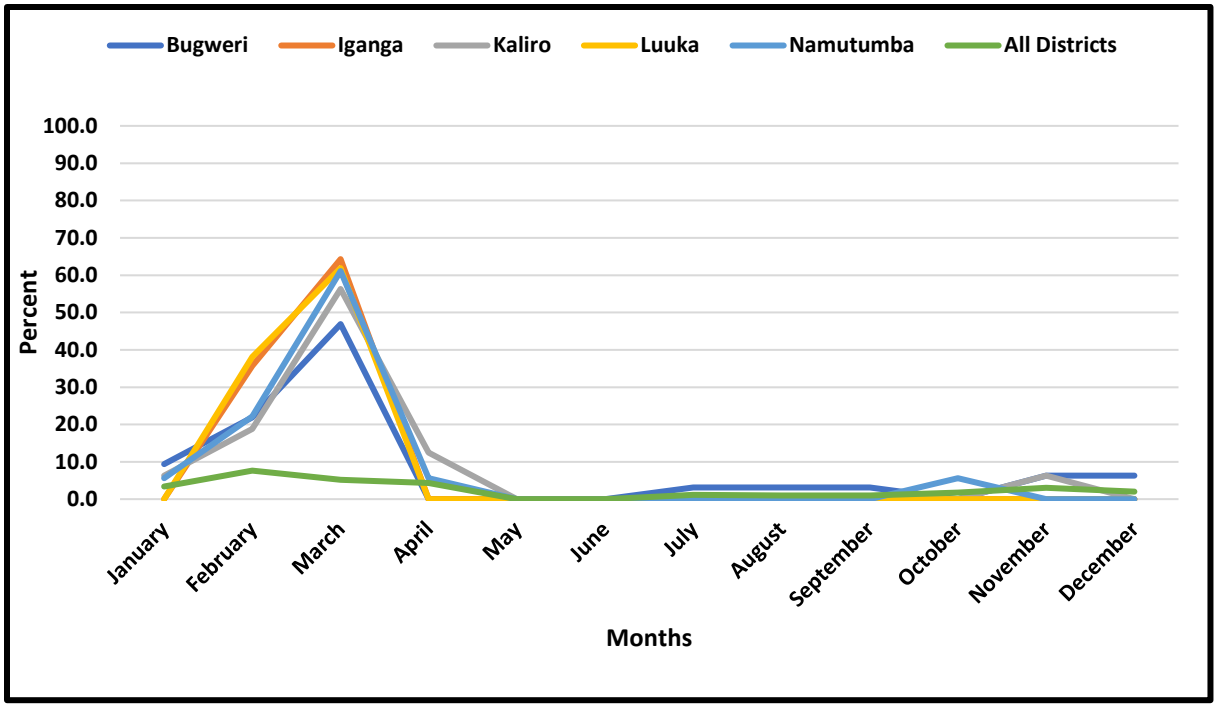


Figure 16: Percentage of HH reporting delayed or early onset of rains (change of seasons) by month of occurrence

4.4.3 Consequences of Climate change effects on communities in the Busoga sub-region

The consequences of climate change in the Busoga region manifest in diverse and often overlapping ways, affecting both livelihoods and well-being. Among the most reported outcomes are food insecurity and a reduction in crop yields, with nearly all climate hazards contributing to these challenges (Table 15). Notably, all the households that experienced longer dry spells reported both food insecurity and a reduction in yields. Similarly, flash floods (72%), reduction in rainfall (85%), and hailstorms (63%) were strongly associated with hunger, while increased rainfall (51%) and strong winds (53%) were linked to significant crop losses. These findings are consistent with global literature, such as the IPCC (2022) and FAO (2021), which highlight that shifts in rainfall patterns and temperature extremes reduce agricultural productivity, disrupt planting seasons, and exacerbate pest and disease outbreaks in crops.

Water scarcity was primarily associated with more frequent droughts (55%), increased temperatures (14%), and longer dry spells (37%), reflecting the impact of increased evaporation and limited recharge of water sources. This aligns with observations from NEMA (2020) and UNICEF Uganda (2021), which documented reduced water availability during dry spells in Eastern Uganda. Public health consequences were also apparent, with increased temperatures (29%), flash floods (16%), and heavy rainfall (11%) linked to a rise in human diseases, which are likely due to

the proliferation of waterborne and vector-borne illnesses such as malaria and diarrhoea. Similarly, livestock health was negatively affected, with increased livestock parasites and diseases most frequently reported under dry spells (25%) and heavy rainfall (6%), respectively.

Crop pests and diseases were notably attributed to increased temperatures (22 %), longer dry spells (14%), and increased rainfall (11%), underscoring how climatic variability creates favorable conditions for pest outbreaks. Additionally, extreme weather events such as strong winds (47%), hailstorms (21%), and floods (22%) were reported to destroy dwellings, exacerbating household vulnerability. Although less frequently reported, some climate events were associated with deaths, particularly lightning (25%), floods (8%), and droughts (8%). These statistics point to the severe and sometimes life-threatening consequences of climate extremes in the region.

Thus, the findings present a comprehensive picture of how climate change compounds vulnerabilities across sectors in the Busoga sub-region. From hunger and declining yields to health risks, water scarcity, and physical property damage, communities face multifaceted risks that call for integrated, climate-resilient interventions. The data support the need for targeted adaptation measures, including improved early warning systems, climate-smart agriculture, public health surveillance, and disaster risk management strategies tailored to the region's most pressing climate threats.

Table 15: Climate Change Effects

Manifestation	Climate Change Effect							
	Surge in crop pests and diseases	Surge in livestock parasites and diseases	Surge in human diseases	Water scarcity	Food insecurity	Reduced crop yields	Damage to houses	Loss of lives
Delayed or early onset of rains (Change of seasons)	3.2	1.6	0	9.5	93.7	39.7	1.6	1.6
Dry spells have become longer	0	25	0	0	100	100	0	0
Flash/increased frequency of floods	0	0	16	0	72	36	20	8
Hailstorms	5.3	1.8	0.9	0.9	63.2	61.4	21.1	4.4

Figures represent the percentage of households that report the specified effects of climate change

4.5 Effects of climate change and Adaptation measures

4.5.1 Vulnerability to climate change effects by gender

In the context of climate change impacts on households, some gender groups are disproportionately more vulnerable than others. Table 16 shows how respondents perceive the vulnerability of different genders to these climate change manifestations. Generally, adult females were perceived to be the most vulnerable group to all the climate change impacts, closely followed by adult males. More than 30% of the respondents considered adult females to be more vulnerable to a reduction in the amount of rainfall, closely related to the early or delayed onset of rains (27%). This was underscored in the group and individual discussions: from my perception, it is the women. Why? In almost all homes, it is the women who look for what to prepare for the people at home. So, when there is little food, it means the women suffer a lot because they have to think of where to get enough for the children" DPO Luuka district, "The women also suffer because during the dry season they depend on the man, for food when they ask men to provide, and the men do not have the women have to find food for the children because the children will ask for food from the mother since in most cases the fathers tend to be tough" men FGD, Kaliro district.

Women are closely followed by men in terms of vulnerability to climate change impacts. This is because, as cited in group discussions, men have the responsibility to find food for their families by finding work to earn some money. In cases where climate change impacts such as longer dry spells set in, work becomes scarce, and the men are left with limited choices for income, as narrated by one, "*I think men as breadwinners are more affected than others. Because we are the ones who fend for the family. Who pays for school fees, takes children to the hospital? So, if you don't have money, you will face it rough*" youth FGD Luuka district.

Table 16: Level of vulnerability to climate change effects on gender

Effect	Adult male	Adult female	Youth (12-18 yrs.)	Children below 12	Elderly (> 65years)	PwDs
Reduction in the amount of rainfall	28.8	31.5	12.3	19.2	6.9	1.4
Flash/increased frequency of floods	25.8	23.6	12.4	18.0	13.5	6.7
Delayed/early onset of rains	25.6	27.1	13.8	18.2	10.8	4.4
Increased temperatures	24.6	25.6	15.9	15.4	13.3	5.1
Increase in the amount of rainfall	23.7	25.8	13.5	18.8	12.2	6.0
Longer dry spells	22.8	24.0	15.5	18.4	12.1	7.3
Hailstorms	22.1	26.2	15.0	19.6	10.9	6.1
Stronger winds	22.1	23.0	15.7	18.4	13.6	7.2
More frequent droughts	21.6	22.8	15.0	15.6	15.0	10.2
Lightening	19.5	24.4	19.5	14.6	12.2	9.8

4.5.2 Factors that increase the vulnerability of households to climate change

Vulnerability to climate change impacts, as reported by respondents, is attributed to a variety of factors, as shown in Table 17. Low income was ranked highest by more than 20% of respondents across the five districts in the study area. This is related to the fact that most of these households entirely depend on climate-sensitive livelihoods such as farming, fishing, and livestock rearing. As such, extreme weather conditions such as heavy rainfall, floods, and long dry spells greatly disrupt their livelihoods, leaving them exposed to food insecurity and economic instability, having no spare/saved money to survive, and generally limited work opportunities. This was further echoed in discussions "*it has led to increased poverty in the area as a result of reduced house hold income, this is because we used to sell part of our food but now we don't have what to sell, and the other alternative sources of income that we used to save for development it is now being used to buy food*" women FGD, Kaliro district.

Other factors cited included limited land at 17% in Kaliro, 15% in Bugweri, and 14% in Iganga, Luuka, and Namutumba, which inevitably leads to wetland encroachment and clearing of forest land for agriculture. Additionally, respondents highlighted the lack of social capital, large household sizes, and limited awareness of climate-smart technologies as factors that further increased household vulnerability to climate change impacts. Therefore, to address these challenges, there is a need to have targeted interventions that provide affordable financial support, adoption of climate-smart agricultural technologies, and increase awareness of climate information for the communities to appreciate that they have a role to play too.



Figure 17: A sun scorched sugarcane plantation in Namutumba district

Table 17: Level of vulnerability to climate change effects on gender

Climate change effect	Overall	District					Gender	
		Bugweri	Iganga	Kaliro	Luuka	Namutumba	Male	Female
Low income	24.2	28.6	23.1	22.2	26.9	20.6	23.7	26.2
Limited land	14.8	15	14.5	17.2	13.7	13.9	15.4	12.7
Financial constraints	13.4	14.1	14	13	15	10.9	13.1	14.3
Lack of social capital	2.9	7.7	2.1	1.3	0.4	3.4	2.5	4.4
Large household size	7.6	6.8	5.8	8.8	7.3	9.2	7.2	9.1
Lack of awareness	5.3	5.5	4.1	6.3	5.6	5	5.1	6
Degradation/overexploitation of forest resources	6.6	5	7.4	4.6	6	9.7	7.5	3.2
Limited access to alternative livelihood options/ lack of employment opportunities	6.3	4.5	7.9	6.3	6.8	5.9	6.3	6.4
Reliance on subsistence agriculture	5.2	4.1	6.6	4.6	5.6	5	5.2	5.2
Degradation/overexploitation of wetland resources	3.3	3.2	3.7	2.1	1.3	6.3	3.8	1.6
Inadequate access to information on climate	3.2	2.7	2.9	3.8	3.8	2.5	2.8	4.4
Poor governance	1.7	1.4	1.2	2.1	0.9	2.9	1.9	1.2
Remoteness/Hard to reach area/very far from main service centres	1.5	0.5	1.2	2.1	1.7	1.7	1.5	1.2
Change in land uses	1.0	0.5	1.7	0.8	1.7	0.4	1.1	0.8
Geographical locations	0.5	0.5	0	1.3	0.4	0.4	0.5	0.4
Poor road conditions	0.6	0	1.2	0.4	1.3	0	0.7	0.4
Degradation of riverbanks	0.1	0	0	0.4	0	0	0.1	0.0
Inadequate access to social services like health and water	0.7	0	0.8	0.8	0	1.7	0.4	1.6
Cultural/historical attachments to the area	0.7	0	1.2	1.3	0.9	0	0.7	0.8
Weak social cohesion	0.5	0	0.4	0.8	0.9	0.4	0.5	0.4

4.6 How households respond to various climate change impacts

4.6.1 Longer dry spells

Households in the Busoga sub-region employed a variety of strategies to cope with longer dry spells, although reliance on food purchases and rationing meals emerged as the most widespread responses (Table 18). Buying food from nearby areas was notably high in all districts, with the highest proportions reported in Luuka (71%), Iganga (66%), and Kaliro (63%). This aligns with findings from Nhamo et al. (2019), who report increased market dependence during prolonged dry seasons due to reduced household food production. Additionally, rationing meals was fairly reported, with one-third of households in Kaliro (34%) and nearly similar proportions in Namutumba (32%) and Iganga (30%) adopting this measure, echoing strategies observed by Twongyirwe et al. (2019) in drought-prone regions of Uganda. Several FGD participants echoed the hardship brought by prolonged dry spells, often linking them to food insecurity. A participant in Bugiri remarked, *"When the drought hits, even a single meal a day becomes a struggle. We eat late or skip entirely."* In another FGD, a respondent from Luuka stated, *"The dry season brings hunger; we buy food and reduce the number of meals. Children suffer most."* These perspectives underscore the lived experience behind the quantitative trends and reinforce the necessity of household-level coping strategies.

Efforts to store food during bumper harvests were reported by (12%) to (22%) of households, suggesting a moderate level of resilience-building through food security practices. Notably, 34% of households in Namutumba and about 8% in other districts attempted to reclaim wetlands for cultivation during dry spells, which, while offering short-term benefits, raises environmental sustainability concerns as highlighted by Kakuru et al. (2014). KIIs further revealed that wetland reclamation is a common yet controversial strategy. One key informant from Namutumba District noted, *"During droughts, people rush to wetlands because they retain some moisture. It's risky, but for many, it's the only way to grow something."* Another KII respondent emphasized that *"relying on wetlands is not sustainable, but when people are desperate for food, they don't consider future implications."*

Crop diversification into drought-resistant varieties was practiced modestly, especially in Iganga (10%) and Namutumba (10%), Planting trees and practicing agroforestry, key long-term climate adaptation strategies, were less common, reported by only 18% of households in Bugweri and marginal percentages elsewhere. This contrasts with national policy recommendations encouraging afforestation (Ministry of Water and Environment (MWE, 2015). Irrigation was practiced by 1-6% of households, limited possibly by financial and infrastructural constraints, as also reported by Bryan et al. (2009). An FGD participant in Kaliro explained, *"We want to grow drought-tolerant crops, but we don't have seeds or know which ones work best." In Luuka, a community*

member added, "Agroforestry sounds good, but we need support. Who will give us the seedlings?" Such sentiments point to knowledge and resource barriers that constrain the uptake of recommended adaptation practices.

Use of soil and water conservation techniques like mulching, digging trenches, or applying green manure was minimal. Furthermore, seeking assistance, whether from government, relatives, or friends, was relatively low, with only Bugweri and Namutumba showing engagement with government support at (11%) and (19%), respectively. According to a key informant in Bugweri, *"Most people don't expect government to help anymore; they survive on their own or with neighbor's support."* Meanwhile, a KII respondent from Namutumba observed, *"Some farmers reach out to extension workers, but the help comes too late or doesn't come at all."* This suggests gaps in timely institutional support and outreach.



Figure 18: Household coping strategies; food storage and horticulture

Health-related strategies, such as seeking medical attention or vaccinating livestock, were reported by under (10%) of households, while adaptation strategies targeting crop and livestock pest management (such as spraying and burying dead animals) were also low across districts. FGD respondents frequently mentioned an increase in crop pests and livestock diseases during dry periods, yet lacked resources for treatment. One female respondent in Bugiri said, *"When animals die, we just bury them. We cannot afford vaccines."* This highlights the low uptake of proactive health-related measures due to cost and accessibility issues.

Finally, the proportion of households reporting doing nothing in response to longer dry spells ranged from (8%) in Luuka to (19%) in Namutumba, pointing to pockets of high vulnerability possibly due to limited awareness, resources, or institutional support (Antwi-Agyei et al., 2012). A key informant in Luuka summarized this vulnerability by stating, *"Some people are overwhelmed; they just wait and hope it rains. They don't have alternatives."*

Table 18: Household response to longer dry spells

Response	All	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Planting trees	4.7	17.9	4.2	0.0	0.0	4.1
Seeking government assistance	9.4	10.7	5.6	7.4	4.1	18.9
Seeking assistance from relatives and friends	8.8	12.5	5.6	10.3	13.7	2.7
Digging trenches, planting pits, vegetation strips, and ridge tillage to trap water and retain water in gardens	0.9	0.0	2.8	1.5	0.0	0.0
Reclaiming wetlands for moist soils to grow crops	12.9	5.4	5.6	8.8	8.2	33.8
Buying food from nearby areas	58.5	50.0	66.2	63.2	71.2	40.5
Rationing meals/reducing the number of meals eaten per day	28.7	21.4	29.6	33.8	24.7	32.4
Buying water	0.3	0.0	0.0	1.5	0.0	0.0
Store food during the bumper harvest	16.1	14.3	16.9	22.1	15.1	12.2
Seeking medical attention	5.0	3.6	2.8	7.4	8.2	2.7
Vaccinating livestock	2.0	0.0	2.8	1.5	4.1	1.4
Spraying livestock to control parasites	2.9	1.8	4.2	2.9	2.7	2.7
Spraying crops to control pests	3.5	0.0	4.2	2.9	5.5	4.1
Cutting down affected crops to control diseases	0.6	0.0	1.4	1.5	0.0	0.0
Burying dead animals to control diseases	1.2	0.0	1.4	1.5	1.4	1.4
Irrigation of gardens	3.8	5.4	5.6	2.9	1.4	4.1
Practice agro-forestry	0.6	1.8	0.0	0.0	1.4	0.0
Change of livelihoods	13.5	14.3	11.3	16.2	9.6	16.2
Mulching gardens to retain moisture in the soil	1.8	0.0	5.6	1.5	1.4	0.0
Crop diversification to include moisture-resistant species	7.3	0.0	9.9	7.4	8.2	9.5
Application of green manure	1.2	0.0	2.8	0.0	1.4	1.4
Sought credit from financial institutions	1.8	1.8	2.8	0.0	1.4	2.7
Application of cover cropping systems	0.6	0.0	1.4	0.0	1.4	0.0
Did Nothing	12.6	16.1	9.9	10.3	8.2	18.9

4.6.2 Delayed or early onset of rains (Change of Seasons)

The shift in seasonal rainfall patterns, manifested as either a delayed or early onset of rains, prompted varied adaptation responses across the surveyed districts (Table 19). Reclaiming wetlands to access moist soils for cultivation emerged as a particularly common strategy, especially in Namutumba (71%), followed by Iganga (30%), Kaliro (22%), Luuka (15%), and Bugweri (12%). This finding aligns with Nzeadibe et al. (2011), who report wetland encroachment as a common short-term coping mechanism during unpredictable rainfall seasons despite its environmental consequences. This coping strategy was reflected in local perspectives, with one KII respondent noting that *"when rains fail to come in time, people rush to cultivate in the swamps because the soils there retain moisture."* Similarly, an FGD participant in Kaliro stated, *"We go to plant in wetlands when the rains delay; it is the only place where our crops can survive."*

Crop diversification, particularly towards moisture-resilient species, was another dominant strategy in response to rainfall variability. It was most prevalent in Luuka (54%), Iganga (50%), Kaliro (44%), and Namutumba (43%), with Bugweri notably reporting none. The popularity of crop diversification corroborates findings by Thornton et al. (2009) and Kristjanson et al. (2012), who emphasized its effectiveness in enhancing resilience to climatic shocks in East African farming systems. One FGD participant from Luuka noted, *"We have changed to crops like cassava and millet because they do not easily fail like maize when the rain changes."* A KII respondent echoed this sentiment: *"Farmers are now more cautious. They plant different crops just in case the rains come late or too early."*

Households also responded by buying food from nearby areas, a reactive coping strategy evident in Iganga (80%), Bugweri (41%), and Luuka (31%), but less so in Namutumba (22%) and Kaliro (11%). Similarly, rationing meals was more common in Iganga (30%) and Bugweri (24%), reflecting immediate household food insecurity in the short run. These consumption-based strategies are often associated with higher vulnerability and lack of long-term planning (Below et al., 2012). A participant in an FGD in Iganga explained, *"When the seasons change, the harvest is poor, so we end up buying food which is expensive, and sometimes we just eat once a day."*

Consequently, change of livelihood sources was a relatively spread strategy reported in some districts such as Namutumba (36%), Iganga (30%), and Bugweri (18%), suggesting a gradual shift in income sources in response to climate stress. This trend resonates with the broader literature on livelihood diversification as a key adaptive strategy in East Africa (Ellis, 2000; Bryan et al., 2009). This was captured in a KII from Namutumba where it was reported, *"Some people now go to towns to look for casual work when their crops fail."* Another FGD participant shared, *"My husband left farming and started boda boda riding because we could not rely on rains anymore."*

Additionally, water use and conservation strategies such as irrigation and mulching were scarcely practiced, each reported in only one or two districts at low levels. For instance, irrigation was noted by (10%) of respondents in Iganga and (11%) in Kaliro, while mulching was exclusively

mentioned in Iganga at (10%). Spraying crops to mitigate pest and disease incidences, potentially worsened by irregular rains, and this was reported only in Kaliro at (11%), which could be as a result of limited access to or awareness of such adaptation practices or capital inadequacies. A KII respondent observed, *"We don't have irrigation equipment. If the rains delay, we just wait and pray."* Another added, *"Mulching is good, but not many people do it because they don't have enough grass or know how to apply it well."*

Social capital as an adaptation resource was moderately used, with (22%) in Kaliro, (12%) in Bugweri, and (8%) in Luuka seeking help from relatives and friends. Meanwhile, only Namutumba (7%) reported seeking government assistance, and the same proportion accessed credit from financial institutions, highlighting limited institutional engagement in seasonal adaptation. In the FGDs, participants often referred to borrowing food or money from relatives when rains delayed. As one from Bugweri mentioned, *"Sometimes we rely on our brothers or cousins when we can't harvest on time."* However, a KII from Namutumba pointed out that, *"Government programs don't really reach us quickly during these seasonal changes."*

Finally, a sizeable proportion of households across Bugweri, Kaliro, Luuka, and Namutumba (ranging from 7% to 12%) did nothing in response to the shifting seasons. This suggests a noticeable level of vulnerability, possibly due to low adaptive capacity or lack of viable options: similar concerns are raised in IPCC (2022) assessments regarding local adaptation inertia. This was echoed in several narratives, such as one FGD respondent saying, *"Some people have given up. They say the seasons are confusing and nothing works."* Another KII participant explained, *"Even if someone wants to act, they don't know what to do or have the means to do it."*

Table 19: Household response to delayed or early onset of rains/change in cropping seasons

Response	ALL	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Seeking government assistance	1.6	0.0	0.0	0.0	0.0	7.1
Seeking assistance from relatives and friends	7.9	11.8	0.0	22.2	7.7	0.0
Reclaiming wetlands for moist soils to grow crops	30.2	11.8	30.0	22.2	15.4	71.4
Buying food from nearby areas	36.5	41.2	80.0	11.1	30.8	21.4
Ration meals/reducing the number of meals eaten per day	19.0	23.5	30.0	11.1	23.1	7.1
Store food during bumper harvest	4.8	5.9	0.0	0.0	7.7	7.1
Spraying crops to control pests	1.6	0.0	0.0	11.1	0.0	0.0
Irrigation of gardens	4.8	5.9	10.0	11.1	0.0	0.0
Change of livelihoods	20.6	17.6	30.0	11.1	7.7	35.7
Mulching gardens to retain moisture in the soils	1.6	0.0	10.0	0.0	0.0	0.0
Crop diversification to include moisture-resistant species	34.9	0.0	50.0	44.4	53.8	42.9
Sought credit from financial institutions	1.6	0.0	0.0	0.0	0.0	7.1
Did Nothing	7.9	11.8	0.0	11.1	7.7	7.1

4.6.3 Hailstorm Occurrences

In response to hailstorms, communities in the Bugweri, Iganga, Kaliro, Luuka, and Namutumba districts employed a mix of food security coping mechanisms, environmental strategies, and social safety nets (Table 20). Despite the diversity in adaptation, a significant share of households, particularly in Iganga (44%) and Luuka (41%) did nothing to respond to the shock. This high level of inaction likely reflects limited adaptive capacity or knowledge about suitable responses, a pattern also observed in other rural settings exposed to climate extremes (Bryan et al., 2009). *"When our houses fall due to strong winds we just rebuild, but it's becoming too much,"* said one FGD respondent in Luuka, highlighting the fatigue and resignation among households repeatedly hit by hailstorms.

The most common adaptation strategy across all districts was purchasing food from nearby areas, particularly in Namutumba (41%), Luuka (35%), and Kaliro (31%). This was often coupled with rationing meals, which was especially prevalent in Kaliro (38%) and Namutumba (22%). These strategies indicate that hailstorms significantly disrupted food production and availability, echoing findings by Antwi-Agyei et al. (2012), who noted that food-based coping mechanisms are often the first line of defense for smallholder farmers in the face of climatic stress. A KII respondent noted, *"Now the issue of storage facilities comes in. If someone had harvested something and stored it, they would eat it during this period. But if hail destroyed everything?"*—emphasizing the vulnerability of households with poor storage capacity when hit by sudden storms.

Environmental and agronomic strategies were less widespread and varied across districts. Planting trees, a measure known for its role in buffering hail and enhancing resilience, was widely adopted in Bugweri (33%) but had limited uptake in other districts. Similarly, the application of cover cropping systems was notable in Kaliro (25%), suggesting the presence of localized knowledge or agricultural extension support. This aligns with findings by Mertz et al. (2009), who reports that, the adoption of agronomic practices is often uneven due to differences in institutional outreach and farmer awareness. *"I plant trees because they reduce the speed of wind and help protect my crops,"* said a woman during an FGD in Bugweri, showing localized understanding of agroforestry as a protective adaptation. Notably, cutting down affected crops to control disease outbreaks, an immediate post-disaster response, was widely reported in Kaliro (38%). In contrast, strategies like digging trenches and establishing vegetation strips to retain water were mostly reported in Kaliro (19%) and Iganga (13%), indicating some understanding of land management, although these practices were relatively rare. According to Deressa et al. (2011), such soil and water conservation strategies are often underutilized due to labor constraints and lack of tools, which may explain their limited adoption here.

Social networks and institutional support also featured in some of the districts, with Bugweri (33%) having the highest proportion of households seeking help from relatives and friends. Additionally, Namutumba (22%) and Bugweri (19%) showed considerable reliance on government assistance. These findings underscore the critical role of formal and informal safety nets in

buffering households against climate-related shocks. A KII interviewee remarked, *"The men have alternatives, they leave home and look for work when storms destroy everything. But for the women, they have to manage with what is left,"* suggesting how gendered coping strategies emerge during crises.

Health and livestock-related responses were observed, though minimal, in Kaliro, where some households reported vaccinating livestock (13%), spraying against parasites (6%), and seeking medical attention (13%). This district also reported the burial of dead animals (5%), an indicator of livestock mortality potentially linked to hailstorms. These measures, although less frequent, reflect an awareness of the broader impacts of climate shocks beyond crop production, as discussed by Thornton et al. (2009), who highlight the vulnerability of livestock systems to extreme weather events. Agroforestry practices were mainly reported in Bugweri (19%), and livelihood diversification was most prominent in Namutumba (16%). The almost complete absence of responses such as irrigation, the use of green manure, or access to credit institutions points to significant barriers in resource access, consistent with findings from Jones and Boyd (2011), who noted that financial constraints severely limit rural households' ability to invest in long-term resilience measures.

In some cases, women and youth were described as actively involved in petty trade, small-scale farming, and tree planting. A men's group in Bugweri noted, "*Women are involved in tree planting and poultry keeping*." However, other groups highlighted a lack of engagement or opportunity. In Kaliro, a women's group remarked, "Youth are just idle and doing nothing. They lack jobs," while in Iganga, another group added, "*Girls do tailoring and sell vegetables, but boys are just in town riding boda-bodas*." These mixed perceptions reflect both potential and barriers for women and youth to take part in resilience-building activities, pointing to the need for more inclusive strategies.

Overall, while some districts like Kaliro and Bugweri demonstrated relatively diverse responses, a high proportion of households did nothing particularly in Iganga and Luuka. This highlights the urgent need for targeted interventions to enhance awareness, improve access to climate information, and promote cost-effective adaptive strategies. This is particularly important in the context of increasing frequency and severity of extreme weather events due to climate change (IPCC, 2022).

Table 20: Household response to Hailstorms

Response	All	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Planting trees	10.5	33.3	8.7	0.0	5.9	5.4
Seeking government assistance	15.8	19.0	4.3	12.5	17.6	21.6
Seeking assistance from relatives and friends	12.3	33.3	4.3	0.0	17.6	8.1
Digging trenches, planting pits, vegetation strips, and ridge tillage to trap water and retain water in gardens	6.1	4.8	13.0	18.8	0.0	0.0
Reclaiming wetlands for moist soils to grow crops	1.8	4.8	4.3	0.0	0.0	0.0
Buying food from nearby areas	34.2	28.6	30.4	31.3	35.3	40.5
Rationing meals/reducing the number of meals eaten per day	19.3	9.5	17.4	37.5	11.8	21.6
Store food during bumper harvest	2.6	9.5	0.0	0.0	0.0	2.7
Seeking medical attention	2.6	4.8	0.0	12.5	0.0	0.0
Vaccinating of livestock	1.8	0.0	0.0	12.5	0.0	0.0
Spraying livestock to control parasites	0.9	0.0	0.0	6.3	0.0	0.0
Spraying crops to control pests	1.8	0.0	4.3	0.0	0.0	2.7
Cutting down affected crops to control diseases	8.8	0.0	8.7	37.5	11.8	0.0
Burying dead animals to control diseases	0.9	4.8	0.0	0.0	0.0	0.0
Practice agro-forestry	3.5	19.0	0.0	0.0	0.0	0.0
Change of livelihoods	7.0	4.8	4.3	0.0	0.0	16.2
Mulching gardens to retain moisture in the soils	0.9	4.8	0.0	0.0	0.0	0.0
Sought credit from financial institutions	0.9	4.8	0.0	0.0	0.0	0.0
Application of cover cropping systems	7.9	4.8	4.3	25.0	5.9	5.4
Plant cover crops	1.8	0.0	0.0	12.5	0.0	0.0
Did Nothing	33.3	33.3	43.5	25.0	41.2	27.0

4.6.4 More Frequent Droughts

The analysis of household adaptation strategies in response to more frequent droughts across the districts of Bugweri, Iganga, Kaliro, Luuka, and Namutumba reveals a strong reliance on immediate coping strategies, with limited use of long-term resilience measures. One of the most common strategies across all districts was buying food from nearby areas, reported by most households in Namutumba (83%), Bugweri (80%), and 50% each in Iganga, Kaliro, and Luuka (Table 21). This indicates a high dependence on market-based food access when household production is disrupted by drought.

As one community member in Namutumba put it, "When drought hits, we buy food in small quantities when we can. It is expensive, but we have no choice" (FGD). Another FGD participant from Iganga observed, *"Sometimes we even reduce our meals to once a day during drought months because the crops dry up"*, reinforcing the critical nature of this coping strategy.

Seeking government assistance was another significant adaptation strategy, particularly in Namutumba (58%) and Bugweri (50%). This highlights the role of public institutions in supporting drought-affected households, especially in situations where self-help options may be limited. On the other hand, seeking help from relatives and friends was predominantly reported in Luuka (50%) and to a lesser extent in Kaliro (17%), indicating the importance of social capital in specific areas. A key informant from a local government agency in Bugweri noted, *"When the drought persists, we try to mobilize relief food, but the demand is often higher than our supplies" (KII).*

Some households employed food storage during bumper harvests as a buffer against drought impacts, with this strategy appearing more frequently in Bugweri (50%) and Iganga (30%). This points to proactive behavior where storage facilities and knowledge are available and accessible. Meanwhile, rationing meals was reported in Namutumba (25%), Iganga (20%), and Kaliro (17%), reflecting growing food insecurity and an immediate coping strategy in response to reduced food availability and access.

On the other hand, Bugweri stands out for employing a broader range of strategies, including planting trees (20%), agro-forestry (10%), vaccinating livestock (10%), spraying crops (10%), and livelihood diversification (10.0%). This diversity may reflect better awareness or improved access to support services. As shared in one KII, *"Some farmers now plant trees and also diversify their crops because droughts are now common almost every year."*

Similarly, Luuka and Kaliro reported households buying water (50%) and (33%), respectively, a strategy not reported in other districts, underscoring the severity of water scarcity and the economic burden it imposes. *"We sometimes buy water for both home use and gardens because the wells dry up early in the season,"* a respondent in Luuka explained (FGD).

Other notable practices include wetland reclamation for crop production in Namutumba (17%) and crop diversification to include drought-tolerant species (8%), also in Namutumba. These

strategies indicate some effort to build adaptive capacity in the face of prolonged dry spells. However, it is concerning that a portion of households reported doing nothing, particularly in Namutumba (25%) and, to a lesser extent, in Bugweri and Iganga (10% each). This passive response suggests barriers to adaptation, such as a lack of resources, information, or institutional support, which may leave some communities highly vulnerable. A youth respondent in Namutumba stated, *"We just wait. There is nothing we can do. The crops dry and we pray for rain"* (FGD).

Overall, while districts such as Bugweri and Namutumba show signs of active adaptation through a combination of immediate coping and institutional reliance, the overall pattern reflects a need to strengthen long-term resilience. This includes promoting sustainable practices such as drought-tolerant farming, enhancing food and water security infrastructure, and increasing access to technical and financial support across all districts.

Table 21: Household response to more frequent drought occurrence

Response	All	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Plant trees	5.0	20.0	0.0	0.0	0.0	0.0
Seeking government assistance	32.5	50.0	10.0	0.0	0.0	58.3
Seeking assistance from relatives and friends	5.0	0.0	0.0	16.7	50.0	0.0
Reclaim wetlands for moist soils to grow crops	5.0	0.0	0.0	0.0	0.0	16.7
Buy food from nearby areas	67.5	80.0	50.0	50.0	50.0	83.3
Ration meals/reduce on the number of meals eaten per day	15.0	0.0	20.0	16.7	0.0	25.0
Buy water	10.0	0.0	10.0	33.3	50.0	0.0
Store food during bumper harvest	22.5	50.0	30.0	16.7	0.0	0.0
Seek medical attention	2.5	0.0	0.0	0.0	0.0	8.3
Vaccinating of livestock	2.5	10.0	0.0	0.0	0.0	0.0
Spraying crops to control pests	7.5	10.0	20.0	0.0	0.0	0.0
Practice agro-forestry	2.5	10.0	0.0	0.0	0.0	0.0
Change of livelihoods	5.0	10.0	10.0	0.0	0.0	0.0
Crop diversification to include low moisture-tolerant species	2.5	0.0	0.0	0.0	0.0	8.3
Did Nothing	12.5	10.0	10.0	0.0	0.0	25.0

4.6.2 Stronger Winds

Table 22 presents an analysis of household adaptation strategies to the climate change effect of stronger winds across five study districts in the Busoga sub-region. The findings reveal a diversity of coping mechanisms, with notable variations by location. Overall, planting trees emerged as the most widely adopted strategy, particularly in Bugweri (33%) and Namutumba (23%), suggesting that households in these districts recognize the long-term protective role of trees against strong winds. This observation resonates with sentiments expressed during KIIs where local leaders in Bugweri noted, "*We encourage tree planting especially along boundaries to reduce the impact of strong winds,*" and a participant in a FGD in Namutumba observed, "*Planting trees acts as a shield, otherwise the wind sweeps everything away.*"

Another widely used strategy was purchasing food from nearby areas, with high proportions observed in Iganga (38%), Namutumba (35%), and Bugweri (30%). This likely reflects immediate coping responses to disruptions in food availability caused by wind-related damage to crops and livelihoods. Additionally, many households reported reducing their food intake as a coping strategy, either by rationing meals or cutting down on the number of meals per day. This practice was especially common in Namutumba (31%), Iganga (19%), and Luuka (18%), indicating emerging food insecurity challenges. This situation was vividly captured by a FGD respondent from Luuka who said, "*When the winds destroy our crops, we have no choice but to eat smaller portions or skip meals.*"

Social networks also played a role in adaptation, as some households sought assistance from relatives and friends, particularly in Luuka (12%), Namutumba (12%), and Bugweri (10%). Meanwhile, changing livelihoods was most pronounced in Iganga (16%), suggesting that economic diversification is being pursued as a resilience strategy by some communities. One FGD participant from Iganga shared, "*After several seasons of losing crops to storms and winds, some of us have shifted to boda-boda riding and petty trade for survival.*"

Moderately adopted strategies included seeking government support, accessing medical attention, and cutting down affected crops to control diseases. For instance, seeking government assistance was reported in Namutumba (12%) and Iganga (11%), while practices like cutting down crops to prevent disease spread were more common in Kaliro (12%) and Luuka (12%). Some adaptive measures, such as reclaiming wetlands for crop production, practicing agroforestry, applying mulching techniques, or using cover cropping systems, were rarely reported. This could be attributed to limited technical knowledge, financial constraints, or the inaccessibility of appropriate extension services. This challenge was highlighted in a KII from Kaliro where it was stated, "*Many farmers would love to mulch or practice agroforestry but there is no support or training to help them start such practices.*"

Of concern is the relatively high proportion of households that reported doing nothing in response to stronger winds. This passive response was particularly evident in Kaliro (34%), Luuka (30%), and Bugweri (25%). The reasons for inaction could range from lack of awareness and

resources to limited institutional support. A community elder from a FGD in Kaliro remarked, *"When the strong winds come, we just pray and watch helplessly because there's nothing much we can do without assistance."*

This finding highlights significant gaps in climate change preparedness and underscores the need for targeted interventions. Overall, the findings point to an urgent need for localized climate education, improved access to adaptive technologies and financial services, and enhanced institutional support to promote sustainable and inclusive climate resilience among vulnerable households in the region.

Table 22: Household response to strong wind occurrences

Response	ALL	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Migration to other areas	1.1	2.5	0.0	2.4	0.0	0.0
Planting trees	20.2	32.5	13.5	12.2	20.6	23.1
Seeking government assistance	7.3	5.0	10.8	7.3	2.9	11.5
Seeking assistance from relatives and friends	9.0	10.0	5.4	7.3	11.8	11.5
Reclaiming wetlands for moist soils to grow crops	1.1	0.0	2.7	0.0	0.0	3.8
Buy food from nearby areas	26.4	30.0	37.8	12.2	20.6	34.6
Rationing meals/reducing the number of meals eaten per day	15.2	5.0	18.9	9.8	17.6	30.8
Store food during bumper harvest	1.1	5.0	0.0	0.0	0.0	0.0
Accessing medical attention	2.2	0.0	0.0	7.3	2.9	0.0
Spraying crops to control pests	0.6	0.0	0.0	0.0	2.9	0.0
Cutting down affected crops to control diseases	6.7	0.0	8.1	12.2	11.8	0.0
Practicing agroforestry	1.7	2.5	0.0	2.4	2.9	0.0
Change of livelihoods	7.3	2.5	16.2	4.9	5.9	7.7
Mulching gardens to retain moisture in the soils	0.6	2.5	0.0	0.0	0.0	0.0
Seeking credit from financial institutions	3.4	5.0	2.7	2.4	5.9	0.0
Application of cover cropping systems	1.7	0.0	2.7	2.4	2.9	0.0
Building a house on high grounds	1.7	0.0	0.0	2.4	5.9	0.0
Did Nothing	25.8	25.0	18.9	34.1	29.4	19.2

4.6.5 Increase in amount of rainfall

In response to the increased amount of rainfall, communities across Bugweri, Iganga, Kaliro, Luuka, and Namutumba adopted a range of adaptation strategies, although a substantial proportion of households in most districts reported taking no action (Table 23). The highest levels of inaction were recorded in Bugweri (42%) and Namutumba (40%), followed by Luuka (24%), Iganga (19%), and Kaliro (18%), reflecting either a lack of awareness, resources, or both to implement coping measures in response to excessive rainfall. In the FGDs, some respondents attributed the inaction to the unpredictability of rainfall patterns, noting that *"you may prepare for rain and then it doesn't come as expected."* One community member added, *"Sometimes the rain comes very heavy and early, destroying gardens before we even plan."*

Planting trees was one of the most widely practiced adaptation strategies, especially in Bugweri (35%), followed by Iganga (23%), Luuka (18%), and Namutumba (20%). This indicates recognition among households of the role trees play in regulating water flow and improving soil structure under intense rainfall. Closely related to this was the adoption of cover cropping farming systems, which was reported in all districts except Bugweri, with Luuka (29%), Iganga (23%), and Namutumba (10%) recording notable levels of uptake. One FGD respondent noted, *"I plant trees because they reduce the pressure of the stormy rain and help hold the soil."* Another shared that they were encouraged by government trainings to use vegetation strips and plant cover crops, which help regulate water retention in gardens.

A significant share of households sought government assistance, particularly in Namutumba (40%), followed by Iganga (15%), Kaliro (14%), and Luuka (12%), suggesting that households affected by excess rainfall turn to public institutions for support. Assistance from relatives and friends was also common across all districts, albeit to a lesser extent, with Bugweri, Iganga, and Luuka all at around 11%. One KII respondent emphasized that *"the government provides food (posho) to the communities affected by floods."* Another explained that in Luuka, *"community leaders work with local NGOs to distribute plastic sheets and basic supplies during heavy rains."*

Coping mechanisms such as buying food from nearby areas and rationing meals were prevalent, indicating the impact of heavy rainfall on local food availability and accessibility. Luuka had the highest share of households buying food (41%), while meal rationing was most common in Kaliro (55%), followed by Iganga (27%) and Luuka (18%). This signals a disruption in food production and supply chains as a result of waterlogged or flooded agricultural land. One FGD participant stated, *"We don't harvest much in such seasons, so we are forced to buy from shops even if the prices are high."* Another said, *"Sometimes we reduce meals to save what little we have left."*

Some districts adopted soil and water conservation practices. For instance, Iganga (27%) and Kaliro (14%) reported digging trenches, planting pits, or using ridge tillage and vegetation strips to trap and retain water in gardens. However, these practices were less common or absent in districts like Namutumba. Similarly, cover crops were specifically planted in Kaliro (18%), with

Bugweri, Iganga, and Namutumba reporting minimal uptake. A KII respondent noted, *"Some men and youth boys joined brick making to elevate their houses from floods,"* while another said, *"Digging trenches is not common because we don't have tools and it's very tiresome for the elderly."*

Households also engaged in spraying crops and livestock to control pests and parasites and cutting down diseased crops, a notable strategy in Kaliro (27%), Luuka (18%), and Namutumba (15%), indicating the emergence of plant diseases associated with prolonged wet conditions. Medical attention was sought in all districts, led by Namutumba (15%), Kaliro (18.2%), and Luuka (12%), implying a rise in health issues related to excessive rainfall, such as waterborne diseases. *"Yes, we have a lot of worms and fungus affecting our crops after rain,"* noted a female respondent in an FGD. *"Our children also fall sick more during such times,"* added another.

More isolated strategies included migration in Kaliro (4.5%), building houses on high ground in Iganga (4%), and reclaiming wetlands for crop cultivation, noted in Bugweri (4%) and Iganga (4%). Other practices, like livelihood change and mulching gardens, were reported sporadically. A KII informant mentioned, *"People are now moving to higher areas; they no longer stay in valleys after losing homes several times."* Similarly, a participant said, *"We have learned to plant on mounds and elevated areas to avoid complete crop loss."*

In sum, adaptation to increased rainfall across these districts involves a blend of proactive environmental management (such as planting trees, cover cropping), coping responses (that include buying food, rationing meals), and community reliance or government support. However, the high levels of inaction in Bugweri and Namutumba suggest gaps in knowledge, resources, or institutional outreach, pointing to the need for enhanced climate-resilience programs that are locally grounded and inclusive.

Table 23: Household response to increased rainfall amounts

Response	All	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Migration to other areas	0.9	0.0	0.0	4.5	0.0	0.0
Planting trees	21.6	34.6	23.1	9.1	17.6	20.0
Seeking government assistance	16.2	3.8	15.4	13.6	11.8	40.0
Seeking assistance from relatives and friends	9.9	11.5	11.5	4.5	11.8	10.0
Dig trenches, planting pits, vegetation strips, and ridge tillage to trap and retain water in gardens	12.6	7.7	26.9	13.6	11.8	0.0
Reclaim wetlands for moist soils to grow crops	1.8	3.8	3.8	0.0	0.0	0.0
Buy food from nearby areas	27.0	15.4	30.8	27.3	41.2	25.0
Ration meals/reducing the number of meals eaten per day	22.5	7.7	26.9	54.5	17.6	5.0
Store food during the bumper harvest	9.9	19.2	0.0	9.1	11.8	10.0
Seek medical attention	9.9	3.8	3.8	18.2	11.8	15.0
Vaccinating livestock	2.7	0.0	3.8	4.5	5.9	0.0
Spraying livestock to control parasites	2.7	0.0	0.0	9.1	5.9	0.0
Spraying crops to control pests	2.7	0.0	7.7	4.5	0.0	0.0
Cutting down affected crops to control diseases	11.7	0.0	3.8	27.3	17.6	15.0
Practice agroforestry	3.6	11.5	0.0	0.0	5.9	0.0
Change of livelihoods	5.4	7.7	0.0	9.1	5.9	5.0
Mulching gardens to retain moisture in the soil	1.8	3.8	3.8	0.0	0.0	0.0
Application of cover cropping systems	15.3	7.7	23.1	9.1	29.4	10.0
Plant cover crops	4.5	3.8	0.0	18.2	0.0	0.0
Build a house on high ground	0.9	0.0	3.8	0.0	0.0	0.0
Did Nothing	28.8	42.3	19.2	18.2	23.5	40.0

4.6.6 Flash or Increased Frequency of floods

In response to flash floods and the increased frequency of flooding, communities across Bugweri, Kaliro, Luuka, and Namutumba districts reported employing a variety of adaptation strategies. In Bugweri, adaptation was notably proactive and diverse, with 100% of households planting trees, 67% digging trenches or implementing water retention structures, and an equal proportion seeking government assistance (Table 24). Additionally, 33% reclaimed wetlands for moisture conservation, stored food, practiced agroforestry, and applied mulching techniques. This multifaceted approach aligns with findings from Mertz et al. (2009) that tree planting and water harvesting measures are common adaptive strategies in flood-prone rural areas. During KIIs, it was emphasized that *"tree planting programs by NGOs have increased awareness among farmers about the benefits of agroforestry for flood control."* An FGD participant from Bugweri noted, *"We dig small trenches around our gardens so that the water doesn't wash away everything."*



Figure 19: Drainage channels in coffee garden and agroforestry in Kaliro district

In Kaliro, the response was comparatively muted, with the most reported strategy being purchasing food (64%), followed by seeking medical attention (29%), and only 14% migrating or storing food. A limited number (7%) practiced livelihood diversification or reduced meal frequency. The lower uptake of ecosystem-based and structural interventions in Kaliro could indicate barriers such as lack of knowledge, institutional support, or resource constraints also highlighted by Below et al. (2012) in their study on household-level adaptation in East Africa. One KII respondent from Kaliro explained, *"We have no proper plans for floods; we only move to relatives' homes and wait until the floods reduce."* Meanwhile, an FGD participant lamented, *"Sometimes you just buy food and pray for the water to go; there's no help that comes in time."*

In Luuka, only one major adaptation was reported: 100% of affected households sought assistance from relatives and friends. This highlights a high dependency on social networks as a coping mechanism, a trend consistent with the findings of Jones and Boyd (2011), who emphasized the role of informal social capital in communities lacking formal institutional support. A KII respondent pointed out, *"When floods happen, we first call our relatives for help because there is no organized government response in our area."* An FGD participant similarly noted, *"We share shelter with relatives until our houses dry up."*

Namutumba showed a more mixed response, with 57.1% seeking government support, 43% buying food, and 29% reducing the number of meals consumed daily. Other strategies included tree planting, food storage, and seeking help from relatives, while a small proportion (14%) did nothing. The respondents who reported taking no action likely said so because they perceived their strategies or responses as insufficient to meaningfully address the challenges posed by climate change impacts. This blend of responses suggests both institutional reliance and individual or household-level resilience strategies (Bryan et al., 2009). An FGD participant from Namutumba explained*, "When floods come, sometimes government brings food but it is not enough, so you reduce meals."* A KII respondent added, *"Some people plant trees now to control erosion, but it's still not enough compared to the destruction floods cause."*

Table 24: Household response to flash floods

Response	All	Bugweri	Kaliro	Luuka	Namutumba
Migration to other areas	12.0	33.3	14.3	0.0	0.0
Plant trees	16.0	100.0	0.0	0.0	14.3
Seeking government assistance	24.0	66.7	0.0	0.0	57.1
Seeking assistance from relatives and friends	12.0	0.0	7.1	100.0	14.3
Dig trenches, planting pits, vegetation strips, and ridge tillage to trap and retain water in gardens	8.0	66.7	0.0	0.0	0.0
Reclaim wetlands for moist soils to grow crops	4.0	33.3	0.0	0.0	0.0
Buy food from nearby areas	52.0	33.3	64.3	0.0	42.9
Ration meals/reducing the number of meals eaten per day	12.0	0.0	7.1	0.0	28.6
Buy water	16.0	0.0	0.0	0.0	0.0
Store food during the bumper harvest	16.0	33.3	14.3	0.0	14.3
Seek medical attention	4.0	0.0	28.6	0.0	0.0
Practice agroforestry	4.0	33.3	0.0	0.0	0.0
Change of livelihoods	4.0	0.0	7.1	0.0	0.0
Mulching gardens to retain moisture in the soils	12.0	33.3	0.0	0.0	0.0
Did Nothing	12.0	0.0	14.3	0.0	14.3

4.6.7 Increased Temperatures

In response to the climate change effect of increased temperatures, households across the districts of Bugweri, Iganga, Kaliro, Luuka, and Namutumba adopted a mix of coping and adaptive strategies (Table 25). However, the overall adaptation response appears limited, with a significant proportion of households reporting no action taken. This passive response was highest in Luuka (63%), followed by Iganga (46%), Kaliro (39%), and Bugweri (30%), suggesting either limited awareness, lack of resources, or both in managing rising temperatures. Namutumba, in contrast, had the lowest percentage of inaction at (11%), indicating relatively higher engagement in adaptation. During the KIIs, one respondent from Kaliro emphasized, *"Most people just stay indoors and wait for the sun to reduce. We have no programs to support adaptation."* In an FGD from Luuka, a participant shared, *"When the heat becomes too much, we only pray and stay idle because there is nothing else we can do."*

One of the most common responses across districts was seeking medical attention, possibly due to increased incidences of heat-related illnesses. This was particularly prevalent in Namutumba (33%), Iganga (27%), Kaliro (23%), Bugweri (20%), and Luuka (13%), highlighting the health burden of rising temperatures. An FGD participant from Namutumba commented, *"We now experience strange diseases like heat rashes and dehydration, and we have to visit health centers more often." Similarly, a KII respondent from Iganga noted, "The health units have reported more cases of heat-related sickness among children and the elderly."*

In addition, buying food from nearby areas emerged as a coping strategy in all districts, most notably in Luuka (25%) and Kaliro (23%), implying that local food production may be constrained by heat stress, prompting households to rely on external sources. One FGD participant in Kaliro mentioned, *"Because crops dry up faster, we end up buying food from markets earlier than before."*

A few households employed strategies aimed at increasing resilience to rising temperatures. For instance, Bugweri reported planting trees (10%) and irrigating gardens (20%), which were not observed in other districts. These measures suggest some level of awareness and capacity to engage in proactive adaptation. A KII respondent from Bugweri explained, *"Some NGOs taught us to plant trees like mango and grevillea to protect against strong heat."*

Similarly, vaccinating livestock was reported in Bugweri and Iganga by (10%) and (9%), respectively, which may be linked to increased disease prevalence due to heat stress. In an FGD from Iganga, a participant noted, *"The animals easily get sick from the heat, so some of us have started vaccinating them more often."* Kaliro and Luuka reported rationing meals (15%) and (25%), respectively, indicating food scarcity as a direct impact of rising temperatures. An FGD participant in Luuka stated, *"Now we eat once or twice because the gardens fail due to the heat."*

Additionally, changes in livelihoods were observed in Kaliro (15%) and Namutumba (11%), possibly as a response to the reduced viability of temperature-sensitive occupations such as crop

farming. A KII respondent from Namutumba revealed, *"People are starting to leave farming for boda-boda riding and small shops because farming is becoming unreliable."*

Other notable but less widespread strategies included reclaiming wetlands for crop cultivation in Kaliro (8%) and Namutumba (11%), spraying crops to control pests in Luuka (13%) and Namutumba (11.1%), seeking assistance from relatives and friends (11%), and mulching gardens to retain moisture (11%) in Namutumba. These practices reflect some local innovation and community-based support mechanisms in the face of climatic stress. An FGD participant from Namutumba remarked, *"We now mulch gardens using banana leaves so that the soil remains wet longer during the hot seasons."*

Largely, the data reveal a pattern of limited and varied adaptation responses to increased temperatures, with high levels of inaction in most districts except Namutumba. While some proactive strategies, such as irrigation, tree planting, and livelihood diversification, are being applied in certain areas, the widespread reliance on short-term coping mechanisms like buying food or rationing meals suggests a need for stronger institutional support, community education, and climate-smart agricultural initiatives to build long-term resilience.

Table 25: Household response to increased temperatures

Response	ALL	Bugweri	Iganga	Kaliro	Luuka	Namutumba
Planting trees	2.0	10.0	0.0	0.0	0.0	0.0
Seeking assistance from relatives and friends	2.0	0.0	0.0	0.0	0.0	11.1
Reclaiming wetlands for moist soils to grow crops	3.9	0.0	0.0	7.7	0.0	11.1
Buying food from nearby areas	15.7	10.0	9.1	23.1	25.0	11.1
Rationing meals/reducing the number of meals eaten per day	7.8	0.0	0.0	15.4	25.0	0.0
Buying water	2.0	0.0	9.1	0.0	0.0	0.0
Store food during the bumper harvest	2.0	0.0	9.1	0.0	0.0	0.0
Seeking medical attention	23.5	20.0	27.3	23.1	12.5	33.3
Vaccinating livestock	3.9	10.0	9.1	0.0	0.0	0.0
Spraying crops to control pests	3.9	0.0	0.0	0.0	12.5	11.1
Irrigation of gardens	5.9	20.0	9.1	0.0	0.0	0.0
Change of livelihoods	5.9	0.0	0.0	15.4	0.0	11.1
Mulching gardens to retain moisture in the soil	2.0	0.0	0.0	0.0	0.0	11.1
Did Nothing	37.3	30.0	45.5	38.5	62.5	11.1

4.7 Existing climate change adaptation initiatives in the Busoga Sub-region

This section presents findings from the study, which aimed to identify existing initiatives—both public and non-public, designed to support households in strengthening their resilience to the effects of climate change. About 25% of the households interviewed affirmed the existence of such initiatives (Table 26). Respondents were then asked to specify what kinds of initiatives were being undertaken.

The findings highlight a broad spectrum of adaptation and mitigation strategies, reflecting varying local environmental challenges and intervention capacities across districts. The initiatives reported were grouped into thematic areas to provide a clearer understanding of their focus and coverage. Overall, among all the responses given, the top three most reported initiative types were Sensitization and Awareness campaigns (24%), followed by Law Enforcement and Regulation (20%) and Wetland and Waterbody Protection (17%). District-wise, Kaliro reported the highest share of total initiatives (33%), followed by Namutumba (21%), indicating either greater environmental degradation pressures or more active interventions in these districts.

Several community voices confirmed the presence of these interventions. For example, a KII respondent from Kaliro stated, *"The District Natural Resources Office is always sensitizing us about protecting wetlands and forests. They even arrest people who cultivate in wetlands."* Similarly, during an FGD in Namutumba, a participant noted, *"Local leaders sometimes call meetings to teach us about the dangers of cutting trees and how we should conserve water."*

In Bugweri, one key informant highlighted the role of law enforcement, saying, *"There are police patrols that prevent people from burning bushes and cutting trees indiscriminately."* However, in some areas like Luuka, communities mentioned gaps; one FGD participant lamented, *"Sensitizations are done once in a while, but people don't take them seriously because there are no alternatives given."*

Table 26 Ongoing and recently concluded initiatives

Initiatives	Bugweri	Iganga	Kaliro	Luuka	Namutumba	Overall
Tree Planting / Afforestation	5.3	3.2	3.2	1.1	1.1	2.7
Law Enforcement / Regulation	2.1	2.1	13.7		2.1	5.0
Sensitization / Awareness	3.2	5.3	6.3	6.3	3.2	4.8
Distribution of Resources	1.1	3.2	1.1	4.2	1.1	2.1
Wetland/Waterbody Protection		2.1	7.4	1.1	6.3	4.2
Warnings / Threats		2.1	1.1	1.1	6.3	2.6
Other / Miscellaneous			3.2		1.1	2.1
Total	11.6	17.9	32.6	16.8	21.1	20.0

Table 27 shows results of literature-based searches on past and ongoing adaptation initiatives in Busoga region. Busoga's climate adaptation efforts have focused on building resilience at the grassroots level through a wide range of interventions including:

- **Natural Resource Management**: Promotion of sustainable wetland use, afforestation/reafforestation, and tree nursery establishment to enhance ecosystem services and buffer climate impacts.
- **Climate-Smart Agriculture**: Implementation of sustainable agriculture, climate-smart practices, livestock integration, and farmer training to improve food security and income.
- **Water and Energy Access**: Introduction of small-scale water pumping, clean cooking technologies, and clean energy solutions to reduce environmental pressure and improve health and efficiency.
- **Livelihood Diversification**: Support for agro-processing, wetland product value chains, and access to credit to increase household income and reduce vulnerability.
- **Disaster Preparedness and Risk Reduction**: Strengthening early warning systems, emergency preparedness, and disaster risk reduction strategies.
- **WASH (Water, Sanitation and Hygiene)**: Improving access to clean water and sanitation to enhance public health resilience.
- **Policy Engagement**: Activities in policy research, advocacy, and climate/environmental action to create an enabling environment for long-term adaptation.

Other projects and programs include

- **Youth-Led and Community Empowerment Initiatives**: Projects like the Young Rural Entrepreneurs' Initiative, Village Agricultural Model Initiatives, and ACRI (Advancing Community Resilience Initiative) have tackled poverty by promoting sustainable agriculture and building local capacity tailored to Busoga's needs.
- **Environmental Conservation and Agroforestry**: Organizations such as Environmental Alert and Joint Effort to Save the Environment have promoted agroforestry, sustainable land use, environmental education, and community-led water management to enhance ecosystem resilience.
- **Renewable Energy and Climate-Smart Agriculture**: SNV has driven adaptation through biogas promotion, climate-smart farming techniques, and improved access to water and sanitation services.
- **Government-Led Climate Planning**: Local governments have implemented district-level adaptation plans, supported reforestation and water management, and coordinated multi-stakeholder efforts for integrated climate responses.
- **UN Agency Support**: Agencies like UNDP, FAO, and UNICEF have bolstered local initiatives by offering technical and financial support for climate projects, disaster risk reduction, and renewable energy adoption.

Table 27: past and ongoing adaptation initiatives in the Busoga region

Organisation/ project	Area of work	Target population	Implementation areas	Implementation period	Source
Rural Community Development Organization	- Sustainable wetland use - Wetland product value chains development - Promotion of clean cooking technologies - Small scale water pumping	- Resource-poor women	Busoga and Nile Basin areas	Active	https://www.equatorinitiative.org/2020/04/24/solution11007/
Heifer International	- Agro-processing for value addition - Access to credit	- Youth - Women - Persons with disabilities - Displaced individuals.	Busoga region	2023-2028	https://mastercardfdn.org/en/what-we-do/our-programs/stimulating-agribusiness-for-youth-employment-saye-mastercard-foundation/
Busoga Trust	Water sanitation and Hygiene		Busoga region	Active	https://www.busogatrust.co.uk/
World Vison Uganda	- Sustainable agriculture - Disaster risk reduction - Cliamte smart agriculture - Early warning systems - Afforestation and reafforestation	- General	Kaliro	Inactive	www.wvi.org/sites/default/files/2024-06/WVI%20FY23%20Annual%20report.pdf
Caritas Jinja	- Livestock integration for increased income - Promotion of clean energy solutions	- General	Busoga	Active	https://caritasjinja.org/index.html
The Advocates Coalition for Development and Environment	- Policy research and analysis - Policy outreach and advocacy	- General	Busoga	Active	https://www.acode-u.org/OurWork
Uganda Red cross Society	- Climate action and Environment - Emergency preparedness and response	- General	Iganga, Kaliro	Active	https://redcrossug.org/
One Acre Fund	- Tree nursery establishment - Tree seedlings distribution - Farmer training in agronomic practices and value addition	- Smallholder farmers		Active	https://oneacrefund.org/what-we-do/countries-we-serve/uganda

4.8 What Can Be Done

4.8.1 Critical Support Needs for Strengthening Household Climate Adaptation in Busoga

The data (Table 28) highlights various forms of support that would be required across the selected five districts in the Busoga subregion, with distinct implications for climate change adaptation. The percentages show that Financial & Business Start-up Support dominates as the most critical resource across all districts, averaging (29.3%) overall. This suggests that many households recognize financial empowerment as a foundation for adaptation, allowing them to invest in farming inputs, diversify livelihoods, or engage in small businesses to cushion against climate risks. Access to finance or capital would enable households to adopt new technologies, expand productive activities, and cope with seasonal uncertainties. If households leverage this support effectively, they could build more diversified and resilient income sources, making them less vulnerable to climate shocks.

Meanwhile, Irrigation Support (11.1%) and Training/Skills Development (10.3%) also stand out, indicating a high demand for practical and technical capacity building. In environments where rainfall is increasingly unreliable, irrigation becomes a lifeline for sustaining agricultural productivity. Similarly, training equips households with modern skills to manage resources efficiently, improve agricultural practices, and understand climate-smart techniques. With these resources, households would likely enhance water use efficiency, adopt better agronomic practices, and make more informed livelihood decisions that improve food security and income stability.

Other support types such as Tree Seedlings (9.9%), Livestock provision (5.1%), and Construction of facilities (5.2%) contribute moderately to adaptation strategies. Trees offer ecosystem services for example soil conservation and microclimate regulation, while livestock provides alternative income streams. Infrastructure such as poultry houses and boreholes boosts productivity and access to critical resources, for example water. If households maximize these supports, they could improve land productivity, diversify assets, and ensure year-round access to water and food resources, ultimately increasing their resilience to climate-related disruptions.

Relatedly, an alternative engagement with communities through Focus Group Discussion (FGD) sessions identified several adaptive strategies that agree with the ones mentioned earlier. These were stated to be urgently needed in helping them cope with climate impacts. These include vocational training, start-up capital, irrigation technologies, and access to quality agricultural inputs. Youth in Kaliro emphasized their desire for empowerment: "*We need training in tailoring and business skills, plus capital to start small businesses*." In Luuka, men expressed demand for water management infrastructure: "*If we had irrigation machines, we could farm even during dry seasons*." Another FGD in Bugweri called for targeted agricultural support: "*Let the government give us*

drought-resistant seeds and teach us how to grow them." These statements confirm a readiness to adapt, provided the necessary tools, training, and financial support are available.

Table 28: Given the resources, what would households do to improve their adaptation capacity

Support Type	Bugweri	Iganga	Kaliro	Luuka	Namutumba	All
Financial & Business Start-up Support	29.0	33.3	27.6	27.3	28.6	29.3
Irrigation Support	9.7	14.8	11.4	10.0	9.2	11.1
Tree Seedlings	16.1	6.2	6.5	10.0	10.1	9.9
Training/Skills Development	9.0	9.3	11.4	12.0	10.1	10.3
Livestock (Cattle, Goats, Poultry)	4.5	4.9	4.1	4.7	7.6	5.1
Provision of Seeds/Fertilizers	3.9	4.9	5.7	6.0	7.6	5.5
Construction (e.g. Poultry Houses, Boreholes)	4.5	3.7	7.3	5.3	5.9	5.2
Drought Resistant Crops/Varieties	2.6	2.5	2.4	4.0	5.0	3.2
Training on Climate Change & Mitigation	3.9	3.7	4.9	4.0	3.4	3.9
Water Harvesting Materials/Storage	1.9	1.9	0.8	2.0	1.7	1.7
Support for Women and Vulnerable Groups	1.9	2.5	1.6	1.3	2.5	2.0

4.8.2 Key Resources and Skills Needed for Strengthening Climate Adaptation and Livelihoods in Busoga

The data (Table 25) reveals significant patterns in resource and skill sets across various districts in the Busoga sub-region, with implications for climate change adaptation. The analysis of the percentages shows that Financial and Investment Support tops the list of resources and skill sets needed for income diversification across all five districts, accounting for an overall average of 20.1%. This category includes both direct financial aid and capital for starting businesses, indicating a widespread demand for financial empowerment. Districts such as Iganga (24.1%) and Bugweri (22.4%) show the strongest emphasis on financial needs, underscoring that access to capital is a fundamental barrier for many households seeking to diversify their livelihoods. This priority may reflect the limited access to formal credit institutions and the need to reduce dependency on traditional agriculture.

Agricultural Skills follow as the second most needed area (11.0% overall), reflecting the continuing importance of agriculture as a foundation for livelihood, even amidst diversification efforts. This is especially significant in Bugweri (13.7%) and Namutumba (11.7%), where reliance on agriculture is more pronounced. Training & Education (9.3%) and Business Skills (8.4%) are also prominent, highlighting the perceived value of capacity building and entrepreneurial knowledge in driving sustainable income-generating activities. These skills are critical not only for starting new ventures but also for improving the efficiency and profitability of existing ones.

Mid- to lower-tier needs reflect more specific livelihood paths, including Livestock Rearing (6.6%), Water Management & Resources (6.6%), Tailoring/Handicraft Skills (4.7%), and Trade/Shop Business (4.7%), suggesting a desire for both farming and non-farming options. The presence of lower-percentage categories such as Motorcycle/Boda-Boda (1.4%), Environmental Conservation (1.1%), and Fishing (0.3%) implies niche interests or context-specific opportunities. Overall, the diversity in needs illustrates a multidimensional livelihood landscape, where access to finance, education, and enterprise development are paramount, supported by complementary skills that reflect both rural traditions and evolving economic aspirations.

Table 29: Resources and Skill sets required for income diversification

Resource/Skill Set	Bugweri	Iganga	Kaliro	Luuka	Namutumba	All
Agricultural Skills	13.7	11.4	7.3	8.8	11.7	11.0
Financial & Investment Support	22.4	24.1	20.0	16.9	15.9	20.1
Business Skills	9.8	7.6	8.2	7.4	8.3	8.4
Training & Education	8.2	10.8	8.2	9.6	9.7	9.3
Livestock Rearing	5.5	6.3	6.4	5.9	9.0	6.6
Poultry Farming	4.9	3.8	4.5	5.1	4.8	4.7
Trade/Shop Business	4.9	3.8	4.5	5.1	4.8	4.7
Tailoring/Handicraft Skills	4.4	3.2	4.5	5.1	6.2	4.7
Business Equipment/Materials	4.4	3.2	3.6	4.4	2.1	3.6
Retail/Shop Start-up	3.8	3.2	5.5	5.9	4.8	4.5
Water Management & Resources	5.5	8.2	5.5	9.6	4.1	6.6
Skills in Animal Health/Management	2.2	5.1	6.4	4.4	5.5	4.5
Motorcycle/Boda-Boda	2.2	1.3	2.7	0.7	0.0	1.4
Hairdressing/Saloon Skills	2.2	2.5	1.8	2.2	2.8	2.3
Other (Specific Needs)	2.2	1.9	3.6	2.2	4.1	2.7
Clothing/Fashion Business	1.6	1.3	2.7	2.9	2.8	2.2
Skills in Environmental Conservation	1.1	0.6	1.8	2.2	0.0	1.1
Old Age/Health Considerations	1.1	1.3	1.8	1.5	3.4	1.8
Fishing	0.0	0.6	0.9	0.0	0.0	0.3



Figure 20: Provision of water management services by some NGOs in the Luuka district

Additionally, skills in animal health and environmental conservation, although less frequently highlighted, are crucial in addressing the broader ecological impacts of climate change. These skills help in maintaining biodiversity, protecting ecosystems, and ensuring the sustainability of both agricultural and pastoral livelihoods. Overall, the data underscores the importance of a multi-faceted approach to climate change adaptation that incorporates agricultural training, economic diversification, and sustainable water and environmental management.

All in all, there were calls for vocational education, improved agricultural inputs, and greater accountability from local leaders. A Key Informant from Kaliro urged, *"Equip the natural resource office and train communities in climate-smart practices."* In Iganga, youth participants recommended, "Let the government bring vocational schools so youth can learn trades." Meanwhile, a Community Development Officer in Luuka stated, *"We need more research on our area's climate problems and real solutions."* These reflections point to a growing awareness of the need for systemic, long-term strategies that are informed by local realities and community input.

4.8.3 District-Level Climate Adaptation Priorities and Institutional Gaps in Busoga

Table 26 highlights critical adaptation strategies across districts in Busoga sub-region, that is Bugweri, Iganga, Kaliro, Luuka, and Namutumba, reveals that the most pressing priorities for climate adaptation are water infrastructure and irrigation (19.7%), planting trees (17.4%), and livestock rearing (15.4%). These strategies are perceived as essential in building resilience against climate-related stressors. Water infrastructure and irrigation consistently rank highly across all districts, reflecting widespread concern over erratic rainfall, prolonged dry spells, and the need for sustainable water access to support agricultural production. Similarly, tree planting is particularly emphasized in Bugweri (31.3%), suggesting both the urgency of addressing deforestation and the recognition of trees as key to ecosystem restoration and microclimate regulation. Livestock rearing, notably in Luuka and Namutumba, indicates a shift toward mixed farming systems as a buffer against declining crop yields and unpredictable weather patterns.

In the medium-priority category, strategies such as alternative livelihoods (10.9%), improved crop farming through fertilizers and seeds (9.7%), and training/education on agriculture (5.0%) point to the growing importance of economic diversification and capacity-building. These areas suggest that rural communities are seeking ways to reduce their overreliance on traditional rain-fed agriculture by exploring supplementary income sources and adopting improved farming techniques. The moderate demand for training and institutional support, especially in Bugweri and Kaliro, highlights a gap in knowledge transfer and technical extension services that are critical for sustaining these adaptation strategies. Financial support (4.0%) and the promotion of retail or small businesses (4.2%) are also emerging needs that hint at aspirations for rural entrepreneurship and market engagement, though they may be limited by structural barriers such as access to credit, training, and startup capital.

Lower-priority strategies like fishing (0.7%) and business improvements (1.2%) appear to be highly localized or underdeveloped within the surveyed regions. Fishing, for instance, only registers in Kaliro, likely due to its proximity to water bodies, while the low rating of business improvements may reflect a lack of awareness or existing limitations in infrastructure and market access. Interestingly, a significant share (6.7%) falls under "Other" or unclear responses, indicating that some community needs may not have been fully captured by predefined adaptation categories. This suggests the importance of participatory and context-specific assessments in future programming. Overall, while core areas of support are clearly defined, the diversity in district-level priorities underscores the need for tailored interventions that align with local ecological conditions, livelihood systems, and institutional capacities.

Finally, even data from the Key informants from the district and sub-county offices did not differ. They described their ongoing efforts to sensitize communities, promote tree planting, and train farmers in climate-smart agriculture. However, they also reported chronic resource constraints,

including limited staffing and transport challenges, which undermine the reach and effectiveness of their interventions. A Natural Resource Officer in Bugweri shared, "*We conduct awareness on the causes and effects of climate change and distribute tree seedlings*." Similarly, an Agricultural Officer in Namutumba acknowledged that, "*We trained farmers in climate-smart agriculture but didn't have funds to follow up*." Another respondent from Luuka highlighted operational barriers: "*Our staff are few and we lack transport to reach all communities.*" These challenges confirm the need for greater institutional investment to enhance service delivery and community engagement.

Table 30: Areas for which support is required

Adaptation Strategy	Bugweri	Iganga	Kaliro	Luuka	Namutumba	All
Planting trees	31.3	16.2	17.1	9.6	8.75	17.4
Water infrastructure and irrigation	20.2	21.6	17.1	20.5	18.75	19.7
Livestock rearing	11.1	13.5	14.5	20.5	18.75	15.4
Alternative livelihoods	8.1	13.5	10.5	11.0	12.5	10.9
Improved crop farming (fertilizers, seeds)	7.1	12.2	9.2	9.6	11.25	9.7
Training/education on agriculture	6.1	8.1	6.6	0.0	3.75	5.0
Retail/small businesses	2.0	4.1	3.9	8.2	3.75	4.2
Government support (training, resources)	8.1	0.0	6.6	0.0	8.75	5.0
Financial support (capital, loans)	2.0	2.7	2.6	6.8	6.25	4.0
Fishing	0.0	0.0	3.9	0.0	0	0.7
Business improvements	0.0	0.0	2.6	4.1	0	1.2
Other (unclear responses)	4.0	8.1	5.3	9.6	7.5	6.7

4.8.3 Potential Project Sites for Climate Smart Adaptation and Mitigation Interventions

Drawing from the climate vulnerability assessment and community consultations conducted across Busoga sub-region, several potential sites emerge as priority areas for the establishment of climate-smart adaptation and mitigation projects. Selection was based on the severity of climate change impacts, extent of environmental degradation, livelihood vulnerabilities, and community readiness for adaptation interventions.

Iganga District

Iganga is highly suitable for projects promoting climate-smart agriculture, small-scale irrigation systems, and livelihood diversification. The district registered strong community interest in accessing financial support for adaptation and has moderately high demand for training in sustainable agriculture, water management, and alternative livelihoods such as aquaculture and poultry farming

Luuka District

Luuka presents a critical opportunity for ecosystem restoration through tree planting and agroforestry, as adoption rates for such practices remain very low. The area also shows a significant need for irrigation infrastructure and skills development in climate-resilient agriculture, making it ideal for interventions like rainwater harvesting, drought-resistant crop promotion, and farmer field schools

Namutumba District

Namutumba is strategically located in the Mpologoma catchment area and given the district's high vulnerability to prolonged dry spells and food insecurity, introducing integrated water management systems, including solar-powered irrigation, surface water and water storage infrastructure, and climate-resilient crop varieties. Would be ideal. In addition, there is a strong community interest in livestock rearing as an adaptive livelihood.

Bugweri District

Bugweri stands out for its demand for tree seedlings, irrigation support, and business capital. Climate-smart agroforestry, forest and wetland protection, and climate-resilient livelihood programs such as small business support and poultry farming are highly recommended here. Energy efficient and or saving cooking interventions are also recommended. The district's active community participation in previous environmental sensitization programs positions it as a strong candidate for successful intervention.

Kaliro District

Kaliro district shows the highest engagement in ongoing environmental initiatives, such as wetland protection and afforestation activities. The district is therefore well-positioned for scaling up community-based reforestation programs, soil conservation interventions, and diversification into resilient agricultural practices. Irrigation support and alternative livelihoods development are also needed.

District	Key Intervention Areas
Iganga	Climate-smart agriculture, irrigation, alternative livelihoods
Luuka	Agroforestry, water conservation, climate-resilient farming
Namutumba	Irrigation systems, livestock promotion, food security interventions
Bugweri	Agroforestry, forest and wetland protection, small business development
Kaliro	Reforestation, soil conservation, diversified farming

4.9 Study limitations

Geographic and Contextual Specificity: The study was limited to five districts within the Busoga sub-region (11 districts in total), selected based on vulnerability to climate change. While this provides in-depth insight into the region, it limits the generalizability of the findings to other regions in Uganda with different socio-ecological dynamics and governance structures.

Perception-Based Data Bias: A significant portion of the study relied on qualitative data from community perceptions and quantitative self-reported experiences. While this approach was crucial for capturing lived realities and local context, it may introduce subjective biases, memory recall inaccuracies, and social desirability effects, especially regarding sensitive issues like government effectiveness or household coping strategies.

Temporal Limitations: The data were collected at a single point in time, yet climate change impacts and household adaptation strategies are dynamic and evolve with changing conditions. While the study complemented the cross-section data with existing secondary data to control for temporal limitations, seasonal variations or long-term adaptation trajectories may not have been fully covered.

Incomplete Institutional Assessment: Although the study highlights gaps in government-led initiatives and support mechanisms, it does not include comprehensive institutional performance or budgetary analysis. This limits the ability to draw robust conclusions about the root causes of institutional gaps or to provide targeted recommendations on policy and implementation shortcomings.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and conclusion

The Busoga sub-region faces complex challenges stemming from climate change, poverty, and environmental degradation. The study revealed that environmental degradation in the Busoga sub-region is driven by a combination of factors, including population pressure, unsustainable agricultural practices, illegal logging, wetland drainage, climate change, and poor waste management. These challenges threaten ecological balance, food security, and the livelihoods of local households and communities. This field report underscored the urgent need for integrated solutions that combine ecological restoration, economic diversification, and institutional strengthening to build climate resilience. Thus, addressing these issues requires a multifaceted approach involving policy interventions, community participation, and sustainable resource management. Also, enhancing environmental awareness, enforcing conservation laws, and promoting alternative livelihoods will be essential in reversing the current degradation trends.

The study also established the main climate-related threats to the sub-region as longer dry spells, stronger winds, hailstorms, and increased amounts of rainfall and delay or early onset of rains (change in seasons). These manifestations threaten food security through reduced income to buy food as well as reduced home production due to crop failure. Strong winds cause damage to both dwellings and field crops. Household adaptation approaches to these threats include buying food from nearby places, and a few of them storing food from harvests and diversifying livelihoods. These findings reveal the increased need to support household financial literacy and access to financial services to strengthen access to food through markets, as well as promote food storage at the household level to smoothen food availability in addition to creating opportunities to access alternative livelihoods less dependent on climate.

The survey results indicate a perceived lack of government-led environmental initiatives in the districts of Bugweri, Iganga, Kaliro, Luuka, and Namutumba. This highlights a potential need for increased government action, more effective communication, and community-based and local-led adaptation and mitigation programs aimed at raising awareness and promoting environmental sustainability. These findings suggest an opportunity for policymakers and developmental partners to focus on improving the visibility and outreach of environmental initiatives, which could lead to more effective environmentally conscious initiatives in these areas.

5.2 Recommendations

To address these challenges, the report suggests several key actions:

1. Promote climate-smart agriculture, including the use of drought-resistant crops, agroforestry, and soil conservation techniques such as contour farming and mulching, etc, integrated soil fertility management, including the application of organic matter, crop rotation, and improved fallow systems, to replenish depleted nutrients and improve soil structure etc.

   Potential impact: Promoting climate-smart agriculture can lead to increased crop resilience, as the adoption of drought-resistant crops and agroforestry practices allows for higher yields during adverse weather conditions. Additionally, techniques such as, soil conservation, integrated soil fertility management, and crop rotation can enhance soil structure and nutrient levels, promoting sustainable agricultural practices. Ultimately, these efforts can improve food security by diversifying crops and securing food supplies, thus reducing vulnerability to climate shocks

2. Promote food storage at household level by promoting household food storage equipment such as hermetic bags and grain silos.

   Potential impact: Supporting storage at the household level by promoting household food storage equipment increases the period over which households can access food from their own production. Proper storage technology buttresses the gains from yield stabilization efforts through promoting climate-smart agriculture by reducing waste. This could improve food availability and access to income where food sales are timed to coincide with periods of higher demand.

3. Promote and support community-based financial infrastructures such as SACCOs and Cooperatives.

   Potential impact: To increase access to credit and financing for climate adaptation.

4. Invest in infrastructure by expanding affordable irrigation and rainwater harvesting systems to mitigate water scarcity.

   Potential impact: Investing in infrastructure, specifically by expanding affordable irrigation and rainwater harvesting systems, can mitigate water scarcity. This access to reliable water sources can enhance agricultural productivity, enabling farmers to cultivate crops year-round and improve their livelihoods.

5. Support livelihood diversification by encouraging alternative income sources, such as poultry, aquaculture, and small businesses, to reduce reliance on climate-sensitive sectors.

Potential impact: Supporting livelihood diversification by encouraging alternative income sources, such as poultry, aquaculture, and small businesses, can reduce economic vulnerability. By decreasing dependence on climate-sensitive agriculture, communities can strengthen their resilience, allowing families to better withstand economic shocks and climate impacts

6. Strengthen policy and capacity building by enhancing local governance, enforcing environmental regulations, and improving community training on adaptive practices.

   Potential impact: Strengthening policy and capacity building through enhanced local governance and enforcement of environmental regulations can lead to more effective management of natural resources and climate adaptation initiatives. Additionally, community training on adaptive practices can empower local populations to implement effective strategies, fostering a culture of resilience.

7. Foster gender inclusion by targeting women and marginalized groups with tailored financial and technical support.

   Potential impact: Fostering gender inclusion by targeting women and marginalized groups with tailored financial and technical support can empower these communities, allowing them to participate fully in economic activities and decision-making processes. Promoting gender equity can also lead to improved overall community resilience, as diverse perspectives contribute to more comprehensive solution

8. Strengthen institutional support for climate adaptation initiatives.

   Potential impacts: Finally, strengthening institutional support for climate adaptation initiatives can enhance collaboration among stakeholders, leading to more effective implementation of adaptation strategies. A robust institutional framework can also attract funding and resources for climate adaptation projects, ensuring sustained efforts in the face of climate change.

9. Foster private sector engagement to bridge critical gaps in funding, technology, and market linkages while aligning profit motives with community resilience.

   Potential impact: Drive scalable, sustainable solutions that reduce vulnerability to climate change and foster economic growth in Busoga region.

10. Develop and roll-out a knowledge management system to document success stories, best practices and lessons learned in locally led adaptation

    Potential impact: Foster adaptive management and inform the design of future adaptation initiatives within and without Busoga region.

5.3 Role/contribution of the private sector in the implementation of this study's recommendations

By leveraging its resources, innovation, and market-driven strategies, the private sector can significantly enhance the effectiveness of these initiatives.

The private sector can play a vital role in implementing the recommendations for climate adaptation in the Busoga region by leveraging its resources, innovation, and market-driven strategies. The private sector can significantly enhance the effectiveness of these initiatives in several key ways as indicated below.

1. By investing in sustainable practices, private companies can provide financial support for local agricultural initiatives. This includes funding climate-smart practices such as irrigation systems, soil conservation, and agroforestry. Additionally, businesses can engage in research and development to create drought-resistant crop varieties and sustainable farming techniques.
2. The private sector can enhance capacity building and training by offering workshops for farmers on best practices in climate resilience, including crop diversification and efficient water management. Companies can also facilitate knowledge transfer through partnerships with local communities, NGOs, and government agencies.
3. In the realm of technology and innovation, private firms can supply agricultural technologies such as drip irrigation systems, water harvesting solutions, and climate-resilient seeds. By utilizing data analytics, businesses can help farmers make informed decisions based on climate forecasts and market trends.
4. The private sector can improve market access and value chains by creating supply chains that connect smallholder farmers to larger markets, ensuring fair pricing and enhancing economic resilience. It can also invest in processing facilities to add value to agricultural products, increasing local income and reducing reliance on raw commodity sales.
5. Engaging in public-private partnerships (PPPs) can enhance resource mobilization and leverage expertise from both sectors to implement large-scale adaptation projects. The private sector can collaborate with governmental bodies to advocate for policies that support sustainable practices and climate resilience.
6. Through corporate social responsibility (CSR) initiatives, businesses can invest in local communities by funding environmental conservation projects, education, and health services. Companies can lead by example, adopting sustainable practices in their operations and encouraging employees and local communities to participate.
7. Through advocacy for green policies, such as tax incentives for sustainable supply chains or wetland restoration projects, the private sector can amplify impact. Corporate social responsibility initiatives might fund reforestation, clean energy projects or microloan programs for women entrepreneurs. Ethical sourcing of raw materials from climate-smart farms, coupled with eco-certification schemes, can incentivize sustainable practices. By

prioritizing inclusive partnerships and scalable solutions, the private sector can bridge funding and technology gaps, align profit with community resilience, and drive economic growth in Busoga while reducing climate vulnerability

8. Financial institutions can develop tailored financial products, such as weather-indexed insurance and microloans, to support farmers in managing climate risks. Overall, the private sector's active involvement can significantly bolster climate adaptation efforts in the Busoga region.

This study has revealed that Busoga region faces complex challenges stemming from climate change, poverty, and environmental degradation, and underscored the urgent need for integrated solutions that combine ecological restoration, economic diversification, and institutional strengthening to build climate resilience. The findings highlighted the vital roles that the private sector can play in implementing adaptive strategies. By prioritizing locally led initiatives and ensuring equitable resource allocation and knowledge sharing, stakeholders can effectively mitigate climate risks and foster sustainable development in Busoga. Collaborative efforts among government, businesses, and civil society are essential for creating a robust framework that supports climate adaptation. Ultimately, addressing these interconnected issues will not only enhance the resilience of the Busoga region but also contribute to the broader goal of sustainable development in Uganda

ANNEXES

Annex I: Household Questionnaire

The Government of Uganda through the Ministry of Water and Environment seeks to support communities adapt to the effect of climate change as well as mitigate further environmental degradation. To that end, a consultant "Athari Lulu Consults, Limited" has been commissioned to conduct a comprehensive study on climate adaptation threats facing the Busoga region (especially Iganga, Kaliro, Luuka, Namutumba and Bugweri), and to develop well-informed project Concept Note for submission to the Adaptation Fund (AF). The Concept Note will outline actionable strategies to address these threats, enhance community resilience and promote sustainable development in alignment with the priorities of the AF. You have been identified as a key stakeholders in this undertaking and therefore invited to actively participate in these assessments by volunteering information relating to the current and future status of climate change adaptation, environmental degradation and their drivers as well as provide recommendations about what can be done to build resilience of local communities.

Section A: Household Location Demographic and Socio-economic Characteristics		
A1	A1.Questionnaire ID	☐☐☐☐☐☐☐☐
A2	A2.Date of interview (dd/mm/yyyy)	☐☐/☐☐/☐☐☐☐
	Location	
A3	A3. District	1. Bugweri 2. Iganga 3. Kaliro 4. Luuka 5. Namutumba
A4	A4. Sub-county	
A5	A5. Parish	
A6	A6.Village	
A7	A7.Household head's full name (Optional)	
A8	A8.Age of the household head	☐☐ years
A9	A9.Sex of household head	1. Female 0. Male
A10	A10. What is the marital status of the household head?	1. Married 0. Not married
A11	A11. Type of household (Gender and Decision making)	1. Dual (male and female spouse); 2. Female headed with an adult male decision-maker; 3. Male headed with an adult female decision-maker

		4. Female headed, without any adult male decision-maker in the HH 5. Male headed, without any adult female decision-maker in the HH; 6. Male headed with more than one wife
A12	A12.Household head's years of completed education	☐☐ years
A13	A13.What is household head's highest level of education attained?	1. No formal education 2. Primary level complete 3. Ordinary level incomplete 4. Ordinary level complete 5. Advanced level incomplete 6. Advanced level complete 7. Diploma 8. University degree 9. Post-graduate 10. Specialized/Vocational training 99. Other (Specify)……..
A14	Is the household head engaged in agricultural activities as a source of livelihood?	1. Yes 0. No
A15	A15. If yes, which of the following agricultural activities is the household head mostly engaged in?	1. Crop farming; 2. Livestock rearing; 3. Crop + livestock farming 4. On farm Casual jobs 5. Off-farm agricultural activities (Salaried) 6. Off-farm agricultural activities (casual) 99. Others specify
A16	A16.Is the household head engaged in non-agricultural activities as a source of livelihood	1. Yes 0. No
A17	A17.If yes, which of the following non-agricultural activities is the household head mostly engaged in?	1. Non-agricultural Employment (Salaried) 2. Non-agricultural employment (casual, temporary (non-salaried) 3. Trade/shop keeping 4. Other petty trade 5. Others (specify)
A18	A18. Is there any household member living with a disability?	1. Yes 0. No
A19	A19.If yes, what is the type of disability? *(Multiple response)*	1. Physical disability 2. Speech/Oral disability

		3. Hearing/Auditory disability 4. Sight disability 5. Mental disability 6. Other specify……
A20	A20. Is the respondent also the household head?	1. Yes 0. No
A21	A21. What is the respondent's relationship to the household head?	See codes A16a Below
A22	A22. What is the age of the respondent?	☐☐
A23	A23.What is the sex of the respondent?	1=Female 0=Male
A24	A24. Respondent's years of completed education	☐☐
A25	A25. What is respondent's highest level of education attained?	1. No formal education 2. Primary level complete 3. Ordinary level incomplete 4. Ordinary level complete 5. Advanced level incomplete 6. Advanced level complete 7. Diploma 8. University degree 9. Post-graduate 10. Specialized/Vocational training 99. Other (Specify)……..
A26	A26.Is the respondent engaged in on-farm activities?	1. Yes 0. No
A27	A27.If yes, which of the following on-farm activities is the respondent mostly engaged in?	1. Crop farming; 2. Livestock rearing; 3. Crop + livestock farming 4. On farm Casual jobs 5. Others specify
A28	A28.Is the respondent engaged in off-farm activities	1. Yes 0. No
A29	If yes, which of the following off-farm activities is the respondent mostly engaged in?	1. Non-agricultural Employment-Salaried 2. Non-agricultural employment-casual, temporary (non-salaried) 3. Trade/shop keeping 4. Other petty trade 5. Others (specify)
A30	How many people are in your household (mostly living in the same homestead and eating from the same pot with you)?	☐☐
A31	How many are female?	
A32	How many are male?	

A33	How many are children 14-17?	
A34	How many are children below 14?	

Codes for A16: 1=household head, 2=spouse, 3= son/daughter, 4=son/daughter-in-law, 5=grandson/granddaughter, 6=parent, 7=brother/sister, 8=nephew/niece, 9=nephew/niece of wife, 10=cousin of head, 11=brother/sister-in-law, 12=parent-in-law, 13=cousin of wife, 14=other relative 15=other, no relation

SECTION B: HOUSEHOLD ECONOMIC STATUS AND LIVELIHOOD RESOURCES

B1	B1. How many members of the household earned an income in the last 12 months (between March 2024 and February 2025)?		Total |____| Male |____| Female |____|
B2	B2. Do you have any household member having access to regular (e.g., weekly, monthly) source of income?		1. Yes 0. No **(Skip to B5)**
B3	B3. If yes, how many household members have access to regular sources of income?		Male _____ Female _____
B4	B4. Who mainly has access to regular income?		1. Male household head 2. Female household head 3. Male spouse 4. Female spouse 5. Girl Child(ren) 6. Boy Child(ren) 7. Independent female relatives/family members 8. Independent male relatives/family members 99. Others, specify
B5	B5a. In the last 12 months (July 2021 to June 2022) what have been the sources of income in this household? (Income from all household members) B5b. How much income (per month) does the household obtain from	**Economic Activities**	**Annual income (appr.)**
		1. Crop farming (less than 10 acres cultivated)	
		2. Crop farming (above 10 acres)	
		3. Livestock farming	
		4. Fishing activities/Fish farming	
		5. Self-employment in trade	
		6. Wage-based activities/causal labour	
		7. Salary	

	each of the sources? *(Please include income from members other than the household head as well)*	8. Vocational Services (tailoring, hairdressing, cobbler etc)	
		9. Rental, interest, dividend income land/property income)	
		10. Public transfer/pension, SAGE	
		11. Private remittance/transfer	
		12. Charity/donations	
		99. Other (specify)	
B6	B6. During the past 12 months, what were your household's three (3) most reliable sources of income? *(1 being the most reliable source; use codes from B5a)*		1. _____ 2. _____ 3. _____
B7	B7. Who in the household decides what to do with household income generated?		1. Men 2. Women *3.* Both

SECTION C: HOUSEHOLD ACCESS TO LAND AND FARM PRODUCTION

C1	C1. Do you or a household member have access to land (own or opportunity to use)? Whether personal or borrowed	1. Yes 0. No
C2	C2. How many acres are accessible to the household?	_____ acres
C3	C3. Of the acres accessible, how many are currently under use?	_____ acres
C4	C4. What acreage of the land accessed is owned by a member of the household	_____ acres
C5	C5. For the land under productive use, what activities do you carry out on that land? (Multiple responses)	1. Crop farming 2. Small-scale industry 3. Animal rearing 4. Conservation (Forest) 5. Poultry 6. Industrial complex 7. Fishing farming 8. Commercial building 9. Renting out land 10. Recreation facilities 11. Planted Forest 12. Nature-based hunting and gathering 13. Land under fallow 14. Earth-based extraction (clay, sand) 15. Houses/accommodation 16. Apiary (Bee keeping) 17. Other

C6	C6. If land is under crop production, What crops are grown? (Multiple responses)	1. Coffee 2. Tobacco 3. Cassava 4. Millet 5. Vanilla 6. Sunflower 7. Maize 8. Ground nuts 9. Cotton 10. Sim-sim 11. Rice 12. Peas 13. Tea 14. Banana 15. Sorghum 16. Beans 17. Sugar cane 18. Sweet potato 19. Potato 20. Fruit trees 21. Vegetables 22. Cocoa 23. Others (specify)
C7	C7. Do you apply any improved crop farming methods?	1. Yes 0. No
C8	C8. If yes, which improved farming methods are adopted?	1. Minimum tillage 2. Intercropping 3. Crop rotation 4. Use of disease tolerant or resistant planting mateiral 5. Use of inorganic chemical fertiliser 6. Use of compost or other organic material (crop residual/green manure) 7. Mulching 8. Irrigation of crops during dry season 9. Application of chemical pest control (biopesticide/synthetic pesticide) 10. Improved harvesting and post-harvest techniques 11. Proper storage 12. Grafting 13. Other (Specify)
C9	C9. If land is under livestock and/or poultry, which animals are you rearing?	1. Cattle 2. Goats 3. Sheep

		4. Pigs 5. Rabbits 6. Donkey/camel/horse 7. Poultry 8. Other(specify)
C10	10. What livestock production method do you use?	1. Extensive or free range, tetheirng 2. Semi-intensive 3. Intensive (e.g Zero grazing, pig stys, deep litter
C11	C11. What is the household's main water sources?	1. Piped into yard/plot/domestic connection 2. Public tap 3. Open well 4. Protected well/spring 5. Borehole/hand pump (public) 6. Borehole/hand pump (private) 7. Rain water harvest tank 8. Valley dam 9. Private vendor 10. Ponds/Lakes/Stream/Swamp 11. Wetland 12. Others (Specify)
C12	C12.What is the distance to the nearest water source?	……..kms
C13	C13.What is the household's main source of cooking fuel?	1. Electricity 2. Gas 3. Kerosene 4. Charcoal 5. Firewood 6. Agricultural crop residue 7. Bio gas 8. Solar 9. Other
C14	C14.Which financial institutions found in this area, are accessible to your household?	1. Commercial Banks 2. Microfinance institutions 3. Village Savings and Loan Associations (VSLAs) 4. SACCOS 5. Money lender 6. None 7. Others, specify……
	Household access to amenities (Please record distance to the nearest places)	
C15	C15a. Primary School	_____kms
	C15b. Secondary school	_____kms

	C15c. All-weather road (tarmac or regularly maintained marram)	_____kms
	C15d. Agricultural inputs shop	_____kms
	C15e. Livestock drug shop	_____kms
	C15f. Health centre	_____kms
	C15g. Commercial bank or MDI	_____kms
	C15h. Mobile money point	_____kms
	C15i. Agricultural and livestock market	_____kms

SECTION D: HOUSEHOLD VULNERABILITY TO CLIMATE CHANGE IMPACTS

D1a	D1a.Do you have access to information on climate change?	1. Yes 0. No **(Skip to D3 …)**
D1b	D2b.What kind of information do you access?	1. Early warning on eminent disasters 2. Adaptation strategies 3. Weather forecasts 4. Mitigation strategies 5. Effects of climate change 6. Causes of climate change 99.Other (specify) ……
D1c	D1c. To what extend do you find this information useful to you or your community?	1. Not at all useful at all 2. Slightly useful 3. Somewhat useful 4. Moderately useful 5. Extremely useful
D1d	D1d. Who mostly provides climate information? (up to three)	1. Public (local or central govt) 2. NGOs 3. FBOs (Faith Based Organizations/Church/Mosque 4. Health organizations/health centres/hospitals 5. VHTs 6. Community leaders
D2	D2. If yes, what are the available climate information sources to the people in this area?	1. Radio 2. Television 3. Print media like newspaper and magazines 4. Telephone 5. Word of mouth 6. Others, specify

D3	D3. Have you experienced any climate change related impacts in past 10 years depending on the period you have stayed in this area?	1. Yes 0. No
D4	D4. If yes, please mention the impacts you have experienced?	1. Dry spells have become longer 2. More frequent droughts 3. Flash/increased frequency of floods 4. Hailstorms 5. Stronger winds 6. Lightening 7. Increased temperatures 8. Reduction in temperature 9. Increase in the amount of rainfall 10. Reduction in the amount of rainfall 11. Delayed or early onset of rains 12. Others(specify)
D5	D5. In which months of the year do you mostly experience …….[Impact]?	1. January 2. February 3. March 4. April 5. May 6. June 7. July 8. August 9. September 10. October 11. November 12. December
D6	D6. Which category of people were/are most affected by …….[Impact]?	1. Adult male 2. Adult female 3. Youth (12-18 yrs.) 4. Children below 12 5. Elderly (> 65years) 6. PwDs 7. Other special interest groups
D7	D7. What effects did …….[Impact] have on you household?	1. Increase in crop pests and diseases 2. Increase in livestock parasites and diseases 3. Destruction of roads infrastructure 4. Increase in human diseases 5. Soil erosion 6. Water scarcity 7. Food insecurity/hunger

		8. Displacement/Homelessness 9. Environmental degradation/increased use of environmental resources 10. Land conflicts 11. Wild bush fires 12. Reduction in farm land yield
D8	D8. When faced with …….[Impact], what adaption measures does your household employ to minimize/overcome the drought related effects?	1. Migration to other areas 2. Plant trees 3. Seek government assistance 4. Seek assistance from relatives and friends 5. Dig trenches, planting pits, vegetation strips, ridge tillage to trap water and retain water in gardens 6. Reclaim wetlands for moist soils to grow crops 7. Buy food from nearby areas 8. Ration meals/reduce on the number of meals eaten per day 9. Buy water 10. Store food during bumper harvest 11. Seek medical attention 12. Vaccinating of livestock 13. Spraying livestock to control parasites 14. Spraying crops to control pests 15. Cutting down affected crops to control diseases 16. Burying dead animals to control diseases 17. Irrigation of gardens 18. Practice agro-forestry 19. Change of livelihoods 20. Mulching gardens to retain moisture in the soils 21. Crop diversification to include moisture resistant species 22. Application of green manure 23. Sought credit from financial institutions 24. Application of cover cropping systems 25. Practice climate smart agriculture 26. Others, specify
D9	D9. If you experienced floods, in which months of the year are these common?	1. January 2. February 3. March 4. April 5. May 6. June 7. July

		8. August 9. September 10. October 11. November 12. December
D10	D10. Which category of people were/are most affected by floods?	1. Adult male 2. Adult female 3. Youth (12-18 yrs.) 4. Children 5. Elderly (> 65years) 6. PwDs
D11	D11. What effects did floods have on your household?	1. Increase in crop pests and diseases 2. Increase in livestock pests and diseases 3. Destruction of roads infrastructure 4. Soil erosion 5. Increase in human diseases 6. Water source pollution 7. Food insecurity/hunger 8. Displacement/Homelessness 9. Environmental degradation/increased use of environmental resources 10. Land conflicts 11. Reduction in farmland yields 12. Destruction of dwellings 13. Deaths 14. Other (specify)
D12	D12. When faced with floods, what adaption measures does your household employ to minimize/overcome the flood related effects?	1. Migration to other areas 2. Plant cover crops to regulate flush floods 3. Seek government assistance 4. Seek assistance from relatives and friends 5. Dig trenches to trap water and retain water in gardens 6. Reclaim wet lands for moist soils to grow crops 7. Buy food from nearby areas 8. Ration meals/reduce on the number of meals eaten per day 9. Buy water 10. Build house on high grounds 11. Store food during bumper harvest 12. Seek medical attention 13. Vaccinating of livestock 14. Spraying livestock to control pests 15. Spraying crops to control pests 16. Cutting down affected crops to control diseases

		17. Burying dead animals to control diseases 18. Irrigate gardens 19. Practice agro-forestry 20. Change of livelihoods 21. Other specify
D13	D13. What else can you do to improve your resilience to effects of climate change?	
D14	D14.What kind of support would you need to do this?	
D15	D15. Are there skills or resources you need to diversify your income and reduce dependency on climate-sensitive activities?	
D16	D16. When faced by climate change related disasters, do you switch livelihoods?	1. Yes 0. No
D17	D17. If yes, please indicate the alternative type of livelihoods you change to.	1. Crop farming (less than 10 acres cultivated) 2. Crop farming (above 10 acres) 3. Livestock farming 4. Fishing activities/Fish farming 5. Self-employment in trade 6. Wage-based activities/causal labour 7. Salary 8. Vocational Services (tailoring, hairdressing, cobbler etc) 9. 9Rental, interest, dividend income land/property income) 10. Public transfer/pension, SAGE 11. Private remittance/transfer 12. Charity/donations 13. Other (specify)
D18	D18. What influences the choice of alternative livelihood that you change to?	1. Availability of financial resources 2. Access to natural resources (e.g., forests) 3. Knowledge and information 4. External support (govt, NGOs, private companies etc) 5. Peer influence 6. Access to labour 99. Others, specify
D19	D19. What are the major drivers of vulnerability to climate change in your household?	1.Large household size 2.Land fragmentation due to limited land 3.Low income/poverty 4. Limited access to alternative livelihood options/ Lack of employment opportunities

		5.Remoteness 6.Poor road conditions 7.Degradation/over exploitation of wetlands resources 8.Degradation/overexploitation of forest resources 9.Degradation of river banks 10. Lack of social capital 11. Change in land uses 12. Inadequate access to social services like health and water 13. Cultural/historical attachments to the area 14. Inadequate access to information on climate 15. Geographical locations 16. Reliance on subsistence agriculture 17. Poor governance 18. Financial constraints 19. Other (specify)

SECTION E: PARTICIPATION AND KNOWLEDGE ON BUILDING RESILIENCE TO CLIMATE CHANGE

E1	E1. Are you aware of any past or ongoing projects aimed at building community resilience to climate change?	1. Yes 0. No
E2	E2. If yes, were you or any member of your household consulted during the formulation of the project	1. Yes 0. No
E3	E3.Have you or any member of the HH participated in any community projects focused on climate change adaptation or environmental conservation?	1. Yes 0. No
E4	E4.What activities were undertaken/being undertaken to build community resilience to climate change?	1. Supporting alternative livelihoods 2. Mobilizing communities and sensitizing them on the proper natural reosuces management practices. 3. Demarcation and restoration of wetlands and forest buffer zones 4. Establishment of soil and water conservation measures 5. Revegetation of bare land 6. Others, specify
E5	E5. In your opinion, have the above activities contributed to increased resilience?	1. Yes 0. No

E6	E6. If yes, to what extent	1. Lesser extent 2. Moderate extent 3. High extent
E7	E7. If 2&3 are yes, what benefits have you derived from the above interventions?	1. Reduced pressure on wetlands and forest ecosystems promoting their regeneration 2. Increased in pastures for grazing animals; 3. Provided more diverse habitats for wild animals 4. New income opportunity from livelihood alternatives 5. Increase in income 6. Increases recreation and tourism activities. 7. Enhanced scenic beauty; 8. Increase in better health among community members as a result of consuming healthier crop and livestock products; 9. Strengthened local management of natural resources 10. Reduced vulnerability to disasters (floods, droughts) 11. Increased productivity of soils hence increased crop yields 12. Improved food security 13. Reduction in crop pests and diseases 14. Reduction in livestock parasites and diseases
E8	E8. Do you think there is a better way government and other organizations can do to better support communities in addressing climate change?	1. Yes 0. No
E9	E9. If yes, Please explain what can/should be done?	

	Section F: Environmental Degradation and Land Use
F1	F1. What are the major environmental challenges in this area?
F2	F2. Based on your observation, has deforestation increased, decreased, or remained the same in your community over the past decade?
F3	F3. What are the main causes of environmental degradation in your area?
F4	F4. Are there any government or community-led initiatives addressing environmental degradation in your area?

F5	F5. If yes, what kind of initiatives are being implemented?

Thank you for your participation

Annex II: Focus Group Discussion (FGD) guide

District Name	
Sub-County Name	
Parish Name	
Village Name	
FGD Group Description	
No. of Youths Participants in the FGD (18-30 years)	
No. of Male Participants	
No. of Female participants	
No. elderly people (60+ years)	
No. of Persons with Disabilities (PWDs)	
Total No. of Participants	

Roster of participants

R1	R2	R3	R4	R5	R6	R7	R8
ID	NAME	Sex *1=Male* *2=Female*	How old is [NAME]? *Completed years*	What position does [NAME] currently have in this community?	For how many years have [NAME] lived in this community? *Cumulative years*	What is the highest educational qualification [NAME} has attained?	Have you heard about or participated in any community-based climate projects? *1=Yes* *2=No*
1							
2							
3							
4							
5							
6							
7							
8							
9							

R5 Codes: 1= Chairperson; 2=Representative Women; 3= Representative Youth; 3= Elderly; 4= School Headmaster; 5= School Teacher; 6= Agricultural Extension officer; 7= Health worker; 8= Business man/woman; 9= Religious leader; 10 = Police; 11 = Local community member 99= Other Specify

R7 Codes: 1= Never attended; 2= Some Primary; 3= Completed primary; 4= Some secondary; 5=Completed secondary;
6=Beyond Secondary

Community livelihood options and climate change experience

1. What are the main economic or livelihood activities that people in this community mostly engage in? *(list a maximum of 5 in order of importance)*
2. Have you noticed any changes in the climate in this area over the past 10 years? If yes, what are these changes?

Climate Change Risks and Community Experiences

3. What climate-related challenges have affected your community the most in the last 10 to 15 years?
4. How have these challenges affected the welfare (food security, income stability, or general well-being) of people in this community?
5. Do specific groups, such as women, youth, the elderly, and individuals with disabilities, experience a greater impact from climate change? If so, in what ways?
6. Are there specific areas in your district that are more prone to climate-related hazards?

Community Climate Adaptation Strategies

7. What strategies have been used or are currently being used in this community to cope with the impacts of climate change?
8. Have you received any support for climate change adaptation? If so, what type of support and from which organizations/institutions?
9. How have adaptation strategies affected the community's economic and social activities?
10. Has this community received training on climate change adaptation? If so, who provided it and what topics were covered?
11. How satisfied were you with the training or capacity building?
12. What traditional or indigenous practices has this community used in the past or is currently using to adapt to climate change?

Barriers to Climate Adaptation

13. What challenges have community members faced while participating in climate adaptation initiatives?
14. What makes it difficult for members of your community to adopt climate change adaptation practices or alternative livelihoods?
15. In your opinion, what is needed to support climate adaptation at the local level that is not yet in place (technical, financial, or institutional)?
16. How do cultural beliefs and traditional practices influence climate adaptation efforts in your community?

Alternative Livelihoods and Opportunities

17. Which skills do people in this community need to acquire to diversify income and reduce dependence on climate-sensitive activities?

18. Which resources would your community need to acquire to diversify income and reduce dependence on climate-sensitive activities? (mention up to 3 most important)
19. What role do women and youth play in climate adaptation efforts within the community?

Community Recommendations

20. What do you think should be done to help your community better adapt to climate change?
21. What kind of support do you need from the government, NGOs, or private sector to enhance adaptation efforts?
22. How can the community be better involved in decision-making regarding climate change adaptation projects?
23. If given the opportunity, what types of training or capacity-building programs would you want to attend?
24. Any other suggestions on improving your community's resilience to climate change

Annex III: Key Informant Interview guide

Name:
Affiliation:
Position:
Role:
Date of interview:

Section 1: Background Information

1. How long have you been working in the field of climate change adaptation?
2. What is the role of your office/organization in supporting community adaptation to climate change, and how has this role evolved over the past 5–10 years?

Section 2: Climate Change Risks and Impacts

3. What are the most common climate change occurrences in the Busoga region over the past 10 years?
4. Which of these occurrences have been the most devastating or frequent (e.g., droughts, floods, landslides, erratic rains)?
5. Have you observed any changes in the frequency or severity of these events over time?
6. How have these events impacted livelihoods and socio-economic activities in the community?
7. Who in the community is most affected by climate change (e.g., women, youth, persons with disabilities)?
8. What coping mechanisms or strategies have communities adopted in response to climate change impacts?

Section 3: Climate Adaptation Strategies and Initiatives

9. Does the district/organization have a climate change adaptation strategy? If yes, what are its priority initiatives?
10. Are there any recently (3 years or less) concluded or active climate adaptation projects/programs being implemented in this area? If yes, what are their main activities?
11. To what extent have these adaptation initiatives been embraced by communities, and how effective have they been?
12. How satisfied are you with the progress and outcomes (if any) of these adaptation initiatives?

13. Are there government policies or programs supporting climate adaptation in the district? If yes, how effective are they?
14. What role does your organization play in promoting climate adaptation in the region?
15. Are there collaborations between government, NGOs, the private sector, or other stakeholders to enhance climate adaptation? If so, who are the key partners, and what interventions are they involved in?
16. What role does the private sector (e.g., CSOs, NGOs, media, financial institutions, academic institutions, and farmer organizations) play in supporting climate adaptation efforts?

Section 4: Challenges and Gaps

17. What challenges or barriers have been faced in implementing climate adaptation initiatives (e.g., human capital, financial, institutional, and cultural)?
18. What technical, financial, or institutional gaps exist in supporting local climate adaptation?
19. What has been the role of cultural beliefs and traditional practices in influencing the adoption of climate adaptation practices?
20. What risks have arisen with the implementation of climate adaptation projects (e.g., social, environmental, or project-related risks)?

Section 5: Funding and Sustainability

21. How do current climate adaptation funding mechanisms align with the needs and existing projects in the district?
22. What strategies could be employed to enhance the cost-effectiveness and sustainability of climate adaptation interventions?

Section 6: Recommendations and Future Directions

23. In your opinion, what are the most urgent climate adaptation interventions needed in the area, and why?
24. How can local communities be better engaged and empowered in climate adaptation processes?
25. What role should research, data, and governance structures play in shaping and improving climate adaptation strategies in the region?

Annex IV: Case Study tool

General Information

- Name of the NGO implementing the project:
- Location of the VSBK kiln:
- Date construction started and current status:
- Objectives of the NGO for adopting VSBK technology:

Construction and Technical Feasibility

1. What was the process of constructing the kiln?
2. What materials were used in construction, and were they locally available?
3. What were the main challenges encountered during construction?
4. Is the kiln structurally complete, and is it ready for operation?
5. What specific machinery is needed to operationalize the kiln?
6. Why has the machinery not been procured yet? (e.g., funding, supply chain issues, lack of technical expertise)
7. Are there alternative solutions for running the kiln without the missing machinery?

Financial and Economic Feasibility

8. What was the total cost of constructing the kiln?
9. How was the project funded?
10. Are there additional funding gaps?
11. What is the estimated cost of the required machinery?
12. Has the NGO sought alternative funding sources for procurement?
13. What is the expected cost of producing bricks using VSBK compared to traditional kilns?
14. What are the expected financial benefits of the VSBK model (e.g., reduced fuel costs, increased efficiency, and market potential)?

Social and Institutional Feasibility

15. What level of stakeholder engagement was conducted before implementing the project?
16. How have local brick makers responded to the idea of using VSBKs?
17. What are the main barriers to community adoption of this technology?
18. Are there concerns about job losses or skill gaps in transitioning to VSBK?
19. What capacity-building or training efforts have been planned or conducted?

Environmental and Adaptation Aspects

20. What environmental challenges does traditional brick-making present in this region? (e.g., deforestation, air pollution, soil degradation)
21. How does the VSBK model address these environmental concerns?
22. Has the project been linked to broader climate adaptation goals (e.g., reducing land degradation, improving energy efficiency, protecting ecosystems)?
23. What adaptation benefits does the NGO foresee in implementing VSBKs?
24. Are there any unintended negative environmental impacts from the new technology?

Lessons Learned and Recommendations

25. What are the biggest takeaways from this partially implemented project?
26. What recommendations does the NGO have for others planning to introduce VSBKs?
27. What key factors would have made implementation smoother or more successful?
28. What steps need to be taken to fully operationalize the kiln?

Annex VI: List of stakeholders consulted

Name	Phone number	Email address	Position	District
Musenero Bernard	0771674292/ 0750566383	bmusenero@gmail.com	DNRO	Luuka
Dr. Batyani James	0759619461/ 0782355068		DPO	Luuka
Paulo Diogo	0782936589	d.polo19@gmail.com	DNRO	Kaliro
Thomas Kibalya			SAO	Kaliro
Abdul Samanya	0779800732	abdisamanya@yahoo.co.uk	DNRO	Iganga
Dr. Apollo Musiita	0775632391		DPO	Namutumba
Ikaaba Dauda	0772923376	ikaabad@gmail.com	DNRO	Namutumba
Bazibu Julius	0779315560/ 0756808014	Juliusbazibu5@gmail.com	Wetland system supervisor	Kaliro
Kalange Muhamood	0776838447		DPO	Bugweri
Najjuma Sarah	0774679653	najjuma_sarah@yahoo.com	Senior Environment officer	Bugweri
Wamukuyu Fred	0705641538		DNRO	Bugweri
Agutut Harriet	0701052529		Satelite Manager, BRAC	Iganga
Joseph Kyegombe	0701907318 /0764838026	Josephs2012@gmail.com	Executive Director SMAD	Namutumba
Makumba Julius	0774931003		SCDO- Ikumbya S/C	Luuka
Joseph Kiranga	0753523352		Youth Leader Bukobo Village- Ikumbya S/C	Luuka

Rogers Ntogona			Assistant RDC	Luuka
Rashid Mukaire		apstruggle@gmail.com	SAP- MD	Iganga
Tiwaaku Florence	0771469855 /0755004452	tiwakuflorence@gmail.com	Environment Officer	Iganga
Agutut Harriet	0701052529		Satelite Manager, BRAC	Jinja
Joseph Kyegombe	0701907318	Josephs2012@gmail.com	ED SMAD	Namutumba
Moses Iyereget	0701533124		AMREF	Busoga region
Brenda Yariwo	0776156160		ONE ACRE FUND	Jinja
Namuganza Naiba	0775358914		SDO- Bukamba	Kaliro
Makumba Julius	0774931003		SCDO- Ikumbya	Luuka

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Annex 3: INITIAL GENDER ASSESSMENT

The 2025 Comprehensive Study covered the five PACT target districts using 437 household interviews, 27 key informant interviews and 14 focus group discussions. Separate male and female FGDs and mixed youth FGDs were conducted, and the study states that a participatory and human-rights-based approach was used to include women, youth and persons with disabilities with free, prior and informed consent. Here we summarize the gendered implications of the that report on Climate Change Adaptation in Busoga Region, especially Sections 4.5.1 and 4.5.2, supported by Sections 4.1, 4.1.3, 4.6 and 4.8.

The assessment follows the Adaptation Fund Gender Policy and Action Plan (amended March 2021) and the Fund's updated gender guidance. Accordingly, it looks beyond female participation counts to differentiated vulnerabilities, roles, capabilities, access to resources and decision-making, and to the practical design changes needed to provide equitable opportunity to build climate resilience.

Evidence boundary. The Busoga Study provides sex-disaggregated vulnerability data and strong household/qualitative evidence, but it does not report sex-disaggregated outcome tables for land ownership/control, credit access, agricultural input access, extension access, market access or intra-household decision-making. Those six areas are therefore treated below as concept-stage structural gender gaps and design risks requiring controls now and quantification/validation during PFG and full proposal preparation; no unsupported women-versus-men differential is invented.

Gender-differentiated climate vulnerability and household roles

The study shows that climate vulnerability is shared within households but is not gender-neutral. Adult women were perceived as the most vulnerable group for most reported climate effects, while adult men followed closely and were perceived as slightly more vulnerable to flash/increased flooding. The figures below are respondents' perceived shares by group, not incidence rates.

Climate effect (Study Table 16)	Adult female (%)	Adult male (%)	Pattern
Reduction in rainfall	31.5	28.8	Women higher
Flash/increased floods	23.6	25.8	Men slightly higher
Delayed/early onset of rains	27.1	25.6	Women higher
Increased temperatures	25.6	24.6	Women slightly higher
Increase in rainfall	25.8	23.7	Women higher
Longer dry spells	24.0	22.8	Women higher
Hailstorms	26.2	22.1	Women higher
Stronger winds	23.0	22.1	Women slightly higher
More frequent droughts	22.8	21.6	Women slightly higher
Lightning	24.4	19.5	Women higher

Source: Busoga Study 2025, Section 4.5.1, Table 16. The study's narrative and FGDs explain the roles behind these perceptions.

Women's vulnerability is linked in the study to food provisioning, care and immediate household coping. A district production officer explained that women are expected to find and prepare food for the household, so food shortages transfer directly into additional stress for them. The study also records that men experience strong income-provider pressure when drought and other shocks reduce farm income, casual work and household cash flow. PACT therefore treats gender as a two-sided adaptation issue: food, care and resource-access burdens affecting women, and climate-sensitive income and provider stress affecting men, with overlapping impacts on the whole household.

The same evidence shows important intersectional vulnerabilities. In the five-district sample, 22.2% of households were female-headed (38% in Bugweri), 33.6% had at least one member living with a disability, average household size was seven, more than 60% of household heads had not completed primary education, 92.9% of household heads relied on agriculture as a livelihood, and only 36.2% of households had a regular income source. Children, elderly persons and persons with disabilities therefore remain material risk groups even where they are not the household decision-maker.

Structural gender gaps and PACT design responses

The table below addresses the six structural barriers named by the reviewer. Each row distinguishes what the Busoga Study establishes from the remaining gender gap and shows how the existing PACT architecture responds without redesigning the project.

Barrier	Study evidence / boundary	Gender gap / design risk	PACT design response	Components
Land	Limited land was a reported vulnerability factor (14.8% overall; 15.4% male and 12.7% female in Study Table 17). The study links land scarcity to wetland/forest encroachment. Female-headed households are 22.2% overall. Sex-disaggregated ownership/control of land was not reported.	A land-title or asset-control requirement could exclude legitimate users, tenants or female-headed households; ecosystem recovery rules could also shift costs onto resource users who lack alternatives.	Do not use formal land title as the sole eligibility test for household support. Record access/use rights and who controls the supported asset. Under C4, complete affected-user mapping before access restrictions and link restrictions to C2/C3 transition support where needed; disclose rules and provide recourse.	C1, C2, C4

Barrier	Study evidence / boundary	Gender gap / design risk	PACT design response	Components
Credit and adaptation finance	42.5% of households reported VSLA access, 8.5% SACCO access, 5.6% microfinance access and 4.3% commercial-bank access, while 29.1% reported no financial-service access. Financial constraints were reported slightly more by females (14.3%) than males (13.1%); low income was also higher among females (26.2% vs 23.7%).	A credit-only delivery model could exclude poorer and female-headed households or increase debt stress. Household-level finance access is documented, but sex-disaggregated borrowing, control of loans and control of proceeds are not yet quantified.	C3 finance remains readiness-gated: debt-safety, governance and climate-income-risk checks precede finance; no household is automatically pushed into borrowing. C2 remains a lower-risk route for ultra-vulnerable households. Track sex of finance beneficiaries, decision/control over financed assets and proceeds, and grievance access.	C1, C2, C3
Agricultural inputs	Households requested improved inputs, including seeds/fertilizers and drought-resistant varieties; FGDs asked for drought-resistant seed and practical training. The study does not report sex-disaggregated access to input suppliers or control over inputs.	Cash constraints, mobility, timing and intra-household asset control can determine who actually receives and uses resilient seed, soil-water inputs or post-harvest support, even where the household is selected.	Deliver inputs only through hazard-screened C2 packages; use quality/standards screening; locate and schedule distribution/demonstration accessibly; verify receipt and use at household level; do not make high cash co-financing a default condition for the most vulnerable; monitor who controls the supported asset/input.	C1, C2
Extension services and climate information	The study reports low education, uneven extension reach and late/insufficient support; over 60% of household heads had not completed primary education. It identifies knowledge-transfer and technical-extension gaps. Sex-disaggregated extension reach is not reported.	Text-heavy, one-off or distant extension can exclude low-literacy participants and people with care, mobility or time constraints; women may be present but unable to influence technical choices.	Use local-language, visual and repeated practical learning through model farmers and FFS/action-learning sites; schedule sessions to reduce care/time barriers; use authorised climate advisories; track participation and decision influence by sex and vulnerability group, not attendance alone.	C1, C2, C5

Barrier	Study evidence / boundary	Gender gap / design risk	PACT design response	Components
Markets	The study identifies livelihood diversification, startup capital, training and market engagement as adaptation needs, while noting structural barriers such as credit, training, startup capital and market access. Sex-disaggregated market access and income control are not reported.	Market-linked adaptation can fail if women or poorer households cannot travel, aggregate volumes, meet quality requirements, negotiate buyers or control resulting income. Finance without a viable market can increase risk rather than reduce it.	C3 requires climate-income-risk and market screening before finance; uses buyer links, aggregation, quality information and service arrangements where viable; allows group mechanisms where they lower transaction barriers; tracks who accesses the market linkage and who controls resulting income/assets.	C1, C3, C5
Decision-making	Study methods included separate male/female FGDs and the household questionnaire collected decision-making variables, while Section 4.5.1 documents different household roles. The published results do not provide a quantified sex-disaggregated table on intra-household decision control.	Representation quotas alone do not prove influence. Women, youth, PWDs or poorer households can attend meetings yet have little power over priorities, beneficiary lists, package choices, asset control or resource-use rules.	C1 uses CAC/CAAP validation, public disclosure, objection windows, scorecards and GRM/recourse. PACT will track who proposes, validates and benefits from decisions and who controls supported assets. CAIF may screen climate/fiduciary/safeguard requirements but must provide reasons and recourse when a community priority is not approved.	C1, C5
Care, labour and time burden (cross-cutting)	Study narratives link women's climate vulnerability to food provisioning and care; water access can require substantial travel and households are large. The study also shows labour/mobility constraints for PWD and elderly household members.	Adaptation can unintentionally shift unpaid labour, O&M or meeting burdens onto women or vulnerable household members.	Use accessible meeting times/venues, local-language tools and lower-labour options where feasible; assign O&M roles explicitly; test who carries labour/time costs during PFG; use GRM and scorecards to detect unequal burdens.	C1-C5

How the assessment changes PACT implementation across C1-C5

The gender response is embedded in the existing five-component design rather than added as a parallel gender project. The commitments below apply to targeting, package preparation, CAIF screening, delivery and learning.

Component	Gender-responsive design commitment
C1. LLA governance / CAIF	Ensure women, men, youth, PWDs and vulnerable households can influence CAAP priorities and validate beneficiary/site choices; disclose criteria and decisions; use scorecards, objection windows and accessible GRM/recourse; monitor decision influence, not only attendance.
C2. Food-security resilience	Prioritise climate-driven food insecurity and the household food-provisioning burden; provide hazard-screened, practical and accessible CSA, soil-water, post-harvest and viable water-related options; maintain a lower-risk route for households not ready for debt or enterprise risk.
C3. Income-security resilience	Treat alternative livelihoods, adaptation finance and market links as adaptation only where they reduce climate-sensitive income exposure. Apply readiness and debt-safety gates, market screening, coaching and transparent finance access; monitor control of financed assets and resulting income.
C4. Ecosystem recovery management	Map affected users and differentiated dependence on wetlands, forests, water sources and fragile land before changing access rules. Avoid enforcement-first recovery; link restrictions to feasible C2/C3 transition support, transparent community resource rules and GRM/recourse.
C5. Knowledge management and learning	Disaggregate learning by sex, age, disability and vulnerability group; document whether women and men actually access, influence and benefit from C2/C3/C4 support; feed findings into annual adaptive learning notes, workplans and CAIF decisions.

PFG/full proposal validation and Gender Action Plan boundary

This Initial Gender Assessment is complete for concept stage; PFG will not repeat the Busoga Study. PFG and full proposal development will validate only the residual implementation variables needed to convert this assessment into measurable commitments and a funded GAP.

- quantify intra-household decision-making and women's/men's control over land, productive assets, income and adaptation finance;
- disaggregate actual access to agricultural inputs, extension/climate information and markets by sex, age, disability and relevant vulnerability status;
- test care, mobility, labour and O&M burdens associated with candidate C2/C3/C4 packages and adjust delivery arrangements where exclusion risks arise;
- set sex-, age- and disability-disaggregated baselines, targets and indicators for participation, decision influence, access, asset/income control and benefits;
- confirm safe and confidential channels for gender-related exclusion, harassment, retaliation or other grievances within the project GRM;
- prepare the full Gender Action Plan with actions, indicators, responsibilities, timetable, budget treatment and monitoring arrangements across C1-C5.

Full-proposal test: the GAP should show, for each component, not only how many women and men participate, but whether structural barriers to land, finance, inputs, extension, markets and decision-making were reduced sufficiently for them to influence decisions and obtain comparable adaptation benefits.

Key sources

Ministry of Water and Environment (2025). A Comprehensive Study Report on Climate Change Adaptation in Busoga Region. Key sections used: 3.1.1, 3.2.1, 3.3, 4.1, 4.1.3, 4.5.1, 4.5.2, 4.6 and 4.8; Tables 4, 7, 16, 17, 28 and 29.

Adaptation Fund. Gender Policy and Action Plan (amended March 2021), OPG Annex 4.

Adaptation Fund. Updated Gender Guidance Document for Implementing Entities on compliance with the Adaptation Fund Gender Policy (2022).

Adaptation Fund Board Secretariat. Technical Review for AF00000530, third-review CAR 3: request for a distinct Initial Gender Assessment annex.

ANNEX 4: COMMUNITY CONSULTATION ATTENDANCE EVIDENCE AND VERIFICATION NOTE

This annex reconciles the community-consultation claim with evidence of field roster titled "Focus Group Discussions Held During the Assessment of the Climate Change Impacts in 5 Selected Districts of Busoga Sub-region". The roster records date, participant name, village, age, district and category columns labelled Male, Female, Elder and PWD.

Fieldwork provenance is additionally supported by the Ministry of Water and Environment introduction letter dated 3 March 2025, addressed to the Chief Administrative Officers of Iganga, Kaliro, Luuka, Namutumba and Bugweri. The letter authorises the consultant to gather data, engage local stakeholders and conduct field assessments, including community engagement to inform project design.

The 2025 Busoga Study remains the substantive consultation record. Its methods state that the study used participatory and human-rights-based methods, sought the views of women, youth and persons with disabilities, applied free, prior and informed consent, and conducted separate male and female FGDs and mixed youth FGDs. Its FGD tool defines youth participants as ages 18-30 and calls for separate recording of male, female, elderly and PWD participation.

What the retained roster verifies

- 104 named participant records are visible in the retained roster, with recorded ages ranging from 18 to 79 years.
- The records fall across 13 distinct date-location combinations between 21 and 27 March 2025.
- The roster contains 45 Male markers, 43 Female markers, 8 Elder markers, 7 PWD markers and one record with no visible category marker.
- Using the Busoga Study FGD-tool definition of youth as ages 18-30, 48 of the 104 records fall in that age range. This is a transparent derivation from recorded age, not a separately marked youth-status field.

Verified attendance summary from the retained roster

Date	Village	District	Total	Male marker	Female marker	Elder marker	PWD marker	Youth 18-30*	Unmarked
21 Mar 2025	Nawansega	Iganga	8	7	0	0	1	2	0

Date	Village	District	Total	Male marker	Female marker	Elder marker	PWD marker	Youth 18-30*	Unmarked
21 Mar 2025	Wante	Iganga	8	0	6	1	1	1	0
22 Mar 2025	Buholo	Iganga	8	7	0	1	0	2	0
22 Mar 2025	Namakoko B	Iganga	8	1	4	0	3	3	0
23 Mar 2025	Iwungiro	Bugweri	8	4	4	0	0	6	0
24 Mar 2025	BubogoB	Iganga	8	1	7	0	0	0	0
25 Mar 2025	Bukobo	Namutumba	8	0	7	0	0	2	1
25 Mar 2025	Mwendanfuko	Iganga	8	1	4	2	1	6	0
25 Mar 2025	Nawansega	Iganga	8	8	0	0	0	0	0
26 Mar 2025	Bulike	Kaliro	8	4	3	0	1	8	0
26 Mar 2025	Nabitende	Iganga	8	5	3	0	0	8	0
27 Mar 2025	Kuto B	Luuka	8	3	5	0	0	8	0
27 Mar 2025	Kuuto A	Luuka	8	4	0	4	0	2	0

* Youth 18-30 is derived from the recorded age using the definition in the Busoga Study FGD guide. Male/Female/Elder/PWD are the roster's visible category markers, not independently verified demographic variables.

Limits of the retained attendance evidence

Sex and vulnerability are not independently recorded. The retained summary uses one visible marker among Male/Female/Elder/PWD for most participants. Where a participant is marked Elder or PWD, the file does not independently show that participant's sex. The Male and Female marker totals therefore must not be presented as a complete sex-disaggregation of all 104 attendees.

Youth is derivable; female-headed and below-poverty status are not. Youth can be derived only because age is recorded and the study tool defines youth as 18-30. The roster contains no field for female-headed-household status or below-poverty-household status. Those categories must not be back-filled from names, appearance, occupation, village or household assumptions.

How vulnerable groups were engaged and how inputs informed PACT

Engagement quality is evidenced principally by the Busoga Study methods and findings, not by the attendance sheet alone. Community members and vulnerable groups participated through household interviews, KIIs and FGDs, including separate male and female FGDs and mixed youth FGDs. The study states that women, youth and persons with disabilities were intentionally included through a participatory, human-rights-based approach and free, prior and informed consent.

Consultation evidence	What participants/study established	PACT design response
Hazards, food insecurity and coping	Communities described longer dry spells, rainfall uncertainty, storms, hail, flooding, crop loss, food purchase/rationing and water stress.	C2 prioritises household food-security resilience through hazard-screened CSA, water/soil measures and post-harvest support.
Income shocks and limited alternatives	FGDs and household evidence show climate-sensitive farm/casual-work income, livelihood switching and limited finance/market access.	C3 uses alternative livelihoods, readiness-gated adaptation finance and market links to reduce climate sensitivity of household income.
Wetland/forest pressure as coping	The study documents wetland cultivation/reclamation and other degrading coping responses when rainfall fails or food/income pressure rises.	C4 combines ecosystem recovery with affected-user mapping and C2/C3 transition support rather than enforcement-first restrictions.
Gender and vulnerable-group constraints	Women, men, youth, PWDs, elderly and poorer households experience different food, income, mobility, information and resource-access constraints.	C1 uses inclusive CAAP/CAC processes, disclosure, scorecards and accessible GRM/recourse; C5 tracks differentiated learning and benefits.

Concept-stage boundary: these consultations shaped the climate diagnosis, priorities, coping evidence, vulnerable-group analysis and support needs. They did not constitute final community financing decisions. During PFG and implementation, communities will lead CAAP prioritisation, beneficiary/site validation, package review, disclosure, scorecards, grievance/recourse and monitoring before and during CAIF-supported implementation.